Urban Agriculture in Cape Town and Maputo
Urban Agriculture’s role for Sustainable Urban Food Systems - a regional characterization and early evidence
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Sub-Saharan Africa is the most rapidly urbanizing region in the world. Achieving Food and Nutrition Security (FNS) is not only a rural challenge, the access to adequate - in terms of quantity and quality - healthy and affordable food is also a growing issue for cities. Especially in the rapidly expanding informal areas, the design and implementation of a Sustainable Urban Food System plays a crucial part for cities and is one of the biggest challenges to address for policy makers, the population and civil society, city planners and of course - urban farmers in Cape Town and Maputo. The discussion on the impact of Urban Agriculture (UA) related to Food and Nutrition Security is controversial. A more environmental-friendly Urban Agriculture in line with Good Agricultural Practice adapted to the urban context (urbanGAPs) has the potential to reduce the health and ecological risks associated with conventional urban agricultural practices, and provide more agrobiodiversity within the city. The assumption is that, if GAPs are adopted adequately this might be a way towards promoting a Sustainable Urban Food System. This paper gives an overview and characterization of the research area with early results on the contribution of UA to household income and FNS, adoption of innovation on farmer level as well as an outlook on the development of the first urbanGAP guideline.

Background of the study
This briefing paper provides early results to the ongoing scientific discussion on the contribution UA could make to a Sustainable Urban Food System in the two research areas. The research is based on the definition of UA given by Mougeot and Van Veenhuizen.

Urban Agriculture: Various forms of plant and livestock production in a variety of production systems in urban and peri-urban areas (Mougeot 2001: 10). It complements rural agriculture and increases the efficiency of national food systems (van Veenhuizen in FAO 2017: 11).

Viljoen and Bohn assume that “space for food production and distribution can beneficially enhance cities as part of a wider landscape strategy and believe that enough knowledge and experience exists to be able to sketch out the multiple actions and interactions between individuals, organizations, communities and disciplines that together can achieve the infrastructure required to support a more sustainable food system” (Viljoen A. a. K. Bohn 2014: 388). Based on this work on continuous productive urban landscapes, we transfer the Sustainable Food System definition to the local context:

A Southern African Sustainable Urban Food System is the complementary city system to feed the population sufficiently and healthily. It considers a more environmental friendly and organic urban and periurban production, affordable and short local supply chains, a strategic urban (food) planning to use appropriate space for food production as well as access to knowledge and willingness by stakeholders to adopt innovations. A Sustainable Urban Food System is stable and strongly interlinked to peri-urban and nearby rural agriculture.

Main Research Questions
There are few studies on the impacts of UA related to FNS especially for cities in Southern Africa countries. To answer Food Insecurity only with increasing production does not reply the need of a Sustainable Urban Food System. FNS in cities is also a question of access, availability and affordability. The way food is produced should consider human and environmental health, therefore this study focuses also on the status quo of promoting a healthy, environmental friendly or even organic UA. Our research addresses the following issues:
Food Security: According to FAO, “Food Security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (FAO 2009). What is UA’s contribution to food supplies in both cities divided on city level (meso) and household level (micro)?

Nutrition Security: The question on urban Food Security is linked on quality of food (Nutrition Security). “Two meals per day do not mean, that people have an adequate and nutritious diet” (Joubert 2012: 186). Is the aim to be healthy and to have an improved nutrition the reason that people farm in the two cities? We assume UA can improve nutrition, especially if urban fruits and vegetables are cultivated organically.

Generate income through improved production: Could upscaling of production with urbanGAPs lead to market gardens with sufficient and even more organically produced food considering also water stewardship? In addition, quantitative and qualitative better production could supply the increasing demand for organically produced food and generate income with short, direct value chains.

Adoption of Innovation: What drivers and barriers do the different stakeholder have, comprising of farmers, extension services, civil society, NGOs and policy makers to adopt innovations with regard to GAPs in cities? What are locally adapted dissemination strategies?

Future role and possible scenarios: What scenarios do stakeholder design for the future of UA within a Sustainable Urban Food System and what does urbanization and climate change mean for the future of UA?

Methodology
The research units of the study are urban farmers with special focus on women and youth during upcoming in-depth research. The research questions were based on literature review, field observation in both cities, with assessments of production, forms of organizations, and communication as well as around 200 expert interviews in both cities and the development of stakeholder maps. Two baseline studies (in collaboration with colleagues from Universidade Edouardo Mondlane, Maputo and University of Western Cape, Cape Town) were conducted on a household level in the backyards and market gardens of Cape Town and in the green belt of Maputo. The baseline survey obtained a clear picture of the urban farmers, their sociodemographic and socioeconomic data, production methods and marketing, perceptions on organic agriculture as well as reasons why farmer adopt innovations, their communication channels and successful means of dissemination of innovation. Early results will be validated, triangulated and deepened with participatory methods during focus group discussions, action research and different stakeholder workshops with farmers, extension service providers, civil society and change makers as well as policy maker in 2018. Final validation and two participatory scenario workshops will be conducted in 2019.

Mixed Method Approach. Baseline survey in Maputos greenbelt and participatory research with farmers in Cape Town. Source: Paganini 2017

Two cities—two realities
Cape Town is the second largest city in South Africa with a population of almost four million people. The population increases especially in the townships due to national migration—mainly from the province of the Eastern Cape—in search of employment.

Mozambique is the least urbanized country in Sub-Saharan Africa (80% of the countries population lives in rural areas) but the urbanization rate is growing tremendously due to migrant laborer and civil conflicts, especially in the capital Maputo with close to 2 million inhabitants. By 2030, it is predicted that more than half of the population will live in urban areas (Raimundo 2014: 8). Besides high urbanization rates and the geographical location in Sub-Saharan Africa - the local circumstances for UA, the drivers and motivation of farmers, history, the institutional support in both cities and the meaning for FNS and income are hardly to compare hence we work on two case studies.

Urban Agriculture in Cape Town
Research is conducted in the Cape Flats, the densely populated area outside of the inner city, mainly in Khayelitsha (one of the biggest township in South Africa) as well as Mitchells Plain. The state of Food Insecurity in Cape Town’s townships was described by Jane Battersby as “severe”. 89% of the households in Khayelitsha are food insecure (Battersby 2011: 13) - especially female-centered households. To deal with this challenge UA is a strategy followed by the City of Cape Town (Urban Agriculture Policy 2007) as well as several NGOs as a countermeasure against Food and Nutrition Insecurity. Therefore UA is highly supported by NGOs and external donors, who contribute inputs for production and training. External factors like poor soil quality, limited space, theft, economic dependence on NGO subsidies, and severe droughts impede the contributions of Urban Agriculture to FNS.
Around 4,000 backyard and market gardeners in different townships in Cape Town, have been trained by NGOs or the communal extension service to improve production and market access. Backyard gardens are small-scale production sites (at an average 4-20 m² according own classification) of vegetables, perennials, hedges and fruit trees around the home in soil or containers for self-consumption and partly for selling within the neighborhood. Market gardens are upscaled food gardens with mainly horticulture production selling directly in the community or with the support of dwellers or NGOs to other markets. Market gardens can be run independently or as community gardens.

- Farmer cite market access as their main challenge and mentioned the potential through upsaling to organic market gardens, transport and maintaining continuous quality will still be a challenge (own focus-group workshop 11/17).

Different studies conducted by the Urban Poverty Research Network have shown that backyard UA is not meaningful for Food Security in Cape Town: “Household Urban Agriculture is not a significant source of food in Cape Town, despite the existence of an Urban Agriculture Policy created by the city” (Battersby 2011: 22). The research conducted within UFISAMO confirms the results of Battersby’s research. The household survey with 120 urban farmers as well as in-depth research with 56 market gardeners showed that Urban Agriculture activities contribute to a source of food and income, but on a negligible scale.

- Four out of five market gardeners contribute to their household income, but only for 11.6% of the farmers is UA their main income. Main income sources are grants 45.6% and other work 18.4% (own Baseline Survey 05/17).

- Motivation for UA are health reasons (49.6%), ecological reasons (27.4%) and just 7.4% practice UA as a strategy to generate income (own Baseline Survey 05/17).

- In May 2017, 36.7% of Cape Town’s urban farmers mentioned that water restriction decreased and hindered their production. From 2018, the use of tap water for agriculture is forbidden. 30% of market gardens and 70% of backyard gardens use tap water as main source (own Baseline Survey 05/17).

According to our own mapping, 50-80 market gardens (depending to season) produce a wide range of vegetables and fruits to sell mainly to high-end restaurants via box programs or to lifestyle markets. Our in-depth interviews with market farmers show that the main challenges are access to (local) markets and transport, the impact of water restrictions, access to inputs, finance and labor, weak soil quality as well as continuous production and quality to fulfill formal market needs. Access to training is given by several NGOs, the governmental extension service or private consultancy on Good Practice and organic agriculture. Networks between the different farmers are mostly informal and meetings for exchange—e.g. Good Agricultural Practices such as diversification—are irregular.

- 87.3% of the farmers use organic agriculture techniques, like compost (52.8%), home made plant protection products (68.7%) or home made liquid manure (83.1%), crop rotation: 67.5% of the backyard gardener and 88.8% of the market gardener (own Baseline Survey 05/17).

- The main reason for farmers to adopt innovations with regard to „improved production methods“ is the wish to have a better market access and support through NGOs. Dissemination works mainly through training and follow up visits (own Baseline Survey 05/17).

Some farmers assess their production with the bottom up quality assurance tool Participatory Guarantee System (PGS) — nevertheless retailers say that urban farmers do not have enough, nor a sufficient qualitative produce for formal markets.

Based on these findings, we will conduct a stakeholder workshop with agriculture experts, researchers, retailers and urban farmers. We will elaborate Good Agricultural Practice guidelines for cities—so called urbanGAPs and a dissemination strategy for it. This first quality standard for Urban Agriculture will be elaborated in early 2018 in Cape Town and transferred in 2019 to Maputo. UrbanGAPs is the guideline for improved production techniques with regard to the urban context. It will include an annex for upscaling to more organic and water saving production.

**Urban Agriculture in Maputo**

Maputo (together with Matola, the capital’s neighboring city) recorded the most rapid population growth rate in Mozambique especially in Maputos districts Kamabukwana and Kamavotas. These two districts belong to the so called „green belt“ and „poverty belt“ of Maputo. This area is the focus of our research, as UA activities are mostly concentrated in these districts and population is consi-
The present study contributes to the PhD studies of both authors within the UFISAMO project.

Since March 2016, the Federal Ministry of Food and Agriculture (BMEL) through the Federal Office for Agriculture and Food (BLE) supports this project on urban agriculture in Cape Town and Maputo. The objectives of the project are to investigate means how to contribute to improved Food and Nutrition Security of segments of the poor urban population and how to increase income by optimizing production, processing and marketing of agricultural and livestock products.

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Research outlook and the future role of Urban Agriculture within a Sustainable Urban Food System

Based on our quantitative results and early qualititative outcomes, next steps are to facilitate focus-group discussions, validation and triangulation. The future role of a Sustainable Urban Food System will be designed in a participatory scenario workshop in 2019. Key stakeholder of policy level, research and strategic planning will discuss our results with urban farmers, local experts and civil society.

The production of fruits and vegetables in the city and its relation to Sustainable Urban Food Systems raises questions not only of quantity and quality, but accessibility, availability and affordability as well. UA has the potential to fill gaps in urban food deserts to a certain degree in quantity and above all nutritionally. Applying techniques from organic or agroecological agriculture could lead to a greener urban environment and sensitize for healthier diet. It could create job opportunities especially for the urban poor. The adoption of innovations and its promotion to urban farmers can improve sustainability if stakeholders are motivated to create networks to exchange and if trainings meet farmers needs. UA could create niche markets to access income, and is an alternative or additional sources of food and a complementary strategy to the rural Food System.