



Swedish Society for Nature Conservation

Report

Will the food of the future be
grown between apartment
buildings?

Examples from Addis Ababa and Gothenburg.

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Foreword

In Gothenburg, Addis Ababa, Berlin, New York, Amsterdam, Vancouver, San Francisco, Mexico City, Kampala and Stockholm, tomatoes, lettuce, carrots, beetroot and other vegetables are being cultivated like never before. Chickens are pecking and scratching and pigs are rooting. We are seeing a growing interest in urban agriculture. Consumers are meeting growers, consumers are becoming growers, and the contribution to the supply of food for the city is increasing. Transport distances are short and the possibilities of getting fresh cut vegetables are attracting a lot of interest.

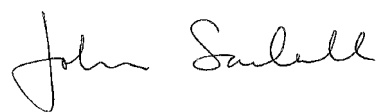
Urban agriculture is, and has been for a long time, a way to reduce vulnerability in towns and cities. The world is threatened by energy depletion, increased unemployment and unstable economies. Urban agriculture creates social networks, produces food and creates employment. Working the soil together increases people's sense of responsibility and engagement. Many want to contribute to sustainable development and see urban agriculture as an opportunity. Gardening is fun! That dry seeds can be put into the soil and transformed into tomatoes, carrots and spinach with the help of sun and water is a miracle.

Urban agriculture contributes to increased diversity as well. Fruit trees crowd with vegetables and spices, and in many urban gardens the bee population is increasing. Diversity improves the conditions for insect-eating birds to thrive, which many appreciate among other things because it keeps mosquitoes and flies down.

Urban farming, too, creates an ecological learning envi-

ronment where as well as cultivating, people learn about eco-system services, the importance of diversity, about their town and about politics. It gets people to care more about environmental issues which are important for the whole planet.

In this report from the Swedish Society for Nature Conservation " *Will the food of the future be grown between apartment buildings?*" we report from a number of urban agriculture initiatives in Addis Ababa and Gothenburg and discuss the opportunities and limitations of urban agriculture. Readers will meet Mahlet in Addis Ababa, who together with 21 other women has become a beekeeper and honey producer, and Masareth who has been involved with renovating one of the Addis hills, earlier covered with forest but cut down 15 years ago. The hill has now been transformed into a "woodland park" with trees and bushes and a recently-opened café. On the river bank in Addis, vegetable farming supports 241 families. Readers will come with us to the district of Högsbo in south-west Gothenburg where a lawn has been transformed to a garden and Orust hens (a local endangered breed) constitute a living gene bank. The group composts and cultivates without the help of fossil energy.



Johanna Sandahl

Vice-chairperson, the Swedish Society for Nature Conservation

1. Agriculture in cities?

In Amsterdam nowadays every primary school must have access to a kitchen garden. In Vancouver the mayor decided to cultivate the parks, and in San Francisco, greenhouses for vegetable production are planned for the middle of the city. Researchers from Columbia University, New York have put forward the concept of "vertical farming" - farming in skyscrapers where gigantic greenhouses will produce food for the local area. In England, a movement is growing through a simple web service (landshare.net) that connects those who want to grow with those who own abandoned city ground. The service has already over 60 000 users. In Gothenburg, the large housing cooperative HSB advertises how they have pigs root between the apartment buildings to prepare the land for tenants' vegetable gardens....

Is urban agriculture just a temporary fad or can it inform the design of sustainable cities for the future? What can we learn from developing countries where the unbroken tradition of urban agriculture makes a considerable contribution to food security?

FAO, the United Nations' Food and Agriculture Organization, has in recent years emphasized the importance of urban agriculture for food security in a world where nearly one billion people are suffering from hunger ([www.fao.org / urbanag](http://www.fao.org/urbanag)). Research from developing countries shows the staggering scope of urban agriculture: in East African cities it is estimated that between a quarter and a third of the population engage in urban agriculture (Lee-Smith, D., 2010). In the Tanzanian capital Dar es Salaam estimates show that about 90% of all leafy vegetables and 60% of all milk consumed in the city comes from urban agriculture. Senegal's capital Dakar is reported to be self-sufficient for 60% of its vegetables. Poultry production in Dakar provides over 65% of the national consumption. From Ghana's capital Accra a reported 90% of the fresh vegetables consumed in the city come from urban agriculture (Klemesu, 2000). What we are talking about here is not a vision but a reality. The question is what will happen in the long term with urban agriculture in these cities where ur-

banization is now taking place at record speed.

For the world as a whole, UNDP estimated in 1996 that about 800 million people were employed in urban agriculture, whereof 200 million produced for the market (Smit, 1996). Many have attempted to estimate the importance of urban agriculture for food security worldwide, but reports vary considerably. Estimates range from urban areas producing 25% of the world's total food to about 30% of the food consumed in cities. This wild flora of data must be understood in light of the definition and delimitation of urban agriculture being far from clear and unambiguous (Jemal, 2002).



Photo: Hillevi Helmfrid.

What is urban agriculture?

In Sweden, we probably think predominantly of urban agriculture as being vegetable production and talk more about urban gardening than urban farming. The international literature gives a broader definition. Urban agriculture includes forestry, aquaculture, livestock rearing and horticulture (cultivation of vegetables, medicinal plants, herbs and ornamentals) in urban areas. In poor countries, forests close to towns are important sources of firewood, and free grazing

livestock is a common feature of the urban landscape in many countries. Forestry and livestock rearing are thus important branches of urban agriculture in developing countries.

The main difficulty in finding a clear definition of urban agriculture relates to geographical demarcation. Many authors choose to speak of "urban" and "peri-urban" agriculture, where the urban area is the actual city while the peri-urban area is the boundary between city and country. The most impressive of the reported production figures generally include peri-urban areas. In rapidly growing cities in developing countries "peri-urban" areas may well have been countryside land that has recently been "engulfed" by the city. Urban farmers are in many cases traditional farmers who have suddenly found themselves to be in the city or on its outskirts. They have not made a conscious choice to farm in the city, but they can take advantage of the proximity to the market and the city can benefit from the supply of food. In a future perspective, it is uncertain who will win the fight for land as cities expand. Much of the literature on urban agriculture in developing countries strives to make decision-makers aware of the value of keeping food production in or near the city and to protect it against other land interests.

In practice, the term *urban agriculture* comprises many - totally different - elements: from balcony growers in the inner city to the farm that has been engulfed by an expanding city. It can include communal farms in residential areas, commercial farms, subsistence farming in backyards, mushroom growing in the basement, livestock on common land, planting trees along streams, orchards, parks, etc. Different authors define their own boundaries. Some study only shared land use, others only commercial production, some focus on small-scale subsistence farming, others study families whose "main occupation" is agriculture. Furthermore, there are no generally accepted definitions of what counts as an urban or peri-urban area. Consequently, estimates of the importance and potential of urban farming are difficult to compare.

Background and driving forces

Since 2007, more than half of the world's population lives in cities, and many of the world's fastest-growing cities have serious problems feeding their populations. In many developing countries the rates of growth of cities, and of urban poverty, are roughly the same. City industrial and service sectors are not able to absorb the large number of job seekers

who move there in the hope of finding a better life. Most rely on making a living in the informal sector that lacks a safety-net for illness, disability and old age. Poor households in these cities spend about two-thirds of their disposable income on food (FAO, 2008). For households with very low incomes, growing your own food can be a way to survive and improve your diet. Owning a sheep or a goat that feeds on grass growing by the road is a common life insurance for vulnerable households in African cities. Many developing countries also lack the infrastructure to transport food long distances. Therefore, vegetables, eggs and milk that are to be consumed fresh need to be produced close to the consumer, which is also widely the case in these countries.

In developed countries, food is transported in long cold-chains that provide the consumer with a wide range of food all year round. Food counters are always well-stocked and most people have enough money to buy the food they need. On average, only a small proportion of disposable income in developed countries is spent on food. In Sweden, the figure is as low as 12% (Råd och Rön 2012). The food we eat can be produced anywhere in the world without distance affecting its price. To operate this system, however, demands a lot of energy, not only for transportation, storage and industrial food processing but also in production where large-scale, input-intensive agriculture dominates. In developed countries, an awareness of the vulnerability of this system often lies behind urban agriculture initiatives. More and more people are realizing that food should be produced more locally for reasons of resources, environment and fairness. Many too, want to influence the quality of production and supply. A desire to cultivate the soil and a desire to contribute to a greener, more liveable, urban environment is also a common motivator. Producing food together in your neighbourhood can also develop a sense of community and be a way to express creativity and take responsibility for your closest surroundings.

The literature on urban agriculture often presents farming in cities as a global trend. In reality, the widespread practice long established in the large cities of the South and the new initiatives for urban agriculture in the North show considerable differences in terms of circumstances, motivations and perspectives. But there are similarities, too. Studying urban farming in two cities, Addis Ababa, Ethiopia and Gothenburg in Sweden, we can highlight the differences and similarities to give us a basis for a discussion of future prospects.

The NIB youth-association, Addis Ababa: Vegetables and fruit trees instead of garbage

On the north-western outskirts of Addis Ababa (Entoto Burat Dildij), over a period of six years, a group of young people have transformed a make-shift rubbish dump into a rich garden. The group calls itself NIB (The Honeybees' environmental protection association) and the members are all from the same school. Already when at school they formed an environmental club. Their inspiration came from an environmental education ISD offered at the school.

– When we were kids, there were many trees and even native species, says Lemma Mossisa, the co-operative's president. We wanted to make people aware of the importance of rehabilitating the environment.

The district officials agreed to lend a piece of "pocket land" (i.e. an unused area of land between buildings) to the youths, on condition that their association registered as a legal entity with purpose statement, statutes, etc. The process took a full year, and support from ISD was vital for its success. The land looked terrible. It was full of junk that people had thrown away. The area had a few hundred square meters of forest, but only with eucalyptus trees.

– We had been active in the environmental club at school. When we graduated from high school, I asked myself: What do I want to contribute to my local community? How can I help myself and my friends? It was the beginning of NIB, says the former president and founder Massai Aragi.



NIB President Lemma Mossisa gets questions every day from neighbours about farming. PHOTOS: Liv Edlund Helmfrid. ▼



▲ Massai Aragi, NIB's earlier president was offered a job with the local authorities thanks to NIB's successful environmental work.



UNEP delegates from all over Africa visited NIB for the ceremony where they planted a total of 300 seedlings of native tree species. Photo: ISD

Today, the co-operative has 14 members: two receive a small salary and the other volunteers participate on a rolling schedule. They grow vegetables and ornamental plants for sale and are setting up an orchard. Previously, they also farmed chickens and grew mushrooms.

In the small patch of forest which the group manages it is heartening to see how native species are coming back. Many come up by themselves from seeds that are still in the ground. The area is now fenced off to protect it from grazing animals. Some native tree species have been planted as well: 300 trees were planted under pomp and circumstance when NIB hosted UNEP's celebrations of the African Environment Day. The goal is to rehabilitate the forest as far as possible to its original condition and for the natural springs that existed in the area to once again begin to flow.

The young people in NIB are passionate about changing people's awareness of environment, health, poverty and gender equality and they have already won a number of awards for their work.

One of their most successful campaigns centered on the domestic tree species *Juniperus procera*, which was a regular feature of the forests that formerly covered large parts of Ethiopia. Today, less than 3% of the country is forested, of which a third is classified as natural forest with native tree species. The remaining forests are highly threatened. *Juniperus procera* is a hard wood and has many uses but farmers do not plant it as it grows slowly. Consequently, the species is threatened throughout the country. Further threats to the tree in recent years come from the fact that more and more Ethiopians are adopting the European custom of the Christmas tree and this tree is most similar to a Christmas tree. Through campaigns on radio and television the youth of NIB reached people throughout Ethiopia with the message of why it is important to let the Juniper grow and not cut it down. The campaign will return every year for Christmas. NIB also raises seedlings of native tree species that are donated or sold cheaply to people who want to do a good deed for the urban environment by planting trees.



A poster against using Juniper as a Christmas tree. A plastic tree is an option that many people choose, but NIB wants to show that the tree does not even belong to the Ethiopian Christmas tradition. Instead, images remind people of their own Christmas traditions.

Photo: Liv Edlund Helmfrid

Right now they are building a café. A future vision, partly realized already, is to make the site into a training centre. Almost daily, people from the neighbourhood come and ask questions about farming. Some of the members are also engaged as trainers and consultants and receive an income from it. These assignments involve giving courses in farming or beautifying a place with ornamental plants. In the future they intend to run a range of courses themselves, ones that ISD has developed and that they have participated in and found useful. They attended about 20 courses through ISD. In the beginning the courses covered personal development, leadership, entrepreneurship, group democracy and participation in development of business, stra-

tegy, finance and planning. Since then, they have also been trained and given training in ornamental gardening, vegetable gardening, mushroom cultivation and livestock breeding.

Yeshe Hareg, who has not yet completed high school, particularly appreciates the confidence she gains from participating in NIB. It is hoped that more and more of the members will be able to get an income from the co-operative. Enela Aseffa is happy for the opportunity he has been given in NIB to translate theoretical knowledge into practice. He has discovered that he likes to cook and looks forward to being able to work in the café when it is ready!



The café is built and will soon provide a job for one of the group members. Photo: Liv Edlund Helmfrid

NIB has gained very good reputation in the city district, which helps them get their environmental message across. Thanks to the progress achieved, Massai, the association's first president, has been recruited to work in the city district administration, where he continues to work on environmental issues. However, the pressure on the land is hard in Addis. Starting this year, the association must pay rent for the land they manage. So far, it is a modest sum but the city has warned that if incomes rise, so will the rent. The members perceive this as a threat because the income from the sale of vegetables and ornamentals is needed to fund public awareness raising and forest, land and water rehabilitation. After all, this is not a commercial enterprise.

The resident's group Hiwot & Wubet, western Addis Ababa: From clear-felled scrapheap to a park with a café

In the western part of Addis (Bethel, Kolfe Keranio), on a steep hill overlooking the river Akaki, is a group called "Hiwot & Wubet" which means "Life and Beauty". One of the members, Masaret Brehan, explains how it all started:

– About 15 years ago, this was forest. But the forest was cut down and more and more rubbish accumulated here. It was also a hangout for bad elements and we were four mothers who did not think it was a good place for our children to grow up close to. The idea to do something came from two men in the area, but we were four women who actually did something about it. We went to the district's Environmental Agency to ask if we could restore the site. They said yes. The place is now environmentally protected and we do not have to pay for it. It was also the Environmental Agency who told

us about the ISD, they have helped us a lot.

The four women managed to recruit members among their neighbours around the shared vision of a restored site. Despite everyone having difficulties with their own economies, members invested both voluntary work and money (a monthly fee goes to pay electricity and water). They removed all plastic junk, fenced in the area, took soil left over from construction nearby and tipped it on the site and the planting could begin. They focused on fast-growing trees and shrubs in order to quickly bring up vegetation on the site, mainly Thuja but also a special kind of Eucalyptus which is used for honey and as a medicinal plant. It was important for them that they could quickly show something was happening on the site, and that they really have made a positive change to their area

Masaret Brehan stands next to half-finished traditional hives made of bamboo. Photo: Hillevi Helmfrid.





▲ Courses have been held in grafting and management of apple and plum trees – varieties that can thrive in the cold climate at more than 2000 meters above sea level, if they get enough water during the dry season. Photo: Liv Edlund Helmfrid

Rainwater from a roof is collected in a tank to create a buffer during the dry season. Photo: Hillevi Helmfrid ▼



The group concentrated on planting fast-growing trees. It was important to quickly show an improvement on the site. Photo: Hillevi Helmfrid ▼



According to Ethiopian tradition, park trees and shrubs are planted to form various "rooms" of about 50-100m² framed by hedges to create both privacy and wind shelter for visitors. The vision is to build small gazebos in these spaces. The area is already well-appreciated by local residents as a place to visit and a café will open here any day soon.

A reservoir for rainwater collection has been built with money from the ISD. The water is used for apple trees planted on terraces on the slope and for the production of apple tree rootstock for sale. Vegetables are cultivated only during the rainy season. Additionally, they are starting beekeeping, which will create income for their members and demonstrate possibilities to the public.

The vision includes organizing children's activities at weekends. The group would also like to get better at communicating what they do in order to gain even more support from the residents. However, there is still no-one in the group good at using information technology.

2. Urban agriculture for survival

Nearly one billion people in the world are malnourished or starving. A quarter of them live in sub-Saharan Africa, which is the only region in the world that was unable to increase its food production per capita over the last 30 years (FAO, 2008). The 66% increase in production achieved in absolute terms was made possible by bringing new land into agricultural use (FAO, 2008). In Ethiopia this has mainly been at the expense of forest ecosystems which shrank from about 10% to less than 3% of the land area in four decades. Deforestation has led to increasing problems of recurrent drought, reduced water supply, increased erosion and an extensive loss of biodiversity. In some countries such as

Ethiopia, the number of hungry people has risen since the 1960s. FAO is concerned that the number of malnourished, hungry and in need of aid will increase in sub-Saharan Africa over the next ten years (FAO, 2008).

Poverty and food insecurity, previously seen as rural problems, are now also a growing urban concern (FAO, 2008). Countries where cities are currently growing the fastest belong also to the world's poorest, see tables 1 and 2. In Ethiopia for example, estimates show that the urban population will double between 2006 and 2020 (Duressa, 2007). In many cases, urban migration simply transfers poverty from rural to urban areas. Expansion of the indu-

Table 1: Africa's 10 fastest growing cities from 2005 to 2010.

AFRICA'S 10 FASTEST GROWING CITIES (2005-2010)			
City	2005-10* absolute growth (1000s)	City	2005-10* proportional growth (%)
Lagos, <i>Nigeria</i>	1,811	Abuja, <i>Nigeria</i>	51.7
Kinshasa, <i>Kongo</i>	1,648	Ouagadougou, <i>Burkina Faso</i>	43.7
Luanda, <i>Angola</i>	1,239	Luanda, <i>Angola</i>	35.0
Nairobi, <i>Kenya</i>	709	Lome, <i>Togo</i>	27.2
Abuja, <i>Nigeria</i>	680	Nairobi, <i>Kenya</i>	25.2
Dar es Salaam, <i>Tanzania</i>	669	Mbuji-Mayi, <i>Kongo</i>	25.0
Ouagadougou, <i>Burkina Faso</i>	581	Dar es Salaam, <i>Tanzania</i>	24.9
Abidjan, <i>Elfenbenskusten</i>	561	Bamako, <i>Mali</i>	24.1
Dakar, <i>Senegal</i>	429	Niamey, <i>Niger</i>	23.5
Alexandria, <i>Egypten</i>	414	Maputo, <i>Moçambique</i>	23.4

* Forecasts

Source: World Urbanisation Prospects. 2009 review, DESA, United Nations, New York, 2010.

Table 2: Forecast 2010-2020 (%). Africa's 10 fastest-growing cities.

AFRICA'S 10 FASTEST GROWING CITIES (2010-2020)			
City	2010-20* absolute growth (1000s)	City	2010-20* proportional growth (%)
Kinshasa, <i>Kongo</i>	4,034	Ouagadougou, <i>Burkina Faso</i>	81.0
Lagos, <i>Nigeria</i>	3,584	Niamey, <i>Niger</i>	56.7
Luanda, <i>Angola</i>	2,308	Kampala, <i>Uganda</i>	56.6
Dar es Salaam, <i>Tanzania</i>	1,754	Dar es Salaam, <i>Tanzania</i>	52.3
Nairobi, <i>Kenya</i>	1,669	Mbuji-Mayi, <i>Kongo</i>	50.0
Ouagadougou, <i>Burkina Faso</i>	1,548	Lubumbashi, <i>Kongo</i>	49.3
Kairo, <i>Egypten</i>	1,539	Abuja, <i>Nigeria</i>	49.2
Abidjan, <i>Elfenbenskusten</i>	1,375	Luanda, <i>Angola</i>	48.3
Kano, <i>Nigeria</i>	1,100	Bamako, <i>Mali</i>	47.9
Addis Ababa, <i>Etiopien</i>	1,051	Nairobi, <i>Kenya</i>	47.3

* Forecasts

Source: World Urbanisation Prospects. 2009 review, DESA, United Nations, New York, 2010.



The urban lifestyle means that more meals are eaten in the street. This leads to a less healthy diet, with an increased proportion of saturated fats, sugar and salt. Photo: Hillevi Helmfrid.

strial and service sectors cannot keep up with the rate of population expansion. Nor can urban planning, meaning living conditions are miserable for most of the residents, characterized by substandard housing, unsafe water supply, inadequate sanitation, pollution of air and water, poor waste management, insecure electricity supply and inadequate public transport.

The proportion of city dwellers suffering from malnutrition is growing as urban populations swell. In Ethiopia, 90% of the urban population gets insufficient food (in terms of the recommended energy intake per day). Furthermore, the urban lifestyle, with its long commutes, leaves less time for cooking at home which often leads to poorer eating habits (FAO, 2008).

Food insecurity in cities affects people at individual/household level and could be said to be mainly due to lack of purchasing power because in overall terms, cities do not lack food supplies. At the same time, food insecurity is present throughout sub-Saharan Africa, including Ethiopia, due to low total production combined with the large losses associated with harvesting, processing, transportation, storage and distribution. The shortfalls in food production nationally in those countries are made up with rapidly growing imports of mainly rice (FAO, 2008). Food insecurity

is thus on both the supply and demand side.

Urban agriculture can mitigate food insecurity for poor urban families in two ways: by production for direct consumption, which can improve their diet, and as a source of income for commercial production (Jemal, 2002).

In Ethiopia, like many other African countries, 80% of the population still live in rural areas which means that the absolute number of poor and hungry people remains highest in rural areas. However, the capital Addis Ababa, with over three million inhabitants, is one of the fastest growing cities in Africa (see table 2). In just a few years the city has changed character from a large sprawling village to a modern capital with multi-lane paved roads, flyovers, shopping malls and skyscrapers. However, most of the inhabitants still live - but not for long - in small houses made of mud and corrugated iron crammed together in ill-served unhygienic neighbourhoods constituting 'pocket slums'. Traditionally, relatives live together on the same plot, where each family has their own house. In recent decades, these plots have become more densely populated as new generations have arrived, and new houses have been needed in the limited space. Even rooms can be divided by flimsy partitions so that two or three families live within one room. Often, vegetable gardens have been sacrificed to make room for new houses, meaning



Addis Ababa is a city undergoing rapid change, where old and new stand side by side and water scarcity is constantly present. Photo: Hillevi Helmfrid.

fewer and fewer families now have the opportunity to grow their own food in their backyard.

Addis Ababa has entered the next phase of growth in population density. The authorities are tearing down houses to make way for tower blocks and blocks of five-story apartments called 'condominiums'. Relocated slum dwellers are offered apartments with subsidized cost with women headed single parent families given preference where local charities and non-governmental organizations step in to make the payments, but many are too poor to pay for such an apartment. It is unclear what happens to those who lose their homes and can not afford the apartment.

Addis Ababa, an example

Urban agriculture in Addis Ababa is widespread. The government estimates that 60% of the vegetables consumed in the city come from irrigated urban lots. Most of this food comes from the eleven producer cooperatives operating along the city's rivers (Gebre & Van Rooijen, 2009). One research report states that annually some 20 million litres of milk in Addis Ababa are produced and sold unpasteurized directly to consumers through home sales. 51,000 families in Addis Ababa depend directly on urban agriculture for their livelihood (Gittleman, 2009).

All income categories are represented in urban agricul-

ture. Vegetable farming predominates in the lower income groups and livestock production in the higher. The lower income groups are less likely to have access to land for their own use, but share it with others, for example in cooperatives, or use common land. The higher income groups use contracts because they often have their own land. Higher income groups also manage to achieve better profitability (Duressa, 2007). In recent decades there has been a shift in urban agriculture from backyard farming for self-sufficiency to small or medium-sized urban farms in the outskirts. Previously, it was common for poor people temporarily and informally to use land that otherwise lay idle. Today there is less and less of such land in the city which means that poor people's ability to supplement their diet through urban agriculture is decreasing. At the same time, new entrepreneurs from the middle class are getting involved in urban agriculture.

Soil and water

The land issue is central to the future of urban agriculture in all rapidly growing cities in the world. FAO particularly emphasizes the peri-urban area as strategically important to protect food production, noting that the right to use land is the most critical limitation for urban agriculture. In sub-Saharan Africa, currently 60-100% of fresh vegetables are

produced in urban and peri-urban areas, and many of these areas are at risk when agricultural land is converted to residential areas at a rapid pace.

In Ethiopia the state is the exclusive landowner and has the right to terminate a tenant contract when deciding to use the land for other purposes. Half of all urban farmers in Addis fear that they will lose their land in the near future (Duressa, 2007). Farmers with land use contracts may be offered new land outside the city. However, many do not have formal contracts. Some of the eleven established vegetable cooperatives, formed in the 1970s when land reform gave them access to arable land, are without formal leases. Authorities have refused to let them pay the recently introduced land lease fees because then they would have to draw up a formal contract with them. The authorities are now talking in terms of time-limited rights (Lemma, 2012). Some of the cooperatives have lost all or part of their land to road building and other construction. All of ENDA's farmers that previously leased land from the city have lost it. This has led to ENDA-Ethiopia (Environmental Development Action, see page 37) giving up the strategy of cultivation in groups. They have reverted to supporting individual backyard farming (Girmai, 2012).

Most people engaged in urban agriculture in Addis have lived in the same place for generations and have inherited land use rights from their parents. Recent arrivals of the



Thousands of small houses have been demolished to make way for apartment buildings. In the absence of any other solution a few families remain in temporary sheds. Photo: Hillevi Helmfrid.

rural poor generally lack opportunities to engage in urban agriculture because they do not have access to land (Duressa, 2007). The trend is that some better-off contractors who have access to land and seed capital are starting to play an increasingly important role in urban agriculture (Duressa, 2007; Gittleman, 2009). If this trend continues, urban agriculture will continue to play an important role in the city's economy with these businesses providing employment and access to fresh locally-produced food for consumers (Tefera, 2010). However, such a development will not alleviate the problems of the poor. The poor cannot afford to buy urban agriculture products; they need to be given the opportunity to become producers. A conscious policy decision to grant the poor access to land is a prerequisite for urban agriculture to be able to contribute to urban food security (Lee-Smith, D., 2010). In addition, poor urban farmers need access to advice and credit (Jemal, 2002).

The image of the future of urban agriculture in Addis Ababa is in many ways paradoxical. The city's expansion and efforts to create economic growth in the industrial and service sectors are now largely at the expense of the arable land of the best quality. For example, the area between Addis Ababa and the nearby town of Debre Zeit has been transformed from farmland into an industrial area in just a few years, forcing many peri-urban farmers from their land.

As backyards are becoming more cramped and green areas are built on, less land is available for farming in cities affecting vegetable growers who are in most cases poor or very poor. At the same time, the authorities are starting projects to engage young people in urban agriculture to create a livelihood for them. The model currently being put forward is milk and egg production in custom-built housing. This does not require much space because the fodder and feed is transported in from the countryside (Lemma, 2012; Gittleman, 2009). In addition to creating jobs, consumers can get fresh eggs and fresh milk with minimal transportation. This is however at the price of fodder transport and broken nutrient cycles. Manure from livestock is not, because of the distances involved, returned back to the land where the fodder is produced. However, it is sold to producers of vegetables or ornamental plants.

Another limiting factor for urban agriculture is Addis Ababa's water supply. Several rivers flow from the mountains in the north, crossing the city to join together in the Akaki River in the southeast. Vegetable cultivation takes place traditionally along these rivers and river water is used

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The women's co-operative Habret Har Til*, eastern Addis Ababa: Their vision brought them crops, chickens and honey

* meaning 'silk woven together'

In the eastern part of Addis, by the river Kabana, a group of women created a garden from "nothing":

– The background is that there are few job opportunities here, says 24 year-old Mahlet Abraham, chairman of the group. It started five years ago when my mother heard about silk production. We were several women who were interested. The district agricultural advisors advised us to organize ourselves in a group, so we did. We were ten women, three young and seven older. In the beginning everyone was so happy and hopeful. We did not think that it could also be difficult to work together.



Mahlet chairman of the women's co-operative. Photo: Liv Edlund Helmfrid

To produce silk you need land to grow the mulberry trees that silkworms feed on. No-one in the group had their own land, so they put in a request to the city district officials. They were offered a plot of land that several other groups had already turned down. It was littered with rubbish, rocky and sloped down straight into the Kabana River. But the women didn't have any alternative and accepted it. Each member paid a considerable amount (equivalent to one or two month's salary) to a company that would transport soil to the site. It took six months and 150 truck-loads of soil get the site in order so they could start planting mulberry trees.

– After working together for a while, there was friction. Some did a good job, others were careless. In the end, five members dropped out and we had to exclude one member according to the statutes. Then there was just me, my mom and another mom and her daughter left. The district administration said in order to keep the land, we had to recruit new members. We did that and it was not difficult. Now we are 14.

But the group ran into more difficulties. The mulberry trees died of drought, so they were forced to abandon silk production and cultivate something else. After having planted 28 fruit trees, of which only one survived and the carrots grew misshapen, they began to suspect that something was wrong with the soil. Strangely enough, none of the advisors who had been on the site noticed that the compacted excavated material was devoid of nutrients and water-holding capacity. What they had got was hardly topsoil.

– We planted new apple trees. When we dug huge holes for them and filled them with compost, the trees did better, says Mahlet.

– We have contacted a truck company that will bring us new topsoil. It comes from a wooded area on the outskirts of Addis where a developer will build. I have visited many building sites and taken soil samples for analysis. I know



When the apple trees were given plenty of compost they fared better, but they need regular watering and supervision during the dry season. Photo: Liv Edlund Helmfrid.



Figure 1: Many important medicines, including some for malaria, can be extracted from *Artemisia Annua*. Photos: Liv Edlund Helmfrid

Figure 2: Soon time to gather the honey. The group gets three harvests a year and the honey is in principle already sold before it is extracted.

Figure 3: Abozench Mengsta likes to work with vegetables. She has come to the project because she has no source of income. Photo: Hillevi Helmfrid

this time it will be good soil.

Mahlet herself would most of all like to get involved with medicinal plants. But even there, they were unlucky. Of the ten kinds of plants that they got in conjunction with a training course, half died. Mahlet is planning to get new plants and look after them better when the new topsoil is in place.

Some vegetables, including potatoes, chard, garlic, chili and onion gave good harvests despite poor soil and there has never been a problem with distribution. Members who help with harvesting, planting and cleaning, may take vegetables home in proportion to their effort. The rest is sold directly to neighbours, like the honey which is more or less sold even before extraction, which takes place three times a year. A member runs a small shop where the group's products are also sold. Mahlet says neighbours are generally very positive and appreciative that their products are of good quality and produced without chemical fertilizers and pesticides.

– In the beginning when we came here and started cleaning the place up, neighbours came and helped. They did not think we women could do such heavy work alone, she says, smiling.

With support from ISD they built a chicken coop where they kept two lots of laying hens. The eggs have provided a substantial income that has made it possible to buy beehives, build a simple meeting room and an office in corrugated iron, get a water connection and pay a guard. Right now, the hen house plot is empty, awaiting new hens. The group applied for a state microfinance loan to expand from 50 to 250 chickens, but when the credit finally arrived the chickens they had ordered were already sold. There is a lack of high yield laying hens in Ethiopia and the queue to buy is long. The group missed the income that the eggs had given and the district agricultural department advised the group to get sheep instead and even dairy cows were tried. However, all fodder needed to be purchased and there was no profit in it so they soon stopped it.

– There are huge differences in the advice you get, says Mahlet. The district agriculture department says that they provide training, but it is not real training. We do not learn what we needed. ISD is a completely different matter. Their training is comprehensive and if we run into any problems, ISD contacts the research community therefore they are in contact with experts. They have helped us with the bees and chickens and it has worked very well.

The group is now pinning their hopes on the new chickens. They will rehire two members who will receive an income for looking after them. The goal was to create jobs but it has been five years of mostly volunteer work for the members.

– My goal right now is to build this place up, says Mahlet. In the future we will also be able to make money, but it takes time.

Mahlet resigned as a waitress at a large hotel in Addis and left a secure job behind to work on building up the co-operative. She says her family, consisting of her mother and four siblings, now live on very little because her big sister's salary is the only income in the family after Mahlet left her work at the hotel.

– It was a difficult decision to make. But I am a visionary, I believe in this. I have been encouraged by Alex at ISD to believe in myself and this project gives me much more than waitressing. We worked 24 hours and were free 24 hours. But I couldn't both study and work hours like that. I wanted to develop myself. Mahlet is currently attending a course in human relations, paid for by ISD. She has her sights set on becoming as good as she can be at leading women's groups. Members of the group all come from poor backgrounds, but they have different educational levels ranging from illiterate to university level. It is an extra challenge to create equal participation in such a mixed group.

– Experience has taught me that it is really not easy to lead groups. I want to learn how to do it in order to continue to build this project.

Women's group Tsinat, Bethel in west Addis Ababa: Restaurant and catering with own-grown vegetables

In western Addis Ababa (Bethel), the co-operative Tsinat (meaning strong / brave) runs a breakfast and lunch restaurant. The co-operative has nine members, all women. They started the restaurant to give their members a source of income and initially they baked traditional ceremonial bread for delivery fresh to customers. This developed into a catering and restaurant business. Inspired by ISD, the women in Tsinat started to grow their own vegetables for the restaurant. Three members at a time currently work on a rolling schedule. Shiulaye Tamirat, president of the co-operative, shows us the vegetable plots in front of the restaurant.

– Cattle came in there last night, Shiulaye points out: see how they destroyed our crops!

Seedlings of lettuce, chard and leeks are badly damaged by the grazing animals, while the carrot and cabbage plants that are under sunscreens of braided grass fare better. Now the fences have been mended again. Shiulaye shows a pic-

ture of the first harvest they received in 2007, which was really impressive.

– We did not get high a yield this year because we did not add any compost last year. The difference really shows, she says, adding that this year they have applied compost.

The compost is produced in a 1.5 metre-deep pit in the ground. All garden waste ends up here. Waste water from the kitchen is also taken advantage of and poured in. The group waters crops with water taken from a private well that ISD helped finance. In this way it is possible to grow even during the dry season when vegetables are expensive.

By serving the vegetables in the restaurant the women can get more value out of their vegetable growing. The women of Tsinat are really good at cooking. They serve a variety of vegetable sauces with the traditional sourdough pancake (ingera) and the restaurant quickly fills with lunch guests from nearby workplaces.

Shiulaye shows us a picture of the impressive first harvest in of 2007. Photo: Liv Edlund Helmfrid.





Vegetable bed with sunscreen of straw for seedlings.
Photo: Liv Edlund Helmfrid.

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for irrigation during the dry season. However, the rivers have become increasingly contaminated by household sewage, solid waste, wastewater from car washes and gas stations, stormwater, and wastewater from factories, which are also traditionally located along the river banks. Measurements from the Environmental Protection Agency of Addis Ababa on river water and vegetables show a high incidence of E-coli bacteria and the vegetables contain elevated levels of some heavy metals, such as zinc, mercury and cadmium. Polluted river water is also used to wash vegetables before sale (Gebre & Van Rooijen, 2009.)

Urbanization alters the water cycle, groundwater levels and surface water flows. The increasing proportion of the city's surfaces that are paved means that less rain water can infiltrate into land in the urban areas. This leads to higher water levels in the rivers during the rainy season which floods the adjacent farmland and renders it unusable for a large proportion of the year. Vegetable growers in these areas can only grow during the dry season which has caused a decline from three harvests per year to just one (Firke, 2012).

Access to water is critical to the profitability of vegetable cultivation. Purifying river water in a filter bed before use is an option advocated by the local environmental agency, which has also built a demonstration plant. However, no producer has hitherto been prepared to finance the construction of such a facility. Since users do not own the land, they cannot be sure to be able to recoup such a large investment.

Watering with tap water is an option that some choose, mainly the groups that are associated with organizations that can offer grants for the purpose. However, there is a lack of tap water in the rapidly growing city which leads to rationing by lowering the pressure in the lines at certain times of day. Often there is no water in the taps in the daytime, only at night. In order to have access to water during the day, households are forced to store water in their water tanks. Addis is a hilly city and those who live high up have less access to water than those living lower down. One of the groups supported by the ISD only gets water in the faucet once a week so they have given up gardening during the dry season.

In ENDA's efforts to encourage backyard farming they teach how household water can be utilized for irrigation on a really small scale. Users in the project always put a bowl under the tap to capture water from hand washing, dishwashing, etc. For the really poor, this procedure means they can grow some vegetables during the dry season, which would

otherwise be unthinkable because of the cost of tap water.

Contaminated land is a known problem for urban agriculture in Sweden and many other industrialized countries. In Addis Ababa, this problem has not been given any attention; it may well be insignificant as the country is only now being industrialized. Many of the urban agricultural projects are located on former informal waste dumps, areas where people threw rubbish even if this was not allowed. For the most part, this debris so far has consisted of plastic bags that could be collected - and organic matter. Due to the rapidly increasing imports of consumer goods in recent years, this picture may change soon since waste management is poor and organized sorting of electronics, batteries, plastics and hazardous waste is nonexistent.

Untapped opportunities

One benefit of urban agriculture often cited is that it recycles nutrients locally. In Addis Ababa, this is done to a limited extent. Human waste from toilets and kitchens is not taken care of but discharged largely into the city's waterways. Water closets are status symbols and are included in all new constructions. Urine separation is not even discussed. The ventilated dry toilets that have recently been built in poor neighbourhoods where people do not have private toilets are in many cases not even designed to be emptied. Households mix organic waste with other waste, including hazardous waste, and it is taken to the landfill. The local environmental agency is conducting an experiment in a residential area with sorting at household level, where compostable waste is separated from other waste and composted at a municipal facility. The experiment is working very well, but has not yet been scaled up (Gebre, 2012).

For urban agriculture to fulfil its potential to recycle nutrients to any large extent, a radical paradigm shift in wastewater and waste management needs to be made. On a small scale, however, recycling is happening today in many cases in an efficient way out of pure necessity. The urban farmers that themselves have both livestock and crop production use animal manure in crops and crop residues as fodder, while the more specialized vegetable and ornamental plant growers often use chemical fertilizers (Jemal, 2002). Cow manure is also largely recovered and formed into flat cakes which are used as fuel not only by the farmers but are also sold in the city. ENDA has started a project for the composting of vegetable waste at the city's biggest vegetable



The flat farmland along the rivers gets flooded during the rainy season and becomes unusable. Photo: Liv Edlund Helmfrid.

market. ENDA and ISD teach composting as a core competence in their courses as both of them are completely directed towards organic farming.

The kind of urban agriculture that the authorities now advocate, with cattle in stalls supplied with fodder from the countryside, will create yet another linear flow of nutrients unless initiatives are started to cooperate with growers for the recycling of manure.

Social mobilization and ecosystem rehabilitation

Urban agriculture can play an important role in food production, but it is about more than just producing food. Growing your own food and growing together with others can have an impact on self-esteem, entrepreneurial development and social mobilization. The social capital that is generated when people come together around urban agriculture has benefits far beyond the actual food that is produced. People gain experience of working together, to orga-

nize themselves and take initiatives that can be applied in other areas. Urban agriculture can be a way of empowering weak groups. This perspective is a point of departure for the organizations, such as ISD and ENDA, working to promote urban agriculture in Addis.

In many of the groups collaborating with ISD the members are driven by a strong commitment to the environment. Ecosystem rehabilitation and willingness to contribute to a greener, more beautiful, healthier, more diverse and more life-friendly local community is a powerful motivator for many, besides production of food.

There are many good examples of projects that combine (1) social and personal development (2) eco-system rehabilitation and dissemination of environmental awareness, with (3) production and income generation. But this sort of urban agriculture will not happen by itself. Advice and encouragement are needed. There are also a number of obstacles, more or less structural, that need to be overcome.



Cow manure is formed into flat cakes to be used as fuel, not only for own use but also for sale in the city. Photo: Liv Edlund Helmfriid.

Barriers and difficulties

Producing food in the urban environment is not unproblematic. Polluted land, water and air can affect food quality negatively and the producers themselves cannot affect these factors. Thefts are common. Costs for fencing and 24-hour guards are heavy expenses for urban producers. The big question, however, is land access. These structural barriers also relate to different views of development.

Two different development paradigms

Is it reasonable to give over space to agriculture in a city? Should all agriculture not be in the countryside? This question is as relevant in the South as in the North. Put simply, there are two different paradigms for urban development.

According to the one view, we should consider increasing population densities in cities as much as possible so that the technical infrastructure can be used at maximum efficiency.

If many people and businesses are in a small area then the energy used for heating, transport and other services can be lower per person compared with more scattered settlements (Wiklund, 2011).

According to the other view, the city is an ecosystem whose health depends on a healthy green structure which is important for biodiversity, the micro-climate, air quality and aesthetics. The goal of this approach is to strike a balance between population density and healthy functioning. In this city, space is needed to better recycle nutrients and also to produce food. People are not only seen as wage earners and consumers. Residents may also want (or need for their survival) to produce and "landscape" the city and this requires space. In cases where the city is built on good arable land, which is not uncommon, there will also be a resource argument to use a certain portion of the land for cultivation. This is relevant for North and South alike (Jarlöv, 2008).

What is exceptional with a country like Ethiopia is that a large proportion of the population is food insecure. The country's total food production is too low at the same time as the number of poor and food insecure in urban areas is increasing. The major challenge in a country like Ethiopia is to find how to increase food production without claiming more land. Urban agriculture with intensive methods, where much is produced in a small area, could play an important role in this aspect.

However, urban development cannot be seen in isolation from development in the country as a whole. Parallel with facilitating urban agriculture, measures are needed to make it possible for people to stay in rural areas and small towns. In Ethiopia, as in many African countries, there is a strong imbalance in that only the capital city can provide a reasonable range of cultural, educational, health care and other services. For sound regional and rural development it is important to get to grips with the "push factors" behind growing urban poverty, i.e. the factors that force people to leave the countryside.

Today's development in Ethiopian cities, where the poor are losing access to land, can create huge problems. There are many historical examples of urban agriculture increasing in difficult times, where the possibility to grow food in cities has been vital for the survival of the poor. This possibility cannot be compensated by other, more affluent groups being given the opportunity to produce food in the city.



Keeping animals for small-scale meat and dairy production is common in multi-million city Addis Ababa. Hay is purchased from farmers outside city. Photo: Liv Edlund Helmfrid.

ENDA Ethiopia, Addis Ababa: Backyard farming for building community and making a living

The organization ENDA Ethiopia works to encourage small-scale backyard farming.

– Urban Agriculture is a social project, says Azeb Girmai from ENDA, whose activities include helping HIV-infected women to get started with gardening. One of these women is Negisti Zeleke who already earlier used to grow ornamental plants. Through the project she has now got herself five chickens and started growing vegetables both for consumption and sale. Water is the limiting factor in the dry season but ENDA teaches how to take advantage of waste water

from households and how to water with it. They also teach composting and how to grow in very small spaces, in pots and recycled containers.

– I am so happy for my garden. I talk to the chickens and the vegetables. I usually tell them that I will be back soon, says Negisti smiling. Her previous job was to sew and embroider designs on traditional dresses but at 50 years of age her vision has deteriorated and she cannot sew like she could before.

– Gardening is something completely different; it gives

Swiss Chards. Photo: Liv Edlund Helmfrid





Negisti gets peace of mind from growing vegetables.



Container gardening in old tins, buckets and bunkers... not even a garden plot is needed to grow vegetables.



Eggs are nutritious and can give cash income.



Adanesch with her daughter.



Waste water from washing up and laundry is collected and used to water the garden.



Swiss Chards growing at Adanesch's. Photo: ENDA.

me peace of mind. Sewing is tiring for the eyes and often under time pressure. Now I don't get stressed, says Negisti. Thanks to the project she is a member of a savings circle along with 23 other women who also got chickens through the project. Savings circle rules require that they save the income from two eggs per month. Slowly but surely the women build a shared capital that members can borrow from as the need arises. At the same time, the women are cultivating fellowship and solidarity, breaking the loneliness that often results from a HIV diagnosis. The vision is for the group to get a larger piece of land that they can cultivate together.

Vegetable farming not only provides a welcome extra income. It has also been shown to have positive effects on health.

– Research conducted within the project shows that test results improve in HIV-positive patients who started to grow and eat vegetables! says Azeb Girmai.

Adanesch Motbainor and her fifteen year-old daughter belong to one of these highly vulnerable households that survive thanks to the vegetable garden. An eight square-meter vegetable patch and five hens are sufficient both for their own consumption and for sale. The land they use is the innermost corner of the family's property, the backyard of the backyard, so to speak. The plot is located there because

the family doesn't want to come in contact with Adanesch, who is HIV-infected. Her chickens are with a woman who is a member of the savings circle, because the relatives of Adanesch would not allow her to have them in the yard.

Adanesch shows off her very well-kept vegetable garden. Again, we see recycled household water in tubs for irrigation and a small pit for compost that Adanesch says will be completed in 21 days.

– That it is possible to survive on such small scale farming is somewhat of a miracle, yet the psychosocial lift that urban agriculture can provide is perhaps the most important, explains Azeb Girmai our interpreter from ENDA. Being able to produce your own food brings back self-esteem and it is especially important for those with HIV who not only suffer from sickness and poverty, but also from society's stigma. Besides urban agriculture, Adanesch gets temporary income from washing clothes for other people, but no regular income. Still, Adanesch works as a volunteer to help others with HIV, for example, to encourage people to get themselves tested and take anti-retroviral drugs. Sometimes she meets those who are so sick that they and their children are starving. She then shares with them what she has from her eight square meters!

Furie Sarise Vegetable Co-operative, Gofa, south Addis Ababa: Leafy vegetables on the river bank provide an income for 241 families

Following the 1974 revolution all land in Ethiopia was nationalized. As part of the campaign "land to those who plough" the state gave poor backyard growers the opportunity to expand their vegetable production by joining one of the many co-operatives that formed. One of these co-operatives is located in Gofa in the south of Addis Ababa.

– The land previously belonged to a Greek private person who left the country when the revolution happened, says Dender Firke, who has grown up, lived and worked in this place all his life.



"I'm 60, but still strong, because I eat vegetables," says Dender Firke who has lived and worked here all his life. Photo: Liv Edlund Helmfrid



The co-operative has currently 241 members and supports as many families. Membership is inherited by children from their parents. Recently, they had to give up a portion of their land for road and bridge construction, but Dender is not concerned about losing the rest of the land because it is designated as a green area. Otherwise, it is a real concern held by many of the other co-operatives located in more strategic areas for the city's expansion.

The Co-operative's members live on the higher slope located alongside the river. The cultivated area is located on the flat river bank and looks like a kilometres-long green sea

of mixed-cropped kale, Swiss chards and lettuce.

– We only grow leafy vegetables, says Dender Firke. That gives most income. Throughout the whole of the dry season we just harvest, leaving the plants to grow new leaves. We let others grow carrots and other less profitable crops, he says, smiling.

Despite the absence of crop rotation he sees no problems with crop rotation diseases. He also tells that they do not use pesticides.

During his 60 years Dender has seen many changes.

– In the past, we had three crops a year, but now we can only have one because of the severe flooding in the rainy season. He believes the floods are due to the increased proportion of hard, impervious surfaces in the city.

By irrigating with river water, it's possible to produce in the dry season, when vegetable prices are highest. This production gives a good and stable income. The members of the co-operative can even afford to hire staff for the hard work like hand tilling. Irrigation is done by leading the river water in channels between the beds, and nutrients are plentiful in the river water. It is all green and lush.

Dender is worried about getting criticised for using the polluted river water. Recently, this problem has attracted the attention of the Environmental Agency, and instead of action being taken by the authorities to reduce pollution of the river water, farmers have felt that both consumers and authorities are directing blame at them.

One stumbling block for the co-operative is distribution and marketing. It is a long way to the large vegetable market between the Merkato and Piassa in the north-western part of the city and the co-operative owns no transport facilities. A portion of the proceeds therefore goes into the pockets of buyers, which bothers Dender. The ideal would be to have their own shop adjacent to the farm, but there is no land to build on. Similar problems are experienced by other co-operatives.



A domestic variety of kale and common Swiss chard dominate with patches of lettuce when the vegetable co-operative chooses to only grow vegetables that provide the greatest net income.

3. Key issues for the development of urban agriculture

Efforts to increase food security should be a high priority in areas where malnutrition occurs. Food security, however, is a complex concept. It is partly about production and partly about distribution to obtain adequate amounts of food and an infrastructure that enables the food to reach those who need it. Equally crucial is purchasing power so that those who do not produce their own food can afford to buy it. A third aspect of food security is all about food variety and quality, that it fulfils needs both from a cultural and health perspective. The fourth aspect is about vulnerability and the long term sustainability of the food chain (Lemma, 2012).

The issue of food security is not only relevant in poor countries. More and more people are realizing that developed countries are vulnerable too. In a world of rising energy prices it can be difficult for developed countries to maintain their current input- and transportation-intensive food system. When oil supplies to Cuba stopped in conjunction with the disintegration of the Soviet Union, the food and transport sectors were the hardest hit. Acute food shortages occurred. Something similar could affect many countries if energy prices suddenly skyrocketed as a result of increasing oil scarcity in combination with oil exporting countries' decision to use a greater proportion of the oil remaining in their own countries.

Against this background, more and more are advocating the re-localization of food production. There is also a growing awareness that this entails not just a purely spatial re-localization but also regaining control over how food is produced. Countries where large-scale production has developed the furthest and where its drawbacks are becoming most obvious (like the U.S.) are seeing the biggest alternative trend. These initiatives include local production, a shift to quality and environmental focus and new, creative, local forms of cooperation (like Community Supported Agriculture) to establish more sustainable systems. Urban agriculture is a natural element among these strategies to develop a more reliable, resource-efficient, multi-functional food production. Multi-functional in the sense that urban

food production fulfils several more functions, such as maintaining a greener urban environment, stimulating social interaction and transferring important survival knowledge to the next generation. Starting to learn to produce your own food is a concrete step that is not too hard to take and that is meaningful, exciting and stimulating for many people who want to contribute to the transition to a sustainable society.

There are clear differences in the driving forces and pre-conditions for urban agriculture in the North and South, as well as similarities. In the South, urban agriculture is often an unbroken tradition. In the case of Addis Ababa the city has, until recently, looked like a vast sprawling village, with a good supply of land for urban agriculture and where circumstances have forced many to produce food for their own consumption and sale. Currently, the situation is changing dramatically. Apartment buildings are an increasingly common type of housing, breaking the tradition of a lifestyle close to ground level. City growth in all directions, including increasing population density, leaves less and less land available to those who want to do urban farming. The need remains, however, both for food and income. When housing is stacked vertically it should theoretically be possible to free space in the city for allotments adjacent to the newly constructed high-rises. This does not happen in Addis Ababa.

Cities of the North have generally been thoroughly planned. In Sweden, city agriculture has historically been allocated land in the form of allotments and gardens of detached houses. The opportunities to engage in livestock production in the city, however, are strongly limited by health care legislation. Access to coal, oil, gas and electricity has made the need for urban forests for firewood-gathering nonexistent for ages. Against this background, there is of course considerable media interest when apartment dwellers in Gothenburg fence off a lawn and let pigs prepare the land so they can grow vegetables together. The contrast with what has been accepted up to now is so great that urban agriculture now appears trendy and daring. Forward-looking cities

in rich countries are preparing space for urban agriculture, at least as long as it is limited to a small area. No similar aura of trendiness surrounds urban agriculture in developing countries, where modernity is rather associated with a movement away from the land. This attitude presents a significant barrier to the development of urban agriculture there.

Despite the differences, there are many similarities between urban agriculture in the South and the North. Even if the direct need for survival is a strong driving force for urban agriculture in Addis Ababa in a way that cannot be compared with the situation in Sweden, most of the drivers of urban agriculture in the North are also found in the South. Just like in Gothenburg, groups are formed in Addis Ababa with social visions for urban agriculture. Much effort is spent on developing forms of fruitful cooperation where income and social environment could go hand in hand. Working in groups is just as challenging, as difficult to master and as rewarding in the North and the South. The issues of 'grassroots' reclaiming resources and increased control over their own lives, giving disadvantaged groups a chance and building models for local development occur in both countries. In Addis Ababa many urban farmers are driven, like their colleagues in the Swedish cities, by a vision of a greener city. They are not only focused on producing food but also want to bring about an improved environment and are using urban agriculture as a tool for learning more about

ecology and disseminating ecological awareness to the other inhabitants in the city.

The advantages of urban agriculture are easy to see. But there are also doubts and questions. Proponents of urban farming tend to emphasize the following:

- fresher food
- ability to recycle nutrients through composting
- reduced transport
- greener cities with increased biodiversity and improved micro-climate
- adapted cropping systems with high production in a small space
- survival strategy for vulnerable households
- job opportunities in small and medium enterprises
- opportunity to be involved in food production
- possibility to produce food that are not available in stores
- closer contact between producer and consumer
- a way to build a sense of community and empowerment in residential areas
- exercise, recreation and "healthy fun"

The following objections are usually raised against urban agriculture:

- risk of poor food quality because of polluted land, water and air

Visitors are encouraged to not feed the pigs, but to leave their leftovers in a special container instead. Silverkällan, Gothenburg. Photo: Liv Edlund Helmfrid.



- risk of sanitary problems with livestock in cities
- urban land should be used for more profitable purposes
- a sparse urban fabric (which provides space for cultivation) requires more energy for transportation and other infrastructure than a population-dense one.

The above points can be used as an urban planning checklist to help avoid disadvantages and increase benefits when planning in general or planning a particular initiative.

It is important to note that urban agriculture in no way replaces conventional agriculture; it rather complements farming in the countryside. What should, then, be produced in the city and what makes most sense to produce in the country?

One principle could be to only produce that which is high value and can be grown in a small area. Another principle is that fresh produce for direct consumption should be produced close to the consumers. To use the city's unused spaces such as roofs and facades for food is an interesting and innovative way to combine the pursuit of dense cities with food close to consumers. Rapid development in this area is going on in many industrialized countries (examples include roof-top gardening and vertical gardening).

In Addis Ababa eggs, milk, meat, and fresh leafy vegetables are produced in the city and its immediate surroundings on a completely different scale than in Sweden. The short distance to the consumer means products have no time to deteriorate in quality despite the absence of refrigeration. From a Swedish perspective, this may be surprising. Livestock production is normally an area-consuming activity and should therefore not fit in the city. In Ethiopia it is made possible by having the fodder largely produced in the countryside. They have thus replaced the transport of sensitive milk with the transport of hay and grain, which can be transported and stored without refrigeration. One challenge is to recycle nutrients back to the fields.

Leafy greens provide a relatively high value product per unit area and are generally consumed fresh. This indicates that leafy vegetables can maximize the benefits of urban agriculture. However, the increasing pollution of land and water in the urban environment brings this into question as leafy vegetables are masters at absorbing heavy metals and other toxins. These problems are present both in the North and the South. In Addis Ababa, consumption of lettuce and other vegetables that are eaten raw is put into question when river water with high levels of E-coli bacteria is used for irrigation.

One idea that is increasingly propagated by urban farming groups in Sweden is that contaminated urban land is a fact that we need to address. Farming groups in Malmö and Gothenburg have initiated research and development work to develop methods to clean contaminated soil using organic methods. Indirectly, interest in urban agriculture can at best raise awareness of the values at stake when soil and water are polluted, and ultimately contribute to greater environmental protection. It is unreasonable, as often happens in Addis Ababa, to blame vegetable growers for the city's polluted rivers. Farming has a long traditions going back to the time when river water was potable. Responsibility for the quality of river water should be on the authorities, not the growers.

An interesting shift in perspective would be not to see contaminated land as an argument against food production in cities, but to see urban agriculture as an argument for restoration and protection of land, water and air, from pollution. Urban farming has the potential to increase awareness of our dependence on the elements and can foster ecological awareness both rationally and emotionally. With this opening, urban agriculture can potentially become a strong transition movement in the North as well as in the South.

The extent to which urban agriculture in industrialized countries will contribute to food production in the future depends partly on how the price relationship between work and energy develops over the next few decades. In the South, the fate of the poor depends primarily on their access to land and water; a human right that appears to be increasingly threatened.

Diana Lee Smith, a researcher and founder of the independent research institute Mazingira in Nairobi, Kenya, summarizes 30 years of research on the relationship between urban agriculture and food security in Africa as follows:

"Allowing urban agriculture is a requirement of the Right to Food. That is, the minimum obligation of central and local governments under international human rights instruments is not to prevent people from providing themselves with food essential for their survival, and to protect them against others who would stop them. Of course, governments may go further, promoting and fulfilling the Right to Food by ensuring marginalized groups have the means to provide themselves with food – mainly land – and by providing extension services so that food is produced in a healthy way." (Lee-Smith, D., 2010.)



Green Culture, Högsbo, Gothenburg: Pigs and hens live happily between the apartment buildings

Between some of the apartment buildings in the district of Högsbo in south-west Gothenburg a lawn has been transformed into an urban farming area. This has been made possible by collaboration between public housing - Familjebostäder the Högsbo Parish, the parks and nature department of Gothenburg city, the district administration of Högsbo and the consulting firm Stadsjord (which roughly translates as 'Town Soil'). Today, the farm is run by an independent growers' co-operative in collaboration with the Church, Familjebostäder and the city administration.

– The first year we borrowed pigs from Stadsjord to root up the ground, says Lena Bergström, President of the co-operative Green Culture Högsbo. Members Kenneth, Jonna, Klara, Edit, Karl, Johanna and Per join her with lunch boxes and baskets at the picnic table where we sit overlooking the 55 plots, the neat tool shed and a chicken coop in the middle

of the field.

– We were afraid we would get complaints from local residents. But we did not. People flocked here and said how nice it was with pigs, and how cute they are! The pigs became an outing for both adults and children in the area.

– The highlight came when a resident went to sell his apartment. When he wrote "overlooking the pigs" in the ad we knew what we were doing was absolutely right. That felt great.

The co-operative has 140 members, but only 55 allotments. The queue to get one is several years long.

– The interest is huge, says Lena Bergström. This urban farm has become a magnet. People want to live in the area.

– I had an allotment in another area before but I have given it up even though it was bigger. This is much more fun with more community involvement and new ideas, says

A flock of Orust hens waiting to be approved as gene bank hens. Photo: Hillevi Helmfrid





Per Högberg and Johanna Gustavsson want to grow a lot in a small space. Photo: Hillevi Helmfrid

Gördis Samuelsson while she plant two rows of potatoes on her allotment. In the other place people were mostly interested in flowers and barbequing. Up here, we associate gardening with transition and "Peak Oil". We are part of a movement, we are creating something new. To get more land, Gördis joined the "growing together" organization in nearby Mölndal (see page 32).

The co-operative seems well organized with a number of working groups: a chicken group, a compost group, grass cutting group, boarder group, shed group and tools group. Doing a good job of organizing seems to engage members as much as doing a good job of gardening. Working well together is, of course, also an important aspect of the transition to sustainability.

Edit and Karl show the hen house that is well-built and pretty for the small flock of Orust hens kept here. They are waiting for the flock to be approved as a gene bank by the project that promotes the preservation of this endangered, old variety. The hen house has become a popular outing for nearby kindergartens and schools. A requirement from the municipality to lease the land was that they keep it unfenced. The area must be kept open to visitors. On rare occa-

sions it has happened that vegetables have been destroyed.

Karl Johansson had a vision of growing vegetables for sale when he joined the association, that has not happened.

– The plots are too small, he says. However, later he says that he did have a surplus of Jerusalem artichokes in the spring. He contacted shops and restaurants, but they do not want to buy from a private individual. For Karl, it has been a learning process of how an over-regulated society creates barriers for simple and healthy solutions. He has been blogging about his artichokes on the co-operative's website.

Several Green Culture members write blogs. One has a blog called "Högsbo farmer". Many members want to influence society, in addition to growing their own food.

The strong support from a number of organizations has been welcome in the start-up phase. For example, the public housing company supported them by purchasing a load of worm compost, and a load of wood-chips for the path. But President Lena Bergström's vision is that the co-operative ultimately becomes independent of outside contributions, perhaps completely self-sufficient. She hopes, for example, that the need to buy soil will disappear when their own composting develops.

Allotments Comet square, Bergsjön, Gothenburg: Cooperation and community in a green oasis

Right next to the tram stop in Comet Square in Bergsjön, in north-eastern Gothenburg, there is an area of intensive vegetable cultivation. The 16 plots are surrounded by fences of white or blue plastic. Each plot is 180 m² and cultivation is done in long, 120 cm-wide framed, deep beds. Friendly neighbours help show the way to Abu Bakier Alipour, one of the 16 growers in the area. That I arrive almost an hour after our appointed time doesn't bother Abu.

– Every day I take the tram from work at five o'clock and come straight here. I stay until it's time to go home and sleep, says Abu Bakier. Here I have something meaningful to do, it is green and healthy, and I am happy to be here. I can sit and enjoy the scene and play board games with a friend.

One of Abu Bakier's friends affirms that he too enjoys being in Abu's garden. His friend cannot, though, help out. – I am not allowed to because I don't understand gardening, he says. – I usually help by eating cucumbers and playing board games, his friend says with a twinkle in his eye. Work is in full swing even though it is only mid-May. One

bed contains Swiss chard from last season that has been kept through the winter and has been cultivated under a plastic tunnel since April. Abu Bakier has already harvested a lot of chard and soon it will be replaced by other crops. The tunnel has been moved to protect the small basil plants. Abu Bakier snatches up a few small weeds as he lifts the plastic to show the basil.

– I have no particular compost I just put the weeds back into the soil, they give an important nutritional supplement, he says.

The gardens are well maintained, all crops are expertly and lovingly cared for in the intensive beds. Abu Bakier grows primarily fast-growing crops that can produce several harvests per year and can thus produce a lot in a small space. Parsley, coriander, lettuce, radishes, chard, mint, cucumber, garlic, watercress, onions, basil and thyme thrive in the beds and under the simple homemade plastic tunnels used to make everything grow faster. He has chosen to grow things that are widely used in the Kurdish cuisine. Abu Bakier is from Iraqi Kurdistan.

– We eat carrots and other vegetables as well, but they take so much space to grow and they are cheaper to buy at the store, explains Abu.

Abu explains that there is much work to do on this plot, but he'd much rather be here after work than sitting at home in his apartment watching TV. Gardening is Abu's passion, but he is not attracted to any ordinary Swedish allotment.

– There they only have shrubs and places to sit. This area produces vegetables – we produce something, says Abu and points out that in his culture they eat more vegetables than the Swedish people do.

Of course there will be a surplus at times, more than the family is able to eat, even if they freeze them in time for the winter season. But Abu does not usually sell vegetables.

– I give them away to my friends when they come over, says Abu.

The 16 growers all know each other and cooperate when



Abu Bakier grows vegetables in home-made plastic tunnels where sensitive plants thrive, here seedlings of basil. Photo: Hillevi Helmfrid



For almost a decade residents have put in hard work to transform a bumpy and gravelly plot between the tram stop and the apartments into a place where food is produced and people meet. Photo: Hillevi Helmfrid

needed, easily and effortlessly, without rules and regulations.

– No, we have not formed an association, we are free, Abu Bakier smiles as he replies to the question.

– Once a year we buy cow manure from a farmer outside of town. One of us takes the order while the others say how much they want. The farmer drives the manure here with a tractor and trailer and we help each other to unload. I usually buy fertilizer for 100 euros per year. Likewise with the water bill. It comes once a year and usually costs about 50 euros per allotment. One person takes on the responsibility to pay the bill to the municipality and the rest of us give him the money in advance. It's simple. There is no co-operative.

– The soil here wasn't good at all, says Abu, who every year uses large amounts of cow manure and sees soil quality improve from year to year.

– Cow manure is best for the plants.

Previously, the space where the Comet Square allotments are located was an unused, uneven and gravelly area between the tram-line and the apartment buildings. At their own initiative, residents have transformed the area, putting in many hours of hard work, into a productive and vibrant place where people happily gather and talk to each other.

However, it is by no means certain that the Comet Square allotments will survive. A developer has shown interest in the site. No-one knows who will win the battle.

How much significance will be given to Abu Bakier's and his neighbours' striving for more than a decade to build up the organic matter content and soil structure? What significance will be attached to the social meeting place that growers have created in this public space, giving both pleasure and safety for the residents in the suburb?

– The municipality have said that we need not worry, says Abu Bakier.

Tillsammansodlingen a gardening co-operative near Mölndal, Gothenburg:

Harvest, socialise and work for a sustainable future

Tillsammansodlingen (meaning “Growing Together”) was born out of Transition Gothenburg but is now a co-operative, or rather, a non-profit association and a co-operative. The 40 members jointly cultivate almost two hectares outside Mölndal, south of Gothenburg. The co-operative’s vision is to contribute to increasing self-sufficiency, reduce dependence on oil and to find out about sustainable ways of living.

It is easy to get there, as the bus stops right at the farm. Several members still choose to cycle the more than 10 kilometres from the city.

– I would have opportunities to garden closer to where I live..., says Robert Kalmar who also keeps a garden at the rehabilitation clinic where he works full-time. “...but this is such good soil. It is so rewarding to grow here, I’ve never seen such good soil, he says enthusiastically.

Previously hundreds of market gardens and small farms were located in a row along the valley. Now most of the land is unused. When Transition Gothenburg looked around for

land there was only one of the original farmers left in the area, and he had grown old and was looking for someone who wanted to take over. As a proficient organic grower, the previous owner had managed the soil well for a long time, so it was easy to start growing.

– The first year we grew only for the open market to get the money to buy the equipment and buildings from the old owner. We leased the land from the municipality, as the previous owner has done for ages. But we only have a contract on a yearly basis, as the area is zoned for industrial development, says Robert who hopes Mölndal municipality will open their eyes to how valuable the farmland is and change their plans.

Rows of mature raspberries and currant bushes were ready for harvest already the first year and vegetables were abundant. Right now, the third growing season is starting. Lola Möller is a new member since last fall.

– When I arrived last fall as a new member, all I had to do

Mature berry bushes provided a harvest already in the first year. Photo: Liv Edlund Helmfrid



A herb garden comes to life.



The gardening group sets the priorities so that members know what tasks need to be done.





You get a lot more back out of gardening together, according to Lola and Christian. Photo: Liv Edlund Helmfrid

was harvest. I thought it was wonderful to be a grower. It was just to pick, eat and socialize. Now I see that there is a lot of work to do too, she says, laughing.

For Lola the feeling of community is the important thing with the co-operative. Robert and Christian Gustavsson agree. The statutes recommend that each member works two days per month on the farm, but it is not compulsory. So far there has not been a problem with some working more or less than others. The community has had an abundance of vegetables, and the work feels light and fun.

– I tend to use the chat feature on the website and write for example – I was thinking of going out tomorrow, but only if someone else comes ..., says Lola.

Each member is a member of one of the five working groups in charge of economy, policy, membership information, growing and coordination. In addition to the Transition

Gothenburg's website, the group also has its own website where members and the public can keep up to date with what is happening. During the winter months the gardening group plans the different crop rotations and what should be grown during the upcoming season. Planning has so far been carried out in the form of study circles in collaboration with the local adult education organization, Studieförbundet, with EU grants to promote small-scale farming in the municipalities surrounding Gothenburg. The project has also organized a harvest festival and is planning a public inspiration day in early summer. Thanks to the cooperation with Studieförbundet, members have also been able to organize, at no cost, the training they needed to develop their knowledge. Among other things, they had three weekend courses on Permaculture and Forest Gardening by Esbjörn Wandt. Public outreach courses have been arranged, too.

Thanks

It has been a great privilege to get to know Azeb Worku and Alemayehu Tegegn at ISD, who took turns to take me to their project groups in Addis Ababa. I learned a lot from them, both about farming and local mobilization. Thanks also to ISD who provided the car and driver when needed, and who generously opened their picture archives!

Thanks for the warm and generous reception I received from ENDA and Azeb Girmai who helped me collect my thoughts and see urban agriculture from different perspectives. The visits she took me on gave me insight into urban agricultural diversity. I got to experience it on a really small and really large scale. Without these visits, my picture of urban agriculture in Addis Ababa had been more limited. Even the ENDA organization provided a car and driver, and other technical support. A million thanks!

Messay Mulugeta Tefera, a graduate student in cultural geography at Addis Ababa University shared his deep involvement as well as his scientific knowledge. I also got to meet his colleagues and the genial discussion we had, of strategies for transition to sustainability in Ethiopia, provided important perspectives.

Endale Lemma wrote his master's thesis on urban agriculture and food security at the Addis Ababa University's Department of Trade and Industry, and is now employed by U.S. Aid. Endale shared his overview of the state of urban agriculture in Addis Ababa, acquired thanks to his own extensive fieldwork.

Getaneh Gebre, a former employee of the environmental office in Addis Ababa, now independent environmental consultant, gave me an important lesson in the environmental situation in Addis and told about various efforts to find solutions to the city's waste and sewage situation. He also

helped me get in touch with ENDA.

In Sweden, I want to thank my good friend Lena Jarlöv. Her experience in research on urban agriculture in South Africa gave me valuable orientation for the trip to Ethiopia. Lena also helped me to quickly familiarize myself with the urban farming situation in Gothenburg and gave me the contact details of interesting initiatives to visit there.

The case studies would not have been possible to write without all the industrious city farmers taking the time to sit down and explain their business and give me the opportunity to take pictures and ask questions: Lemma Mossisa, Enela Aseffa, Yeshe Hareg, Massai Aragi, Masaret Brehan, Mahlet Abraham, Belete Aialo, Abozench Mengsta, Yordonos Abra, Mekedes Kebede, Aselch Belye, Shiulaye Tamirat, Adanesch Motbainor, Negisti Zeleke, Dender Firke, Lena Bergström, Kenneth Agerskov, Jonna Dignelius, Klara Magnusson, Edit and Karl Johansson, Johanna Gustavsson, Per Högberg, Gördis Samuelsson, Abu Bakier Alipour, Robert Kalmár, Christian Gustavsson and Lola Möller. A warm thank you to you all and good luck with your endeavours!

Finally, I would like to thank Karin Höök at the Swedish Society for Nature Conservation in Stockholm who hatched the idea for the project, found funding and supported the project while it was underway.

Locknevi in June 2012,

Hillevi Helmfrid

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Some links

International

Resource Center for Urban Agriculture and Food Security (www.ruaf.org)

Urban Agriculture Magazine (www.ruaf.org)

New Agriculturist (www.new-ag.info)

Ethiopia

ENDA Ethiopia (www.iwpar.org)

ISD (www.isd.org.et)

Sweden

Grön Kultur Högsbo (www.gronkulturhogsbo.blogspot.se)

Råd och Rön 2011. Dyr mat en myt. (www.radron.se/artiklar/Dyr-maten-myt/)

Högsboodlaren (www.direktpress.se/Bloggar/Start/Odlaren-i-Hogsbo)

Odlingskooperativet Tillsammans (www.tillsammansodlingen.se)

Omställning Göteborg (www.omstallninggoteborg.se)

Stadsjord (www.stadsjord.blogspot.se)

Naturskyddsföreningen (www.naturskyddsforeningen.se)

List of abbreviations

ENDA-Ethiopia

Environmental Development Action is the Ethiopian branch of the network ENDA-International, which operates on three continents. ENDA supports local initiatives that work to eradicate poverty, preserve and develop the environment and strengthen civil rights. ENDA-Ethiopia is one of the pioneers in advocating and spreading urban agriculture in Addis Ababa. (<http://www.iwpar.org/enda-ethiopia.html>)

ISD

Institute for Sustainable Development is an Ethiopian organization that lifts the role of small-scale organic agriculture in rural development and works to support young people, in both urban and rural areas, to develop environmental and ecological projects. ISD has a partnership with Naturskyddsföreningen, The Swedish Society for Nature Conservation, within the framework of the Swedish international development agency, Sida's civil society programme. (<http://www.isd.org.et/home2.php>)

UNDP

United Nations Development Programme is a United Nations agency, a solution-oriented, knowledge-based development organization, supporting countries to reach their own development objectives and internationally agreed goals, including the Millennium Development Goals (MDGs). ([Http://www.undp.org/content/undp/en/home.html](http://www.undp.org/content/undp/en/home.html))

The literature on urban agriculture often presents farming in cities as a global trend. In reality, the widespread practice long established in the large cities in the South and the new initiatives for urban agriculture in the North show considerable differences in terms of circumstances, motivations and perspectives. But there are similarities too. Studying urban farming in two cities, Addis Ababa in Ethiopia and Gothenburg in Sweden, we can highlight the differences and similarities to give us a basis for a discussion of future prospects.

The Swedish Society for Nature Conservation is a non profit organization with the power to create change. We work by spreading knowledge, charting environmental threats, creating solutions and influencing politicians and authorities nationally and internationally. The association has about 192 000 members with local associations and county federations all over Sweden. We are behind the world's toughest environmental labelling, Good Environmental Choice.



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"Bra Miljöval" (Good Environmental Choice). Climate, the oceans, forests, environmental toxins, and agriculture are our main areas of involvement.

www.naturskyddsforeningen.se



Bra Miljöval