

URBAN AGRICULTURE MAGAZINE

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Cover

Many displaced people have to remain in refugee camps for extended periods or reside (often illegally) in and around urban areas, where they will try to improve their food security by establishing some form of agriculture or small-scale gardening, like container gardening, pots on shelves or hanging baskets.

Cover photo (Woman cultivating kale in Kibera) by: Solidarités

Linking Relief, Rehabilitation and Development: A role for urban agriculture?

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Natural hazards, civil conflicts, wars and economic crises continue to generate unstable and unsafe conditions, placing immense pressures on communities and local livelihoods. These emergency scenarios often result in people fleeing their homes to other areas or crossing borders to other countries, thereby creating mass refugee situations. Many of these refugees or internally displaced persons (IDPs) have to remain in refugee camps for extended periods or reside (often illegally) in and around urban areas.

Consequently, many people living under the harsh conditions of refugee life will try to improve their food security by establishing some form of agriculture, such as small-scale gardening in refugee camps, in backyards, or on open spaces outside settlements. And where land is limited they may resort to micro-technologies, such as container gardening, pots on shelves or hanging baskets.

In the previous issues of Urban Agriculture Magazine we highlighted the multiple functions of urban agriculture, including its role in building communities and sustainable environments. We also discussed the processes of technological, organisational and institutional innovation in urban agriculture. In this issue we focus on the role urban agriculture plays in linking relief, rehabilitation and development following a disaster or in emergency situations.

Disasters and emergency situations

Different types of hazards can cause disasters or trigger crisis situations. Disasters can be rapid-onset or slow-onset, the latter building up over a period of months. If the crisis is characterised by political instability or high levels of violence, it is often referred to as a complex emergency.

Disaster risk is a function of the intensity of the hazard and vulnerability ($\text{Risk} = \text{Hazard} \times \text{Vulnerability}$). Vulnerability is defined as the capacity to anticipate, cope with, resist and recover from the impact of a hazard (Wisner et al., 2004). Crisis situations therefore have a higher impact in vulnera-



Provision of local female goats
Photo: Astrid van Rooij

ble areas and a disproportionate impact on the urban poor, especially women, children and the elderly.

Fragile states are currently in the centre of the development debate. The gap between the developed and developing countries is widening, with the poorest states stagnating and even regressing. In these states achieving the Millennium Development Goals is a particularly difficult challenge. Many of the fragile states, a group of 30 to 50 countries depending on the definition used, are low-income countries characterised by a weak state capacity or ineffective or “bad” governance. Their economic, social and political institutions have a diminished capacity to absorb shocks and they are therefore more susceptible to conflict and crisis. As the level of vulnerability determines the actual impact of a hazard, the impact will be more extensive in these countries than in countries characterised by security and stability, thus highlighting the increased attention needed for these fragile states.

Different types of disasters and resulting impacts are discussed below and illustrated by articles in this magazine.

Economic crises result in rising food prices, declining real wages, formal labour market redundancies, and cuts in food

subsidies. Reduced public expenditure also has its impact on basic services and infrastructure. In these situations refugees, migrants and the urban poor frequently resort to non-market (informal sector) livelihood activities, including urban agriculture.

Jakarta is a good example. The financial turmoil that first hit Indonesia in 1997 left millions of people without sufficient money to buy food, and thus vulnerable to food insecurity. Consequently, people started to produce food on small plots and open spaces all over the city, even transforming former public parks into gardens, as government bodies encouraged the people of Jakarta to grow their own food.

Economic crises often have a social or political origin. Probably the best known example of a country adopting a national urban agriculture policy in response to such economic and political constraints is Cuba (see box below). Other examples of cities that have promoted backyard gardening, rooftop gardens, institutional and school gardens as a standard component of emergency agricultural response include Harare (Zimbabwe, see the article on page 26), Lagos (Nigeria), Rosario (Argentina), and Gaza in Palestine (as reported in earlier issues).

The current global economic crisis is related to our oil-dependent economy. The price of food, a subsidised commodity for over fifty years, has demonstrated its oil dependency by rising with every dollar on a barrel of oil. But other factors, such as the use of grains for bio fuels and the growing demand for imported food by China and India, have also contributed to steep increases in global food prices. Global food prices have increased 83 percent in the past three years, pushing 100

Addressing the crisis in Cienfuegos, Cuba

By Alejandro R Socorro Castro

Cuba is often presented as an example where government policies encouraged urban agriculture. Major national measures were taken in response to the crisis in the 1990s in the agriculture and food sector, like the conversion of large state-owned farms into new cooperatives, or Basic Cooperative Production Units, and the granting of land to people and organisations to produce food. The National Urban Agriculture Programme started in 1993, and proposed to stimulate food production in available urban and periurban spaces, taking advantage of the opportunities offered by the availability of labour and the close proximity between producer and consumer.

Within 15 years of implementation, the National Urban Agriculture Programme led the municipality of Cienfuegos to unprecedented levels of production, along with other favourable results. A study (UMP LAC, 2002) concluded that urban and periurban agriculture in Cienfuegos enhances food security and constitutes a movement with widespread public participation, involving men and women of different ages.

Urban agriculture in the municipality of Cienfuegos in 1996 consisted of about 34 hectares of organoponics (a system based on the use of substrates composed of mixtures of soil and organic material from different sources) and another 2 hectares of gardens. By 2006, urban agricultural production was taking place in organoponic systems, intensive gardens, plots and backyards (basic modes of urban agriculture practice), covering a total surface area of over

1,525 hectares (including vegetables, rice fields, roots and tubers, corn, sorghum and beans) (Minagri, 2007), and an additional 1,200 hectares of land was being used to raise animals (mainly sheep, goats, rabbits, pigs and poultry).

The resulting system of urban agricultural production is intensive (high yields are produced per unit of land) as well as viable and profitable in a context of scarce inputs. Urban agriculture further increases the resilience of Cuba's cities against hurricanes, which batter the island every year. The development of urban agriculture was facilitated by the population's high level of education, the availability of vacant land, the provision of free technical assistance and financial and material support, and the development of appropriate policies and a regulatory and legal framework adapted to the new conditions. The programme was based on participatory decision making between the government and various social and economic sectors, and was linked at national, provincial and local levels.

Fifteen years after the initial organised actions of the urban agriculture movement in Cienfuegos, this activity was integrated into the municipality's General Territorial Ordering Plan.

MINAGRI Provincial Delegation / Cienfuegos, 2007. Operational Report on Urban Agriculture.

UMP-LAC. 2002. Implementation of the Urban Agriculture Programme in Cienfuegos. Urban Management Programme for Latin America. (In Spanish).

A full article on Cienfuegos will be published in the next UA-Magazine (no. 22).

million people deeper into poverty (RUAF, 2008). It is a sobering fact that cities like London (UK) are never more than five days from food depletion; such is the city's dependence on imported food. Agricultural production in and around cities reduces food transportation costs, and can improve access to (cheaper) fresh food, thus reducing vulnerability in the poorer sections of the city, while also improving the general urban ecology and environment (Hopkins, 2008).



Income generating activity in Buduburam, Ghana
Photo: A.Adam Bradford

Environmental and natural disasters

impact millions of people globally in the form of drought, flooding, hurricanes and earthquakes (see the article on New Orleans on page 28). According to the International

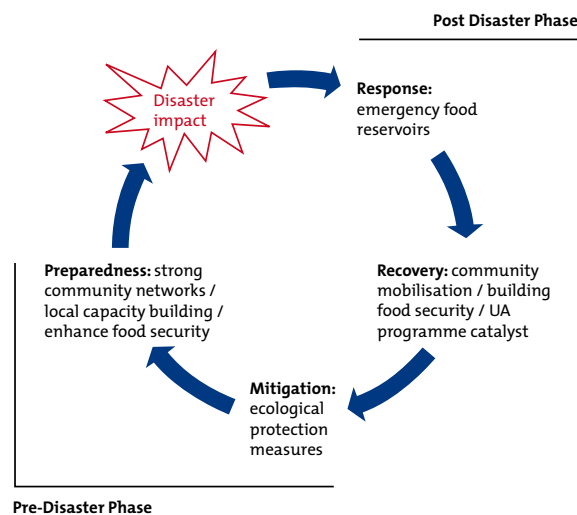
Federation of the Red Cross and Red Crescent Societies (UNHCR, 2006) the total number of people affected by natural disasters has tripled over the past decade to two billion people, with an average of 211 million people directly affected each year. This is approximately five times the number of people estimated to have been affected by armed conflicts over the past decade. In recent climate change debates it has been said that many cities run the risk of becoming “environmental disaster traps”, where a diminished food supply from the rural areas (caused by floods, droughts, gale winds or frost) could lead to severe food shortages (the next issue of the UA Magazine will discuss this issue further).

Unlike natural disasters, many **man-made emergencies** are deliberate and intentional acts that cause significant population movements (internal and cross border). These situations involve an intricate web of volatile and often hostile military and political forces. For example, in the Indonesian province of Aceh, conflict, violence and a massive counter-insurgency campaign by the Indonesian military against separatist rebels has displaced more than 300,000 people since 1999. Many of these people were forced to move again after the tsunami of December 2004, which displaced an estimated half-million people - 12 percent of the population (see the article on Aceh on page 29). The recent crisis in Gaza is another example: the Israeli invasion has caused over 90,000 people to flee their homes, while agricultural life has been thrown into total disarray with the fields, trees and crops destroyed. Most of the agriculture in Gaza can be considered urban (Laeremans and Sourani, 2005), and apart from the aid provided by NGOs the rehabilitation of this agriculture is paramount for food security in Gaza.

Whether as a result of a hurricane, prolonged drought, armed conflict or economic crisis, people in disaster situations always experience shortages in their basic needs, such as food, water, shelter and health care. According to the

UNHCR (2006), there were about 10 million refugees (people who flee across borders) and 13 million internally displaced persons (people who flee within their country of origin) in the world in 2006 due to various types of crisis situations. These people are either settled in camps in rural or urban settings or they live dispersed in settlements and slums in urban areas. As articles in this issue show, while displaced people (for instance in Kenya and Jordan) are entitled to support themselves in obtaining food and other basic needs, they are often not allowed to work or fully integrate with the host society, a constraint that is often compounded by a lack of access to land for productive uses.

Insecurity in specific regions can continue for many years. Refugee camps tend to gradually convert into “shanty towns” or become permanent settlements (see the articles on Kakuma on page 11 and on Ethiopia on page 16). Many of these “camps” are difficult to distinguish from surrounding towns. Many displaced people will never return to their original “home” areas for a variety of reasons, and would rather seek new livelihood opportunities in and around nearby cities. Despite many ongoing conflicts, in some countries there are opportunities to rebuild communities and to facilitate the return of refugees and other displaced populations. The largest returns in recent years include the repatriation of more than 3.4 million refugees to Afghanistan and the return of over a million displaced persons to Bosnia and Herzegovina, Sudan, Sierra Leone, and Liberia (see the articles on Liberia and Sierra Leone on pages 22 and 19). Repatriation is the beginning of a long process of reintegration.



Disaster management cycle with urban agriculture linkages
Adapted from Alexander 2000:3

From crisis to development

Disaster situations can be viewed as a series of phases on a time continuum. The disaster cycle as illustrated in the figure is used to illustrate the different elements of disaster management (mitigation, preparedness, relief, and recovery). Identifying and understanding these phases may help aid workers and urban planners identify disaster-related needs and then implement the appropriate disaster management activities. The *relief* phase is the period immediately following the occurrence of a disaster, when exceptional

Food distribution versus food production in disasters and emergencies

Food distribution to beneficiaries during times of crisis and disaster has always been the main food aid response, since the Biafra War of the late 1960s, when media reports were successfully used in the west to mobilise public support to fund the relief effort. Despite some very successful examples of small-scale food production in refugee camp situations, little attention is given to food-producing-based relief strategies, with the main relief aid strategies still focusing on food distribution as the main response mechanism.

The chain of response to an emergency is as follows:

*Crisis → Resource mobilisation → Relief implementation
→ Food security or Food dependency.*

In a disaster aftermath the emphasis is on fast and effective food distribution, and this approach fits well into the media campaigns run by the implementing agencies. In the table below these are expressed as primary issues. But when food distribution programmes are viewed over the long term, secondary issues such as food dependency, corruption, and programme costs come into play. Despite being effective for its purpose, i.e. saving life, food distribution remains a highly inefficient food security tool due



Dumped food aid Lebanon 2006

Photo: A.Adam Bradford

to high food and fuel prices and often extensive logistical costs. Of course there are situations when food production is not a viable option, for example when agricultural land is contaminated or mined. However, a focus on food distribution with only minor gardening initiatives (not as part of the longer-term strategy) would result in major lost opportunities, as the implementation of food production can play an important role in mobilising and rehabilitating communities following the impacts of a disaster or emergency.

Food distribution, as part of immediate relief, should be planned in conjunction with food-producing options, as part of the rehabilitation and development strategies, so that transitions from food dependency to food security can be made at the earliest opportunity and with minimum risk to the beneficiaries.

Table Food distribution and food production: comparison of issues

Food Distribution	Food Production
Primary issues	
Provide immediate food security	Provide sustainable food security
High media impact	Lower media impact for fundraising strategies
High donor expectations	Low donor priority in initial relief response
Requires mainly logistical expertise	Requires greater programme expertise
Faster initial food delivery to disaster victims	Time lag before first crop harvests
Secondary issues	
Provides logistical infrastructure to implement emergency nutritional feeding programmes	Time lag before specific crops can be produced for emergency nutritional feeding programmes
Limited land requirements	Agricultural land may be contaminated or mined
Requires high-cost food and fuel inputs	Requires low-cost tool/seed/training inputs
Corruption/embezzlement/risk of rising food prices due to high/rapid levels of local purchasing	Less opportunity for corruption/embezzlement and builds strong local markets
Creates beneficiary dependency	Empowers and mobilises communities while also bringing psychological benefits
Creates food dependency	Creates food security
Mainly processed crops (may include GM foods)	Higher nutritional content in freshly grown crops
Can contain unfamiliar and culturally unacceptable produce leading to food dumping	Incorporates indigenous vegetables and locally used crops, enhancing local production
Blurs transition from relief to recovery, even creating barriers to future development	Catalyst for implementing land-based mitigation and food-security-based preparedness strategies
High carbon count from food mileage and processing	Lower carbon count

Liberian refugee camp, Buduburam, Ghana

The UNHCR-administered camp at Buduburam was established in 1990 for refugees fleeing from the First Liberian Civil War and over the pursuing five years was home on average to 40,000 Liberian refugees. The Second Liberian Civil War (1999-2003) brought further crisis and once again influxes of refugees arrived in Ghana on route to the camp at Buduburam. Although the camp remains a permanent feature it now has a much-reduced total population in the vicinity of 7,000 to 10,000 refugees. Every month WFP food aid is distributed to the vulnerable persons in the camp. On the same day of delivery, traders from the capital Accra, also descend on the camp only to buy the maize grain directly from the beneficiaries. The traders then return the grain to Accra, where it is sold to local and national markets at a substantial profit for the traders. Meanwhile the beneficiaries use the meagre earnings to purchase rice from the local market as rice is the Liberian staple crop as opposed to maize. This situation of course begs the question: why can rice not be distributed in the first



Liberian refugee camp, Buduburam, Ghana Photo: A.Adam Bradford

place? And preferably Ghanaian rice which has a higher nutritional value than the rice imported from the USA. Notably, urban agriculture is taking place in areas around the camp, but these interventions are not

currently receiving effective institutional support. In addition, agricultural extension services at the camp remain nonexistent due to a lack of resources, such as the agricultural handbooks for refugee situations which the UNHCR have produced in Switzerland but have not been distributed to this particular camp in Ghana.

measures have to be taken to search for and rescue the survivors, as well as meet their basic needs for shelter, water, food and medical care (provision of emergency aid). In the *rehabilitation* (or recovery) phase, operations are planned and decisions taken with a view to facilitating more structural adjustments to the impacts caused by the disaster (helping people to recover what they have lost). *Reconstruction* refers to the actions taken to restore affected areas to their former (living) conditions after a period of rehabilitation. Such actions include the construction of permanent housing and the full restoration of all services, leading to circumstances in which financial and material resources can once again be used to pursue longer-term development goals.

These phases do not necessarily capture the cause and effect relationship between disasters and social and economic development, or the need to gradually change from emergency relief to development assistance. For example, the rehabilitation phase after a disaster provides significant opportunities to initiate development programmes, and act as a catalyst for the implementation of mitigation and preparedness strategies, thus building longer-term resilience. Rehabilitation programmes can be specifically aimed at teaching new skills, and strengthening the sense of community and leadership. This is particularly important in the case of protracted refugee situations and in urban areas. In the longer term this capacity building process can also contribute to restoring local municipal government, which in turn legitimises and builds good governance at the state level. This need to fill the gap between humanitarian aid and development is frequently debated and is addressed in an approach called *Linking Relief, Rehabilitation and Development (LRRD)*. The European Union (in its European Commission Humanitarian Aid (ECHO) programme) emphasises the importance of this linkage. Nevertheless it remains a challenge to smoothly integrate the two streams of aid as there are opposing views on how relief should be provided.

In this LRRD process, attention to *self reliance* is important: this is the capacity of a community to either produce, exchange or claim resources which are necessary to ensure its sustainability and resilience against future disasters. The introduction of the concept of *sustainable livelihoods* also moves away from perceiving refugees as vulnerable people entirely dependent on external relief aid. A livelihoods approach in emergency settlement camps focuses on strategies that facilitate beneficiaries to meet their basic needs, while also identifying the constraints that prevent them from enjoying their (human) rights and thus developing their livelihoods. The concept of *human security*, finally, promotes a shift from focusing on state security (i.e. mainly on the protection of state territory), to focusing on human issues and rights (right to food, right to shelter, etc).

In doing so, it widens the scope of interventions from governments and international organisations and addresses issues such as increasing access rights of displaced people to land, rather than just addressing food security and human protection. Human security further pays attention to the array of issues behind the complex international causes of population movements, explaining the causes and linking them to development and poverty. Increasingly, there is an emphasis on preventive strategies, such as the development of good governance. See the articles on Kakuma (page 11) and Uganda (page 13).

Food security is one dimension of human security. It relates to availability, access, and use of food. Food *availability* at the household, city or national level can be affected by a war, due to its disruption or destruction of farming land or the transport infrastructure, or by natural disasters such as drought, floods, locust infestations, or mudslides that destroy a harvest. Food access at household level can be disrupted by a lack of purchasing power or disease amongst the house-

hold members. Food use can be affected at an individual level, when people are ill or wounded, or have needs for specific types of food (like pregnant women, young children, people recovering from disease, etc.).

The role of urban agriculture

Urban agriculture has always been used as a food security strategy during economic and emergency situations. Examples include the extensive “Dig for Victory” campaign in Britain during the Second World War, and more recently “Operation Feed Yourself” in Ghana during the 1970s. Similarly in many other countries, backyard farming, and institutional and school gardening have all been encouraged during times of food instability, with many examples featured in this issue.

Directly after a crisis, little attention is given to agricultural production or the protection of farming sites. When relief agencies depart, as they eventually do, outside support and resources decline, often leaving large numbers of affected people dependent on external food aid for extended periods of time (see figure on page 5).

The reasons to support agriculture-related activities in the early stages of the post-disaster phase are numerous. Firstly, there is a need for fresh and diverse food (in addition to the supply of staple foods). Increasingly the potentials of vegetable gardening and other agricultural production activities (e.g. eggs, mushrooms, medicinal herbs, etc.) in protracted refugee situations are being recognised (see the interview with UNHCR on page 18). Secondly, becoming involved in constructive activities may help people regain dignity, hope and self respect and enhance overall well-being. Home or community gardening activities help increase self reliance, allowing people to grow their preferred crops and varieties, and can improve their skills and knowledge, while additionally reducing operational costs for humanitarian agencies and potentially contributing to restoring the social fabric of disaster-affected communities. Urban agriculture can play

multiple roles in different phases of the disaster management cycle. Instructions for protecting primary food production are given in the Sphere Project guidelines, which also contain planning and design recommendations for allocating small plots of land for use as kitchen gardens (see The Sphere Project guidelines on page 31).

In the longer term, gardening also generates income and improves associations and linkages with other refugees or local communities, while contributing to the broader development of the area where refugees are hosted by stimulating local markets and trade. Deliberately combining attention to food production and to social inclusion is illustrated, for example, in the article on El Alto Bolivia on page 32. *Finally*, natural resources can be conserved and protected by promoting sound agricultural practices and introducing waste-recycling systems appropriate to the local conditions.

When developing agriculture-based interventions and projects in urban refugee settings, the following issues should be taken into consideration:

- Physical characteristics of the local setting, such as infrastructure capacities, basic social services (water, sanitation, waste use, health), land availability, energy supply (wood, kerosene)
- Social characteristics, such as IDP / refugee rights, security, social fabric and cohesion (race, tribe, gender), uncertainty, traumas, labour supply (abundant but weakened), and possibility of conflict among refugees and IDPs
- Food availability, food quality, balanced food basket, culture, income, etc.
- Political issues that can inhibit interventions.

In this development process, attention to increased self reliance is important. Protecting and supporting livelihoods should constitute an early component of an emergency response and can be instrumental in safeguarding food security and minimising relief aid dependency among beneficiaries.

The development of livelihood strategies including agriculture and animal husbandry will depend on the availability of, and access to, land, irrigation water, seeds and natural resources, but also freedom of movement. Humanitarian agencies may provide refugees with seeds, tools and when necessary technical support, but access to land and common resources is often constrained by the policies implemented by the host country, which may restrict their freedom and mobility. In particular, access to land is limited by the traditional land tenure system and laws concerning land ownership and rights of usufruct. As shown in the articles on page 13, 16 and 36, the host governments need to take a more positive attitude here (as in the case of Uganda).

Beneficiaries’ interest in agricultural activities may evolve over time, as their immediate needs start to be met. But some may not wish to start growing vegetables as this might trigger the impression that they have to settle at that location for an extended period of time. Agriculture for many still has a permanent character. During the first period of emergency relief, agricultural production is unlikely, but the plan-



Pond outside camp was made to hold irrigation water, also got fish in it.

Photo: A.Adam Bradford



Child collecting water from a drainage ditch
Photo: UNHCR

ning of future production sites must be taken into account in the camp layout or the housing reconstruction plans.

Micro-technologies

Similarities exist between agriculture in camp settings and in urban and slum areas. Urban agriculture, with its emphasis on space-confined technologies (also see UA Magazine no. 10), use of composted organic waste and recycling of grey wastewater, may offer good options for the provision of fresh vegetables, eggs, dairy products and other perishables to the population of the “new town” in addition to generating some income. Often stimulated by relief organisations, refugees start growing highly nutritious crops for their own consumption and to address immediate needs. These crops require only a limited growing period and a low investment, using (often available) traditional knowledge and skills. A number of articles in this issue describe the use of low-space technologies that have been developed or propagated in refugee camps (pages 16, 34 and 36). These technologies, i.e. the use of (very scarce) local resources (minimal land of low quality, recycled organic waste and wastewater, local seed, etc.), minimise health and environmental risks. In addition the article on page 38 presents the use of multi-storey gardens in slum areas of Nairobi.

Resilience

In addition to considering agriculture as an important strategy in the transition from relief to rehabilitation and reconstruction, agriculture should be integrated in disaster mitigation strategies, as it contributes to increasing resilience to future disaster impacts. Mitigation is a collective term for all actions taken *prior* to the occurrence of a disaster (pre-disaster measures), including preparedness and long-term risk reduction measures. New insights in the field of disaster risk reduction have demonstrated the essential role of resilience and the strong connection between resilience and the sustainability of socio-ecological systems. Resilience determines the persistence of relationships within a system.

Resilience is a measure of a household's, city's or nation's ability to absorb shocks and stresses (Wisner et al., 2004).

A focus on resilience means emphasising what can be done by a system or a community itself and how to strengthen capacities, notably the:

- Capacity to absorb stress or destructive forces through resistance or adaptation
- Capacity to manage or maintain certain functions and structures during disastrous events
- Capacity to recover or bounce back.

The costs of restoring communities back to something resembling their original states are much greater than the costs of investing in a community disaster risk reduction programme and increasing its resilience before a disaster strikes.

The role of urban agriculture in building resilience will be further discussed in the next issue (see the call for papers on page 48).

Conclusions and Recommendations

Experiences show that refugee agriculture is not only a survival strategy for displaced people to obtain food on a temporary basis, but it is also a valuable livelihood strategy for those that settle permanently, and for those who eventually return to their home cities or countries. Many displaced people, both in camps and in and around cities, engage in agriculture for subsistence and market production. And more and more local and national authorities, as well as relief agencies, are not only allowing but intentionally supporting agricultural production activities as part of their development strategies (see page 18). Urban agriculture can play an important role in all aspects of the disaster management cycle and is a multifunctional policy instrument and tool for practical application.

In the post-disaster phase, urban agriculture can contribute to food security through the production of fresh vegetables, thus providing a balanced nutritional input in conjunction with food aid programmes. Often these camps do not have a lot of space available, hence the use of micro-technologies, such as multi-storey gardens. During the recovery period, urban agriculture provides livelihood and income-generating opportunities and contributes to wider social and economic rehabilitation, especially in protracted camps, and in and around cities, where levels of unemployment and urban poverty may be particularly high. Depending on the availability of land, several forms of urban agriculture can be applied in such locations.

Although displaced people have a certain protective status, the reality on the ground often shows that they do not have the right to use land or undertake productive activities, as the articles in this issue illustrate. Consequently, the status of refugees and IDPs needs to be improved and implementing agencies need to give adequate attention to human rights and entitlements, such as access to land for gardening and farming.

In addition, community gardening helps to build different forms of capital (social, human, financial, economic, physical,

natural, etc), contributes to longer-term resilience and can reduce the impact of future shocks. To be able to build sustainable, shock-resistant communities, the active engagement of people themselves throughout the process is crucial.

Policies and interventions to promote refugee agriculture need to be included in planning and design at the camp level and should include:

- a. Adequate camp and slum arrangements (see Sphere Project guidelines on page 31)
- b. Promotion of low-space crops and animal production and water saving technologies
- c. Organisational support and training, both in technology and in reintegration and rehabilitation activities
- d. Provision of inputs and financial support (which becomes especially important in longer term settings, and when farmers move towards producing for the market) displaced settings want to move from self-consumption to market production.

Income generation from agriculture-based livelihoods will play an increasingly important role in developing economic self-reliance amongst refugee populations, and will help create an effective transition between emergency relief and longer-term development. It is likely that the availability of



Group gardening, Oryang

Photo: Astrid van Rooij

capital equipment or loan capital for small businesses will improve the ability of displaced people to pursue livelihoods and food security, and it is likely that the benefits will eventually also reach the host community.

Facilitating the change from emergency relief operations towards rehabilitation and sustainable development requires innovations that address current needs, while building and incorporating future perspectives. This requires putting in place participatory mechanisms, such as farmer or gardening groups and farmer field schools. These approaches put farming communities at the centre of the development agenda, thereby strengthening their technical capacities as well as enhancing a sense of community. Multi-stakeholder processes involving public and/or non-government actors



Post-tsunami homegarden.

Photo: A. Adam Bradford

can help build governance, which is especially important in fragile states that lack government capacity and willingness to perform key functions and services (OECD, 2008).

Growing food in camps and cities, when appropriate to the local conditions, reduces dependency on external food supplies, improves the availability and access to more nutritious food, and in the longer term may increase the resilience of people and cities.

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The Accidental City: Urbanisation in an East-African refugee camp

11

Bram J. Jansen

Refugee camps are regarded as temporary settlements, organised according to the functionality of humanitarian operations. According to this political view, refugees are passive recipients of aid and the dynamics of life in the camps remain hidden. Instead, refugee camps can be seen as emerging urban environments.

When entering Kakuma refugee camp in Kenya, notions of time and space become obsolete, not only because of the many years of existence of the camp, but especially as a result of the social and material processes that occur in it. Based on fieldwork conducted between 2004 and 2006, the author presents a follow up on earlier observations by Agier (2002) and Montclos and Kagwanja (2000), 5 - 8 years later.

Kakuma refugee camp

Kakuma refugee camp was established by the United Nations High Commissioner for Refugees (UNHCR) in 1992 and by early 2006 hosted approximately 95,000 inhabitants, mainly from Sudan and Somalia but to a lesser extent also from the Congo, Ethiopia, Eritrea, Burundi, Rwanda and Uganda. The camp is located in the semi-arid Turkana region of Kenya, which borders Sudan, Ethiopia and Uganda.

Kenyan refugee policy stipulates that refugees are not allowed to venture outside of the virtual camp walls and are not to interfere with the natural resources of the nomads. They are officially not allowed to work or integrate in Kenyan society, rendering them dependent on food handouts.

Inside those virtual walls, however, an informal economy has evolved that provides livelihood opportunities for refugees beyond the basic measures of protection that are provided by UNHCR and NGOs, and which stretch beyond the camp limits in various ways. The camp has become like a city in a pastoralist desert.

Diversity of people and livelihoods

The camp knows a diversity of people, lifestyles, cultures, religions, livelihoods and skills, which exceed pure humanitarian aspects of a refugee situation and include more developmental aspects. For example, in 2005 the camp had four secondary schools, 23 primary schools and seven pre-schools that accounted for a total of 33,000 students. These students



Supermarket in the Ethiopian community in the camp
Photo: Bram Jansen

are enrolled in education programmes that follow the Kenyan curriculum and lead to the corresponding diplomas. Education is even provided for the blind and there is a girls' primary boarding school, intended to keep girls in school in a secured environment.

Refugees are often presented as a homogeneous group or as target groups for intervention – women, children, or the elderly. In Kakuma, however, other socio-economic strata have emerged, as there is a (visible and invisible) division of labour and livelihoods (merchants and their employees, the clergy such as sheiks and pastors and refugee leaders, incentive workers employed by the aid agencies, and those who receive remittances from abroad or have income and opportunities from Kenyan cities such as Nairobi). The refugees who are totally dependent on handouts can be seen as a form of poor 'under-class'.

Food

The food rations for refugees are not sufficient, and subject to budget cuts and regular fluctuations in the provision of beans, maize, oil and salt. Opportunities for food production in the camp are limited due to the climate, the minimal amount of space available and regulations. There are some multi-storey gardens, small-scale home-grown vegetables, and some people raise rabbits or chickens for consumption. It is difficult to estimate the amount of products produced and sold, but they are not enough and most products sold in the camp are imported from elsewhere, in turn providing market opportunities for the surrounding local Turkana population.

The markets for fresh vegetables and goat meat are very large. The local Turkana sell cattle, goats, camels, chickens and vegetables to the refugees, either through shops or directly to the refugees. Conversely, the refugees also sell their rations and small produce to locals (maize for sorghum for instance). Shops in the camp import a variety of products from Nairobi and the Dadaab camp, the only other UNHCR-run refugee location in Kenya, or even from overseas. Bicycles, clothing, suitcases, radios, cassette and CD players and a wide variety of household items are sold, including cosmetics and hygiene products.

People have mobile phones and at the time of the study there were two internet cafes in the camp, whereas in the surrounding towns there were none.

Social change

In the economy of Kakuma, enterprise, social change and social and human capital are strongly related to each other. A refugee who finished secondary school can be employed as a school teacher, which can provide the cash needed by a relative to start up a business. The example of specific types of entrepreneurship from a neighbouring community can stimulate people to start something themselves. Moreover, people who get resettled become donors for their kin who remain in the camp by sending remittances. The presence of satellite TVs in the bars and restaurants in the camp (in itself an enterprising initiative) impact people by providing access to media and stimulating youth cultures, or bringing in new ideas for business.

Human flows connect the camp to the outside. During the study period, NGOs and companies working in Sudan came on a nearly daily basis to recruit (refugee) personnel in the camp who had experience and training as teachers, clinical officers, nurses and so on. Similar linkages exist between Kenyan cities and the camp, and between the local host population and the camp.

The camp has partly become a place where there are resources to be found, including first and foremost education and resettlement, but also traditional refugee hosting services such as protection, health services and food (Jansen 2008). In 2006, an estimated 2000 refugees from Tanzania came to Kakuma.

Refugee camp economies contradict the problems associated with protracted refugee situations. One of those problems is that refugees in Kenya (as in many other camps) are officially not allowed to work. Inside the camp, however, what is officially allowed in this respect and what actually takes place can differ greatly. The same applies to travel. While refugees are officially restricted to the camp, some can be seen departing for and returning from Nairobi, other Kenyan cities and even Sudan on a daily basis. Refugees thus negotiate their way through restrictions to find possibilities and opportunities. In this sense, various transactions take place outside the scope of the agencies.

Members of the Somali community started a microcredit system to aid business initiatives by women's groups. As soon as one group had repaid its debt a slot opened up for another group; this system is in a way similar to that of an agency offering microcredit. The NGO discourse on refugee dependency has a tendency to overlook these activities that are outside of the intervention area. Somali leaders estimated that nearly 90 percent of their population in the camp was no longer dependent on UNHCR handouts (similar estimates come from the Dadaab camps).

Supporting surrounding communities

It is an increasingly recognised facet of protracted refugee situations that camps can actually contribute something to refugee hosting environments, instead of primarily causing disorder, resource depletion or environmental degradation. "We are nothing without these refugees, if they go, we'll have to fly the Palestinians in", said a local Turkana man who lives in Kakuma town next to the camp, indicating that Kakuma town and its growing community benefit greatly from the existence of the camp. Many "drop-out pastoralists" have settled around the camp seeking livelihoods inside the camp and in its environs. According to estimates by the UN and the local chief, their numbers grew to between 45,000 and 65,000 in 2006.

While some friction is caused by the reality (or paradox?) that many refugees are "better off" than members of the local Turkana community, most locals believe they would be far worse off without the refugees. The camp has become something of a paradox: a temporary place that slowly shakes its features of temporality through processes of place-making that are similar to forms of urbanisation, with no end in sight as of yet.

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From Dependence to Self-reliance: Experiences from northern Uganda

13

Astrid van Rooij
Loan Liem

For over twenty years, the people of Acholiland in northern Uganda have been struggling to survive in the midst of violent conflicts. Many people have been killed. The long conflict has created high levels of dependency. A food security and livelihoods programme was started to enhance self-reliance of displaced people.

The conflicts have resulted in the internal displacement of nearly the whole population (around 1.1 million people), which is made up primarily of subsistence farmers. In 1996, the Government of Uganda created so-called “protected villages”. People had to live close together so that the Ugandan army could provide security. Large and overpopulated camps were formed resulting in many disease outbreaks. People did not have enough food because there was hardly any land available for agricultural production. They also lost most of their belongings, like seeds and tools, and their livestock was looted. In August 2006, serious peace talks started between the Government of Uganda and the Lord Resistance Army (LRA). This process has been positive, but the comprehensive peace agreement is still not signed. Due to improved security, people have started to move from the camps to transit sites (36 percent) and even back home (28 percent) (IASC, 2008). Greater movement has resulted in better access to land for the internally displaced people (IDPs) and returnees.

Securing food

When the first camps were populated, the World Food Programme (WFP) together with the Norwegian Refugee Council (NRC) started distributing food to all IDPs. In this way, malnutrition rates were contained below an acceptable level. On some occasions, however, the food pipeline was broken, which meant that IDPs received less food. They had to look for ways to cope, like reducing the number of meals per day and eating smaller portions per meal.

Due to movement restrictions - people were only allowed to move five kilometres from the camps - only some IDPs could cultivate small portions of land around the camps. By growing crops like vegetables, they aimed to supplement their WFP food rations that then consisted of cereals, pulses, oil and salt. However, for many reasons the harvests were usually small and inadequate: the soil was depleted because



Market in Layamo IDP camp
Photo: Astrid van Rooij

too many people used the same land, trees and shrubs were used for building material and fuel, limited quantities of seeds and hand tools were available, people had limited skills and knowledge (because they were hardly taught agricultural production in the view of newly emerged technologies and techniques) and there was a lack of capital.

The long conflict and subsequent humanitarian assistance created high levels of dependency, while at the same time WFP proposed to reduce the food aid ration further. Hence, it was time to think of enhancing the IDPs' self-reliance. As a result, the NRC, with support from the Norwegian Ministry of Foreign Affairs and the Netherlands Refugee Foundation (Stichting Vluchteling, SV), started in 2005 to pilot a food security and livelihoods programme in three districts. At the same time, SV supported other small-scale agricultural interventions being implemented by local organisations.

Support to IDPs and returnees

Initially, extremely vulnerable individuals (EVIs) were targeted as their options to cope with displacement were most limited. At a later stage, when people were able to move and access land nearer to or at their villages of origin, other IDPs also received support, so that they could rebuild their livelihoods faster and hence provide a social safety net for the EVIs. In order to reach as many people as possible, NRC started working through groups in the various camps. Most groups (between 20 and 30 members) already existed providing some level of social and economic safety to its members. Initially the programme worked with around 3,800 households. This has been gradually increased to nearly 9,000 households.

The programme looks at accessibility, availability, and utilisation of food and risks linked to these through agricultural production, income-generating activities and environmental conservation. The programme embraces in all its components similar approaches to reach its beneficiaries and have an impact on the ground: in input provision (to ensure a kick-start); training, and in monitoring and technical backstopping.

Due to high dependency levels, ownership of interventions is considered of utmost importance for success. NRC has developed its programme in such a way that IDPs and returnees themselves are able to choose their own agricultural or non-agricultural enterprises for which they themselves provide some of the locally available inputs.

By creating knowledge, strengthening and developing sources of food and sources of cash, the programme helps IDPs and returnees cope with their situation in the short term as well as gain skills and practices that will benefit them when they return to their places of origin in the longer term. Local government technical staff and staff from local organisations are taking part in training and monitoring. This enables them to stay up-to-date with the latest developments in their fields and to be fully involved in the recovery programmes in their areas.

Agricultural production

When most IDPs were still living in camps and land could only be accessed nearby, agricultural production was limited to small plots. Mainly local vegetables and crops used for the families' own consumption, like groundnuts, sesame, millet and beans, were grown as a supplement to food aid. As land was a limiting factor and IDPs in camps had hardly any space in their compounds, people were taught other methods of farming which did not need much land, like growing vegetables in a sack or cultivating crops at the overflow of a borehole and/or taps. The target group was provided with the necessary inputs like improved seeds and hand tools. The training provided followed the agricultural season so that what was learned could immediately be put into practice and the information was not too overwhelming, particularly for the majority of participants who are not literate.

During the lengthy - and still on-going - return process, which in general improves access to land, people have slowly started to cultivate more acreage. Initially oil crops were predominant in the fields as the surplus can be sold for a reasonable price. Due to blanket seed distribution by other organisations, gradually more crop varieties and more seed stocks have been established. This has led to a shift in approach - from direct seed distribution to seed fairs - where community members can sell their surplus seeds and earn income while others (with the assistance of vouchers) can diversify and increase their seed stock. These earnings enable the target group to start investing in the agricultural enterprise by for example purchasing hand tools when the earlier distributed ones are worn out.

Land use and production levels in Acholiland

IDPs and returnees benefitting from the programme have been able to gradually open more land for cultivation. In the second season of 2006 on average 1.8 acres per household was in use while this was 3.4 acres in the rainy seasons of 2007. Land use per household is not expected to increase much more as labour will not be sufficient to cultivate more land. The average land use per household in Acholiland not benefitting from the programme in the first rainy season of 2008 was around 1.5 acres (LUCYA, FAO/WFP, 2008).

Along with increased land use, production levels also increased, as can be seen from the table below. Oil crops are among the most important crops in Acholiland. They are used for own consumption (mainly in pasted form) as well as for sale. Other preferred crops are cassava, millet, sorghum, beans, black eye peas, pigeon peas and green gram.

Crop (improved varieties)	Production in 2006-II (kg/ household)	Production in 2007-I (kg/ household)
Groundnuts	803	1,214
Sesame	255	116
Millet ¹	181	35
Beans	32	394
Total	1,271	1,759

¹ sesame and millet are mainly second season crops

Income-generating activities

As most people had hardly any access to land at the start of the programme, alternatives were sought to diversify their diets and increase their incomes through economic development of camp-based enterprises. This limited the scope of the interventions but still enabled IDPs to earn some additional money for food and other basic needs. Most support is given to groups involved in petty trade and groups taking care of small animals like goats. In addition to their main enterprise, many groups operate a revolving fund, which in some cases is supported by the programme. Here, too, skills and business training and input provision are considered of utmost importance in order to ensure realisation of outputs. Close monitoring, follow up and technical backstopping give groups the opportunity to really earn some additional income.

When people started to return nearer to their homes, there were more opportunities to generate income. Agriculture-based enterprises like produce buying and selling and draught power for hire became a real option. In order to reduce risks, diversification of enterprises became important, resulting in a variety of income-generating activities like provision of transport, bakeries, beekeeping, restaurants and grinding mills. Increased agricultural production of cash crops became

Income generated

Around 750 households (in 35 groups) have been participating in the first cycle of income-generating activities. Most of them have been involved for around one year. Not all activities were immediately profitable due to start up costs and the fact that some activities, like animal traction, took time to take off (the animals needed to be trained first) and are seasonal. On average, the groups have been able to save Ugx 530,000 (1800 Ugx = 1 USD), while at the same time most groups had outstanding revolving funds loans of around Ugx 20,000 to Ugx 30,000 per member (i.e. Ugx 400,000 to Ugx 600,000 in total). Individual members carried out activities like petty trade to supplement their household incomes as well.

a relevant income-generating activity and provided more cash for essential foods or other household needs.

Environmental conservation

During the encampment, IDPs solely relied on the area near the camp for the provision of construction poles, thatching grass and firewood. This resulted in depletion of the natural resources on the land belonging to the host communities. Depleted soils result in less agricultural production and hence food security is negatively affected. It also meant that women had to walk longer distances and spend more time collecting firewood for cooking. Therefore, the programme incorporated high-quality, energy-saving stoves, made out of locally available materials. In the programme, trainers were trained, provided with construction kits including moulds and were paid for every good-quality stove constructed and in use. Initially, women using the stoves had to learn to use the right amount of firewood to avoid burning food.

When the return process started, it became evident that depletion of natural resources would become an issue at new transit sites as well. Many people would be in need of construction material. Since they settle at these sites for a relatively short time, they may not be concerned about their immediate environment. To counteract these processes, the programme decided to add an agro-forestry component, in which community tree nurseries are established. The tree varieties serve the communities' different needs for construction poles, firewood, fodder, fruits, etc. Depending on the local context, trees are being planted in woodlots, as an inter-crop or as compound trees.

Lessons learned

From the start, the programme has focused on potential return, so various interventions were developed in such a way that they would be suitable and relevant in various phases of displacement. Most skills learned in the three components of the programme can be used from the relief phase to recovery and development. For example, improved

agronomic practises as well as construction and use of energy-saving stoves are also seen in places of return where programme support is not provided.

Due to the large scale of the conflict, during which the whole population was displaced, vulnerability categories have been the main criteria for selection of the target groups. As a result, many women were considered direct beneficiaries of various interventions, which empowered them greatly. However, men were often left behind, which created different gender roles than before encampment. At return, men are expected to take up their traditional roles - something they have not been doing for many years. By changing its targeting from vulnerability categories to needs, the programme will be more gender sensitive.

Since the return process started in Acholiland, where agriculture and related activities are the backbone of the economy, problems with land have become more evident. Disputes over land boundaries and ownership are now common, while landlessness has become more prominent. This affects livelihoods up to a certain level and it has a negative effect on the return process. Legal aid programmes are assisting the affected people.

Besides the protracted conflict, northern Uganda has also experienced the effects of climate change as the rain pattern has changed drastically during the last few years. First two distinct rainy seasons were experienced, but now it seems to be one long rainy season with some dry spells in between. To enable farmers to become more resilient to these kinds of shocks and hence prevent new displacement, the concept of community-based disaster risk reduction is being introduced.

While the return process in northern Uganda is firmly underway, it has to be realised that various phases of displacement are still present. This complex situation requires flexibility and innovativeness. To overcome some of the challenges, NRC is looking into a system whereby it not only supports IDPs and returnees directly but also collaborates more with local authorities and organisations to build their capacities to ensure continuity of interventions after NRC leaves.

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Enhancing Household Food Security in Refugee Camps in Ethiopia

Mulugeta WTsadik

The Somali region is located in the eastern part of Ethiopia. Its capital, Jijiga, is located 635 km from the capital Addis Ababa. Currently there are three refugee camps in this region, namely Kebribeyah, Awberie and Sheder, which together host about 28,500 individuals. To allow refugees to complement the basic food ration, UNHCR and its partners started a number of homegardening projects. The results will help UNHCR decide on a more formal approach to gardening in refugee camps.

The stream of refugees to the camps is ongoing, with an average of 1000 individuals arriving per month and about 16,000 asylum seekers waiting for screening at the newly opened Sheder refugee camp. Most refugees in this region originate from Somalia, Sudan and Eritrea. As of September 2008, the total number of refugees hosted in Ethiopia was about 77,000.

Most of the Somali refugees arrived in 1991 when warlords overthrew the dictator Mohamed Siad Barre, who had been in power for 21 years, and Somalia turned into a state of chaos. Another wave arrived in 1994 after war erupted between factions in northwestern Somalia. These refugees were initially settled in eight refugee camps, but seven of them were closed after voluntary repatriation in 2005. Only Kebribeyah remained, until two other camps were opened in the region (Teferiber in 2007 and Sheder in 2008) due to rising conflict among the transition governments of Somali and other warlords, which continues today. Most of the Sudanese refugees arrived in Ethiopia in 1991 and 1992 from South Sudan following the start of the civil war. These refugees were settled in five refugee camps in the western part of Ethiopia. The Eritrean refugees first crossed the Ethiopian border soon after the Ethio-Eritrean conflict in May 2000, and since June 2004 they have been re-located to the western zone of the Tigray region. Several ethnic groups among the Ugandan and Eritrean refugees are farmers and pastoralists.

Food security

A number of issues of concern related to food security were identified by UNHCR and WFP in the refugee camps in Ethiopia. First, the refugee diet is both monotonous and does not meet the full micronutrient needs of the population.

UNHCR and its partners

UNHCR's mandate is to ensure effective protection and quality assistance to refugees and others persons of concern and to implement durable solutions in a consistent manner across the world. UNHCR is the main funding agency in Ethiopia, and its key international partners are WFP (The UN World Food Programme), ZOA Refugee Care, IRC (International Rescue Committee) and the Lutheran World Federation (LWF) and GTZ. WFP coordinates the provision of food (a general food ration) for the refugees, as well as supplementary food rations for the selective feeding programme and the school feeding programme in the refugee camps.

The NGO ZOA is working actively with Somali refugees and IDPs (Internally Displaced People) on various livelihood issues, such as environmental protection, vocational skill development and training, income generation, backyard gardening and water development activities.

UNHCR's main national partners in Ethiopia are institutes like the Administration for Refugee & Returnee Affairs (ARRA, the implementing governmental partner), local NGOs like Save Rural Society (SRS), which focuses on environmental protection, and the Mother Child Development Organization (MCDO).

Almost 90 per cent of the refugees have been living in Ethiopia for more than 15 years, and these protracted refugees depend fully on food aid, which means they have been receiving the same kind of food commodities all this time: cereals (wheat and/or maize), vegetable oil, salt and sugar (together amounting to 1750 to 2100 kcal/day/person). Second, the dietary diversity is very poor, due to lack of affordable fresh foods (which are also scarce in the region). UNHCR is not able to provide fresh vegetables in many refugee camps, while the hosting government's current land policy does not allow the refugees to cultivate crops themselves outside the camps. Third, it was found that children and pregnant women are especially vulnerable. Anaemia rates among children and women of childbearing age are high. Although these rates were reduced from 35 - 67 per cent in 2007 to 34 - 38 per cent in 2008, they are still too high and a public health concern.

Based on these findings, in August 2007 WFP started to provide a more diversified food ration, including pulses and fortified corn-soya blend (CSB). UNHCR decided to provide peanut butter (50g), tomato paste (70g) and lentils (50g) for pregnant women and children aged 6-24 months. In addition, to allow refugees to complement the basic food ration and to discourage them from selling part of their food ration (for income, partly used for buying vegetables), UNHCR started a number of homegardening projects.

Food production and gardening

Home gardening provides a low-cost, sustainable strategy for increasing household food security through dietary diversity and the introduction of micro-nutrient rich foods. Gardening improves the direct access to food, and when it does not depend too heavily on imported and costly inputs, it increases the self-reliance of households. Vegetable plots in combination with animal husbandry provide supplementary foods with high nutritive values, including proteins and vitamins, which are especially important for vulnerable groups (malnourished children, pregnant and lactating woman, and sick people). In addition, excess produce can be easily marketed locally. The proposed activities in the project can be easily done by women and are an acceptable activity for women-headed households. Gardening further creates self employment opportunities and fosters women's empowerment.

The following criteria are important in the gardening projects initiated by UNHCR and its partners:

- Refugees and IDPs are expected to not be repatriated in the following year (rather the number of refugees is expected to increase, and it is assumed that staff will be available in the camps).
- It is expected that the security situation will not deteriorate significantly and that market conditions will be more or less stable.
- There is interest in backyard gardening and poultry raising, and commitment and cooperation can be expected from the community and the implementing agencies.

In the Somali Regional State, the gardening project initiated by ZOA, UNHCR and ARRA focuses on Shimelba, Aw Bare and Kebribeyah camps and their immediate surroundings. Even before the project began, some of the refugees in Kebribeyah and Aw Bare refugee camps had already started backyard gardening with the limited resources available to them (most of these gardeners are women, but it is difficult to provide accurate numbers on how many are involved). In Kebribeyah refugee camp most of the refugees have enough backyard space to cultivate crops and the land is relatively fertile. In Aw Bare each refugee family has about 70m² of land, which is a bit stony, but contains enough top soil.

The project's primary target groups are households with more than three children under five years of age; households with women or children who are severely anaemic; households with children who are severely malnourished; families with people living with HIV/AIDS; disabled persons; households with an agricultural background; and households supporting the elderly. Priority is given to people who meet

these criteria and who are highly motivated. In total there are 400 beneficiaries (200 households per camp that have started backyard gardening and poultry raising).

UNHCR and ZOA support selected refugees in providing training and inputs (seeds, farm tools, and also plastic sheets for water harvesting). The most common vegetables cultivated by the refugee communities are kale, spinach, okra, capsicum, pepper, tomato, onion, cabbage, cow peas and sorghum. Small livestock, like poultry, are also produced.

Refugees are not allowed to use land outside the camps. Water shortage is also a major issue in most of the refugee camps. Most refugees do not have access to production inputs like vegetables seeds, different farm tools and initial capital, and they also often lack skills to undertake backyard agriculture or animal husbandry practices.

Based on the ongoing gardening activities in refugee camps in Ethiopia and elsewhere, UNHCR has already determined that more emphasis is needed on:

- Training on backyard gardening practices, poultry production, nutrition and meal preparation, and on income generation;
- The provision of seeds, fruit tree seedlings and selected poultry breeds that are adapted to the climate and soils;
- The promotion of appropriate water harvesting technologies, compost preparation and use; and
- Identification and selection of viable income generating activities.

Agriculture in refugee camps is also hampered because: 1) most families lack capital for investment, 2) some refugees are just waiting to go home but still want to start agricultural activities; 3) many women are not able or allowed to do heavy labour (and other physiological and sociological factors); and 4) there is a lack of commitment from the government /host community to provide guidance to the refugees.

Promising technologies

Multi-storey gardens (MSGs) are ideal for areas with constrained land, poor soil quality and reduced water availability as is found in Eastern Ethiopia. The gardens are grown in the top and sides of a sack, rather than planted directly in the ground. They require reduced land space (only the space needed for five grain sacks) and are very water efficient. UNHCR and its partners intend to provide the materials individual households would need to create MSGs. The methodology can be easily employed in small areas (as small as 10 m²). An additional metre of land is needed to house two chickens in the space directly behind the yard. The introduction of MSGs will be supported with training on capacity building and water harvesting and saving technologies. UNHCR has been partnering with GTZ in Kenya and Ethiopia to develop technical training modules on the MSG that emphasize nutrition, environmental protection, water conservation and the ease with which sufficient vegetable can be grown for home consumption.

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Towards a more formal approach on refugee gardening with UNHCR

Comments by Ahmed Baba Fall (December 19, 2008)

Senior WFP liaison and Food Security Officer

UNHCR has been supporting gardening in refugee camps as part of its community services activities since the beginning of the 1990s. This support mainly consists of taking gardening into account in the design of camp layouts (if possible) and supplying seeds and tools on an ad hoc basis. Depending on the phase of intervention (emergency, relief or rehabilitation), the local agro-ecological situation, and the attitude of the host government and refugees, UNHCR decides on the type of intervention needed. Common techniques applied have been backyard-, multi-storey- and keyhole gardening, but if larger plots are available more rural types of technologies are applied, such as mono- or inter-cropping, growing beds, alley gardening, etc.

Government views on these practices vary to a large extent and depend on the political and economic situation of the country concerned. But even within countries the attitude towards gardening can change over time due to internal dynamics. In Tanzania for example refugees that arrived in 1972 were given large plots to cultivate and they were taught farming techniques by a very supportive government, while refugees arriving there after 1993 were given shelter in semi-closed camps, where gardening and local integration were much more restricted. The Sudanese refugees in western Ethiopia face no problem in accessing agricultural land, while refugees in eastern Ethiopia have very limited space for movement. The development of food production activities is therefore very much dependent on the availability and access of local resources like land.

Cans that contained vitamin-A supplements are re-used for planting seeds
Photo: UNHCR



The pilot project in three refugee camps in Ethiopia (described above) signifies the start of a more formal approach within UNHCR towards refugee gardening. There is no specific policy on homegardening, but it will be part of the organisation's nutrition strategy and livelihood approach. UNHCR aims to systematise gardening experiences and will start to monitor the impacts of food production on nutrition and identify the agricultural training needs of refugees (this has not been done before). The outcomes will enable the replication of similar projects elsewhere.

It is often said that many refugees in protracted refugee situations are self sufficient, but assessments by UNHCR show that very often there are major nutrient deficiencies and required levels of nutrition are not reached. Complementary feeding is still required. UNHCR mainly provides complementary or supplementary food (ground nuts, tomatoes), whereas WFP provides basic food needs (cereals, pulses). The type of food that is distributed depends on local preferences and availability. These food items are imported if locally unavailable, which is very costly. Therefore a shift towards local crop production by refugees themselves is a more cost-effective and sustainable approach.

Besides adopting a more formal approach towards gardening, the UNHCR plans to raise awareness on the multiple benefits of gardening among its own programme managers as well as among refugees and hosting governments. UNHCR is convinced of the benefits of gardening (as it can lead to a harvest of 12 kg of vegetables per month per household) and would also like to focus on marketing aspects.

A special and increasing challenge identified by UNHCR is to achieve food security among urban refugees, who are living among the urban population and are more difficult to target than refugees in camps. Together with other (UN) development agencies the UNHCR seeks to integrate these people with development programmes and aims to locally integrate the refugees and returnees (a process which can take up to 5 to 10 years).

Especially in the context of the current food crisis, targeting these urban refugees is a major concern. Damascus is the first case where food was distributed to urban refugees. Together with the WFP, UNHCR is searching for opportunities to further support urban refugees in their food security, and urban agriculture is an important factor in this effort.

19 December 2008

Promoting Urban Agriculture in Post-conflict Greater Freetown Area, Sierra Leone

19

Saidu Kanu
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Sierra Leone experienced a civil conflict between 1991 and 2002 as a result of which many people fled to the Greater Freetown Area (GFA). During and after this unfortunate period, urban agriculture became an important livelihood strategy. It is increasingly being recognised as a reliable coping mechanism for redressing food shortages and gaining employment.

The small West African state of Sierra Leone is currently regarded as the poorest country in the world (UNDP, 2007). Despite abundant natural resources and the favourable agricultural climate, the country's economy has been in steady decline since the early 1980s. This can be attributed to a variety of contributing factors, foremost of which is the recently concluded decade-long civil war (1991-2002).

The Greater Freetown Area now covers about 8,100 hectares, and it is estimated that up to one quarter of the country's population: around 1 million people, reside in Freetown (2004 census). Before this time, rural to urban migration was already high, the population, for instance, nearly quadrupled between 1963 and 1985. But in the nineties economic life and food security deteriorated rapidly, and during civic strife, agriculture resurged in the city. Rural families were destabilised and traumatised by rebel insurgents, causing a spontaneous mass-migration of people. More than 2 million people were displaced, and major economic activities, such as farming, mining, and forestry, were disrupted. People flooded into Freetown, increasing the demand for food.

“Urban farming has become one of the survival strategies”

After the war, a significant number of rurally displaced persons preferred to permanently stay in the city in search of jobs and improved living conditions. This increased population created high pressures on food supplies and urban facilities and services. A majority of these urban dwellers are rural migrants, with a strong agricultural background. Many public sector workers became unemployed, and some of their spouses entered the informal sector, cultivating leafy



Urban agriculture is an appropriate strategy to improve food production during crisis periods
Photo: René van Veenhuizen

vegetables and marketing fruits and vegetables within and near the Freetown municipal boundary. Young displaced people and women joined the urban agriculture marketing chain by preparing fast food for the growing numbers of unemployed, or divorced family members. These factors contributed to a significant expansion of urban and periurban agriculture as an essential coping strategy for providing the vital augmentation of food stocks.

Attention to Urban Agriculture

In 2002 a national Food Security Programme named “Operation Feed the Nation” was launched. The main thrust of this programme was to significantly augment domestic food production through increased food production in all agricultural production systems. It includes reference to urban and periurban agriculture. The belief that agricultural development is a critical element in economic development and poverty alleviation now pervades all of the government's actions, as is reflected in the Agricultural Sector Review (MAFFS, 2004) and the country's Poverty Reduction Strategy Paper (Govt. of Sierra Leone, 2005). Urban farming has become one of the survival strategies adopted by the urban population of Freetown, and significantly contributes to the food supply in the city. The agricultural sector review of Sierra Leone sponsored by the government of Sierra Leone, FAO and

the World Bank recognised the importance of urban and periurban agriculture in poverty alleviation and ensuring food security. Consequently local and international non-governmental organisations initiated urban and periurban agriculture programmes in Freetown.

Higher educational institutions played an important role in raising awareness about the importance of urban agriculture in post-conflict GFA among the major stakeholders, who since 2005 have been regularly meeting under the Freetown Urban and Peri-urban Agriculture Programme (FUPAP) and have developed a City Strategic Action plan.

By the official end of the war in 2002, the national higher educational Institutions (i.e. Njala University College and Fourah Bay College, both at that time part of the University of Sierra Leone), in collaboration with their international counterparts and the Ministry of Agriculture, Forestry and Food Security (MAFFS) started promoting urban agriculture in Freetown. To help feed the burgeoning city, since 2005 the Ministry of Agriculture and Food Security (MAFS) has promoted urban farming associations and training under the UN Food and Agriculture Organization Special Project for Food Security's Farmers Field School.

Within the framework of the Cities Farming for the Future (CFF) programme of the International Network of Resource Centres on Urban Agriculture and Food Security (RUAF), the FUPAP initiative was launched in Freetown in 2006. RUAF-CFF facilitates participatory and multi-stakeholder policy formulation and action planning (MPAP) on urban agriculture in Accra, as such supporting city authorities in recognizing the benefits of urban agriculture and addressing urban poverty, food security and improved urban environmental management. With the re-establishment of the Freetown City Council, the newly constituted multi-stakeholder city team under FUPAP is working toward the full integration of agriculture into city development plans. Starting in 2009, RUAF will focus its activities in Freetown to supporting market chain development and farmer organisation under the From Seed to Table programme. Urban agriculture will be further supported under two programmes funded by the European Union programme on Food Security that will also start in 2009.

A three-year DelpHE-funded collaborative partnership, involving institutions from Sierra Leone, the UK and New

Zealand, was launched in January 2008 at a crucial point in the country's post-conflict reconstruction phase, with the aim of contributing to a greater understanding of the incidence, dynamics and importance of UPA among households in Freetown.

Urban Agriculture

Urban and periurban agriculture has always been practiced in Freetown as a source of food, income and employment, but only in the past six years has its importance grown. It contributes substantially to the local economic development of Freetown and the country as a whole.

The majority of the rural migrants and internally displaced persons who fled their homes during the war are skillful farmers, and developed a keen interest in urban agriculture as the best option for ensuring food supply, survival and for achieving sustainable livelihoods. Urban agriculture currently provides full-time or part-time employment to over 1400 people, consisting of 1105 females and 285 males, and including both farmers and middlemen. Women are traditional gardeners and normally tend the crops. Men provide capital investment assistance and physical preparation of land such as initial land clearing, making the beds for planting, and building the irrigation channels in the swampy areas and the appropriate drainage structure. They also harvest and market the crops. A significant proportion of male urban farmers are also engaged in other activities, such as the civil service or the artisan sector. Reports suggest that a portion of the income generated from these other livelihood activities is often re-invested in farms and food production. Almost all urban farmers belong to a farmers' association or a community-based organisation, except those individuals who farm the back plots of their homes.

Through the exploratory study undertaken by FUPAP in 2007, urban agriculture was characterised and several problems constraining its development were identified. The study showed, among others, that urban agriculture is widespread in Freetown. The Freetown urban and periurban areas are divided into 8 local administrative zones and agricultural activities were identified in all zones, although most activities were observed in the Western Area of the city (West I, II, and III), and the Eastern Area (East I, II, and III). The hillsides, slopes and valleys of the hilly terrain that forms the land-mass on which the city is built, offers an ideal location for this type of agricultural practice.

Over 30 crops have been encountered in Freetown and 10 species of animals in domestication and husbandry activities. The most commonly cultivated crops are exotic vegetables (cabbage, lettuce, carrots, spring onions, tomatoes, beans, etc.) and locally consumed vegetable crops (potato leaves, spinach, cassava leaves, etc). These are perishables which are consumed on a daily basis and cannot withstand long-haul transportation. They are usually harvested and sold at the market on the same day. Mostly free ranged local poultry and piggery are the main animals raised. Among the constraints identified in the study, access to land and security on tenure, access to clean water for irrigation,



Meeting of farmers to discuss progress in RUAF project
Photo: René van Veenhuizen

inadequate and untimely supply of farm inputs, and limited agricultural extension services are the most important. Urban farmers face with fierce competition in Freetown for the sale of their products from similar imported vegetables and animal products (Cornell University and NUC, 2006; Winnebahl, 2007) and require capacity strengthening in critical aspects of urban agricultural production and marketing of their products.

In addition, FUPAP identified a need for public awareness of the strategic importance of urban agriculture among the main city stakeholders, and formulation or revision of acts and by-laws. This process has started in the past two years and will continue supported by the different programmes mentioned above. Most of these activities have been agreed under the Freetown City Strategic Agenda.

City Strategic Agenda

One of the principal outputs of FUPAP (2008) was the agreed Five Year (2009-2013) Rolling Freetown City Strategic Agenda. Under an agreed vision: to promote the development of urban and peri-urban agriculture that significantly contributes to urban poverty reduction, food security and improved urban environmental management, a number of activities have been prioritised.

1. Regular meetings of the Multi-stakeholder Forum, in which the major stakeholders on urban agriculture participate, and which is responsible for the promotion and development of urban agriculture in Freetown.
2. A number of additional funds have been successfully accessed. The European Union will support urban agricultural activities in Freetown with two international Non-governmental Organisations, COOPI and Concern Worldwide (with RUAF), who have agreed to coordinate and share lessons under FUPAP.
3. Njala University, a major agricultural training institution, has incorporated urban and periurban agriculture into its agriculture curriculum.
4. The Freetown City Council, responsible for the administration of Freetown Municipality, has put modalities in place for the full integration of urban and periurban agriculture in its city planning agenda.
5. MAFFS has developed enabling policies for food security involving the commercialization of agricultural enterprises, encouraging people to invest in agriculture, and committing more land and resources to agriculture production purposes. Incorporating urban agriculture into its Food Security Programme further allows it to benefit from funds allocated by the Central Government.
6. At Fourah Bay College, extensive research is on-going, and the researchers have agreed to collaborate with other scientists at Njala University and the relevant line ministries to promote the development of urban agriculture in Freetown.

Lessons learned

Urban agriculture is recognised as an appropriate strategy in augmenting food production during crisis periods. It has played an important role in the survival of many displaced people at



Men are mostly involved in harvesting and marketing
Photo: René van Veenhuizen

the peak of the war and is still a survival strategy for many. It significantly contributes to food security and creates employment particularly for youths.

Nearly 80 percent of wastes generated in Freetown are degradable organic materials, which can be used as organic manure and compost for the production of vegetables. Acquisition of land for urban farming is still very challenging. Although, according to government policy, all wetlands that belong to government can be used for agricultural activities, such use is threatened by rapid estate development.

The multi-stakeholder process for action planning and policy development for urban agriculture included the major stakeholders in dialogue and joint decision-making. The challenge is to maintain this process. Urban agriculture in Greater Freetown has been recognised as a main source of livelihood for disadvantaged communities. The development of urban agriculture is now high on the political agenda and is seen as pivotal in the achievement of food security in Sierra Leone, while also improving the environment in Freetown.

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Urban Agriculture in and around Monrovia, Liberia

Timothy Kortu

Since the end of the war that raged from 1989 to 2003, Liberia has suffered from chronic food insecurity, due to the destruction of its agricultural sector and basic socio-economic infrastructure. Urban agriculture provides a strategy to help reduce urban poverty, improve food security and enhance urban waste management in Monrovia and other Liberian cities. Recently the government acknowledged the importance of urban agriculture in enhancing food security in the country.

Agriculture has always been the key to food security in both urban and rural areas of Liberia. Before the conflict, approximately 80 percent of the people of Liberia derived their livelihoods from farming alone. After the civil war and decades of predatory regimes, Liberia today is one of the most food-insecure countries in the world, with one third of the population undernourished and over 75 percent living below the universally established poverty line of 1 USD per day. It is ranked as one of the lowest countries in the UNDP Human Development Report, which covers various sector including employment, income, health, education, gender equality and child welfare (UNDP, 2007). The interim Poverty Reduction Strategy of Liberia (2007) highlights agriculture as one of the major economic sectors that has the potential to resuscitate the economy and create significant job opportunities that could make an impact in addressing the high unemployment.

Agriculture has always been important in urban areas of Liberia

Monrovia

The preliminary results of the 2008 national population and housing census in Liberia reveal that over one third of the 3.49 million inhabitants of the country live in Greater Monrovia, but many in Liberia believe the percentage may be closer to 40-50 percent.

The urban population in Liberia is growing quickly as the economy slowly recovers from the disastrous effects of the 15 years of war. The capital, Monrovia, is host to an estimated 45 percent of the more than one hundred thousand rebel fight-



Many Monrovia citizens are now growing their own food
Photo: VOSIED

ers who were demobilised in Liberia and a huge population of war-affected people including IDPs, repatriates and rural families who migrated to Monrovia in order to escape poverty. Many of these migrants were farmers before coming to Monrovia, but lack the basic skills necessary to secure employment in other sectors. The education gap experienced by most Liberian youths has also created a significant dearth of skilled workers in most sectors. Young adults are not attracted to the low income generated in agriculture, which cannot compete with unskilled labour wages offered, for example, in mining. Their marginal status and lack of prospects also undermine social cohesion, stability and economic growth, especially in already fragile situations as experienced in Liberia.

According to the Greater Monrovia Food and Nutrition Survey (Republic of Liberia, 2007), 14 percent of households in Greater Monrovia are food insecure and 16 percent are vulnerable to food insecurity. This urban population is highly vulnerable to economic shocks, especially the food crisis that has directly impacted food prices. The consumer price index increased 14 percent between January 2007 and January 2008, and the cost of a typical food basket increased by 25 percent over that period. Given that half of the urban population's income is spent on food (GoL, 2008), the situation of the poorest urban families has seriously deteriorated. As a consequence, the most disadvantaged households are severely restricted in their intake of proteins and vegetables, which leads to decreased dietary diversity and increased malnutrition, especially among children under five.

Urban agriculture has the potential to alleviate urban food insecurity and support poverty reduction by offering employment and skills building, while also tackling the problem of waste management.

Agriculture in Monrovia and other cities

Most vegetables and fruits currently sold in markets and supermarkets in Monrovia and other Liberian cities are imported at very high prices from Guinea, Ivory Coast, Lebanon or China. Rice and cassava are the main staple food crops in Liberia, and more than 60 percent of the rice consumed in Liberia is imported (WFP, 2008). But in and around Monrovia families are increasing their own food production as a way to provide their families with fresh and nutritious food, while a minority sells their produce on the market.

Many people, including IDPs, repatriates and rural families migrated to Monrovia

In backyards and small plots on open spaces, families grow vegetables (sweet potato, cabbage, amaranth, okra, pepper, eggplant, cassava, or corn), and some fruit (mango, papaya) or medicinal plants. Some households have access to two plots: one near the house for the rainy season and one on the edge of nearby swamps for the dry season. These home-gardens and small plots are mostly cultivated by women.

Constraints

Urban agriculture is not new in Liberia. It was practiced for decades in Monrovia and other Liberian cities before the civil war broke out in 1989, but grew in importance during and after the conflict.

Although many Monrovia citizens are now growing their own food and the government is positive about urban agriculture, there is little or no awareness of its importance among the governmental institutions. Urban agriculture is not yet high on the agenda at municipal level or within the Ministry of Agriculture. There are no policies that promote urban agriculture, especially regarding land tenure issues.

The challenges to sustainable urban agriculture in Liberia include limited farm/garden management skills, a lack of

Families grow vegetables in backyards and small plots on open spaces
Photo: VOSIED



There is a need to raise awareness on the importance of urban agriculture in Liberia
Photo: VOSIED

access to inputs (including financial services) and agricultural extension services, limited marketing and food processing skills, and contamination of crops with pathogens (mainly due to irrigation with polluted water or unhygienic marketing practices).

What could be done

For urban agriculture to develop its full potential and contribute to sustainable urban development, it is important that this potential be recognised by the urban authorities, Monrovia City Corporation, the Ministry of Agriculture, the National Environmental Protection Agency (EPA), researchers, NGOs, universities, and the major donor agencies. There is first a need to raise awareness among stakeholders and policy makers on the importance of urban agriculture in Liberia. Support to urban producers and micro-retailers is further necessary, and training should prioritise sustainable and profitable agricultural practices, the development of value chains and the establishment of city-based farmers' networks. Subsequently, the major support institutions need to strengthen their provision of technical assistance.

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The Role of Urban Agriculture in Kirkuk, Iraq

Galawezh B. Ormizyari

Kirkuk is located in the northeast of Iraq, along the Khasa River, about 250 kilometres northeast of the capital Baghdad. After the toppling of Saddam Hussein's regime in 2003, tension rose among ethnic groups as thousands of internally displaced people (IDPs) returned to Kirkuk. Most of the Kurdish returnees have started using land in Kirkuk illegally for housing and agriculture.

Kirkuk is the centre of the Iraqi petroleum industry and thus strategically and economically important. However, this ethnically diverse city (whose population is predominately Kurdish) was neglected under the former government of Iraq. In the eighties Kirkuk was modernised and redesigned as a defence base for the army.

The total population of Kirkuk is 839,000 and it includes about 60,000 internally displaced people (SIGIR 2008). The exact number of IDPs that returned to Kirkuk is difficult to assess due to the ethnic and political sensitivities of the area and the security concerns for persons working on IDP issues (IOM 2005). The Arab families residing in Kirkuk, the UN and the multinational forces were against any de-Arabisation of Kirkuk ⁽¹⁾, and the Kurdish IDPs did not automatically regain their homes occupied by the Arab settlers. Tension grew even more when the Kurdish majority demanded governance by the Kurdistan Regional Government (as stipulated in a proposed article 140 ⁽²⁾) rather than the central government in Baghdad in accordance with the revised Iraqi constitution.

Conditions of returnees

According to IOM (2005), the number of returnees to Kirkuk was 21,401. A substantial portion of them could not return to their original location in Kirkuk and are currently residing in temporary accommodations until their homes/lands are vacated by Arab families. For instance, 41 Kurdish IDP returnee families (who previously lived in Erbil) now reside in the Al-Feilaq neighbourhood, a former military location in Kirkuk. The group has been allocated land to live on, but according to IOM (2008) monitoring reports, they receive little attention or support. They live in houses made from mud, use blankets as doorways and have poor sanitation facilities. They need food assistance as well as non-food items (IOM 2008). But also Turkmen ⁽³⁾ families and even Arab IDPs who returned to Kirkuk have not been able to return to their own homes. Around 38 percent of the Turkmen are living in camps in dire conditions (IOM 2005). Arab IDP



Livestock pen made from scrap materials and stocked with goats and sheep Photo: A. Adam Bradford

returnees are families that were forcibly relocated during the Arabisation process to certain areas in Kirkuk in order to create a security buffer zone adjacent to the northern Kurdish governorates and to increase the Arab presence in the region. These families are reported to be in need of water, sanitation, education, health care and legal protection. They also expressed a need for fresh food in addition to their dry rations (IOM 2005).

Most of the Kurdish returnees have started using land in Kirkuk illegally. The temporal houses they have built have no sanitation and water, and no roads, education or any other services are provided to them. Local initiatives have started to distribute land legally to returning Kurdish IDPs, albeit in an unstructured way. The UN in Kirkuk has failed thus far to help reconcile the city's ethnic tensions. USAID with the help of local authorities and very few international NGOs operate under strict security conditions and are implementing community-led programmes to rehabilitate the city and meet the needs of the returnees and vulnerable families in the city. Support for income generation initiatives (including agricultural support) for IDPs has a high priority among NGOs (IOM 2005). It is at this integration and rehabilitation stage that support is needed for families to meet their fresh food needs through gardening.

The role of urban agriculture in rehabilitation

The IDP returnees are not engaged in any substantial farming because they lack services like water. Water is scarce in

My family was forced to leave Kirkuk in 1988. The four of us resided in Erbil, where we rented one room within a house. We shared a garden with the landlord's family, which was big enough to plant herbs, spinach and radish. We depended on the vegetables and herbs from this garden for our daily diet. In fact it was crucial to our survival.
The author

Kirkuk. Families have limited access to safe drinking water. The Khasa River, which runs through Kirkuk, is dry in the summer and flooded in winter. It is no longer a significant source of fresh drinking water due to lack of maintenance. The main source of water is the reservoirs fed with water brought in from neighbouring districts.

Agriculture is currently informally practiced only by IDP communities living on the banks of the Khasa River. During summer when the sediment of the river is wet, these communities plant vegetables like lettuce, celery, parsley, cabbage, radish, spinach, cucumber, tomatoes, eggplant, courgette and other fast-growing vegetables common in the area. Watermelon and melon are the most common fruits planted and harvested in the summer. These are consumed by the communities themselves and at times commercially traded at a very small scale in the local markets mainly in the low-income Rahimawa suburb. Some of the Arab families living downstream (south of Kirkuk) have some goats and sheep.

According to anecdotal accounts both animal manure and human waste are used in these small informal gardens, and incidents of diseases resulting from eating the produce have been reported. As a result, people have started using salt or washing powders to soak and clean the herbs and vegetables they buy. Intervention in the form of awareness campaigns is therefore needed to tackle these public health concerns.

The inhabitants of Kirkuk were for the most part transformed from producers to consumers under the urbanisation policy implemented during the Saddam era. This led to a shortage of locally produced food. Most fruits and vegetables in the markets are still imported from neighbouring countries (Iran, Syria and Turkey). Therefore, helping the families of Kirkuk to practice urban agriculture is a viable option to increase the availability of fruits and vegetables in the city. Urban agriculture could serve as an income generation activity for the city's displaced and poor and an important source of food security and livelihood. City authorities need to start allocating plots of manageable size to the IDP returnees, and provide support in the form of tools and water.

Opportunities for urban agriculture development

Given the circumstances, people are making the most of the land available in their city. Those who are currently planting on public land in Kirkuk could at any time be deprived of the patches of land on which they grow vegetables and herbs for their daily consumption. It would be ideal if the government backed by community leaders would legalise such agricultural practices and help these growers with schemes that promote the management and maintenance of community-led urban agriculture. In addition to increasing food security, being involved in the production of one's own fresh food gives people a sense of ownership and increases their self-esteem.

There is potential for more urban agriculture in Kirkuk, which could reverse the city's current dependency on food imports from neighbouring countries (Naqishbendi, 2008). The following changes are recommended to help achieve this objective:

- The central government should provide revenues from



Small scale community urban agriculture on the banks of River Khasa Photo: Galawezh Bayiz

- Kirkuk's oil to the city, and collaborate with the local councils.
- The Kurdish Regional Government and the Iraqi Central Government should help the returnee families by providing them with protection, legal access to land (for instance community-shared land for agricultural production), water, sanitation, and health and social services, and by providing them with basic tools and seeds.
- Existing community urban agriculture practices around the Khasa River should be supported and further enhanced, facilitated by international organisations such as ACIDI/VOCA and IOM. ACIDI/VOCA is funded by USAID and is already implementing community action programmes in Kirkuk. Peace building and community integration initiatives, while enhancing food security through urban agriculture projects, would need the permission of local authorities. Local NGOs should be involved and their capacities should be built.
- The river should be properly managed so that safe irrigation of agricultural land is possible.
- Local communities and returnees should be actively involved in these large-scale projects for agriculture, water and sanitation. Their participation is required to ensure a sustainable long-term solution to Kirkuk's stagnant economy.

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Notes

- 1) During the 1980s, Arab settlers from the centre of Iraq were paid the equivalent of 10,000 USD to live in Kirkuk in a process called Arabisation.
- 2) Article 140 states that Kirkuk is part of the Kurdish territories and that Arab families are to be stimulated to return to their places of origin. Implementation of this proposal is still pending as it is being contested by several ethnic groups in the city, like the Turks and Arabs.
- 3) Turkmen are a distinct Turkic ethnic group living in northern Iraq

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The Impact of the Economic Meltdown on Urban Agriculture in Harare

Percy Toriro

Harare is the capital city of Zimbabwe. With approximately 2.5 million inhabitants (1.8 million as of the 2002 census), here almost 50 percent of Zimbabwe's urban population lives. Recent economic difficulties have led to a phenomenal growth in urban agriculture in Harare as well as in other cities in Zimbabwe.

The spatial growth of the city of Harare has been largely lateral, consisting of a large uptake of surrounding agricultural land for urban development (Toriro, 2007). The economy of Harare as with the rest of Zimbabwe is agro-based. Agriculture drives the economy by providing the inputs that are processed in industries. Many of the manufacturing industries produce machinery that supports agriculture. Over the past decade, the economy of the country has been in a downward slide. This has been attributed to a number of factors that include poor economic management by the government, disruption of commercial farming resulting from the fast-track land reform programme, successive droughts and economic sanctions imposed on the country's rulers by traditional international financiers.

Urban agriculture as a response to economic crisis

Although it has become more visible in the last fifteen years (Toriro, 2005), urban agriculture has always been present in Harare. The recent increase began in the 1990s when the government's economic structural adjustment programme (ESAP) opened the economy to global competition, leading to a massive closure of industries. Many factory and other workers were retrenched and adopted urban agriculture as a means to provide food for their families. A few people with access to larger and secure land even used urban agriculture as a form of new employment for themselves and one or two others. Several studies (e.g. Chaipa, 2001) indicated that the total land under cultivation in Harare increased by over 90 percent in the early nineties.

The growth became phenomenal after the economic downturn following the 2000 general elections and the 2002 presidential elections. Many countries in the west refused to accept the results of the elections, which many believed had not been free and fair. Sanctions were imposed on the country leading to the dwindling of direct foreign investment.



More extension officers are being appointed in the city
Photo: Percy Toriro

Foreign currency became scarce, leading to the country's failure to import spare parts for industries and other basic needs. Many more industries downsized or closed down. Thousands more workers were rendered unemployed or under-employed. Many of these people turned to agriculture so that they could grow their own food to feed their families. Harare now covers approximately 1000 square kilometres. It is estimated that almost 50 percent of this area, which was previously open space, undeveloped land, or reserved for other uses, is currently being used for agriculture. During the summer (the rain season), the main crops grown on the open spaces are staple food crops (predominantly maize and beans). Less than 20 percent of this land is used throughout the year due to lack of access to water. As many as 40 percent of the farmers produce enough cereals to cover half a year's consumption. Few farmers (less than 10 percent) sell the staple maize to the market.

Profile of cultivators

The profile of urban cultivators has changed over time as a result of the economic downturn. In the past, it was mainly the poorer citizens who used open spaces (off-plot) for crop production. But now there is competition amongst people of all income brackets. People with higher incomes, who could afford to buy their own food, say five years ago, now have found their incomes so eroded by inflation that they cannot afford to buy all food provisions. They have to resort to urban agriculture to supplement their diets and their incomes. It is

now common to see families from high-income residential areas cultivating open space areas that used to be cultivated by their employees and residents from lower-income areas.

Pressure on land

There has been extreme pressure on the land in the past few years. This has been aggravated by the fact that there is limited planning of what land may be used for agriculture in Harare. Most farmers who cultivate on the open spaces in the city have acquired the land by “first claim”; i.e. the first to find vacant land and start using it becomes the de facto “owner” of the piece of land. However, these farmers have limited security of tenure. The actual owners of the land (private or public institutions) can decide to use it at any time. In addition, other farmers aware of this informal arrangement can take a chance and cultivate it earlier in the season than the current occupier. Such conflicts are now common because of the huge demand for land.

Recognition and support

On the positive side, the government increasingly recognises and supports the growing participation in urban agriculture. The Governor of the Harare Metropolitan Province (a largely urban province covering Greater Harare and the satellite towns of Ruwa and Chitungwiza), Mr. David Karimanzira, has been actively supporting urban agriculture (since he was appointed to the position three years ago) and encouraging the allocation of allotments for agriculture. He has spearheaded the demarcation and allocation of one-hectare plots to urban farmers in the largely urban province. He also facilitated government inputs support to farmers in these cities, and supported initiatives like farmer field schools, and show days where farmers exhibit their produce and exchange information. The Governor has been in the news regularly speaking about urban agriculture (The Herald, 2008).

Growth became phenomenal after the economic downturn starting in 2000
Photo: Percy Toriro



The economic downturn coupled with the acceptance of agriculture as an alternative livelihood strategy has also encouraged local authorities to be more sympathetic to agriculture. Prior to the year 2000, there were reports of local authorities destroying “illegally cultivated crops”. This mainly referred to crops grown in areas where the farmers had not been formally allocated plots by the local authorities. There is no single report of crops being destroyed by authorities since the turn of the millennium. This has been a significant development for councils that used to use destruction of crops as a deterrent to other would-be cultivators in “illegal” areas.

Many other organisations have started to recognise agriculture as a viable survival and economic activity in urban areas. In Harare alone, the work of RUAF through the Municipal Development Partnership (MDP) is now complemented by organisations such as SNV, World Vision, Practical Action, Mercy Corps, and Environment Africa. All these organisations are also collaborating with each other in city multi-stakeholder platforms. MDP has also been asked by NGOs and local authorities for ideas on how to run viable urban agriculture programmes.

Five years ago there were only two extension officers in the city, who were not even sure of their duties with respect to urban agriculture. As a result of the huge number of urban farmers in Harare (now estimated at over 500 000) and the lobbying by stakeholders through the Harare Urban Agriculture Stakeholders Forum, the city now has six extension officers. It is expected that more officers will be appointed in Harare and the satellite towns as well as in other cities in Zimbabwe.

Conclusion

The economic downturn in Harare has led to the prospering of urban agriculture. There is cooperation and collaboration amongst both governmental and non-governmental organisations. The next challenge is for Harare planners to properly plan for agriculture. The successful Bulawayo programme on urban agriculture (facilitated by RUAF’s Cities Farming for the Future) has become the local centre of excellence for planning and management of urban agriculture, and it could help sustain the growth that has been experienced in the sector.

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A Report from New Orleans: Growing food in a recovering city

Martin Bailkey

Over three years have passed since Hurricane Katrina flooded 80 percent of New Orleans in August 2005. While the population of the metropolitan region is close to the pre-Katrina total, that of the city itself is approximately 70 percent of its former level. Flooded neighbourhoods, such as Hollygrove, Gentilly, and particularly the Lower Ninth Ward, are far from their former vibrancy.

Those who have returned, however, are preparing the paths for others to follow. With large government-funded rebuilding projects slow to begin, the physical restoration of New Orleans is being driven by the efforts of many non-governmental organisations. In this context of grassroots activism, urban agriculture advocates have seized the opportunity to create a healthier, better-nourished city.

The New Orleans Food and Farm Network (NOFFN), a small organisation created before Katrina, has become a particularly prominent urban agriculture actor, with projects across the city. In a neighbourhood once under two metres of water, NOFFN has partnered with the Carrollton Hollygrove Community Development Corporation to develop the future Hollygrove Growers Market and Farm. The 0.5-hectare site of a former nursery business will soon contain greenhouses, composting areas, training areas, and a "Green Grocery" store to sell food to Hollygrove neighbours, restaurants and other outlets. Students and staff from Tulane University and Louisiana State University have engaged in renewal projects throughout New Orleans.

In New Orleans East, the MQVN (1) Community Development Corporation is laying the groundwork for an ambitious farm and market project amidst New Orleans's active community of Vietnamese refugees. The Vietnamese were among the first to return to New Orleans post-Katrina, quickly re-establishing a self-sufficient system of urban agriculture based on growing traditional fruits and vegetables in residential yards and along protection levees. To encourage economic development around food production, the Viet Village Urban Farm will transform 11 hectares of undeveloped land at the community's edge into small garden plots, structures to house weekly markets and special festivals, commercial farming plots, and a livestock farm.

The Lower Ninth Ward experienced great devastation in 2005, and remains largely empty after three years. Urban



Laurentine Ernst community garden in New Orleans
Photo: Martin Bailkey

planning proposals to leave the flood-prone land green and open have been ignored in favour of restoring the Ninth Ward to the tightly-knit neighbourhood it once was. Urban agriculture advocates are working to integrate food production within a fabric of physical and social renewal. Under the auspices of the two-year-old grassroots organisation, lower-nine.org, the Lower Ninth Ward Urban Farming Coalition is taking a community-based urban agriculture approach by uniting individual backyard gardeners into a working unit, and creating a community-supported agriculture operation across several dispersed vacant parcels instead of a single farm site.

Despite these positive efforts, urban agriculture has not been established as a vital and necessary mechanism in the recovery of New Orleans, where urban agriculture projects and community gardens did exist, but not to a significant degree compared to other US cities. In the crisis days of autumn 2005, efforts to restore the food system focused on re-opening existing grocery stores, and not on establishing emergency food-growing sites. Concerns about contaminated soils in flooded areas played a role, and there were early efforts at bioremediation.

What urban agriculture does represent is the resiliency of New Orleanians – best exhibited in the speed with which the Vietnamese re-established their gardens, and their expansion of the role played by urban agriculture in the community through the Viet Village Farm. Similarly, those who have returned to Hollygrove and the Ninth Ward are acting on the opportunity to employ urban agriculture in the collective effort to create a better New Orleans.

1) An acronym for "Mary, Queen of Vietnam."

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Tsunami Aftermath: Development of an indigenous homegarden in Banda Aceh

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Moustafa Osman

On 26 December 2004, a major underwater earthquake to the west of the island of Sumatra, Indonesia, triggered an extensive and devastating tsunami that impacted the entire South East Asia region and reached as far as the East African coastline. The Banda Aceh region located in the north of Sumatra bore the brunt of the tsunami, which resulted in catastrophic damage along the coastline, killing thousands of people and leaving an estimated 400,000 people homeless.

Latifa

Latifa and her family survived the disaster. With the help of her five children and husband, Latifa planted and created what was to become a highly productive thriving homegarden on barren soil outside their government-built emergency shelter. Latifa's plot resembles a traditional Indonesian homegarden characterised by spatial plant stacking, water conservation and nutrient recycling, and has become an inspiring example of post-disaster self-help, all the more so as the homegarden was created with no external assistance. In fact her efforts have gone largely unnoticed by the relief NGOs and government agencies working in the emergency settlement, who were preoccupied with delivering basic services and distributing food aid.

The tsunami was not the first crisis Latifa and her family endured. In 2000, they were forced to move from their home village Paluh in the interior, to the coastal village Kajhu, as a result of the armed conflict in Aceh between government forces and Acehenesian rebels. Many of the interior villages were evacuated during the conflict, which contributed to the high population densities in the coastal towns and villages prior to the disaster. When the tsunami hit the coast, Kajhu was totally destroyed, and Latifa and her family lost their home and possessions and were once more relocated, this time to a government-built emergency shelter block, Neuheun Barrack, which was constructed in May 2005.

In the Neuheun Barrack settlement, 25 wooden shelter blocks were built, each block containing 12 family rooms. In all 323 families were housed in the camp with a population of approximately 1,500 people. Over time, basic infrastructure



Latifa in front of her homegarden
Photo: A. Adam-Bradford

such as latrines, washing and cooking areas were added although the camp facilities remained quite basic, with food and water being distributed to the residents through relief aid programmes.

Latifa and her family were allocated one such room. But they were not content with living from the food distributions, and soon set to work on transforming the hard stony ground outside the door into a lush tropical homegarden. Within the first six months they were producing vegetables, and the following year the fruit trees were well established with bountiful harvests following thereafter. They used a minimum of inputs, which included collected cow manure (from a kilometre away), recycled junk (wooden stakes, plastic bottles, plastic piping), seeds collected from the wild and some obtained from the local market, a little wire fencing (purchased), and most importantly an inspiring vision to plant and create a thriving homegarden to benefit their family. Latifa's vision and technical ability came from her own passion for gardening, her self-declared hobby, but also from being raised in the interior. This would have ensured that her upbringing and livelihood were intricately linked with traditional natural resource management, hence the creation of an indigenous homegarden as opposed to a simple vegetable patch for surplus foods.

Opportunities were missed by relief agencies to assist the beneficiaries in developing small-scale primary food produc-

tion around the temporary shelter sites. If the Sphere Standards would have been applied, attention would have been given to food production and small kitchen gardens. These interventions improve the nutritional status of participants and contribute to psychological enhancement and (thus) improve the beneficiaries' general wellbeing.

Prior to the visit to Latifa's homegarden by us (as part of a team from Islamic Relief), the only other visitors had been two Japanese relief workers who had been equally impressed with Latifa's small oasis on the emergency settlement. The ingenuity of Latifa went far beyond simply planting local seeds in a freshly composted soil bed that had been made from collected manure, as her homegarden, measuring 3x5 metres, was extremely well designed. The garden incorporates different micro-habitats, including a wetland area for Taro, kept moist with the domestic washing water, a composting area for domestic organic waste, a homemade drip irrigation system, and a plant stacking column. This is made from a plastic pipe inserted into the ground with plastic water bottles fixed up its length. Each protruding bottle contains compost and a plant. Spatial stacking in the homegarden was completed with different fruit trees and sugar cane, while a degree of wind protection was provided from pumpkin leaves that were growing along the surrounding wire fence. During the homegarden survey, 30 crops were identified, which consisted of vegetables, fruits, cooking spices, medicinal plants and ornamentals. Latifa's garden was not just a practical intervention, but also a spiritual one, in the tradition of the indigenous homegarden, which, for the Acehnese, not only provides food, fibres and medicines for the family but also a physical place of beauty for reflection and spiritual thought.

Table Homegarden survey: plant list grouped by usage

Vegetables		
Long beans	Water spinach	Multi-sided bean
Pumpkin	Broccoli	Wing beans
Kuchai	Celery	Taro
Cassava		
Fruits		
Papaya	Pineapple	Marquisa
Juice		
Sugar cane		
Cooking spices		
Green chilly pepper	Ginger	Basil
Pandanus	Greater galingale	Tamarind
Tangerine	Red chilly	Citrus fruit
Lemongrass (citronella)		
Medicinals		
Javanese turmeric	Katu	Bunga pekan
Ornamentals		
Shoe flower (hibiscus)	Bougainville	Orchid



Traditional Indonesian homegarden with spatial plant stacking
Photo: A. Adam-Bradford

Although homegardens were observed in other areas in the Neuheun Barrack settlement, among the 300 family rooms, only Latifa's had a garden planted outside it, leaving the remaining camp population still dependent on food aid nearly 24 months after the camp was constructed. Latifa's homegarden provided a wonderful and inspiring example (and demonstration site), achieved with some basic material inputs, motivation and vision. Facilitating the scaling up of such simple but highly effective food security measures should have been part of the relief strategies of aid organisations. Latifa had the ideal skills, experience and knowledge to demonstrate the benefits of homegardening to other camp residents. She was thus an ideal community-level facilitator, who should have been supported by a relief NGO. Combining the expertise and local knowledge of innovative people like Latifa and her family can bring a genuine degree of local participation and community ownership to what are otherwise outside relief interventions. Mobilising local communities in such a way is also likely to accelerate the recovery by bridging the gap between rehabilitation and development and thus building resilient communities.

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The Sphere Project Guidelines

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The Sphere Project guidelines consist of a Humanitarian Charter and Minimum Standards in Disaster Response that are presented in a book format aimed to assist humanitarian relief workers in delivering high-quality and accountable disaster response. The initiative was launched in 1997 through an international collaboration that includes the Red Cross and Red Crescent movement. The collaboration currently consists of over 400 organisations in over 80 countries which have all adopted the Sphere consensus, including donor organisations which now request that emergency funding proposals be written in the context of the Sphere Guidelines. The identified Minimum Standards to be attained in disaster assistance are grouped in five key sectors:

- 1) Common Standards to All Sectors (project management)
- 2) Water Supply, Sanitation and Hygiene Promotion
- 3) Food Security, Nutrition and Food Aid
- 4) Shelter, Settlement and Non-Food Items
- 5) Health Services

The combination of food production with food distribution is clearly advocated in The Sphere Project guidelines, which is a handbook designed for use in disaster response but has an equal role in disaster preparedness and broader disaster risk reduction programmes. It is applicable in a range of scenarios, including natural disasters as well as armed conflict in both slow-onset and rapid-onset situations. This includes urban refugee situations as a result of armed conflict (Liberia, Sierra Leone) and urban disasters that may have resulted from tsunamis, earthquakes or tropical storms, as have recently occurred in urban areas of India, Indonesia, China and Pakistan. The Sphere Handbook is based on two core beliefs: “first, that all possible steps should be taken to alleviate human suffering arising out of calamity and conflict, and second, that those affected by disaster have a right to life with dignity and therefore a right to assistance” (page 5). Such core beliefs are of great relevance to urban agriculture as the Sphere Handbook strongly endorses small-scale agricultural interventions, which bring not only increased localised food security and fresh nutritional inputs but also dignity and psychological support through the mobilisation of human resources among those who may be suffering from post-traumatic stress following an extreme event.

The Sphere Handbook provides appropriate guidance for agricultural interventions in a range of the key sectors from food security to physical planning of settlements. For example, the minimum requirement of surface area per person in a planned settlement is 45 m², so a camp for 1000 refugees would have to be 4.5 hectares. This includes space for household plots, roads, footpaths, sanitation, and other infrastructural inputs, but moreover it also allows for “limited kitchen gardens for individual households” (page 217). On a 4.5 hectare site and using an average household plot size of six

people, this would result in the implementation of 166 small kitchen gardens. The Minimum Standards in Food Security, Nutrition and Food Aid provide the bulk of practical guidance for practical agricultural interventions with key aspects being addressed in Food security standard 1: general food security (page 120) and Food security standard 2: primary production (page 124). For example, primary production mechanisms should be protected and supported, through local capacity building measures and where appropriate with the distribution of seeds, tools, fertilisers, livestock, fishing equipment, hunting implements, credit and loan facilities, market information, transport facilities, etc. Important guidance notes are also provided on the viability of primary production, technological development, improving choice, timeliness and acceptability of primary production, seeds, local purchase of inputs, monitoring usage and unforeseen or negative effects of inputs. The guidance notes also address complexity issues to ensure programmes are well designed, appropriate to local conditions and sustainable.

The Sphere Handbook highlights that “although food distribution is the most common response to acute food insecurity in disasters, other types of response may also help people meet their immediate food needs” (page 121). Thus in urban areas a priority may be the reestablishment of normal market conditions, but equally important are small kitchen gardens and primary production methods: “Such strategies may be more appropriate than food distribution because they uphold dignity, support livelihoods and thereby reduce future vulnerability” (page 121). Thus, in conclusion, the choice of food relief strategy must be made to suit the conditions on the ground rather than external factors such as donor influence, NGO technical expertise or lack of access to basic, appropriate food aid. Food distribution must be planned in conjunction with food-producing options so that transitions from food dependency to food security can be made at the earliest opportunity and with minimum risk to the beneficiaries the food distribution supposedly serves.

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Stacking column with plastic water bottles containing compost and a plant inside

Photo: A. Adam-Bradford

Urban Agriculture in El Alto: An experience of revitalisation

Oscar Rea Campos

The structural food crisis in the city of El Alto has had an especially negative impact on the lives of the poorest families. Urban agriculture is one of the alternative strategies initiated to improve their food security, but also to enhance the social inclusion of the women involved, who have more time available than the men and who can develop additional skills through this activity.

El Alto is a city founded in the 1960s on the outskirts of La Paz. It has 960,000 inhabitants, 80 percent of whom are of Aymara origin, and close to 60 percent of whom are women. The annual population growth rate is 8.2 percent. This city is located on the Bolivian altiplano (high plateau) at 4,000 metres above sea level. The average temperature is 8.8 degrees Celsius and the city's economy is primarily based on informal commerce and cheap labour.

El Alto is the poorest city in Bolivia, as nearly 70 percent of the population lives on less than US\$1 per day (Iriarte, 2007). It is estimated that 80 percent of the residents of this city live in

low-income settlements, and 35 percent of the population lives in extreme poverty (National Statistics Institute, 2006). This urban poverty is generally accompanied by a lack of water, limited and low-quality food and housing, restricted educational opportunities and dangerous, low-paying jobs.

The structural crisis

Most of the residents of El Alto suffer from the consequences of what one could call a structural crisis. This crisis is caused by migration to El Alto and subsequent high pressure on the land and overexploitation of the soil, high levels of unemployment, precarious housing and a high level of malnutrition and the lack of governmental support to tackle these problems. In recent years, production of tubers and quinoa, the main crops of the altiplano, has fallen drastically in this region. The daily diet of the population is based mainly on carbohydrates from the potato and its derivatives and other tubers. The consumption of proteins, vitamins and minerals is extremely low.

During the 2000 and 2003 crisis and demonstrations, El Alto was seriously blocked by government, which generated a chronic shortage of food and a resulting indiscriminate rise in food prices. Urban gardening proved to be the only source of food for the inhabitants of El Alto.

Food security and social inclusion

The Comunidad y Acción foundation, together with a group of young women, many of whom are abandoned and/or unemployed mothers, has sought alternative solutions to the problem of malnutrition and seeking alternatives to overcome the crisis. Together with the municipality of El Alto and FAO, 37 family micro-gardens⁽²⁾ in different districts of the city of El Alto were established in 2008, particularly in the most remote and marginal districts of the city where there is no potable water service. The aim of this project is to address food security, while at the same time facilitating social inclusion of the participants.

The micro-gardens have a surface area of 25.6 m² and are intended to produce food for household consumption. Each of the family micro-gardens directly benefits an average of 5 people, or 185 in total. However, poverty forces most families to share their household with grandparents, in-laws, nephews and nieces, brothers and sisters, etc., which on average represents 5 additional people per household. Some of the crops that have been

Urban agriculture improves food security and enhances social inclusion of women Photo: Alain Santandreu





Both crops and small livestock (Guinea pig) is produced under cover
Photo: Alain Santandreu

introduced into the daily diets of these people are: Swiss chard (acelga), lettuce (4 varieties), radishes, beets, green beans, cucumbers, paprika, pepper, tomatoes, cabbage, cauliflower, broccoli, leeks, tomatoes, zucchini, turnips, basil, and the Andean aromatic plants: huacataya and quirquiña. All of these are produced without the use of agro-chemicals.

The production and consumption of this produce has also generated significant economic benefits, because the money these households used to spend on purchasing vegetables can now be used to buy meat, eggs, milk and bread, which they previously could only eat on very special occasions.

This more diversified diet has significantly enhanced people's nutrition, especially that of children, which translates into better performance in school and a significant reduction in disease. The 37 women responsible for the gardens enjoy their work and the health benefits of gardening. Before starting the micro-gardens, these women were constantly looking for temporary work, like selling candy or cigarettes, washing clothes, working as maids, or providing cheap labour. Their empowerment has also led in many families to better relationships, both between spouses and between parents and children.

The micro-gardens have further initiated a process of social interaction among neighbours, some of whom also want to learn how to grow the vegetables.

Communities of dialogue

There is no democracy without citizenship. The women responsible for the micro-gardens also participate, on a weekly basis, in a process of political education in the *communities of dialogue* ⁽³⁾. These communities aim to facilitate education and the development of improved social and human relations. These communities also address environmental and poverty issues and seek to develop a sense of ownership and responsibility toward one's own municipality as well as the environment in general. In this context, the creation and maintenance of micro-gardens is a reflection of individual responsibility.

As there is a high demand for the micro-gardens, the selection of people to manage them is important, and priority is given to unemployed women with children, but also to those who have the necessary technical skills (those who attended the micro-gardening course). The micro-gardens are built jointly. The foundation provides technical advice, and the

families provide the labour and the remaining materials (disposable PET containers, tin cans, etc.). The women also participate actively in the process of political education in the context of the communities of dialogue.

High demand

Poverty and food insecurity are the main reasons for the rapid growth of urban agriculture in El Alto. Women micro-gardeners prioritise their children's food security: "In 2003, there were no vegetables, and prices were sky high. We don't want to go through that delicate and anguishing situation again."

"With the lack of jobs and high inflation, my micro-garden is like a blessing from God."

"The family micro-gardens, where we produce quality, fresh vegetables, have managed to balance and improve our diet."

"Our parents' wages are low and the micro-garden helps to balance our family's nutrition, especially for the kids."

"Now my children eat vegetables in their soup. Even though we don't always have meat, we have vegetables: chuño ⁽⁴⁾, potatoes, etc."

"Now I can use the vegetable budget to buy other primary food items."

This information is based on two interviews conducted with Purnima by IWMI staff on 24/4/08 and 26/4/08.

Conclusions

The family micro-gardens have proven to be an effective solution to the problem of structural food insecurity, which the poor women of El Alto live with every day. At the same time, they are a window of hope. By using the gardens also as spaces for education, the programme helps the women of El Alto become more empowered in their families, neighbourhoods and wider public and social settings.

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Notes

- 1) Surcufundio: Refers to the furrows that today the indigenous people leave as an inheritance to their children.
- 2) The Municipality of El Alto and FAO started implementing family micro-gardens already in 2003 (also see UAM no. 19), and since that time 400 gardens have already been created.
- 3) A methodology of community participation, capacity-building and empowerment implemented by the Fundación Comunidad y Axión.
- 4) Dehydrated potato

Reference

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Multi-storey Gardens to Support Food Security

Mary Corbett

Addressing food insecurity in resource-poor settings is difficult in any context. However, in protracted refugee camp situations, where people are almost entirely dependant on humanitarian assistance, the challenges are even greater. The development and adaptation of multi-storey gardens has been tried in refugee camps in Kenya with impressive success.

The refugee camps of Dadaab and Kakuma have been in existence for almost 15 years and both acute and chronic malnutrition have remained high in the camps. A key factor is the long-term dependence of most of the refugees in these camps on food assistance involving a monotonous diet of cereal, pulses and oil, and sometimes a corn soya blend (CSB). Most of the refugees do not readily have access to fresh fruit and vegetables or fresh meat.

The refugee camps are situated in Northern and Western Kenya, a semi-arid region with limited rainfall. The refugees have not been given access to land to cultivate, apart from land close to their houses. The introduction of multi-storey gardens (MSG) combines aspects of dietary diversification, nutritional education, women's empowerment, income generation, community promotion and self reliance.

With financial support from the Canadian Initiative through GTZ (German Development Cooperation) and with technical support from GTZ, the uptake of MSGs in Dadaab was particularly high - a total of over 5,000 households (out of over 18,000 households). In Kakuma camp the uptake was initially lower, but interest has grown substantially and now over 2,500 households (out of 12,800 households) have MSGs.



Multi-storey garden in Dadaab camp, Kenya
Photo: Mary Corbett

blend (with compost) is placed in the bag around the tin cans. Seeds are then planted in the soil on the top of the bag. When it is time to "thin out" the seedlings, some of the small plants are removed from the top and, after holes are made in the sides of the bags, the seedlings are planted along the sides of the bags. This means the top and sides of the bags are utilised for growing.

In areas where water is in short supply this is a very economic way to utilise extremely limited resources. Each bag only needs to be watered twice daily with about 5 litres of water (on average). This is mainly greywater (household wastewater) or sometimes spill-off water. The water is poured into the top tin at the centre of the bag and drains through the stones down through to the end of the bag of soil irrigating all the plants throughout the depth of the bag. It is recommended to use household wastewater after rinsing out clothes or bathing, and also wastewater from around water points. However, it is important to incorporate and integrate waste management into the programme so as not to further limit water resources necessary for other activities.

Produce

In Kenya the produce grown in the MSGs includes a number of leafy green vegetables, tomatoes, okra and eggplant. Normally when the green leafy vegetables are ready for harvesting they can be harvested 2-3 times weekly. This can make a huge difference in the nutrition content of an extremely bland diet, increasing people's appetites and improving their general well being. It can be particularly beneficial in supporting the diet of young children. Based on

It is a very economic way to use extremely limited resources

Multi-storey gardens

The World Food Programme (WFP) has supported the project by providing empty 50 kg cereal bags and empty oil cans. The cereal bags are used for growing the produce. The tin cans are filled with rocks and placed on top of each other in the centre of the upstanding cereal bag. Holes are drilled in the sides and bottoms of the tins. Holes are not drilled in the bottom of the tin placed at the bottom of the bag. A soil

experiences in the camps, it is estimated that each household (containing on average 6-7 members) needs a minimum of five MSG bags to have enough produce to make a significant impact on its dietary diversity and also to assist in income generation. This approach has proven to be a labour-efficient means of increasing food security.

Training

GTZ set up nurseries to plant seeds and grow seedlings, which are also used as demonstration areas and for training refugee incentive workers. The refugee incentive workers are responsible for the development of the programme: their job is to sensitise the refugee population, run the seedling nursery, assist in the training of refugees (on construction, soil preparation and irrigation and use of wastewater), assist in the construction of the MSGs, and do community outreach.

Other benefits

Along with positively impacting dietary diversification and income generation, the approach encourages self reliance and empowers women. Produce can be grown all year round and the production of varied produce can be used in practical nutrition education. The concept of micro agriculture using a small amount of space and water is the central element, and could be targeted at households where labour is constrained, e.g. households with people living with HIV/AIDS or orphans.

“In the past I used to sell quite a lot of the food ration to buy things like tomatoes and spinach”

Reasons for poorer uptake

In Kakuma, the NGOs initial plan of action was less developed and the personnel employed were not convinced that this initiative could work. Therefore the uptake of the MSGs was much lower among the refugee population. The refugees in Kakuma camp were not aware of the MSGs' benefits and potential to support food security as the NGO staff did not have the same belief in the programme as those who introduced it in Dadaab.

Although the uptake of the approach in Kakuma camp was initially lower, this eventually improved and the refugees there “made it their own” by adapting the technique. Instead of growing the produce in just one 50 kg cereal bag, the refugees sewed a number of bags together to make a larger grow-

Halima Mohamed Aliyow, female MSG gardener, Dadaab camp

I have a family of fifteen, including two of my own children under five years and three nieces and nephews under five. I also have an older disabled son and my blind father living with me. I was very concerned as we never had quite enough to eat and the old man in particular was always tired of having the same food each day. I began with five sacks for use in making MSGs, but I enjoyed it so much I asked GTZ for an additional five sacks, which they gave me. I am now growing okra, spinach, tomatoes, coriander, and Kenyan spinach. I grow enough for everyone in the household to eat, plus I can give a little away to my neighbours. I feel that my family is healthier, we are happier and I do not worry about feeling hungry. In the past I used to sell quite a lot of the food ration to buy things like tomatoes and spinach, but now it is not necessary to do that.

I would like to become a Model Gardener for my block and then I could teach people about growing and cooking vegetables. If I could double the number of plants I am growing I could sell the excess to neighbours. Already people come to see the garden and want to buy my produce. I use run-off water from the tap stand to water the plants and they just grow and grow and grow.

ing area with the same overall concept of placing tins with stones in the centre that assist in watering and irrigation.

Cost

The introduction of MSGs is an inexpensive intervention as it requires low inputs. The initial costs included setting up the programme, hiring staff, training incentive workers, and developing training material on MSG techniques and nutrition issues. Other costs included tools and seeds for the programme. A one-year budget of US\$ 300,000 supported the development of 5,155 MSGs in Dadaab and 2,500 MSGs in Kakuma camp. With anaemia levels for women and children under 5 years at over 70 percent and malaria endemic around the camps, it is hoped that the introduction of fresh vegetables, in particular green leafy vegetables, will have a significant impact.

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Note

1) This article is based on an article by the same author in Field Exchange, issue 29, 2006. The information shared in this article was recorded during a consultancy for UNHCR/WFP.

Farming in Bags: Micro-gardening in northern Uganda

Holly Welcome Radice
Devrig Velly

The Acholi region of northern Uganda (Kitgum, Pader and Gulu districts) has been affected by rebel activities since 1986. Due to the constant crisis and erratic security situation, access to food, income, and productive assets for the population has become increasingly difficult over the years.

The majority of the population, estimated at 515,000 people (UNOCHA), is internally displaced and living in camps throughout the district. In particular, access to land is very limited due to security constraints and related displacement.

Action Against Hunger-USA (AAH) has been active in Gulu district since 1997, mostly working in the areas of nutrition, water and sanitation. Based on recommendations made in a 2003 assessment, AAH began a pilot micro-gardening project in two IDP camps in Gulu district in 2004.

Implementation

The aim of the project was to increase livelihood and food security options for households (vegetable production, sale of home produce, and planting work for the landless), but also to decrease the time spent on gardening duties and exposure to insecurity by reducing travel time to the gardens. A total of 940 households participated in the programme, mainly recipient households of the supplementary feeding centres (SFC) in Opit and Amuru camps.



Micro-gardening family with bag in bloom
Photo: Action Against Hunger ⁽¹⁾

The project used the basic ideas of urban agriculture and rooftop farming, using locally available materials. The method promoted involved polyethylene grain sacks, which are abundant in the camps and not costly, loam soil, rocks and banana stems. One banana stem was placed in each sack and then filled with rocks. Loam soil was placed around the stem. When the sack was filled with soil, the banana stem was removed leaving a core area of rocks, which served as a watering area. Planting was carried out around the bag (sides) and on top of it.

Each camp had a demonstration garden near the SFC that was tended by a gardener and which hosted training sessions. Training days coincided with the days the caretakers picked up rations at the SFC. Groups of up to 40 women (almost all SFC caretakers are women) participated in the training on

AAH-USA staff, Thomas Ojara (middle) making a micro-garden
Photo: Action Against Hunger



Micro-gardens planted in Opit camp
Photo: Action Against Hunger



Family with MSG
Photo: Action Against Hunger



construction, maintenance, and vegetable harvesting. At the end of the training, each household received a 100 kg grain sack, seeds (carrots and a choice of spinach (dodo) or cowpeas (boo)), and an instruction sheet written in the local language, Luo. Each household was supposed to plant one garden. The project was kept small-scale in order to gauge the interest and appropriateness of the activity before rolling it out. Gardens were constructed near the beneficiaries' households. Soil and rocks were brought from nearby areas and the majority of gardens was built in 2-3 days. Fences made of local materials (e.g. thorny bushes, bamboo) were constructed to protect the gardens. Maintenance took up on average just over two hours per week. This included watering, transplanting, fencing and weeding. The results of the micro-gardening project were assessed through weekly monitoring of the gardens' progress and discussions with the beneficiaries, observations, and a formal evaluation.

Success of farming in bags

Despite the beneficiaries' initial perception of micro-gardening as "strange" and even "a childish thing to be doing", and their unfamiliarity with the main crop, carrots (not a traditional Acholi crop), the women (the beneficiaries were almost exclusively women) were eager to try the new activity. Many husbands and neighbours looked on with curiosity. Almost all households that received the garden kit planted a garden. Over 85 percent of households claimed they were satisfied with the project and 94 percent wanted to continue with the activity for several seasons; many said that they liked the project idea, had no "other" land to plant, and were able to provide vegetables for their children. Half of these households had not planted vegetables the previous season; consequently vegetable consumption was generally low in the area (most households only ate vegetables 1-3 times a week). At the time of the evaluation, 37 percent of the households had eaten six meals or more from their gardens, with an average of six people taking part in these meals. Carrots were a big hit. AAH conducted training with the beneficiaries on preparation and cooking of carrots and some parents stated that the children really enjoyed them and ate with more verve when there were carrots in the meal.

The most frequently mentioned advantages were the proximity of the micro-garden to the compound and the ease of maintenance. Theft of crops was also reportedly discouraged because the micro-gardens can be constantly monitored. One unexpected advantage was that the micro-gardens decorate the home. The most significant disadvantages were problems related to watering (gardens required, on average, two litres per day in the dry season) and protecting them from destruction by children and animals. Watering was a particular problem in Amuru camp, where water availability was very limited.

Fifty five percent of the micro-gardens observed were well maintained. However, there was a great contrast between the camps. The gardens in Opit were in better condition than those in Amuru. This was related mainly to the water scarcity in Amuru, where watering was carried out sparingly, resulting in poorer crop performances.



Men preparing garden in Opit camp
Photo: Action Against Hunger



Planting seeds in a micro-garden
Photo: Action Against Hunger

Conclusions

An important attribute of the micro-garden is that it has offered a new idea to the IDP population. After almost ten years of displacement and very restricted movement, the IDPs in Gulu district are largely demoralised and lack impetus for innovation. While planting in bags was first viewed as childish by many, people are now really interested.

AAH plans to continue the project, improve it and increase the number of beneficiaries. The pilot project highlighted the need to increase the size of the gardens for greater impact, while at the same time making sure not to overburden households. Improvements will be sought in: increasing sensitisation and awareness; increasing the frequency and variety of training; systematic monitoring; increasing the variety and quantity of seeds; increasing the number of bags cultivated per household; and diversification of the method (containers, land).

Holly Welcome Radice

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Note

(1) All photos are made by Thomas Ojara, Pamela Atim, Victor Onenchan, Siddharth Krishnaswam

A Garden in a Sack: Experiences in Kibera, Nairobi

Peggy Pascal
Eunice Mwende

More than 60 percent of the population of Nairobi lives in the numerous slums located around the city. Kibera slum is one of the 146 slums of the Kenyan capital and the second biggest slum in Africa (after Soweto in South Africa). Around one million people are currently living in Kibera and the population is increasing daily. In the slum, landslides are frequent and the unemployment rate is very high. Most of the land is dedicated to housing, and agricultural land remains scarce.

In December 2007, Kibera was one of the two slums struck by the post-election violence that hit Kenya. These riots were the result of various factors compounded by the high level of poverty and increasing vulnerability. Most of the families living in the slums had recently settled there, after leaving the overpopulated rural areas. During 2008, food and non-food prices rose by up to 50 percent in six months¹. Resulting dietary changes are evident, including a reduction in the composition and frequency of meals, which could lead to a rise in malnutrition and susceptibility to disease.

The French relief NGO Solidarités supports the communities in Nairobi's slums, including in Kibera, with its "garden in a sack" project.

Objectives of the project

The project implemented by Solidarités and funded by the French government involves planting vegetable seedlings on top of and around the sides of earth-filled sacks, which are placed on doorsteps. Solidarités' strategy is based on two major objectives:

- To increase access to food using the garden in a sack concept.
- To increase the income available for household use through the sale of vegetables from the garden in a sack.

The target groups are low-income populations and those affected by HIV/Aids (who need better nutrition)². The inhabitants of the slums have the appropriate know-how to cultivate vegetables. The main problem preventing the development of agriculture is the lack of land and cash to buy agricultural inputs.

During the first phase of the programme in Kibera, over 11,000 beneficiary households adopted the technique and



Woman cultivating kale in Kibera
Photo: Solidarités

produced vegetables on their doorsteps. The current phase targets 32,000 households, some of which are now cultivating tomatoes, onions, kale or spinach. Over 18 nursery beds have been established in the Kibera slum. Some selected community members are responsible for the management of the nursery, whereas another group is in charge of training the beneficiaries.

According to Francis Owino Waneno, the area chief, the project has boosted food security in the slum. "People can now eat and in some cases sell their own produce and that means a lot to dwellers of this slum", he says (*The East African Magazine*, June 2-8, 2008).

Preparation

Small plots were voluntarily given by the communities (without compensation) for the establishment of nursery beds. Solidarités provides the seeds, and community mobilisers support the community members in management of the nurseries.

It takes at least three weeks for the seedlings to mature enough to be transplanted into the sacks or kitchen gardens. And already at this stage community participation is important. It is important to explain that the seedlings will be distributed for free to community members who qualify as per the selection criteria.

In the context of a slum, crops with a short growing period and long-term benefits are needed. For instance, in the first phase of the programme it was noted that (crop bulb) onions took too long to mature, so the participants opted for leafy onions. Furthermore, the quality of the soil and water for irri-

gation present challenges. However difficult, it is important to ensure that hygiene and good sanitation are practiced, especially near the seedbeds, to prevent contamination.

Training and community mobilisation

Having a demonstration farm proved to be crucial for training; and community mobilisers were instrumental to the success of the first phase of the programme because of their effective communication, monitoring and follow up. It is important to have community members as mobilisers. The local administration and village elders assisted in the identification of these individuals; but to prevent political interference, the role of the local administration should be clear and the names given need to be well verified.

The team of mobilisers was composed of varied age groups (between 25 years and 80 years of age) and was balanced in gender. This increased the group cohesiveness and the level of acceptance by their communities. It also proved to be important that these community mobilisers were adequately paid (with a monthly salary and any other benefits) to ensure full commitment without the need to supplement their salaries.

Preparing the sacks

Each sack has a volume of 0.1 to 0.5 m³. The most appropriate crops for the bags are leafy vegetables since they keep on growing even after the leaves have been harvested. Vegetables are planted at the top of the sack and through small holes on the sides. On average, one single sack contains 30 to 40 seedlings of kale or spinach and 20 tomato plants. These are crops that the communities were already familiar with; but other vegetables, such as capsicum, leafy onions, and coriander, were also introduced.

Two models of vegetable sacks have been tried out: one with a stone spine and one with layers of stones. The latter appeared to be less interesting since the planting area is smaller than in model 1, which offers planting area for seedlings all around the bags.



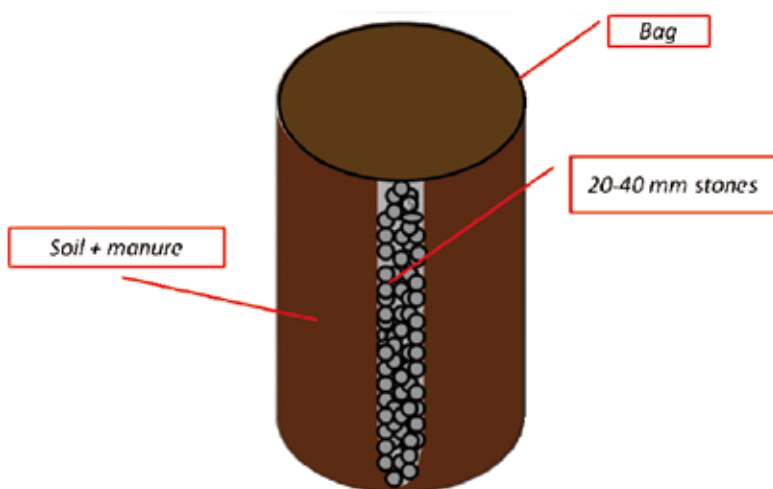
Ongoing training in seed bed
Photo: Solidarités

The sacks are prepared by the households, which have to find or buy a sack (which are inexpensive (Kshs.10) and easily available) and find the soil and stones before receiving the seedlings. Once the bags are ready, Solidarités provides the seedlings. This approach helps select households that are really motivated and strengthens ownership.

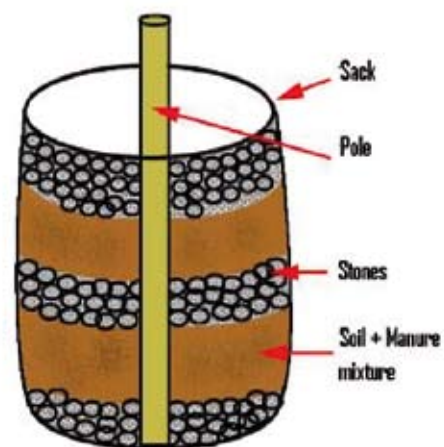
In some slums, good soil for planting is difficult to obtain. In some cases, beneficiaries had to buy their own soil to be able to participate in the programme. This demonstrates the household's commitment, but it also leads to additional costs to the beneficiaries and might limit the number of beneficiaries of the programme. A second challenge is access to water, as there are no reliable water supply systems in the slum areas. Some sacks and kitchen gardens withered during the dry periods of July - November as a result of lack of water. Most slum dwellers purchase water from water vendors, who are not subject to any regulations in setting the price of water.

Impacts

Vegetables from the sacks are used for consumption or they are sold, thereby increasing a household's access to cash for other needs and for education of the children. Families that are producing vegetables are able to prepare a full meal two to three times a week. On average, each household also increases its weekly income by 5 USD. Given that house rental in Kibera costs around 6 USD/month, this additional cash represents an important source of income. Households with access to three or more sacks have an estimated revenue of



Model 1: Vertical spine made with stone to facilitate the infiltration of water



Model 2: Layers of stones



Spinach in a bag in Kibera
Photo: Solidarités

around 33 USD per month, which is more than the average monthly income per family (June 2008)⁴.

The approach is cheap and readily embraced by the slum inhabitants, most of whom practiced agriculture in rural areas before coming to the city to look for jobs. It is a self-sustaining programme in which Solidarités is responsible for initial capacity building, general management of the programme, and the initial purchase of seeds. The other activities are taken up by the communities themselves. However, the presence of dedicated and diverse (in culture and age) community mobilisers plays a significant role in ensuring that the programme is well embraced by the communities. Solidarités started its work with WOFAK (Women Fighting Aids in Kenya), which has been active in Kibera for ten years dealing with HIV/Aids-vulnerable people in the community and KENWA (Kenya Network of Women with Aids).

Conclusion

People living in urban areas are particularly vulnerable to soaring food prices. The garden in a sack concept is an effective,

simple and sustainable method of ensuring food security for slum dwellers. The households are either able to earn an income or save on costs that they would otherwise incur to buy food. The biggest challenges identified by the beneficiaries of this programme are the presence of pests (and lack of access to pest control), access to water, vegetable diseases and the theft of vegetables³. Solidarités assists the communities in implementing pest control measures.

Solidarités strongly believes that urban agriculture should be one of the pillars of food security strategies in the coming years. The organisation has therefore extended the project to other areas in the Kibera and Kiambiu slums and is also introducing it in two other slums: Mathare (also near Nairobi) and Juba (southern Sudan). Juba is a big slum with very poor access to safe water and sanitation facilities, but very little NGOs work in the city.

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Notes

- 1) The price of maize, the main staple food, even increased by 100 percent in just a few months.
- 2) The HIV rate in Kenya is 6 percent and the disease is a major problem. At least 1.3 million people are currently living with HIV/Aids in Kenya, 65 percent of whom are women between the ages of 19 and 45, according to NACC statistics.
- 3) Interviews and data collection were done in three primary villages of Kibera and in Kiambiu village as a whole. The villages selected in Kibera were Makina, Lindi and Kisumu Ndogo. 200 questionnaires were completed by beneficiaries of Solidarités intervention; 183 of which were considered valid for further analysis of the impact of the intervention.
- 4) This information does not consider income generated from onions, which were mostly grown in kitchen gardens and not in sacks, in order to allow for growth of the bulbs.

A nursery bed in Kiambi slum

Photo: Solidarités



Health Risk Assessment of Children Exposed to Greywater in Jerash Refugee Camp in Jordan

Sahar Dalahmeh
and Almoayed Assayed

Jerash refugee camp is one of the ten official Palestinian refugee camps located in Jordan. It is inhabited by about 28,000 people who originally fled from Gaza, Palestine, in 1968, as a result of the 1967 Arab-Israeli war. Although more than 30 years have passed, the responsible authorities still consider the camp to be a temporary shelter, and investments in services and infrastructure in the camp, except for basic services, have not taken place.

The camp covers an area of 750,000 m² and is situated five km from the famous ancient Roman monument of Jerash. In 1968, the camp was set up as an “emergency” camp for 11,500 Palestinian refugees, and UNRWA set up facilities for mass supplementary feeding, environmental sanitation services, health services and education in tented schools. The original 1,500 tents have been replaced by prefabricated shelters, and over the years many of the camp inhabitants have replaced these prefab structures with more durable concrete shelters.

Jerash camp now consists of 2001 permanent brick/stone building units supplied with piped water for domestic purposes. The main sanitary facility consists of “cesspools”, which are tanks built underground and used to collect toilet wastewater. Cesspool walls are usually sealed with concrete, bricks or stones and they have an un-sealed bottom that allows seepage of wastewater. Greywater from kitchens, showers and washing machines is drained in small pipes through the house walls to small ditches in the roads between the houses, where children walk and play. Part of this water is used for the production of crops.

Agriculture in the area is practiced by both local farmers and refugees. However, the local farmers own the agricultural fields around the camp, and they hire refugees as labourers, who obtain food and income in this way. About 70-100 refugees work in the farms downstream of the camp. In the cultivation season this number increases. The total number of farms is 13, and each covers about 1.6 hectare.

Wastewater has been used for irrigation in Jordan for several decades. Some treated effluent has been used directly on

restricted crops of relatively low value, but the main practice has been to discharge effluent to the environment where it mixes with freshwater flows before being used downstream. More than (70 M cubic metres) of reclaimed water was reported to be annually used in Jordan (McCornick, 2001), either directly (adjacent to wastewater treatment plants) or indirectly (after mixing with natural surface water supplies and freshwater supplies downstream). However, the health aspects and risks related to this reuse have not yet been investigated within a coherent framework.

This article presents the results of an assessment of health risks related to exposure of children in Jerash refugee camp to greywater that runs openly in small ditches in roads between the houses in the camp.

Risk assessment

The IDRC/WHO/FAO project (also see UAM no. 20) on adapting and implementing the new WHO guidelines for the safe use of wastewater, excreta and greywater in agriculture seeks to investigate optimal modalities for the application of these guidelines in the context of poor urban communities. Under this project, the assessment of risks associated with children being exposed to pathogens in grey wastewater in

The water is pumped out of the ditches on the fields
Photo: Sahar Dalahmeh



Jerash camp was carried out with information gained using qualitative participatory methods (observational checklists and structured interviews), that followed the risk assessment structure as mentioned in the WHO guidelines and include: 1. Hazard Identification; 2. Hazard Characterisation; 3. Exposure Assessment; and 4. Risk Characterisation. Questions in the structured interviews were divided into four main components: family information, exposure information, epidemiological information, and hygiene behaviours and risk perceptions.

The hypothesis used in this risk assessment was that children's exposure to greywater while playing near greywater ditches results in a high incidence of diarrhoea, that faecal contamination of greywater is the agent that causes diarrhoea, and that diarrhoea and hepatitis are caused by direct contact with the contaminated greywater during irrigation or cultivation, and not by the consumption of crops irrigated with greywater.

The impact of greywater exposure and hygiene behaviour on the health of children was studied, including factors like the source of the children's drinking water, whether the children were involved in or exposed to livestock (manure), what sanitation facilities they had access to (cesspools or other), and their personal hygiene behaviour (hand washing after playing and hand washing before eating).

Farm level

Greywater generated in the households in the camp runs along collection ditches and flows downstream to agricultural sites, where it is stored in small pools for irrigation use. The water is pumped out of the ditches into concrete reservoirs or earthen pools. These pools have different types of reed vegetation (forming a natural wetland). The size of the pools is about 60-100 m³.

The crops grown in the fields are ornamental trees, productive trees (olive, citrus, figs, almond, and cactuses), and vegetables (zucchini, lady-fingers, beans, maize, and capsicum). Most of the crops cultivated near the camp are either vegetables that are cooked before eating, shelled fruits or ornamental crops. The fields are located on the sides of the greywater canal just downstream from the camp. Some 39 percent of the farms collect greywater in pools or reservoirs and 62 percent directly pump greywater for irrigation without storage; 15 percent of the farms use drip irrigation systems, 23 percent use buckets, and 62 percent use surface irrigation.

Faecal contamination is the main source of pathogens in the greywater and occurs through activities at the camp, such as the changing of baby diapers in hand-washing basins, through illegal dumping of wastewater from cesspools into greywater ditches, and through animals. In addition, greywater passes through uncontrolled dumps of organic and household waste. The main health impacts associated with the faecal contamination of greywater are bloody diarrhoea and hepatitis A.

Exposure analysis

Greywater exposure is likely to occur near the collection pools during pumping activities from the ditch to pools (the tubes are manually moved), and frequent contact is probable during manual distribution between the different lines of irrigation. Also the harvesting procedure for olives creates situations in which there is a high likelihood of contact. Vulnerable groups exposed to risk in these farms include farm workers (69 percent), children who work or visit their families at the farms (23 percent) and shepherds who visit farms to graze their animals near the canal.

Risk characterisation

Five cases of hepatitis in one family were recorded. This family pumps the greywater from the canal to a concrete reservoir near their house and uses the stored greywater for surface irrigation. The agricultural fields studied here are important in the livelihood of Jerash camp refugees. Most refugees do not have an identity card and are not allowed to work in governmental and public organisations. Agricultural labour is important in earning an income. Therefore, the risk of infection is high, and reduction of this risk is crucial for the inhabitants of the camp. This can be achieved by controlling and reducing the contact between humans and the greywater during irrigation and harvesting, which includes the use of mulch and drip irrigation (for farms that already use surface irrigation), and the use of protective clothes, boots and gloves.

The main health impact associated with the faecal contamination of greywater in the camp is diarrhoea. The incidence of diarrhoea during the period August 9–September 9, 2007 was 10 percent. A significant relation was found between hygiene behaviour and infection with diarrhoea. Children who wash their hands after playing in the canals have 44 percent less risk of developing diarrhoea than those who do not wash their hands after playing. Moreover, the risk ratio between diarrhoea and hand-washing before eating is 64 percent. Thus the risk of developing diarrhoea is decreased by 36 percent among those children who wash their hands before eating.

The risk associated with greywater exposure at household level in Jerash refugee camp can be managed by promoting health protection measures and implementing hygiene education and sanitation programmes.

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This project was carried out by the Environmental Research Centre of Royal Scientific Society in Jordan under the umbrella of a WHO/IDRC/FAO project on adapting and implementing the WHO Guidelines for the safe use of wastewater, excreta and greywater in agriculture and aquaculture, which was launched in January 2007.

Books

further readings

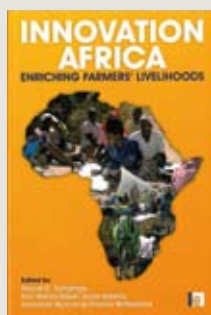
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Innovation Africa Enriching Farmers' Livelihoods

Pascal C. Sanginga, Ann Waters-Bayer, Susan Kaaria, Jemimah Njuki and Chesha Wettasinha (Editors).

Earthscan, 2008.

This book covers new conceptual and methodological developments in agricultural innovation systems, and showcases recent on-the-ground experiences in different contexts in Africa. The contributions show how innovation is the outcome of social learning through interaction of individuals and organisations in both creating and applying knowledge. It brings examples of how space and incentives have been created to promote collaboration between farmers, research, extension and the private sector to develop better technologies and institutional arrangements that can alleviate poverty.



Women Feeding Cities – Mainstreaming gender in urban agriculture and food security. Practical Action.

Alice Hovorka, Henk de Zeeuw and Mary Njenga (Editors), 2009.

The book analyses the roles of women and men in urban food production, processing and marketing in case studies from three development regions and includes field-tested guidelines and tools for gender mainstreaming. It is essential reading for researchers, policy makers and development practitioners. The publication is based on experiences gained in the context of Urban Harvest, the CGIAR System-wide Initiative on Urban and Peri-urban Agriculture and The Cities Farming for the Future programme of the RUAF Foundation.

Junior Farmer Field and Life Schools – Getting Started! Running a Junior Farmer Field and Life School. FAO. 2007.

Available at:

<http://ftp.fao.org/docrep/fao/010/a1111e/a1111e00.pdf> or
<http://ftp.fao.org/docrep/fao/011/i0379e/i0379e.pdf>

In response to the growing number of orphans and vulnerable children, the Gender, Equity and Rural Employment Division of FAO, with the World Food Programme (WFP), has supported the development and implementation of Junior Farmer Field and Life Schools (JFFLS) in various countries of East and Southern Africa over the past several years. In the process, information and training materials have been developed, and reports produced. This JFFLS Getting Started! manual is the culmination of experiences of many individuals, communities, and organisations in Kenya, Mozambique, Namibia, Swaziland, United Republic of Tanzania, Zambia, and Zimbabwe.

Series of UNHCR handbooks available at:

<http://www.unhcr.org/protect/PROTECTION/3b94c8364.html>

- Livelihood options in refugee situations. A handbook for promoting sound agricultural practices (2002). This handbook is intended to help develop an understanding of what needs to be considered when dealing with agriculture in a refugee or returnee operation. In particular, it clarifies how to promote and maintain sound practices for displaced people in diverse situations, often working with a range of different agencies.
- Handbook for planning and implementing development assistance for refugee (DAR) programmes (2005)
- Practising and promoting sound environmental management in refugee/returnee situations (2001)
- UNHCR environmental guidelines (2005)
- Forest management in refugee and returnee situations (2005)
- Livestock keeping and animal husbandry in refugee and returnee situations (2005)
- Handbook for repatriation and reintegration activities (2004)
- Handbook for self-reliance (2005)

Agricultural Rehabilitation – Mapping the linkages between humanitarian relief, social protection and development

Humanitarian Policy Group (HPG), 2006. Research report 22 ICRISAT.

This paper addresses the question of how to support the livelihoods of rural people who have been affected by conflict. Specifically, it focuses on how international actors might move beyond conventional interventions involving seeds and tools to address vulnerability and support the agricultural component of rural livelihoods in countries emerging from conflict. Available at:

<http://www.odi.org.uk/hpg/papers/hpgreport22.pdf>

Reducing the Risk of Disasters – Helping to achieve sustainable poverty reduction in a vulnerable world.

DFID policy paper. 2006

This paper summarises DFID's policy on disaster risk reduction as it applies to natural and technological disasters. It sets out the key elements of disaster risk reduction and why it is important.

Addressing Food Insecurity in Fragile States – Case studies from the Democratic Republic of the Congo, Somalia and Sudan.

Luca Alinovi, Günter Hemrich and Luca Russo, 2007. ESA Working Paper No. 07-21, Agricultural Development Economics Division. FAO.

Drawing on case studies from the Democratic Republic of

Books further readings

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the Congo, Somalia and Sudan, this paper focuses on policy, programming and institutional issues related to addressing food insecurity in protracted crises and fragile states, with a focus on areas afflicted by conflicts. The case studies illustrate how dysfunctional institutions are at the root of structural food insecurity and how local people and institutions have been able, to a certain extent, to adapt and cope with the crises. Available at:

<ftp://ftp.fao.org/docrep/fao/010/aio28e/aio28e00.pdf>

The Long Road Home – Opportunities and obstacles to the reintegration of IDPs and refugees returning to Southern Sudan and the Three Areas Report of Phase I.

Sara Pantuliano, Margie Buchanan-Smith and Paul Murphy. 2007. Humanitarian Policy Group Overseas Development Institute, London.

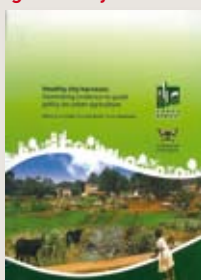
The study seeks to understand key determinants of sustainable reintegration and the role of different actors in achieving this goal. It focuses on key obstacles to, and opportunities for, successful and peaceful reintegration, paying attention to different interventions (like agriculture).

Available at: <http://www.odi.org.uk/resources/details.asp?id=2432&title=long-road-home-opportunities-obstacles-reintegration-idps-refugees-returning-southern-sudan-three-areas>

Healthy City Harvests - Generating evidence to guide policy on urban agriculture

Donald Cole, Diana Lee-Smith and George Nasinyama (Editors), 2008. CIP/Urban Harvest and Makerere University Press.

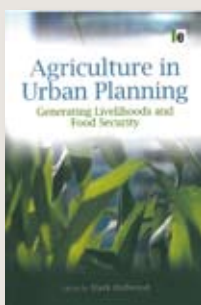
This book presents research results on potential health risks of crop and live-stock production in the city, as well as nutritional and food security benefits of urban farming, embedded in the policy context of Kampala, but with relevance to other cities in Africa. It addresses the role of urban agriculture in a time of global urban food crises and rapid, unplanned city growth, and how these were re-integrated in a public policy debate. For more information: <http://www.uharvest.org/>



Agriculture in Urban Planning - Generating livelihoods and food security

Mark Redwood (Editor), 2008.

This volume written by researchers working in urban agriculture examines concrete strategies to integrate city farming into the urban landscape. Drawing on original field work in



cities across the rapidly urbanising global South, the book examines the contribution of urban agriculture and city farming to livelihoods and food security. For more information: http://www.idrc.ca/en/ev-133761-201-1-DO_TOPIC.html

African Indigenous Vegetables in Urban Agriculture

C. M. Shackleton, M. Pasquini and A. W. Drescher (April 2009)

This book provides a comprehensive synthesis of current knowledge of the potential and challenges associated with the multiple roles, use, management and livelihood contributions of indigenous vegetables in urban agriculture in sub-Saharan Africa. For more information and book orders: <http://www.earthscan.co.uk/?TabId=56958&v=451875>

Marketing Compost - A guide for compost producers in low and middle-income countries

Jonathan Rouse, Silke Rothenberger and Chris Zurbrugg, 2008.

This guide describes a marketing approach to composting, and is intended to help compost producers run more viable initiatives by unlocking the value of their product.

Available at: http://www.eawag.ch/organisation/abteilungen/sandec/publikationen/publications_swm/downloads_swm/marketing_compost_low.pdf

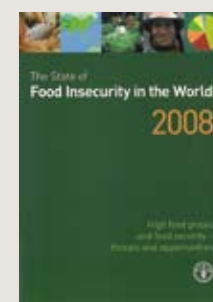


The State of Food Insecurity in the World 2008 - High food prices and food security threats and opportunities.

FAO

This yearly report raises awareness about global hunger issues and its underlying causes, while monitoring progress toward the targets established at the 1996 World Food Summit and the Millennium Summit. This year's report focuses on high food prices, which are having a serious impact on the poorest populations in the world, drastically reducing their already low purchasing power.

Available at: <ftp://ftp.fao.org/docrep/fao/011/i0291e/i0291e00.pdf>



The Sphere Handbook - Humanitarian Charter and Minimum Standards in Disaster 2004

The handbook takes into account recent developments in humanitarian practice in water and sanitation, food, shelter and health, together with feedback from practitioners in the field, research institutes and cross-cutting experts in protection, gender, children, older people, disabled people, HIV/Aids and the environment. It is the product of an extensive collaborative effort that reflects the collective will and shared experience of the humanitarian community, and its deter-

<http://km.fao.org/fsn/>

FSN Global Forum on Food Security and Nutrition Policies and Strategies, on-line discussions, knowledge sharing and problem solving on topical issues related to FSN policies and strategies. General and city specific information on FAO's response to emergencies, and in fostering transition from relief to recovery of food and agricultural systems can be found at: <http://www.fao.org/emergencies/en/>

http://www.fao.org/fcit/cities_emergencies_en.asp

This section of the Food for the Cities website of the FAO offers some selected documents on Emergencies and Crisis and Disaster Preparedness as well as the FAO factsheet on "Emergencies and crisis in urban areas".

<http://www.actionagainsthunger.org/what-we-do/food-security>

One of the themes of Action Against Hunger is food security. AAH supports families in emergencies to regain self-sufficiency, support livelihoods and enhance coping mechanisms regarding food security.

<http://www.solidarites.org/missions/Kenya/action-crisealimentaire.shtml>

Solidarités, a French humanitarian organisation, has experience with gardening in sacks in Kenya in response to food insecurity (see the article earlier in the magazine).

<http://www.enonline.net/>

Network of organisations and practitioners working in emergency nutrition and food security. Also provides access to the online Field Exchange Magazine (see section on publications).

<http://www.unhcr.org/cgi-bin/texis/vtx/home>

Homepage of the UN refugee agency UNHCR. The website provides news messages on gardening in emergencies; see following case studies:

<http://www.unhcr.org/news/NEWS/45d966394.html>

<http://www.unhcr.org/news/NEWS/45dda2414.html>

<http://www.unhcr.org/news/NEWS/4873657b4.html>

<http://www.unhcr.org/news/NEWS/487cc36e4.html>

<http://www.uharvest.org>

This is the newly updated website of Urban Harvest.

<http://www.ifrc.org/what/disasters/resources/publications.asp#fs>

International Federation of the Red Cross (IFRC) also works on food security issues. Especially take a look at the publication on Food Security Assessment.

<http://www.disasterstudies.wur.nl/UK/>

Website of disaster studies of the University of Wageningen, containing information on the study itself (on bachelor, master and Phd level) and publications on the topic.

http://www.urd.org/en/presentation/index_en.htm

Groupe URD is a non-profit research institute which works on evaluations, methodology and training with the aim of improving practices within humanitarian action in favour of crisis-affected populations.

On DvD / VIDEO

Lesotho – Make a Keyhole Garden

A great little video made in Lesotho, showing how a group of schoolchildren made a keyhole garden. The charity Send a Cow showed them how to make it and the children can now make their own at home and have access to more food.

<http://www.youtube.com/watch?v=XjcCCx3BWY>

Young city farmers in Nairobi slum grow organic food

This audio-slideshow on BBC-News shows how in Kibera, Nairobi, young city farmers of a youth reform self help group are successfully growing and selling organic vegetables:

http://news.bbc.co.uk/2/hi/in_depth/7865387.stm

mination to improve on current knowledge in humanitarian assistance programmes. More information on the project or the handbook can be found at: http://www.sphereproject.org/component/option,com_frontpage/Itemid,200/lang,english/

Journal of Disaster Studies

Overseas Development Institute

Available online at: <http://www.blackwellpublishing.com/journal.asp?ref=0361-3666&site=1>

Especially Volume 26, Number 4, December 2002 Special Issue: Beyond Seeds and Tools

Refugee livelihoods – A review of the evidence
Machtelt de Vriese, 2006. Evaluation and Policy Analysis Unit UNHCR.

This paper deals with refugee livelihood strategies (both urban as well as rural) and success factors and limitations of these strategies.

Cultivating Resilience – Lessons from the 2004 tsunami

Melissa Harvey and Sathis Wijewardena in LEISA Magazine 24. 2008.

The article discusses the role of homegardens after the tsunami in Sri Lanka. Available at: [http://ileia.leisa.info/index.php?url=article-details.tpl&p\[_id\]=219109](http://ileia.leisa.info/index.php?url=article-details.tpl&p[_id]=219109)

Distance learning course: Urban Agriculture Types (online)

January-April 2009

The course Urban Agriculture Types is the third course in a series of four developed by Ryerson University's G. Raymond Chang School of Continuing Education and Centre for Studies in Food Security (www.ryerson.ca/foodsecurity) in partnership with ETC-Urban Agriculture (www.etc-urbanagriculture.org) and the international network of Resource Centres on Urban Agriculture and Food Security (RUAF) (www.ruaf.org). The course fee is (CAD) \$474. For more information contact: Reg Noble, PhD, Email: food@ryerson.ca

National Food - Co-ops Conference

(London, UK)

2 February 2009

As part of the Making Local Food Work programme, Sustain is organising a national food co-ops conference. The conference aims to help food co-ops and other community-run food outlets become more sustainable, and provide a forum for sharing experiences. The keynote speaker is Martin Caraher, reader in Food and Health Policy at City University. For more information:

<http://www.sustainweb.org/news.php?id=235>

World Conference of Humanitarian Studies

(Groningen, the Netherlands)

4-7 February 2009

The World Conference of Humanitarian Studies provides a meeting ground for different scholars and practitioners. Plenary sessions and panel discussions will focus on the causes, dynamics and effects of humanitarian crises; the politics and discourses of humanitarian crises; the responses to crises, including local coping practices as well as political, military and humanitarian interventions; the processes of rehabilitation, and the linkages with development, peace-building, and security; the experiences and lifeworlds of refugees and internally displaced people.

For more information and registration:

<http://www.humanitarianstudies2009.org/>

5th World Water Forum

(Istanbul, Turkey)

15-22 March 2009

The World Water Forum is the main water-related event in the world, aimed at putting water firmly on the international agenda. A stepping stone towards global collaboration on water problems, the Forum offers the water community and policy- and decision- makers from all over the world the unique opportunity to come together to create links, debate and attempt to find solutions to achieve water security.

For more information: <http://www.worldwaterforum5.org/>

Special Summit on Refugees, Returnees and IDPs in Africa

(Kampala, Uganda)

1-15 April 2009 (exact date to be confirmed)

In this special summit, specific focus is on rebuilding affected communities emerging from conflicts and natural disasters to enable sustainable reintegration of returning refugees and internally displaced persons. For more information: <http://www.africa-union.org/root/au/index/index.htm>

Rethinking Urban-Rural Interactions in China's Agricultural Development: Beyond the Urban Bias

(Leeds, UK)

3-5 April 2009

Organised by the Department of East Asian Studies, University of Leeds and National Institute of Chinese Studies, White Rose East Asian Centre, UK

For more information:

<http://www.ecardc.org/index.php?q=en/node/15>

Dubai International Humanitarian Aid & Development Conference - Empowering Communities: From Disaster to Development

(Dubai)

7-9 April 2009

Sessions will focus on topics such as building community resilience and capacity for disaster preparedness and response, climate change and the global food crisis:

how can communities prepare and respond?, and case studies of mitigation, preparedness and response to disasters and other emergencies at the community level urban and rural environments. For more information: http://www.dihad.org/about_dihad.php

American Planning Association National Planning Conference - Making great Communities Happen

(Minneapolis, USA)

25 April 2009

For more information and registration:

<http://www.planning.org/nationalconference/index.htm>

2nd International Conference on Landscape and Urban Horticulture 2009

(Bologna, Italy)

9-13 June 2009

The conference will explore the advances being made in a wide range of topics, among which plant management in urban environment, garden design and urban agriculture.

The conference will be hosted by the International Society for Horticultural Science (ISHS), and include food and flower production, urban horticulture meets architecture and the social and psychological role of horticulture in the urban

environment. For further information:
<http://www.luh2009.org>

ICLEI World Congress 2009, Connecting Leaders - Advancing Local Action for Sustainability

(Edmonton, Canada)

14-18 June 2009

The World Congress is the key gathering of ICLEI members, strategic partners and experts. The event will facilitate exchange and capacity-building among local governments and other stakeholders who play leading roles in the path towards sustainability. Registration will open soon, but you may visit: world.congress@iclei.org

Global Platform for Disaster Risk Reduction

(Geneva, Switzerland)

15-19 June 2009

The Global Platform for Disaster Risk Reduction is the main global forum on disaster risk reduction. The thematic focus of this event will be on poverty reduction and disasters. Specific plenary sessions will also assess the state of global disaster risk and progress made in the implementation of the Hyogo Framework for Action; identify critical actions to accelerate national and local implementation; and address community resilience. For more information:
<http://www.preventionweb.net/globalplatform>

5th Urban Research Symposium: Cities and Climate Change: Responding to an Urgent Agenda

(Marseille, France)

28-3- June, 2009

This symposium is held every two years and is part of a research programme conducted by the World Bank, and a large network of partners, which vary according to the theme. It allows researchers from developing and developed countries to present their work, and a voice to cities on issues that are important to them. More information will follow in the next UA magazine (See call for contributions):
<http://www.urs2009.net/>

IDRC International Disaster and Risk Conference

(Chengdu, China)

13-15 July 2009

Topics of this IDRC conference are amongst others: the Wenchuan earthquake response and the capacity building of integrated disaster reduction and mitigation; the implementation of the disaster mitigation strategy; climate change adaptation strategies; risk analysis, and disaster risk prevention. For more information: <http://www.idrc.net/cn/>

The Integration of Sustainable Agriculture and Rural Development in the Context of Climate Change, the Energy Crisis and Food Insecurity

(Agadir, Morocco)

12-14 November 2009

This conference aims to look critically at the ways in which research can be, and sometimes is, used to create change worldwide. Research results will be shared and future research prospects, challenges, issues and concerns discussed. Research projects and networks will be developed involving researchers from both developed and developing countries. The Faculty of Law, Economics and Social Sciences of Agadir and the North-South Center for Social Sciences (NRCS) Please visit <http://2009-international-conference.synthasite.com> or contact Conference.agadir@gmail.com

International Conference on the Global Food Crisis: Promises and Prospects of Urban and Periurban Agriculture

(Nairobi, Kenya)

2009/2010

A group of organisations that are involved in research and promotion of urban and periurban agriculture at the national, regional and global levels has proposed this international conference. They have formed a convenors' group, with representatives of Mazingira Institute (Kenya), Urban Harvest and University of Nairobi, linking to RUAF NAUPA (North America), and NRI (UK). More information on themes and exact dates will follow on the RUAF website.

XIII World Forestry Congress

(Buenos Aires, Argentina)

18-25 October 2009

This Congress focuses on the role of "Forest and Trees for Healthy Cities – Improving Livelihoods and Environment for All". The deadline for submission of abstracts for papers has passed. More information at: <http://www.wfc2009.org>



Little Sparrow Farm
 Photo: Martin Bailkey

We would like to receive your contributions or suggestions for the next issue of the UA Magazine

NO. 22: The role of urban agriculture in building resilient cities JUNE 2009

Please send us your contribution before: 15 MARCH 2009

In this issue of the UA-Magazine we will look into the role that urban agriculture can play in building resilient cities. We will collaborate in the development of this issue with the Center for Resilient Cities and the World Bank.

The number of people around the world who live in cities is increasing steadily. For the first time in history the percentage of population that lives in cities has passed the 50 percent mark. These cities are quickly becoming the principal spaces for planning and implementation of strategies that aim to eradicate hunger and poverty. Many cities cannot cope with the rapid population growth and face enormous challenges in creating sufficient employment; in providing basic services; and in planning and managing urban wastes and waste water. In many cities, unstable economic and political situations or natural hazards aggravate this condition of vulnerability, for instance the growing scarcity of water, rapidly rising food prices, and climate change.

Resilient cities are cities that can effectively operate and provide services under conditions of distress. Resilient cities can better absorb the type of shocks and stresses as identified above. Rather than focusing on vulnerability, a focus on resilience means putting emphasis on what can be done by a city or a community itself, building on existing natural, social, political, human, financial, and physical capital, while at the same time strengthening its capacities.

Urban agriculture can play a role in building more resilient cities. Growing food in cities reduces the dependency on (rural) food supplies, which can easily be affected by disrupted transport, armed conflicts, droughts or flooding and increasing food prices. Apart from enhancing food security and reducing the ecological footprint, urban agriculture can also play a role in city greening and water management. Green spaces contribute to economic (energy) savings, or controlling storm water flows.

We are interested to receive your articles and well-documented experiences regarding the role of urban agriculture in building resilient cities, for example:

- Cases and experiences that discuss threats to cities and that show the potentials and restrictions of urban agriculture to building more resilient cities;
- Cases and experiences that show the contribution of urban agriculture to combating the negative impacts of rapidly rising food prices;
- The impact of cities on climate change, as well as the impacts of climate change on cities, and the role of urban agriculture and greening in reducing these effects;
- The extent to which urban agriculture plays (or can play) a role in reducing the city's ecological footprint;
- The role of institutions and policies in meeting these challenges and building more resilient cities.

Please clarify in your article the concepts used, the relation with urban agriculture, and also present where these experiences were gained and the main actors, impacts, related costs, problems/challenges encountered and solutions found, the major lessons learned and recommendations for both practitioners and planners or policy makers.



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Urban Agriculture magazine

Urban Agriculture: Linking Relief, Rehabilitation and Development, a Role for Urban Agriculture?

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The RUAF Partners are

- *English-speaking West Africa:* IWMI-Ghana, International Water Management Institute, Accra, Ghana; email: o.cofie@cgiar.org; Website: www.iwmi.cgiar.org/africa/west_africa/projects/RUAFII-CFF.htm
- *East and Southern Africa:* MDPSA: Municipal Development Partnership, Harare, Zimbabwe; email: tmubvami@mdpafrica.org.zw; Website: http://www.mdpafrica.org.zw/ua_cffp.html
- *South and South East Asia:* IWMI-India, International Water Management Institute, Hyderabad, India; email: p.amerasinghe@cgiar.org; Website: <http://www.iwmi.cgiar.org/southasia/ruaf/about.html>
- *Latin America and UA Magazine in Spanish and Portuguese:* IPES Promoción del Desarrollo Sostenible, Lima Peru; email: au@ipes.org.pe; Website: www.ipes.org/au
- *French-speaking West Africa and UA Magazine in French:* IAGU Institut Africain de Gestion Urbaine, Dakar, Senegal; email: moussa@iagu.org; Magazine in French: <http://www.iagu.org/RUAF/index.html>
- *North Africa and Middle East and UA Magazine in Arabic:* AUB-ESDU: American University of Beirut, email: zm13@aub.edu.lb / ziadmoussa@yahoo.com; Website: www.urbanagriculture-mena.org
- *China and UA Magazine in Chinese:* IGSNRR Institute of Geographical Sciences and Natural Resource Research of the Chinese Academy of Sciences; email: caijm@igsnrr.ac.cn; Website: www.cnruaf.com.cn

Editors, No. 21

This issue was compiled by René van Veenhuizen (Responsible Editor), together with Femke Hoekstra of ETC and A. Adam-Bradford

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Next issues of the UA-Magazine

The following issues will be produced in 2009 and 2010 and your ideas and contributions of articles are already most welcome:

No. 23: Management of Nutrients (including recycling and use in urban agriculture) in the city:
November 2009

No. 24: Linking Urban Producers to Markets; Chain development for urban agricultural products:
May 2010

Articles on urban agriculture should consist of maximum 2000 words (three pages), 1200 words (two pages), or 600 words (one page), preferably accompanied by an abstract, a maximum of 5 references, figures and digital images or photographs of good quality (more than 300 dpi or in jpg format more than 1 Mb preferably). The articles should be written in a manner that is readily understood by a wide variety of stakeholders.

