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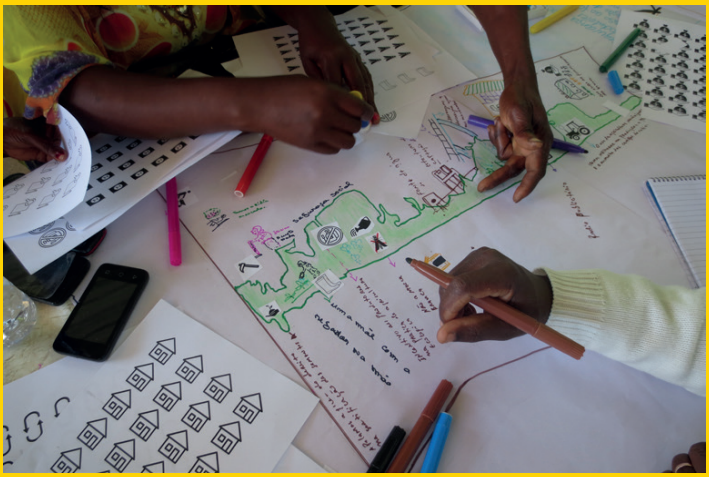
Perspectives of Urban Agriculture in Maputo and Cape Town

Dialogue, networks and future scenarios

Severin Halder, Jessica Agüero, Patrick Dolle, Enrique Fernández, Celia Schmidt, Michelle Yang



2018

Perspectives of Urban Agriculture in Maputo and Cape Town:

Dialogue, networks and future scenarios

Seminar für Ländliche Entwicklung | Centre for Rural Development

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SLE Postgraduate Studies on International Cooperation for Sustainable Development

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Preface

For more than 55 years, the Centre for Rural Development at the Humboldt-Universität zu Berlin has trained 20 post graduates annually to become professionals equipped with excellent knowledge and skills in the field of German and international development cooperation.

Three-month empirical research projects conducted in cooperation with German or international development agencies form an integral part of this one-year course. Participants work in interdisciplinary teams supervised by experienced team leaders and carry out innovative, future-oriented research on development problems that prevail on the ground on a local or national scale. This strengthens global knowledge and provides partner organisations in the host country with strategies and tools. Here, it is vital to involve a wide range of actors in a process which includes surveys and consultations at the household, expert and policy levels.

Most studies are linked to rural (or urban) development themes and have a socio-economic focus, such as the enhancement of agricultural livelihoods or the design of regimes to manage natural resources sustainably. Up to now our partner countries have either been developing or transformation countries, and occasionally fragile states. In the future, however, studies will also be conducted in the global north, since the Sustainable Development Goals (SDGs) are a global concern. New methodologies have been introduced in some studies, e.g., production of handbooks or guidelines. Further priorities are evaluations, impact analysis and participatory planning. In these cases, the respective host country serves as a test region.

Throughout the years, SLE has carried out more than 200 cooperation projects in over 90 countries. The results are published in this series.

The present study on urban agriculture in Mozambique and South Africa was carried out in cooperation with the University Eduardo Mondlane, the University of Western Cape, the technical secretariat for food and nutrition in Mozambique SETSAN and the NGO Abalimi Bezekhaya.

We wish you a stimulating read.

Yours sincerely,

Prof. Dr. Bernhard Grimm
Dean of the Faculty of Life Sciences
Humboldt-Universität zu Berlin

Dr. Susanne Neubert
Director of the Centre for
Rural Development (SLE)

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Thanks to all of you!

Feeling grateful (From left to right Fernando Baule, Patrick Dolle, Michelle Yang, Severin Halder, Celia Schmidt, Enrique Fernández and Jessica Agüero)

Source: Luisa Chicamisse at the end of the farmers' meeting in Maputo.

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Abbreviations

ABIODES	Associação para Desenvolvimento Sustentável (Association for sustainable development)
ASCA	Associações de Poupanças Acumuladas e Crédito (Accumulating Savings and Credit Associations)
BCI	Banco Comercial e de Investimentos (Commercial and investment bank)
BIM	Banco Internacional de Moçambique (International Bank of Mocambique)
BLE	Bundesanstalt für Landwirtschaft und Ernährung (German Federal Agency for Agriculture and Food)
BMEL	Bundesministerium für Ernährung und Landwirtschaft (German Federal Ministry for consumer protection, food and agriculture)
BNI	Banco Nacional de Investimento (National Investment Bank)
BTM	Banco Terra Moçambique (Food and Agriculture Bank)
CAVA	Comércio, assistência e valorização agrícola (Commerce, Assistance and Valorization of agricultural products)
CCOM	Caixa Comunitária de Microfinanças (Community Saving Institution for Microfinance)
CEPAR	Centro de Estudios de Producciones Agroecológicas (Centre for the Study of Agroecological Production)
CEPAGRI	Centro de Promoção da Agricultura (Centre for Promotion of Agriculture)
CompComSA	The Competition Commission of South Africa
COPAC	Co-operative and policy alternative center
CMM	Conselho Municipal de Maputo (Municipality of Maputo)
DAE	Departamento de Actividades Económicas (Department of Economic Activities)
DASACM	Direção da Agricultura e da Segurança Alimentar da Cidade de Maputo
DMMF	Direcção Municipal de Mercados e Feiras (Municipal Directorate of Markets and Fairs)
DOA	Department of Agriculture
DOH	Department of Health
DUAT	Direito de Uso e Aproveitamento das Terras (Right to Use and Benefit from Land)
DPME	Department of Planning, Monitoring and Evaluation
FAO	Food and Agriculture Organization of the United Nations

FDA	Fundo de Desenvolvimento Agrícola (Agricultural Development Fund)
FFG	Frankenförder Forschungsgesellschaft (Frankenförder Research Association)
FRELIMO	Frente de Libertação de Moçambique (Mozambique Liberation Front)
GAPI	Sociedade de Gestão e Financiamento para a Promoção de Pequenos (Management and Funding Company for Promotion of Small Investment Projects)
GovInn	Centre for the Study of Governance Innovation
ICT	Information and Communication Technologies (ICTs)
IFAD	International Fund for Agricultural Development
IIAM	Instituto de Investigação Agrária de Moçambique (Institute of Agrarian Research of Mozambique)
ILIMMA	Community platform created by farmers in Cape Town for exchange of information
IPEME	Instituto para Promoção das Pequenas e Medias Empresas (Institute for the promotion and development of small and medium-sized enterprises)
MASA	Ministério da Agricultura e Segurança Alimentar (Ministry of Agriculture and Food Security, formerly: MINAG)
MCTIC	Ministério da Ciência, Tecnologia, Inovações e Comunicações (Ministry of Science, Technology and Communication)
MIC	Ministério da Indústria e Comércio (Ministry of Industry and Commerce)
MITADER	Ministério da Terra, Ambiente e Desenvolvimento Rural (Ministry of Land, Environment and Rural Development)
MINED	Ministério da Educação (Ministry of Education)
MZN	Metical (Currency of Mozambique)
NGO	Non-governmental organization
NPO	Non-profit organization
NUIT	Número Único de Identificação Tributária (Taxpayer Single Number)
PHA	Philippi Horticulture Area
PLAAS	Institute for Poverty, Land and Agrarian Studies
PGS	Participatory Guarantee Systems
RASET	Rapid Agrarian Socio-Economic Transformation
ROSCA	Rotating Savings and Credit Associations
RUAF	Resource Centre on Urban Agriculture and Food Security
SAFL	Southern African Food Lab
SDG	Sustainable Development Goal(s)

SETSAN	Secretariado Técnico de Segurança Alimentar e Nutricional (Technical Secretariat for Food Security and Nutrition)
SLE	Seminar für Ländliche Entwicklung (Centre for Rural Development)
SMASAN	Secretariat for Nutrition and Food Security, Brazil
SU	Stellenbosch University
TFPC	Toronto Food Policy Council
UA	Urban Agriculture
UEM	Universidade Eduardo Mondlane (University Eduardo Mondlane)
UFISAMO	Urban Agriculture for Food Security and Income Generation in South Africa and Mozambique
UJ	University of Johannesburg
UNAC	União Nacional de Camponeses (National Union of Farmers)
UWC	University of the Western Cape
WCG	Western Cape Government
WP	Work package

Executive summary

Abstract

With its multiple dimensions and functions, urban agriculture has the potential to contribute to a sustainable urban development process, depending on how it is executed and who is included. In this study, we promoted multi-stakeholder dialogue about the outlook of urban agriculture in Maputo and Cape Town in form of interviews, meetings, field visits, farmers' meetings and scenario-building workshops. The goal was to create a common vision with the different actors – farmers and gardeners, non-governmental organizations, social movements, enterprises, scientists and policy makers – and to develop strategic measures for positive change that served as the basis for formulating recommendations.

In Maputo, thousands of small-holder farmers are well-organized and there are many actors who have the will to promote agriculture within the city. However, the political institutions that deal with urban agriculture lack commitment to address urban agricultural issues. Therefore, we propose a set of strategies that range from the creation of multidisciplinary working groups to the mapping of available arable land in the city.

On the other hand, although the level of political institutionalization is much higher in Cape Town – a city with a big variety of different urban gardens and fields, we found that the focus of most stakeholders on resilient urban food systems is not well approached. The recommendations build on a range of strategies from the conduction of workshops about logistics for small-holder farmers to the creation of awareness on ecological issues, fair food production and conscious consumption.

Problem statement and study objectives

A growing human population and rapid urbanization make sustainable planning of urban areas one of the most challenging issues of the 21st century. Cities must meet many different needs of citizens, including housing, infrastructure, income generation, health, social justice and the enormous demand on the urban food system. We assume that urban agriculture can play a role as part of a sustainable development towards resilient cities and urban food systems. Short transportation routes that bring food to the consumer, income generation for the producer, an increase of biodiversity and air quality due to more green spaces in the city and the possibility for citizens to get involved in community projects in their neighborhoods are only some of the examples of possible positive impacts of urban agriculture on its environment. However, urban planners and political deci-

sion makers are often not prepared to integrate urban agriculture into cities' plans for the future. Because land in and around cities is limited and manifold alternative uses are possible, urban agriculture is often threatened by competition for land and has to take place under semi-legal and precarious conditions. The potential lies in overcoming those constraints by mediating these different interests. Hence, we created a participatory stakeholder dialogue with the goal of creating a common vision among the key actors and analyzed the necessary conditions for the sustainable future of urban agriculture in Maputo and Cape Town. We always tried to build upon pre-existing research, institutional structures and processes. We gathered key actors, from farmers to policy makers, to discuss the future role of urban agriculture within and beyond the urban food system.

Conceptual framework and local context

Urban agriculture is an umbrella term for different types of agriculture and horticulture within (intra-urban) or on the fringe (peri-urban) of a city which grows or raises, processes, and distributes a diversity of food and non-food products. It (re-)uses largely human resources and products to provide services for the local environment with multifunctional ecological, socio-cultural, sanitary and economic impacts (Halder, 2018, p. 113; Mougeot 2000). Studies estimate that over 800 million people practice urban agriculture worldwide (Hoornweg & Munro-Faure, 2008, p. 22).

Due to disparities of the local context in Cape Town and Maputo and their urban agriculture practices, the particularities of each city are described below, as the project strongly focuses on the specific needs of local actors and considered existing local structures.

Urban agriculture plays an important role in the city of Maputo, especially regarding the economic dimension. The agricultural sector employs about 66,200 people directly and is responsible for 8 percent of the city's gross income. Moreover, urban agriculture in Maputo provides food for 22% of households (White & Hamm, 2017). Farmers in Maputo are small-holders peasant. They produce mainly fast growing vegetables like lettuce and kale, which are usually purchased directly by intermediaries in or near the fields and sold on local markets, leaving small profit margin for the farmers. One particularity of the capital city are the *zonas verdes*, extensive green belts in the urban and peri-urban area. Most producers are affiliated with associations and cooperatives. Some of the challenges they face are inappropriate and extensive use of agro-chemicals and salinization of soil. With respect to the political framework, there is little governmental protection for

land used for agricultural purposes and no differentiation between rural and urban agricultural activities.

Cape Town has a diverse urban agriculture scene that includes different farmers, gardeners, NGOs, social movements, private enterprises, governmental actors, research institutions and other stakeholders. Likewise, the types of farming practiced is also diverse. In the Cape Flats, the predominant forms of agricultural practice are home and community gardens. Approximately 4,000 home gardens (with a size of Ø 6-12 m^2) and approximately 100 community gardens (with a size of Ø 600 m^2) produce a variety of horticultural products which are either consumed by the producers themselves or, to a small degree, marketed with the support of NGOs in the form of vegetable boxes sold to households, as well as to "lifestyle markets" and trendy restaurants in the city center. In the Philippi Horticulture Area and in the peri-urban areas, bigger commercial farms prevail. The urban farmland of the Philippi Horticulture Area produces 100,000 tons of fresh produce annually on 3,000 hectares. Urban agriculture in Cape Town plays an important multifunctional role, ranging from providing food to building communities creating spaces for environmental education. But the challenges urban farmers face, threaten the continuity and sustainability of this practices. For instance, little legal protection or land rights for the agricultural land in the city, the urban food insecurity in general, the situation of climate change, water scarcity and restrictions, as well as a lack of training and experience.

Research framework and methodology

Our project is part of the interdisciplinary research project Urban Agriculture for Food Security and Income Generation in South Africa and Mozambique (UFISAMO), implemented by a consortium of German, Mozambican, and South African universities, state departments and civil society organizations. The main goals of the UFISAMO project are to contribute to improved food and nutrition security of the poor urban population and to increase income generation by optimizing production, processing and marketing of agricultural and livestock products. This is done through the different working packages (WP) such as value chains analysis (WP1), risks and benefits of crop production and livestock production (WP2), a research and education network (WP3), as well as the transfer of research results into practice and policies (WP4).

Our work lies between the WP3 and WP4, thus one of the main objectives of this study was to strengthen the dialogue between different key actors in Maputo and Cape Town (i.e. producers, NGOs, research organizations, government and policy agencies, and the private sector) to foster cooperation between these

stakeholders and create a common understanding of different aims and interests, as well as a joint vision for urban agriculture. Another essential objective of this study was developing recommendations for strategic interventions that support integrating urban agriculture into a sustainable development process for the cities of Cape Town and Maputo. The most important basis for the specific recommendations made was the input of participants in the participatory workshops we organized, one farmers' meeting and one scenario building workshop in each city. This was complemented by literature review, the analysis of the political framework, interests of the different key actors, good practices from other cities and expert interviews. This combination allowed us to give suitable recommendations tailored to the local context, while also leveraging existing local structures and knowledge.

Results and recommendations

The potential of Maputo's urban agriculture lies in the existence of extensive green zones dedicated to agriculture in the city and the organizational structure of farmers in associations. Indeed, this potential can be leveraged through strategic measures, ranging from the creation of transversal working groups to deal with the multi-dimensional aspects of urban agriculture to concrete technical solutions like the mapping of available arable land in the city. According to the workshop participants, the following challenges and recommendations are those considered the most important to resolve and initiate:

Financial services

Small-holder farmers lack access to credit, partly due to insufficient offers of services and products suitable for their needs (e.g. high interest and monthly payments, despite the seasonal nature of agriculture). This is also due to farmers' inability to meet the requirements of finance institutions. Hence, the main recommendations are to encourage financial institutes like the Bank of Mozambique or the FDA to develop an action plan for financial services tailored for small-scale farmers and to increase trainings in financial literacy for them.

Market access

Urban farmers in Maputo often lack information about prices and market conditions, as well as suitable infrastructure like farmers' markets. Furthermore, logistics and transportation are usually a challenge for them. Both issues could be improved with greater transparency (e.g. establishing a central database of prices or market services) and incentivizing collective action of producers' associations to

improve their bargaining power and to support establishing transportation facilities to bring agricultural produce from the field to the local markets.

Protection of agricultural land

Although Maputo still has a vast area of arable land in its green zones, conflicts of interests (selling vs. preserving) are omnipresent and the area is likely to diminish in the next years, as a result of informal and formal settlements. Since urban agriculture falls under the jurisdiction of several different levels and types of authorities, the recommendation to tackle agricultural land issues is to improve coordination with other departments and ministries to improve the quality, transparency and reliability of city zoning. Combined with a regularly updated mapping of all the arable land in the city, this will create a clear setting for formal planning.

Formalization and capacitation of farmers

A very important aspect for the farmers is the level of professionalization of their work. This includes the recognition of their contribution, e.g. through improved land rights and continuous capacity building through education and training programmes. A solid recommendation to achieve this goal would be creating a joint program with academic, technical institutions and Ministry of Education that has an equivalent value to a first university degree and that similarly considers theoretical and practical components as part of its study plan.

Management of communication lines among actors

Communication among actors is a challenge that requires not only commitment from all sides on the personal and organizational level, but also some form of institutionalization. Ideally, communication should take place on a regular basis and include representation from all stakeholder groups. We recommend an interactive sharing platform managed by a local or international organization like the UNAC, CMM and the FAO. Universities, particularly UEM, are called to work as platforms in order to exchange ideas and support joint work in urban agriculture.

Climate change resilience

Due to its geographical location, Mozambique is vulnerable to the consequences of climate change. Future scenarios indicate numerous possible negative impacts like rising sea levels, more extreme weather events, water shortages, land degradation due to saltwater intrusion or food shortages. Thus, climate change resilience is a complex topic that requires the development of a joint action plan or climate change resilience strategy, including urban agriculture together with all stakeholders and/or integrate its potential and perspectives of urban agriculture in

existing strategies, such as the National Climate Change Strategy or others on a transnational level.

Water management

The participants at the scenario workshop discussed two aspects of water management: the necessity to preserve natural water resources and the relation between water quality and urban agriculture. The quality of water is necessary to produce good and healthy food. However, the inappropriate use of fertilizers and pesticides can compromise the quality of the water over time. Thus, we recommend creating awareness campaigns and capacity building efforts underlining the importance of water management, reusing treated waste water and sustainable agricultural practices, as well as creating technical working groups to develop an action plan for water management.

Soil management

Increased soil contamination due to heavy use of agrochemicals and contaminated water, as well as soil erosion due to heavy precipitation in the rainy season, were mentioned as key challenges in Maputo. Adequate strategic measures could include a technical work group that brings different stakeholders together to develop a plan of action, and awareness campaigns regarding soil erosion and contamination. On the on hand, the action plan should tackle issues like the capacity building for good agricultural practices for better soil conservation. On the other hand, political and infrastructural issues like urban drainage system could be reorganized.

The discussion in our stakeholder dialogue in Cape Town was not limited to urban agriculture but went beyond to address the urban food system as a whole. Critical questions such as the real price of food, including social and ecological costs of big-scale agriculture, the dominance of big supermarket chains in commercializing food produce, and the awareness of consumer about the current food system were raised. Moreover, there was a debate about the importance and the future of the Philippi Horticulture Area, especially regarding its role in a resilient urban food system (providing agricultural produce) and for ecosystem services like groundwater renovation. The area is under the threat of being used for housing developments and sand mining. The recommendations for Cape Town developed range from conducting workshops about logistics for small-holder farmers, to awareness raising for ecological problems that are connected to food production and consumption.

Access to land and functional framework

Initially identified as two separate factors, the factors access to land and functional framework were combined by the participants at the scenario workshop as accessing land is often related to the legal and functional framework. To the participants, access to land meant ownership or leasing land, availability of land, mapping available lands and procedures to get permissions. Functional framework refers to complex and often unclear formal procedures, such as registering and applying for licenses in governmental institutions, as well as protecting these lands from building infrastructure or other non-agricultural uses. We recommend creating a working group to design and operationalize a help desk to assist the urban farmers, and to transparently map the available land for urban agriculture, including the private sector and universities.

Market access

In Cape Town, there is not enough infrastructure and little attention paid to direct local marketing and processing locally produced food. Small-scale farmers in particular struggle to access markets and retailer structures. Emerging farmers or small-holder farmers cannot compete with medium or large producers who control the market. Transportation costs from their production sites to the central markets are often too high. Currently, there are very few local community markets in the Cape Flats where a large part of the urban food production is taking place. Efforts to establish a market platform in this area have failed so far (Dolch, 2017, p. 69-72). Our recommendations range from the creation and supervision of a community market owned by farmers to the decrease of market barriers for small-holder farmers.

Stewardship of nature

During the scenario workshop, the participants decided to combine the proposed factors of soil and water management, climate change resilience and awareness in the urban society about ecological issues and called it "stewardship of nature". Stewardship is an ethical concept that focuses on responsible planning and management of any kind of resources. Regarding natural resources, it can be defined as "(…) the responsible use (including conservation) of natural resources in a way that takes full and balanced account of the interests of society, future generations, and other species, as well as of private needs, and accepts significant answerability to society" (Worrell & Appleby, 2000). Cape Town faces many ecological challenges, such as the severe droughts of the last years or the contamination of poor sandy soils. Creating awareness should start in schools. Therefore,

we propose to strengthen the Environmental Education Program in the school curricula and include environmental issues as transversal topics in other school subjects. Furthermore, the complexity of environmental issues requires more transversal working groups in governmental (and non-governmental) institutions.

In summary, urban agriculture in Maputo and Cape Town has different characteristics, challenges and potentials.

Maputo has large areas of arable land in the middle of the urban area, as well as well-organized and empowered urban farmers, but it lacks specific strategies and political institutions that deal with urban agriculture issues because there is no distinction between rural and urban agriculture on the institutional side. Nevertheless, there is political will to make agriculture more sustainable and productive, as it is seen to be of great importance for economic development and national food sovereignty.

In Cape Town the opposite is the case. Although land is scarce and many farmers are limited to their backyards and depend on NGOs, the level of the academic debate and political institutionalization are much higher. It must be mentioned that Cape Town faced and still faces severe droughts resulting in water restrictions that will probably intensify in the next months and years, and have strong effects on all activities in the city, including urban agriculture.

Conclusion and outlook

We conclude that urban agriculture contributes to the sustainability of both cities by producing local food, raising awareness of healthy and responsible alimentation, bringing opportunities for income generation and food security to socially disadvantaged parts of the society, and bringing together different people. To increase and maintain this contribution, a continuous dialogue including the various stakeholders and formal recognition from city officials is crucial. The end of the report contains detailed recommendations for different target groups in both cities. Indeed, all these recommendations depend on the commitment and resources of the local key actors. There are still many possibilities for improvement, but due to its multi-dimensionality, urban agriculture has the potential to be part of a transdisciplinary and holistic solution for the urban challenges of the 21st century. Politicians and academics should create and maintain the dialogue and urban gardeners and farmers should be creative and adapt to new circumstances and ideas – and together farm the city for a better future.

Zusammenfassung

Kurzfassung

Urbane Landwirtschaft hat mit ihrer Multifunktionalität das Potenzial, zu einer nachhaltigen, sozial- und umweltgerechten Stadtentwicklung beizutragen – vorausgesetzt, sie wird als integraler Bestandteil mitgedacht und die verschiedenen Akteure sind an den Entscheidungsprozessen beteiligt.

Während der vorliegenden Studie wurden Interviews, Treffen und Workshops durchgeführt, um in Maputo und Kapstadt einen Multi-Stakeholder-Dialog zu urbaner Landwirtschaft anzustoßen. Das Ziel unserer Arbeit lag darin, gemeinsam mit Bäuer*innen, Gärtner*innen, NGOs, sozialen Bewegungen, Unternehmen, Wissenschaftler*innen, Verwaltungsangestellten und Politiker*innen eine gemeinsame Vision zu entwickeln. Hieraus wurden anschließend strategische Maßnahmen für einen positiven politischen Wandel abgeleitet.

In Maputo gibt es tausende gut organisierte Kleinbäuer*innen und viele Akteure sind gewillt, Landwirtschaft in der Stadt zu fördern. Allerdings ist in den Institutionen oftmals nur ein geringer politischer Wille vorhanden. Daher haben wir eine Reihe unterschiedlicher Empfehlungen entwickelt. Diese reichen von der Bildung transdisziplinärer Arbeitsgruppen bis zur Kartierung der verfügbaren landwirtschaftlichen Flächen in der Stadt.

In Kapstadt ist die politische Institutionalisierung der urbanen Landwirtschaft weiter vorangeschritten. Es gibt eine große Vielfalt an aktiven Interessensgruppen, Gärten und landwirtschaftlichen Flächen. Allerdings fehlt oftmals der Überblick in Hinblick auf das Zusammenwirken der Akteure und Institutionen auf das städtische Ernährungssystem. Die Empfehlungen für Kapstadt reichen von der Durchführung von Workshops zum Thema Logistik für Kleinbäuer*innen bis hin zu Sensibilisierungskampagnen zu ökologischen Herausforderungen wie fairer Produktion und nachhaltigem Verbrauch von Lebensmitteln.

Problemstellung und Ziele der Studie

Eine stetig wachsende Weltbevölkerung, die sich vor allem auf die Städte konzentriert, macht die Stadtplanung zu einer der größten Herausforderungen des 21. Jahrhunderts. Städte müssen viele unterschiedliche Bedürfnisse ihrer Bewohner*innen in Einklang bringen; vom Wohnen über Infrastruktur, Arbeitsmöglichkeiten und soziale Standards bis hin zu einer immer größeren Nachfrage nach Lebensmitteln und anderen Produkten. In unserer Studie gehen wir davon aus,

dass urbane Landwirtschaft zu einer nachhaltigen Entwicklung hin zu resilienten Städten und Ernährungssystemen beitragen kann. Kürzere Transportwege von Produzent*innen zu den Verbraucher*innen, höhere städtische Biodiversität und eine bessere Luftqualität aufgrund einer größeren Zahl an städtischen Grünflächen sowie die Partizipationsmöglichkeiten für Bürger*innen in Gemeinschaftsgärten sind nur einige Beispiele, um den positiven Einfluss von städtischer Landwirtschaft auf ihre Umgebung zu illustrieren. Nichtsdestotrotz sind Stadtplaner*innen und politische Entscheidungsträger*innen oft nicht gut genug darauf vorbereitet, urbane Landwirtschaft in die Pläne und Strategien ihrer Städte zu integrieren. Da verfügbares Land in und um die Städte begrenzt ist und es viele alternative Nutzungsmöglichkeiten gibt, ist Landwirtschaft in der Stadt einem hohen Druck ausgesetzt. Unter anderem deshalb findet sie oftmals unter prekären und halblegalen Bedingungen statt.

So divers wie die urbane Landwirtschaft sind auch die involvierten Akteure. Indem die unterschiedlichen Interessen und Perspektiven in Einklang gebracht werden, können die oben genannten Probleme zum Teil überwunden werden. Deshalb haben wir einen partizipativen Stakeholder-Dialog unterstützt, um eine gemeinsame Zukunftsvision der verschiedenen Akteure zu entwerfen und die notwendigen Bedingungen für eine nachhaltige Zukunft in Bezug auf städtische Landwirtschaft in Maputo und Kapstadt zu beleuchten. Dabei waren wir stets bemüht, die bereits existierenden lokalen Strukturen, Forschungen und Prozesse miteinzubeziehen und auf ihnen aufzubauen. All dies hat uns ermöglicht, eine partizipative Diskussion über die zukünftige Rolle der urbanen Landwirtschaft anzustoßen – als Teil des urbanen Ernährungssystems und darüber hinaus.

Konzeptioneller Rahmen und lokaler Kontext

Urbane Landwirtschaft ist ein Überbegriff für unterschiedliche Formen von Landwirtschaft und Gartenbau innerhalb der Stadtgrenzen (intra-urban) bzw. am Stadtrand (peri-urban), bei dem Lebensmittel und andere Produkte hergestellt werden. Ein besonderes Augenmerk liegt auf der Multifunktionalität der städtischen Landwirtschaft mit ihrer ökologischen, soziokulturellen, gesundheitlichen und wirtschaftlichen Dimension (Halder, 2018, p. 113; Mougeot, 2000). Schätzungen zufolge betreiben weltweit über 800 Millionen Menschen urbane Landwirtschaft (Hoornweg & Munro-Faure, 2008, p. 22).

Aufgrund der unterschiedlichen lokalen Gegebenheiten in Maputo und Kapstadt wird die urbane Landwirtschaft beider Städte im Folgenden kurz umrissen.

Die städtische Landwirtschaft spielt in Maputo, vor allem in Hinblick auf die ökonomische Funktion, eine wichtige Rolle. Etwa 66.000 Personen sind im landwirtschaftlichen Sektor der Stadt beschäftigt und 8 Prozent der Wirtschaftsleistung der Stadt sind auf die Landwirtschaft zurückzuführen. Darüber hinaus werden über diesen Sektor 22 Prozent der Haushalte mit Lebensmitteln versorgt (White & Hamm, 2017). Die Produzent*innen in Maputo sind vor allem Kleinbäuer*innen, die hauptsächlich schnell wachsendes Gemüse wie Salat oder Kohl anbauen, um dieses dann an Zwischenhändler*innen zu verkaufen. Dies bedeutet auch dass die Bäuer*innen nur geringe Gewinne erzielen. Maputo ist bekannt für die sogenannten *zonas verdes*; riesige Grünstreifen innerhalb des Stadtgebietes, auf denen Landwirtschaft betrieben wird. Die meisten Produzent*innen sind in Verbänden und Kooperativen organisiert. Zu den Herausforderungen, mit denen sie konfrontiert sind, gehört der unsachgemäße und übermäßige Gebrauch von Chemikalien sowie die Versalzung der Böden. Wirft man einen Blick auf die politische Situation, fällt auf, dass es nur einen geringfügigen legalen Schutz der landwirtschaftlichen Flächen gibt und innerhalb der politischen Institutionen kaum zwischen ländlicher und urbaner Landwirtschaft unterschieden wird.

Kapstadt hingegen hat eine sehr diverse städtische Landwirtschaftsszene mit vielen unterschiedlichen Methoden und Akteuren. Diese reichen von Bäuer*innen, Gärtner*innen, NGOs, sozialen Bewegungen, Unternehmen und staatlichen Akteuren bis hin zu Forschungsinstituten. In den Cape Flats herrschen Klein- und Gemeinschaftsgärten vor. Ihre Zahl wird auf etwa 4.000 Hausgärten (mit einer durchschnittlichen Größe von 6-12 m²) und 100 Gemeinschaftsgärten (mit einer durchschnittlichen Größe von 600 m²) geschätzt. Diese stellen eine Reihe unterschiedlicher Produkte her, die entweder direkt von den Produzent*innen konsumiert werden oder mit Hilfe von NGOs in Form von Gemüsekisten auf lokalen Märkten oder an Restaurants verkauft werden. In der Philippi Horticulture Area und am Stadtrand sind hingegen hauptsächlich größere kommerzielle Farmen vorzufinden. Auf dem Gebiet der Philippi Horticulture Area werden jährlich etwa 100.000 Tonnen Gemüse auf 3.000 ha produziert. Die urbane Landwirtschaft in Kapstadt spielt eine bedeutende Rolle, da sie bezüglicher ihrer Multifunktionalität vielseitig diskutiert und praktiziert wird, von der Nahrungsmittelproduktion bis hin zu Umweltbildungsaspekten. Allerdings gibt es auch viele Herausforderungen, z.B. einen geringen legalen Schutz der landwirtschaftlichen Flächen, die generelle städtische Ernährungsunsicherheit, die Effekte des Klimawandels, Wassermangel und -restriktionen sowie fehlende Bildungsmöglichkeiten für marginalisierte Bevölkerungsgruppen.

Forschungsdesign und Methodologie

Unser Projekt ist Teil des interdisziplinären Forschungsprojekts „Urban Agriculture for Food Security and Income Generation in South Africa and Mozambique" (UFISAMO), das sowohl von deutschen, mosambikanischen und südafrikanischen Universitäten als auch von staatlichen und nichtstaatlichen Organisationen umgesetzt wird. Das oberste Ziel des UFISAMO-Projektes ist die Verbesserung der Ernährungssicherheit der armen städtischen Bevölkerung und verbesserte Einkommensmöglichkeiten durch eine optimierte Produktion, Verarbeitung und Vermarktung von landwirtschaftlichen Produkten. Das Projekt ist in verschiedene Arbeitspakete („working packages", WP) aufgeteilt: eine Wertschöpfungskettenanalyse (WP1), eine Analyse der Risiken und Potenziale der Produktion (WP2), die Bildung eines Forschungs- und Bildungsnetzwerkes (WP3) und der Wissenstransfer der Forschungsergebnisse in Politik und Praxis (WP4).

Unsere Arbeit ist zwischen WP3 und WP4 anzusiedeln, da das Hauptziel dieser Studie eine Stärkung des Dialogs zwischen den verschiedenen Akteuren in Kapstadt und Maputo ist (z.B. zwischen Produzenten, NGOs, Forschungsorganisationen, politischen Institutionen und Privatsektor). Dadurch soll eine bessere Zusammenarbeit und die Entwicklung einer gemeinsamen Zukunftsperspektive der verschiedenen Stakeholder unterstützt werden. Ein weiteres Ziel der Studie ist die Entwicklung von Empfehlungen für eine bessere Integration der urbanen Landwirtschaft in eine nachhaltige Stadtentwicklung. Hierfür waren die Beiträge der Teilnehmer*innen in den von uns organisierten partizipativen Workshops (Bauerntreffen und Szenario-Workshops in beiden Städten) elementar. Dieses Wissen wurde durch eine Literaturanalyse, eine Analyse der politischen Rahmenbedingungen, gute Praxiserfahrungen aus anderen Städten und Experteninterviews ergänzt. Die Kombination aus diesen Methoden machte es uns möglich, geeignete, an den lokalen Kontext angepasste Empfehlungen zu formulieren und die existierenden Strukturen der urbanen Landwirtschaft in beiden Städten zu stärken.

Ergebnisse und Empfehlungen

Das Potenzial der städtischen Landwirtschaft in Maputo liegt in der Existenz der großen, landwirtschaftlichen Flächen innerhalb des Stadtgebiets und in der Organisationsstruktur der Kooperativen. Durch einige strategische Maßnahmen könnten diese Potenziale besser ausgeschöpft werden: die Bildung von transdisziplinären Arbeitsgruppen, um Lösungen für die unterschiedlichen Aspekte der multidimensionalen urbanen Landwirtschaft zu entwickeln, sowie eine Kartierung der verfügbaren landwirtschaftlichen Flächen der Stadt sind zwei Beispiele. Basie-

rend auf den Aussagen der Workshop-Teilnehmer*innen sind folgende Herausforderungen und Empfehlungen hervorzuheben:

Finanzdienstleistungen

Kleinbäuer*innen fehlt oft der Zugang zu Krediten, teilweise aufgrund von fehlenden Angeboten an Dienstleistungen und Finanzprodukten, die an ihre Bedürfnisse angepasst sind (z.B. geringe Zinssätze), aber auch durch fehlende Voraussetzungen der Bäuer*innen. Daher richtet sich eine Empfehlung an Finanzinstitute wie die Bank of Mozambique oder die FDA, spezifische Angebote und Fortbildungen für Kleinbäuer*innen zu Finanzdienstleistungen zu entwickeln.

Marktzugang

Die städtischen Bäuer*innen in Maputo haben oft keinen oder nur einen geringen Zugang zu Informationen über Preise und Wettbewerb und zu spezifischer Infrastruktur wie formalen lokalen Märkten. Darüber hinaus gehören der Transport und die Lagerung ihrer Waren zu den größten Herausforderungen. Beide Aspekte könnten durch eine höhere Transparenz (z.B. die Errichtung einer zentralen Datenbank zu Preispolitik und Märkten) und Anreize für Zusammenschlüsse der Bäuer*innen für eine bessere Verhandlungsposition optimiert werden.

Schutz der landwirtschaftlichen Flächen

Obwohl Maputo große landwirtschaftliche Flächen innerhalb der Grünflächen hat, ist zu beobachten, dass Interessenskonflikte um das Land zunehmen. Hinzu kommen immer mehr informelle Siedlungen, die die landwirtschaftlichen Flächen zusätzlich reduzieren. Da urbane Landwirtschaft ein Querschnittsthema vieler verschiedener politischer Ebenen und Institutionen ist, empfehlen wir eine bessere Koordinierung zwischen den Ministerien und Abteilungen, um die Qualität, Transparenz und Zuverlässigkeit des Flächennutzungsplans zu verbessern. Eine weitere Empfehlung ist eine regelmäßige Kartierung und Aktualisierung der landwirtschaftlichen Flächen, die als Basis für die Stadtplanung fungieren könnte.

*Formalisierung der Bäuer*nnen*

Ein elementarer Aspekt für die Bäuer*innen ist der Grad der Professionalisierung ihrer Arbeit. Dies beinhaltet die Anerkennung ihres Beitrags für die Stadt, z.B. durch verbesserte Landrechte und regelmäßige Fortbildungsmöglichkeiten. Eine konkrete Empfehlung ist die Bildung eines Ausbildungsprogramms – zusammen mit Akademiker*innen, technischen Institutionen und dem Bildungsministerium – welches gleichwertig mit einem Hochschulabschluss ist und sowohl theoretische als auch praktische Elemente enthält.

Kommunikation zwischen den unterschiedlichen Akteuren

Die Kommunikation zwischen den Stakeholdern ist eine Herausforderung, die nicht nur Motivation und ständigen Einsatz von Individuen und Institutionen erfordert, sondern auch eine Form der Institutionalisierung braucht. Idealerweise sollte die Kommunikation regelmäßig stattfinden und alle Akteure miteinbeziehen. Wir empfehlen die Errichtung einer interaktiven Plattform, die von lokalen oder internationalen Organisationen wie der UNAC, CMM oder der FAO betrieben wird. Die Universitäten, besonders die UEM, sollten dabei als Austauschplattform für Ideen dienen und die Zusammenarbeit fördern.

Resilienz gegenüber den Auswirkungen des Klimawandels

Aufgrund der geographischen Lage ist Mosambik besonders anfällig für die Auswirkungen des Klimawandels. Zukunftsszenarien deuten auf eine Vielfalt an negativen Effekten hin. Hierzu gehören der Anstieg des Meeresspiegels, mehr extreme Wetterereignisse, Wasserknappheit, Landdegradation durch Versalzung und Nahrungsknappheit. Die Resilienz gegenüber diesen möglichen Auswirkungen bedarf einer komplexen Strategie, die urbane Landwirtschaft und ihre Akteure miteinbezieht bzw. die Integration der städtischen Landwirtschaft in bereits existierende Strategiepapiere wie die National Climate Change Strategy.

Wassermanagement

Die Teilnehmer*innen des Szenario-Workshops in Maputo diskutierten zwei Aspekte des Wassermanagements: die Notwendigkeit, die natürlichen Grundwasserspeicher zu schützen und den Zusammenhang zwischen städtischer Landwirtschaft und der Wasserqualität. Eine gute Wasserqualität ist nötig, um gute und gesunde Nahrungsmittel herzustellen. Gleichzeitig kann ein unangemessener Gebrauch von Spritz- und Düngemitteln die Wasserqualität verringern. Deshalb ist eine Sensibilisierungskampagne wichtig, um die Bedeutung eines guten Wassermanagements, das die Verwendung von Grauwasser und nachhaltige landwirtschaftliche Praktiken beinhaltet, zu unterstreichen. Darüber hinaus empfehlen wir die Bildung einer technischen Arbeitsgruppe, um einen Aktionsplan für das Wassermanagement zu entwickeln.

Bodenmanagement

Die zunehmende Bodenverschmutzung in Maputo ist auf einen hohen Einsatz von Chemikalien in der Landwirtschaft und kontaminiertes Gießwasser zurückzuführen. Außerdem sorgen heftige Niederschläge in der Regenzeit für eine hohe Bodenerosion. Eine technische Arbeitsgruppe könnte die unterschiedlichen Akteure zusammenbringen und einen Aktionsplan und eine Sensibilisierungskam-

pagne zu gutem Bodenmanagement entwickeln. Darüber hinaus sollten auch nachhaltige landwirtschaftliche Praktiken, die den Boden schützen, gefördert werden und Herausforderungen, wie das teilweise fehlgeplante urbane Drainagesystem, angegangen werden.

Die Diskussion des Stakeholder-Dialogs in Kapstadt war nicht auf urbane Landwirtschaft begrenzt, sondern ging weit darüber hinaus und umfasste das gesamte Ernährungssystem der Stadt. Es wurden kritische Fragen gestellt, z.B. nach dem echten Preis von Lebensmitteln (wenn die sozialen und ökologischen Kosten miteinbezogen würden), der Dominanz der großen Supermarktketten und zum Bewusstsein der Verbraucher*innen. Darüber hinaus gab es eine Debatte über die Zukunft der Philippi Horticulture Area, vor allem in Hinblick auf ein resilientes Ernährungssystem für Kapstadt und die Ökosystemdienstleistungen des Gebietes. Die Philippi Horticulture Area ist davon bedroht, dass die Flächen in Zukunft für Wohnraum und Sandminen genutzt werden. Die Empfehlungen für Kapstadt reichen von Logistik-Workshops für Kleinbäuer*innen und Händler*innen bis hin zu Sensibilisierungskampagnen für ökologische Probleme, die mit der Nahrungsmittelproduktion zusammenhängen:

Zugang zu Land und politische Rahmenbedingungen

Zuerst wurden diese beiden Aspekte im Szenario-Workshop getrennt behandelt, doch im Prozess wollten die Teilnehmer*innen beide Punkte zusammenführen, da sie eng miteinander verknüpft sind. Der Zugang zu Land wurde im Workshop als der Besitz oder die Miete von landwirtschaftlichen Flächen, die Verfügbarkeit von Land, Kartierungen von verfügbarem Land und der bürokratische Prozess, um an Landrechte zu gelangen, definiert. Der politische Rahmen bezieht sich sowohl auf die komplexen und oft unklaren formalen Prozesse, wie die Registrierung oder Bewerbung für Landlizenzen in staatlichen Institutionen, als auch auf den Schutz dieser Flächen vor Bebauung oder anderen nicht-landwirtschaftlichen Nutzungen. Wir empfehlen die Bildung einer Arbeitsgruppe, die als Anlaufstelle für Fragen und Hilfeleistungen für Bäuer*innen und Gärtner*innen dienen soll. Darüber hinaus sollten mithilfe des Privatsektors und Universitäten die für die Landwirtschaft verfügbaren Flächen kartiert und diese Daten transparent zur Verfügung gestellt werden.

Marktzugang

Besonders die Kleinbäuer*innen in Kapstadt haben Probleme, Märkte und Zwischenhändler*innen zu erreichen, da sie nicht mit größeren Produzenten konkurrieren können und die Transport- und Lagerungskosten oft zu hoch sind. Hinzu kommt eine unzureichende Wertschätzung für lokal und nachhaltig produzierte

Lebensmittel seitens Politik und Konsumenten. Momentan gibt es nur wenige Bauernmärkte in den Cape Flats, wo ein Großteil der städtischen Landwirtschaft stattfindet. Bemühungen, hier einen lokalen Markt für die Bevölkerung vor Ort zu etablieren, schlugen bisher fehl (Dolch, 2017, p. 69-72). Unsere Empfehlungen reichen von der Errichtung von Bauernmärkten, die von den Bäuer*innen eigenständig organisiert und verwaltet werden, bis hin zu einem Abbau von Marktbarrieren für Kleinbäuer*innen und Sensibilisierungskampagnen, die sich an die Verbraucher*innen richten.

Verantwortung gegenüber der Natur

Im Szenario-Workshop entschieden sich die Teilnehmer*innen, die drei von uns vorgeschlagenen Faktoren Bodenmanagement, Wassermanagement und Resilienz gegenüber den Folgen des Klimawandels zusammenzuführen. Sie nannten ihn „Verantwortung gegenüber der Natur" („Stewardship of nature"). „Stewardship" ist ein ethisches Konzept, das sich auf das verantwortliche Management aller Arten von Ressourcen bezieht. Es kann interpretiert werden als der verantwortungsbewusste Gebrauch (oder Nicht-Gebrauch) natürlicher Ressourcen im Sinne der gesamten Gesellschaft und zukünftiger Generationen (Worrell & Appleby, 2000). Kapstadt ist mit vielen ökologischen Herausforderungen konfrontiert, z.B. den Dürren der letzten Jahre oder der zunehmenden Kontaminierung der sandigen Böden. Die notwendige Bewusstseinsbildung sollte in den Schulen beginnen. Daher schlagen wir eine Stärkung der Umweltbildung in den Schulcurricula vor. Ökologische Themen sollten zudem in allen Fächern als Querschnittsthemen behandelt werden. Außerdem benötigt die Komplexität von ökologischen Herausforderungen mehr transdisziplinäre Arbeitsgruppen in den staatlichen (und nichtstaatlichen) Institutionen.

Zusammenfassend halten wir fest, dass die urbane Landwirtschaft in Maputo und Kapstadt sehr unterschiedliche Charakteristiken, Herausforderungen und Potenziale hat.

In Maputo gibt es große landwirtschaftliche Flächen innerhalb des Stadtgebiets und gut organisierte und selbstbewusste Bäuer*innen. Gleichzeitig ist bei manchen Akteuren ein politischer Wille vorhanden, die Landwirtschaft nicht nur produktiver, sondern auch nachhaltiger zu gestalten, da es sich um einen wichtigen Wirtschaftszweig handelt und die nationale Ernährungssouveränität verbessern könnte. Allerdings fehlt es an speziellen Strategien und politischen Institutionen, die sich explizit mit städtischer Landwirtschaft und ihren Besonderheiten beschäftigen.

In Kapstadt konnten wir eine andere Situation beobachten: Land ist rar und viele Bäuer*innen können nur ihre Hinterhöfe zu landwirtschaftlichen Zwecken nutzen. Im Vergleich zu Maputo sind die akademische Debatte und die politischen Institutionalisierung jedoch weiter vorangeschritten. Es bleibt zu erwähnen, dass in Kapstadt zurzeit eine große Dürre herrscht und die daraus folgenden Wassereinsparungsmaßnahmen in den nächsten Jahren auch die urbane Landwirtschaft betreffen werden.

Fazit und Ausblick

Wir kommen zu dem Schluss, dass urbane Landwirtschaft zur Nachhaltigkeit beider Städte beitragen kann. Dies fängt bei der Produktion von lokalen Lebensmitteln, der Sensibilisierung bezüglich Gesundheit und nachhaltiger Ernährung, verbesserten Einkommensmöglichkeiten und Ernährungssicherheit für benachteiligte Teile der Bevölkerung an und hört beim Zusammenspiel verschiedener Akteure auf. Um diesen positiven Einfluss beizubehalten bzw. das Potential urbaner Landwirtschaft besser zu nutzen, sind ein kontinuierlicher Dialog zwischen den relevanten Stakeholdern sowie die formelle Anerkennung seitens der politischen Entscheidungsträger*innen unabdingbar. Am Ende der Studie befinden sich detaillierte Empfehlungen für die unterschiedlichen Akteure. Die Umsetzung dieser Empfehlungen ist jedoch vom Engagement und den Ressourcen der lokalen Schlüsselakteure abhängig. Urbane Landwirtschaft hat das Potenzial, Teil einer transdisziplinären und holistischen Lösung für die urbanen Herausforderungen des 21. Jahrhunderts zu sein. Politiker*innen und Akademiker*innen sollten daher immer wieder den Dialog mit der städtischen Landwirtschaft suchen und Plattformen anbieten. Gleichzeitig sollten die städtischen Gärtner*innen und Bäuer*innen die Möglichkeit bekommen, sich aktiv und kreativ an die sich verändernden Umstände anzupassen, um gemeinsam und für eine bessere Zukunft die Stadt zu „beackern".

1 Introduction

In times of an ever-growing human population coupled with rapid urbanization, sustainably planning urban areas has become one of the most challenging topics of the 21st century. By 2030, almost 60 percent of the world's population will live in urban areas, and most of this urban expansion will take place in the Global South[1]. Cities worldwide have to meet the needs of their growing population, including housing, infrastructure, income generation, health and social justice. Moreover, the rapid growth of cities is placing enormous demands on food supply systems and food is often unevenly distributed and accessible. Power imbalances and the lack of access to resources, like land, increase urban poverty and food injustice. In addition, urban food systems are often not resilient enough to withstand demographic and climatic changes, and ecological, as well as social problems, are on the rise in cities around the world (Steel, 2013). Facing all of these challenges, the international community has committed to reach the Sustainable Development Goals in order to end poverty and protect the planet. The goals include ending hunger and making cities resilient and sustainable[2].

Urban agriculture is not the solution to these challenges, but it can be a complementary strategy. With its multiple dimensions, contributing to food supply and nutrition but also to the economic, ecological and social development of a city (Mougeot, 2010), we assume that it can play a role as part of a sustainable development towards resilient cities and urban food systems.

Urban agriculture is a phenomenon that cannot be ignored. It has always been present and has once again gained ground in current debates. Studies estimate that over 800 million people worldwide practice urban agriculture (Hoornweg & Munro-Faure, 2008, p. 22). However, the recognition of (peri-)urban agriculture is only slowly growing among planners and politicians (Drescher, 2001, p. 1; Morgan, 2015; von der Heide, 2014). Few cities acknowledge the value of well-planned and integrated urban agriculture and even fewer integrate it systematically into urbanization policies and land use planning. Urban planners and political decision-makers are often not prepared to integrate food systems into the future development of cities (Lovell, 2010, p. 2499). Therefore, urban agriculture is threatened by competition for land and often has to take place under semi-legal and precarious conditions (Smit, Nasr, & Annu, 2001, p. 17). The potential lies in overcoming

1 http://www.un.org/en/development/desa/news/population/world-urbanization-prospects-2014.html.

2 http://www.un.org/sustainabledevelopment/sustainable-development-goals/.

those constraints and creating synergies between key actors like farmers, NGOs, policy makers, urban planners, academics and social movements.

This is where our research project comes in, because it discusses the necessary conditions for the future of urban agriculture in Maputo and Cape Town that includes all actors. The aim is to bring together key actors to talk about the future role of urban agriculture within and beyond the urban food systems in both cities. Looking at different scenarios of possible futures, we will work out strategies of how to achieve the desired situation. The goal is to find out if there is a common future with diverse actors involved in urban agriculture. Moreover, by stressing the multiple potentials of urban agriculture, we want to contribute to a higher recognition of it.

2 Research framework

Our project is part of the interdisciplinary research project Urban Agriculture for Food Security and Income Generation in South Africa and Mozambique (UFISAMO), implemented by a consortium of German, Mozambican, and South African universities, state departments and civil society organizations.

The main goals of the UFISAMO project are to contribute to improved food and nutrition security of segments of the poor urban population and to increase income generation by optimizing production, processing and marketing of agricultural and livestock products. Partners of the UFISAMO project are the Albrecht-Daniel Thaer Institute of the Humboldt University of Berlin, Free University of Berlin, University Eduardo Mondlane (UEM), the University of Western Cape (UWC), the Technical Secretariat for Food Security and Nutrition (SETSAN) in Mozambique, the private research institute Frankenförder Forschungsgesellschaft (FFG) and the NGO Abalimi Bezekhaya in South Africa. It is financed by the German Federal Ministry for consumer protection, food and agriculture (BMEL) and under direct supervision of the German Federal Office for Agriculture and Food (BLE).

The UFISAMO project identifies the risks and opportunities of urban agriculture by looking at the economic, social, ecological and technical aspects. In all of these areas, good practices will be identified and verified with regard to their further dissemination, as well as possible distribution channels. The project generates practical results that can be relevant for the improvement of urban agriculture. This includes education (e.g. development of curricula in partner universities), production (e.g. good agricultural practices), nutrition habits (e.g. consulting, sensitization) and organizations (e.g. associations). In order to frame the different scopes of the UFISAMO project, five work packages have been developed (see figure 1). UFISAMO focuses its research in Cape Town and Maputo.

The Centre for Rural Development (SLE) assumed the lead on work packages (WP) 1 and 4. This research project is involved in the latter, overlapping partly with WP3 (see figure 1). More specifically, we aim to identify the potential and challenges of urban agriculture for a sustainable urban development in Maputo and Cape Town by bringing together key stakeholders and supporting a common vision among them. A participatory stakeholder dialogue on the future of urban agriculture is accompanied by an analysis of good practice examples of integrating urban agriculture into urban development, as well as an analysis of the political

framework in both cities. These activities will support the formulation of recommendations for key actors from NGOs, research institutions and on the policy level.

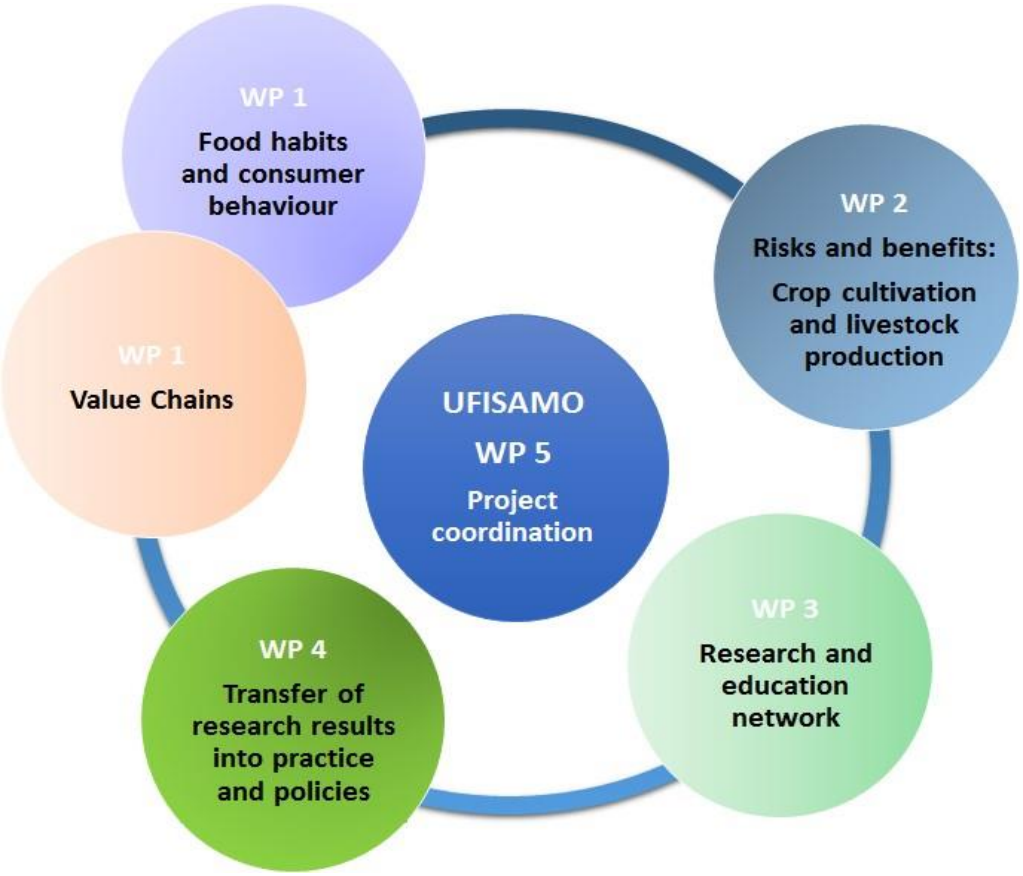

Figure 1: Overview of work packages (WPs)

Source: Adapted from the UFISAMO Inception report, 2017.

In the following text, the local context in Maputo and Cape Town are presented, as well as the research objectives and the underlying assumptions of this study.

2.1 Local study context

This research focuses on the cities of Cape Town and Maputo. Due to the disparity of the local context and its urban agriculture practices, it is important to point out the particularities of each city, as the project focuses primarily on particular needs of local actors and existing local structures.

An overview of the main actors involved in urban agriculture in Maputo and Cape Town, such as farmers, the government and city administration, civil society

organizations and NGOs, as well as research institutions, are shown in the stakeholder mapping (see 5.2.2 for Maputo and 5.3.2 for Cape Town).

2.1.1 Maputo

Maputo is the capital city of Mozambique, with approximately 1,250,000 inhabitants and a total area of 300km² in the metropolitan area. The urbanization rate of 33% (The World Bank, 2016) is still very low compared to other cities in Southern Africa, although has experienced rapid growth in recent years of an average of 3.3% growth per year (Central Intelligence Agency, 2017). As a result of this accelerated urbanization, the city faces challenges such as high unemployment at 22,4% (United Nations, 2014), poverty, malnutrition and environmental degradation.

One particularity of Maputo are the *zonas verdes* (green zones): extensive long green belts in the urban and peri-urban area. The area began to be occupied by the population after Mozambique's independence in 1975, partly due to the government's incentives to increase food provisions for the city. As a result of the socialist government's policies, the farmers were organized in cooperatives and in collective ways of production. During the civil war (1980-92), occupation in the area intensified, while parts of it were sold for development, causing conflicts between farmers and those who wanted to sell their land (Barghusen et al., 2016).

Currently, over 14,500 farmers work on small parcels of land, producing both for self-consumption and for income generation. Agricultural production is concentrated in four out of seven municipal districts, namely KaTembe, KaNyaka, KaMubukwana and KaMavota (Barghusen et al., 2016; DASACM, 2017) . The latter two are the districts where we conducted our research. Figure 2 shows the rough land coverage for the administrative area of Maputo, the green zones and the five main municipal districts.

Urban agriculture plays an important role in the city of Maputo. The agricultural sector employs about 66,200 people directly (including farmers and service providers) and is responsible for eight percent of the city's gross income (CMM, 2016). According to estimates, the income of a farmer in Maputo is on average four times that of the national poverty line (FAO, 2012). Moreover, urban agriculture in Maputo provides food for 22% of households (White & Hamm, 2017). The majority of farmers (about 10,000 out of 14,500 farmers) are affiliated with associations and cooperatives (CMM, 2016), which facilitate access to plots and land use titles. Agriculture in Mozambique is seen as women's activity. About 70% of the farmers in the capital city are women. This can be attributed to the history of civil war and

limited access to job opportunities, which has resulted in women relying on agriculture to provide food for their families and to generate some income (Barghusen et al., 2016; DASACM, 2017).

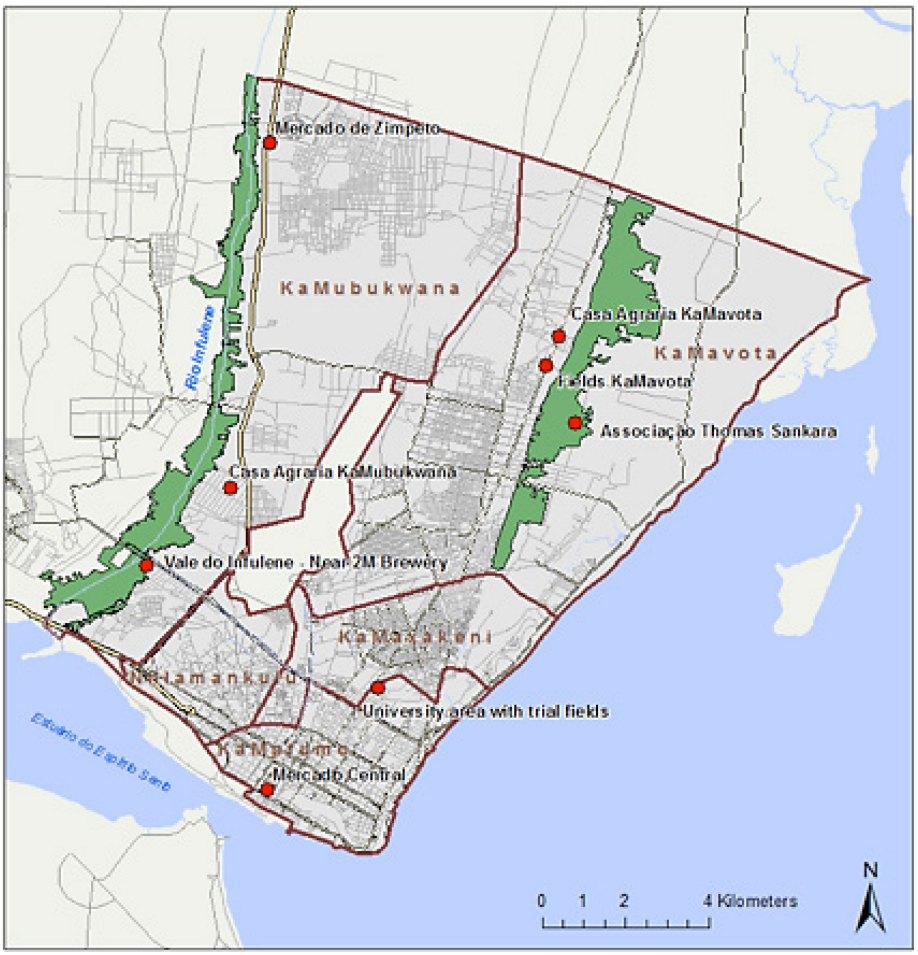

Figure 2: Map of Maputo with districts and *zonas verdes*

Source: Barghusen et al., 2016.

In Maputo, urban farmers produce mainly fast-growing, low-profit produce (lettuce, kale, etc.) which are usually purchased directly by intermediaries in or near the fields and sold at local markets (Schmidt, 2017), leaving little profit margin for farmers. Some of the environmental challenges to urban agriculture are inappropriate use of agro-chemicals and the salinization of soil. From the political framework perspective, there is little protection of land used for agricultural purposes and no differentiation between rural and urban agricultural activities addressed by agriculture policies. This leaves urban farmers who may face challenges different to those of their rural counterparts, with limited support related to their context (Barghusen et al., 2016; Schmidt, 2017).

2.1.2 Cape Town

Cape Town is the second-largest city in South Africa with 4 million inhabitants, an area of about 2,500 km² and a growth rate of 1.6%. It has an unemployment rate of 21%, and 80% of its households can be considered severely or moderately food insecure[3] (Frayne et al., 2010, p. 14). Spatial segregation and social inequality are the result of the politics of the apartheid and have had a huge impact on the everyday life until the present day – with a Gini Index of 62.5%, South Africa can be considered as one of the countries with the highest inequality in income distribution[4].

As a consequence of climate change, the city faces severe droughts in the last years (2016 and 2017) and water restrictions were introduced.

In 2007, an urban agriculture policy paper for the city of Cape Town with the aim "to develop an integrated and holistic approach for the effective and meaningful development of urban agriculture" was published, making it the first urban agriculture policy framework in an African city.[5] Figure 3 shows the different agricultural land categories and their spatial extension in Cape Town (the various home and community gardens in the townships[6] are not shown in the map).

Cape Town has a diverse urban agriculture scene that includes many farmers, gardeners, NGOs, social movements, enterprises, governmental actors, research institutions and other stakeholders. In the Cape Flats, more precisely in the townships Khayelitsha, Nyanga, Gugulethu, Crossroads, the following can be found: (i) approximately 4,000 home gardens (with a size of Ø 6-12 m^2), (ii) approximately 100 community gardens (with a size of Ø 600 m^2) and (iii) various commercial farms, especially in the Philippi Horticulture Area (PHA) and in the peri-urban areas (Dolch, 2017).

Urban agriculture in Cape Town plays an important multifunctional role, from providing food (largely by commercial farmers at PHA, 100,000 tonnes of fresh produce are grown in the PHA annually[7]) to building communities and creating spaces for environmental education. Horticultural products produced by backyard and community farmers are either consumed by the producers themselves or, to a

3 This means that about four out of five poor urban households do not have enough to eat at any given time.

4 https://data.worldbank.org/indicator/SI.POV.GINI.

5 2013 a renewal of the policy paper was planned and written, but never published.

6 In South Africa, the terms township and location usually refer to the often marginalized and segregated urban areas that, from the late 19th century until the end of apartheid, were reserved for non-whites, namely Indians, Africans and Coloureds.

7 Battersby-Lennard & Haysom (2012).

small degree, marketed with the support of NGOs in form of vegetable boxes sold to households, as well as to "lifestyle markets" and trendy restaurants in the city centre (Dolch, 2017). However, there are also several challenges, especially for urban farmers: there is no legal protection or land rights for the city's agricultural land, general urban food insecurity, climate change, water restrictions, as well as a lack of training and experience.

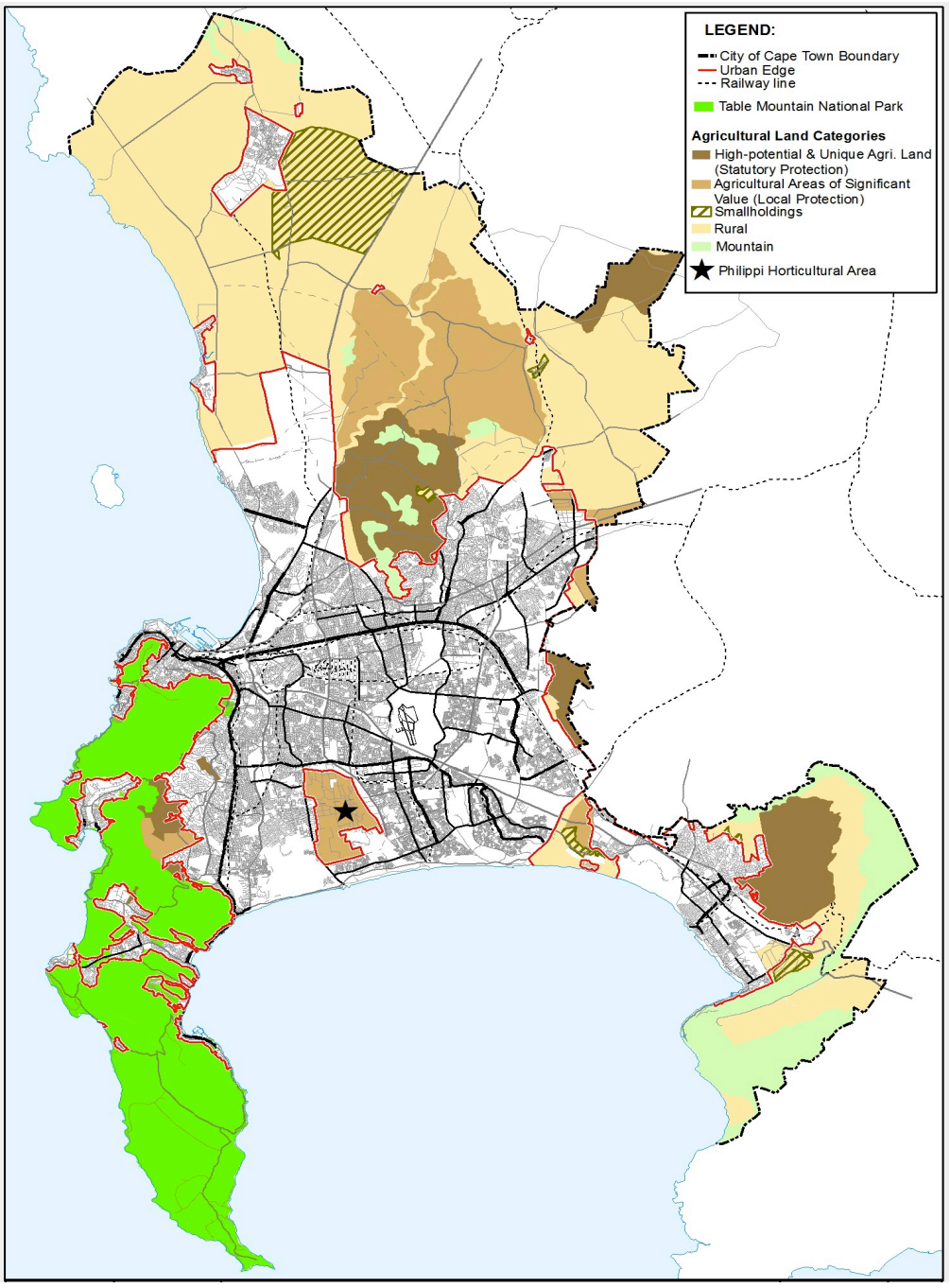

Figure 3: Agricultural areas to be protected in Cape Town

Source: www.capetown.gov.za.

2.2 Research objectives

As mentioned previously, our research project included in the work package 3 and 4 of the UFISAMO project. Accordingly, our research objectives are to:

- Strengthen the dialogue between various key actors (i.e. producers, NGOs, research organizations, government and policy agencies, and the private sector) working within the urban agricultural context of each city with a focus on farmers' perspectives,
- Understand stakeholders interests and foster cooperation among them,
- Create a joint vision for urban agriculture and
- Acknowledge its role in urban development. In this regard, we assume that urban agriculture can play a role and contribute towards resilient urban food systems and hence sustainable development.

Our research project then seeks to more deeply inquire into the potentials and challenges of agriculture in the city and also discusses the necessary conditions for a prosperous and inclusive future for urban agriculture in Maputo and Cape Town. In doing so, the research aims to support ongoing work (e.g. existing structures, networks and research) and find synergies with the stakeholders involved in this process.

A more operational research objective primarily based on the results of the complete analysis – for example, the desired future scenario that resulted from the scenario workshop, the identified key forces, literature review, experts interviews and local structures analysis – is forming recommendations. These are developed with the intention of enabling strategic decision-making for primary stakeholders and contributing to establishing the topic in the policy and urban (food) planning in the long term.

Last but not least, the results of the study seek to help UFISAMO with empirical information to assess the potentials and risks of integrating urban agriculture into urban development.

The following figure presents the different research objectives within our impact analysis context.

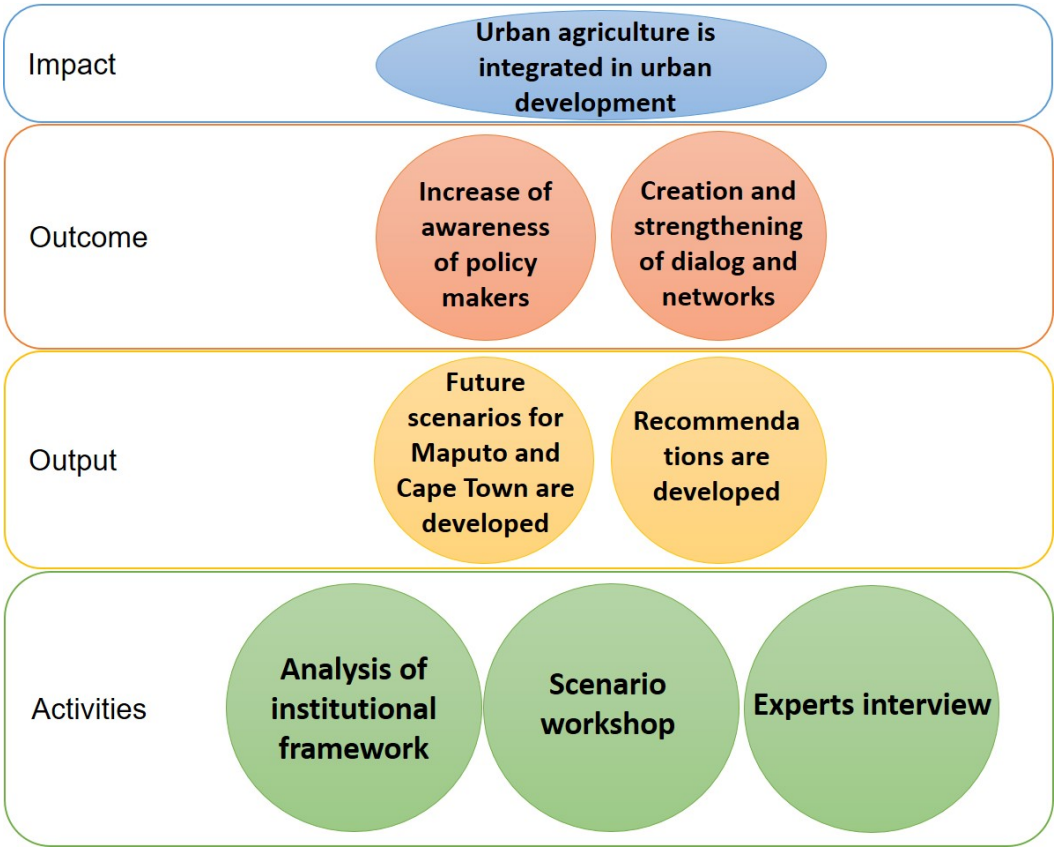

Figure 4: Impact analysis (simplified)

Source: Own illustration.

2.3 Underlying assumptions and guiding questions

The following underlying assumptions and guiding questions served as a basis for conducting the study.

Underlying assumptions

- Urban agriculture and its multiple benefits play a role in sustainable urban development, especially in the creation of resilient urban food systems.
- By taking part in the dialogue, stakeholders improve their knowledge about each other and about urban agriculture.
- Through meetings and workshops, the dialogue between stakeholders and the network of urban agriculture is strengthened in both Maputo and Cape Town.
- The recommendations that are developed will contribute to the strategic planning of key actors of urban agriculture.

Guiding questions

- What are the potentials and challenges of urban agriculture? How can it contribute to a resilient city?
- What are the conditions and/or structures needed to integrate urban agriculture into an sustainable urban development process?
- What are the specific characteristics and key stakeholders of urban agriculture in Cape Town and Maputo?
- What are future visions of key actors for urban agriculture in Maputo and Cape Town? What are the key factors influencing the future of urban agriculture in both cities? Which strategic measures, actors and institutions are necessary to achieve the desired situation?

3 Conceptual framework

The concepts central to our study will be outlined in this chapter. Since urban agriculture is a multifunctional phenomenon that passes through a wide and diverse array of perspectives, from the theory to the practice, it is important to explore its impact on social, economic and ecological aspects that contribute to the goal of making Maputo and Cape Town sustainable cities and their urban food systems more resilient. Because this approach concerns different sectors and the people working in them, a collective endeavor is needed. To achieve this, it is essential to bring different stakeholders together. Specifically, the creation of networks based on stakeholder dialogues could foster institutional and political support and create the basis for improving ownership at many levels. Accordingly, the following chapter displays the different aspects of urban agriculture, from its definition to the role and limitations within a sustainable city approach, the diverse aspects that are part of its functionality and how stakeholder dialogues can support its consideration in a city's urban planning.

3.1 Definition of urban agriculture

Defining urban agriculture is a complex task. Different definitions and interpretations of the concept have been used and adapted to the context of cities where urban agricultural activities are taking place.

Existing literature presents a wide range of practices that are framed in concepts such as gardening and farming. However, in practice, much of what is known as urban agriculture is basically gardening combined with elements of farming (WinklerPrins, 2017, p. 2).

On the other hand, when talking about urban agriculture, location tends to be one aspect where authors distinguish their approach. The literature usually categorizes the city area where agricultural activities occur as intra-urban when it occurs within the city limits, and peri-urban, when it occurs around the city. In our case, both cities have specific agricultural linkages and dynamics. For example, in the district of KaMubukwana in Maputo, the Infulene river is considered to be the city limit for this area, although this does not actually separate the agricultural field (see chapter 2.1.1 for the local context in Maputo). Similarly, the Philippi Horticulture Area in Cape Town is located in the middle of the city, and although is considered as peri-urban zone, it does not belong to the city borders (see chapter 2.1.2 for the local context in Cape Town). Those are some example as to why we

do not make the "intra-peri" urban distinction and consider those terms to be parts of the broad urban agriculture concept that we use for our work.

Nevertheless, it is important to mention that the activities which occur far beyond the peri-urban zone (city borders) are considered rural. This complements the approach from RUAF Foundation[8] that states that the most distinguishing feature of urban agriculture, which also differentiates it from rural agriculture, is the fact that it is an integral part of the urban economic and ecological system. It does not, however, contradict the vision that states that urban agriculture generally complements rural agriculture rather than competing with it (Mougeot, 2000).

In terms of the functionality of urban agricultural activities and their relevance within city dynamics, the literature recognizes that it has positive ecological, economic and social effects (Halder, 2018) which, depending on each particular urban environment, can be developed to a greater and lesser extent (see chapter 3.2.1 for the different dimensions of urban agriculture). Beyond this, there are some prominent characteristics reviewed in the literature that reflect on common understandings and principles surrounding the concept. For example, White & Hamm (2017) state that it is helpful to think of urban agriculture as a distinctly urban livelihood rather than a rural livelihood that has been "misplaced".

For the purposes of our project, the following definition has been selected with the aim of acknowledging the variability and complexity of urban agriculture. Moreover, it also forms the theoretical basis of our research:

Urban Agriculture is an umbrella term comprising different types of agriculture and horticulture within (intra-urban) or on the fringe (peri-urban) of a city, which grows or raises, processes, and distributes a diversity of food and non-food products. It (re-)uses largely human resources and products in order to provide services for the local environment with a multifunctional ecological, socio-cultural, sanitary and economic impact (Halder, 2018; Mougeot, 2000).

Additionally, we believe it is important to present a more concrete and practical approach to framing urban agriculture whereby the great diversity of agricultural practices is displayed (see table 1).

8 RUAF is a global partnership on sustainable urban agriculture and food systems. For more information visit http://www.ruaf.org.

Table 1: Range of urban cultivation[9] (urban agriculture)

Type	Organized	Management	Location	Purpose	Scale
Home gardens; yards	Sometimes	Individual or household	Backyards, front yards, containers, sacks	Household food production, landscaping, recreation	Micro-Meso
Community gardens; allotments	Usually	Municipality, non-profit programme and self-organization	Vacant lots, parks, open land	Food production, cultural reproduction, recreation	Meso
Non-profit urban farms	Yes	Non-profit organization	Vacant lots, rooftops	Education, food access, vocational training, youth and children's programmes	Macro
For-profit urban farms	Yes	For-profit company (individual or individuals)	Vacant lots, warehouses, client yards, greenhouses	Food production, garden installation	Macro
Institutional gardens	Yes	Hired staff or volunteers	Schools, churches, prisons, hospitals	Education, rehabilitation	Micro-Meso
Interstitial food spaces (e.g. guerilla gardening, gleaning and foraging)	Sometimes	Individuals or group	Berms, traffic circles, alleys, parks, forests, backyards, front yards	Reclaiming urban spaces, food production and consumption, urban greening	Micro

Source: Slightly modified from WinklerPrins, 2017.

3.2 The contribution of urban agriculture towards sustainable and resilient cities

In a world that continually urbanizes, challenges associated with this process (e.g. growing numbers of urban dwellers, inadequate basic services and an in-

9 Urban cultivation is the term WinklerPrins suggests as alternative to urban gardening and/or urban farming.

crease in air pollution) arise, particularly in cities in the Global South. By 2030[10], the year we selected as the target year for our scenario workshops' vision (see chapter 4.4), the UN estimates that more than 60% of the world's population will live in urban areas due to rapid urbanization, causing dwellers to face urban ills in addition to starvation (UNDESA, 2014). In this respect, governments, local communities and programmes, such as the 2030 Agenda for Sustainable Development (particularly the SDG 11[11]), the 100 Resilient Cities (100R) Initiative[12] and the City Resilient Index[13] look for approaches that can improve city structures entirely.

The increase in attention paid to urban agriculture by city authorities, citizens, academics and the media across the globe reflects the importance of this multifaceted phenomenon that, in practical terms, has been neither an example of modernity nor exclusively related to food productivity (Prové, Dessein, & Krom, 2016). On the contrary, it has involved ongoing processes that embrace economic, social and ecological dimensions. This multidimensionality addresses the complexity of issues related to the goal of achieving sustainable and resilient cities.

3.2.1 Sustainable dimensions of urban agriculture

Besides its importance to increasing access to locally produced fresh food, urban agriculture can also be seen as part of a comprehensive sustainability agenda and be part of necessary strategies to cope with climate change, population growth and diminishing resources (Nasr, Komisar, & Gorgolewski, 2013, p. 25).

Urban agriculture encompasses a variety of dimensions, including economic, social and ecological aspects, among others (Halder, 2018, p. 138). These dimensions interrelate and combine components that can support the creation of strategies and policies to address sustainable urban development concerns.

From an economic point of view, urban agriculture can offer an alternative to reduce living costs through subsistence production (Golden, 2013) by offsetting produce expenditures (Hagey, Solana, & Flournoy, 2012, p. 7). Even though research shows that urban farmers usually struggle to access productive inputs such as land and water in the city (Hagey et al., 2012), the diversity of ways in which urban agriculture is practiced gives the residents the opportunity to use "in-

10 In line with the Sustainable Development Goals, 2030 is used as target by a number of researchers using scenario planning (Erdogan, Abbott, & Aouad, 2010).

11 Sustainable Development Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable.

12 100 Resilient Cities. Website: www.100resilientcities.org.

13 City Resilient City. Website: www.cityresilienceindex.org.

between" (Spada & Bigiotti, 2017), vertical and small areas for producing food and non-food products (e.g. cosmetic and cleaning products). Furthermore, where conditions allow, urban agriculture can also be part of processing and marketing activities (De Zeeuw, Van Veehuizen, & Dubbeling, 2011) as well as input (e.g. seeds and compost) and service provision (e.g. veterinary services). This can contribute to job creation and income generation (Smit et al., 2001) not only affecting those engaged in the production but along the entire value-chain.

From a social perspective, urban agriculture can contribute to coping with some of the current social issues in cities (e.g. marginalization of new migrants, lack of social cohesion and violence). Community and home gardens improve the quality of life in the city by stimulating social interaction within the neighbourhood, as well as self-organization and community building (Halder, 2018, p. 155). The green spaces also offer opportunities for recreation, exercise and education (ASLA, n.d.). Referring to this last aspect, some (community) gardens are established and maintained by schools and universities that use the spaces to raise awareness within the urban population about the importance of re-establishing the connection to the sources of their diet, showing students and other citizens the value of nature and the responsibility of taking care of a communal good. The benefits that come from these efforts, although non-monetary, are, according to Avila & Veenhuizen (2002), of primary importance – particularly for the poor – and could hardly be denied when considering sustainable development as a main goal for the city.

From an ecological point of view, urban agriculture contributes to closing the nutrient cycle that occurs as spaces in the city are increasingly cultivated. It ideally uses materials already in place and engages in waste (nutrient) recycling in the process of cultivation and reconstituting urban soil for cultivation (WinklerPrins, 2017). Moreover, since urban landscapes are usually highly fragmented and the competition of different forms of land usage is very high, green spaces in the city, become a "last resort" for many animal and plant species. This means that vegetative land supports cities´ biodiversity and ecosystem services (Lin, Philpott, & Jha, 2015). Thanks to urban agriculture spaces and their different forms of management, high levels of biodiversity and environmental benefits can be recognized, such as pollination of crops, prevention of heat islands, improvement of air quality and better water regulation (Lin et al., 2015). Therefore, together with other green urban spaces, urban agriculture land can be part of an urban climate mitigation and adaptation strategy (Demuzere et al., 2014, p. 1).

As is apparent, these dimensions have their individual characteristics. However, it is also important to acknowledge that the various policy initiatives regarding the dimensions of urban agriculture should be addressed jointly since sustainable development challenges in cities are complex and interlinked.

3.2.2 Urban agriculture as part of urban resilient food systems

A food system is defined as a set of activities involving food that goes from food production, food processing and transportation to consumption. Urban food systems is this set of activities interacting with other urban systems such as waste recovery, housing or employment (see figure 5).

Some argue that the urban food system has low visibility compared to other urban systems, such as housing and transportation, since these are perceived as being more important urban issues than food (Pothukuchi & Kaufman, 1999). The problems related to the food system, such as unequal food access, availability, affordability and future consequences are unclear to city residents and not recognized by its policy makers. Moreover, technological advancements like mechanized farming, transportation and refrigeration-enabled continued food supply in the cities, while the loss of farmlands in and around the cities went unnoticed (Pothukuchi & Kaufman, 1999).

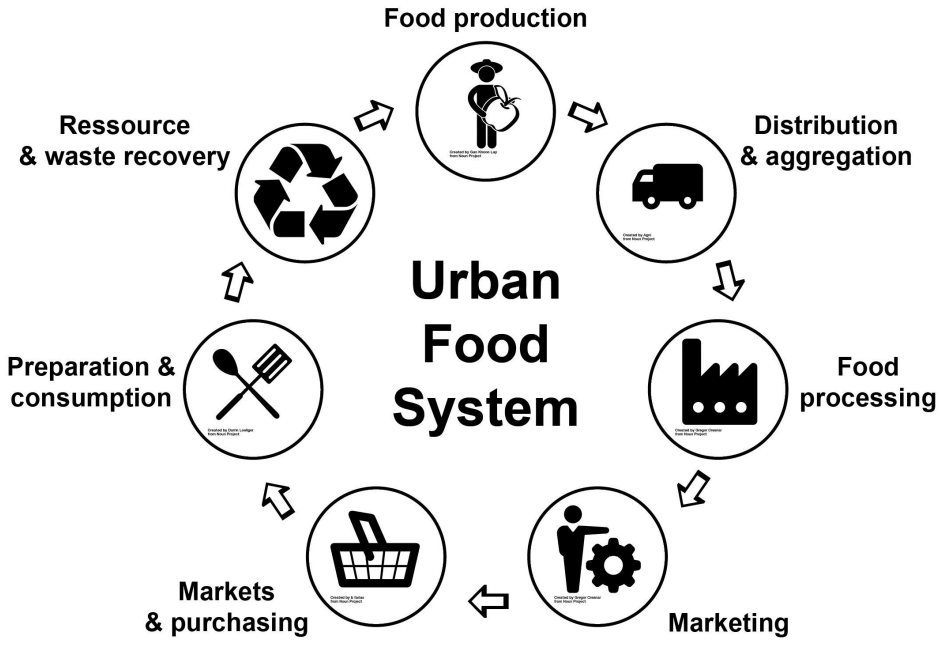

Figure 5: Urban food system

Source: Adapted from the Center for Environmental Farming Systems.

Urban agricultural activities form part of urban food systems in almost every part of the food system, from growing crops, to small-scale food processing, to packaging and selling and to consumption and organic waste recycling. By considering urban agriculture and its role within the food system and interaction with societies and environments, one can start to identify the relationships through the lens of food. This comprises food provisioning processes and practices, the spatial dimensions of food access, food distribution and food quality (White & Hamm, 2017). These aspects and relationships need to be understood and improved in order to think about a more resilient food system.

Box 1: Food sovereignty and food security

According to La Via Campesina, food sovereignty is "the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems"[14]. On the other hand, as the 1996 FAO Rome World Food Summit states, food security refers to "the condition that exists when all people, at all times have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life".

Although both concepts address food issues, there are important differences that have an impact on the way policies are created and supported. Food sovereignty, unlike food security, is a movement growing from the farmers, fishers, indigenous peoples and landless workers who are most impacted by global hunger and poverty. Food sovereignty then builds its structure from the bottom up, considering aspects beyond ensuring that people have enough food to meet physical needs. It asserts that people must reclaim their power in the food system by rebuilding the relationships between people and the land, and between food providers and those who are the final consumers[15].

Within the framework of our study, and as part of the UFISAMO project, food security is the concept that accompanies the different stages of our research process. However, as urban agriculture is strongly connected with food sovereignty principles (i.e. sustainable use and protection of space in cities, the right to define production and distribution models, and conscious consumption patterns) (Pimbert, 2009), it is important to acknowledge that this concept captures in a more comprehensive way, the potential and value that agricultural activities can bring to cities. For this reason, food sovereignty seems to be more appropriate for urban agriculture (Halder, 2018, p. 183).

14 Declaration of Nyéléni, the first global forum on food sovereignty, Mali, 2007.

15 From US Food Sovereignty Alliance. For more information visit: www.usfoodsovereigntyalliance.org.

A resilient urban food system is characterized by a city's capacity to cope with external shocks, such as sudden rise of international commodity prices, droughts or times of conflict and crisis. The presence of urban agricultural practices can greatly contribute to the ability of cities to cope with these challenges. Locally produced food tends to be less vulnerable to international commodity prices, especially when cultivated by a less-advantaged urban population, which would largely be affected by price fluctuations and are more at risk of being food insecure. Furthermore, if conflict arises and disrupts food supply, having food supply within the city can ensure food provision – at least for a while.

3.2.3 Limitations of urban agriculture

Despite its potential and contribution to various aspects of a sustainable urban development, urban agriculture should not be portrayed as the silver bullet to the problems surrounding urban food insecurity. As White & Hamm (2017) note, "urban agriculture is only one component of a complex food system, practised in various ways, at various scales depending on the goals, opportunities and constraints of urban cultivators" (p.14). Thus, the practice of urban agriculture does not seek to replace or minimize the importance of other forms and sources of agricultural produce, but rather it can help us to understand and complement our complex food system today.

It is important to note that the contribution of urban agriculture varies strongly depending on the local context: the share of produce originating from urban agriculture provides food for 4% of the households in Cape Town, for 22% in Maputo and 60% in Harare[16]. Thus, it seems that for some places, although urban agriculture does not solve the problem of food insecurity, it is critical to mitigating food security (White & Hamm, 2017).

Furthermore, the celebrated view of urban agriculture is often based on important assumptions that need to be questioned. First, it is assumed that urban agriculture benefits the most food-insecure households. However, numerous case studies show otherwise (Haysom & Battersby, 2016). Second, self-help intervention targeting the poor to help them initiate their own food security through urban agriculture assumes that underemployed poor have free time, while in fact, they must often pursue multiple strategies to survive. Third, it also builds on the assumption that those who are food insecure can get access to important resources

16 As we have experienced in our own research in Cape Town and Maputo, it is difficult to get exact data on the quantity of urban agricultures' production.

such as land, water, seeds and everything else they need, which is not the reality of poverty (Haysom & Battersby, 2016; White & Hamm, 2017). Although government and NGO programmes offer some of these resources, those who are most vulnerable often lack knowledge or social networks to access them (Haysom & Battersby, 2016).

Moreover, research has shown that the contribution of urban agriculture to food security may not be as important as is sometimes believed (Crush & Frayne, 2011; White & Hamm, 2017). There is little evidence that urban agriculture contributes to food and nutrition security, either locally or internationally (Haysom & Battersby, 2016). In fact, urban food security is much more about access, regularity, food safety and nutritional diversity and quality. Economic, political and social factors, especially those related to inequality and to geographical location all must be considered when analysing urban food security. Urban agriculture can contribute to raising awareness about these topics and also about food justice and what is necessary to have a healthy and effective food system (Crush & Frayne, 2011; White & Hamm, 2017).

Another reason for caution is the over-reliance on urban agriculture, especially that which targets the most-vulnerable urban population, such as women and female-headed households, as a measure to improve self-sufficiency. This risks relieving officials and governments of their duties to respond to the needs of those who are marginalized. It also perpetuates existing inequalities by keeping women in low-paid activities in the informal economy (Hovorka, 2006; White & Hamm, 2017).

In summary, despite acknowledging the limitations of urban agriculture, this study focuses on exploring the advantages of the practice and supporting existing initiatives by promoting stakeholder dialogues and strengthening networks and ownership in the cities of Maputo and Cape Town.

3.3 Stakeholder dialogue, networks and ownership

As illustrated in the chapter 3.2, urban agriculture can contribute in many ways (i.e. economic, environmental, social) to resilient urban development and to increase awareness about how a city's food system functions. However, to have a greater impact, the urban agriculture sector continues to face different challenges, and behind each challenge, there are governmental, social and private institutions at play, more precisely the stakeholders of these institutions acting on their behalf.

The concept of "stakeholder" was developed from the perspective of an organization and was defined as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 2010, p. 53). To scope a social ideal for integrating urban agriculture in each city, we decided to involve different stakeholders in the analysis of the current situation of urban agriculture in Maputo and Cape Town and to develop participatory future scenarios for urban agriculture in each city (see chapter 2.2).

Based on the assumption that a participatory dialogue (see chapter 2.3) involving key stakeholders such as farmers, civil society organizations, policy makers and city administration in the planning and policy making is necessary (Arndt & Haidle, 2004; Jennings, Cottee, Curtis, & Miller, 2015) to achieve successful integration of urban agriculture into urban development, as well as the development of its full potential. This includes not only those involved in agricultural issues, but all who are concerned with achieving the goal of a sustainable city and a planned food system. However, dialogue aimed at achieving concrete goals should go beyond conversations and discussions. Rather, dialogue has to be understood as an act of collaboration that can bring people and their different agendas together (Hemmati, 2007, p. 28).

"Well-structured stakeholder dialogues can create networks and cultivate the sense of ownership towards sustainable change" (Kuenkel, Gerlach, & Frieg, 2011, p. 221). The concept of ownership is an important prerequisite for the acceptance of a project and its sustainability and to reach the desired institutionalization of strategies.

Furthermore, the goal of initiating a stakeholder dialogue was to create a shared vision for a common strategy to achieve the desired future for urban agriculture in the respective cities and in doing so, enable the constructive participation of different stakeholders. It can eventually allow the institutionalization of instruments in the form of networks, units or departments, web pages, policy strategies and/or food policy councils. They can become the driving forces to design new regulations and policies to support urban agriculture.

Box 2: Towards Institutionalization: The Toronto Food Policy Council

One possibility to place urban agriculture on the political agenda and to democratize current food systems are food policy councils. The councils serve as multi-stakeholder platforms, bringing together civil society, the economy, science, politics and administration. Food policy councils have been identified as innovative tools to allow civil society platforms to participate in food policy. As more and more citizens want healthy food and a sustainable agricultural policy, this is a way for them to influence communal policies. Today, there are more than 250 councils worldwide in cities such as Los Angeles, Berlin, Toronto; and even on a national level in Brazil (Heuser, Pohl, Urhahn, & Buron, 2015).

The Toronto Food Policy Council (TFPC) was established in 1991 as a subcommittee of the Board of Health to advise the City of Toronto on food policy issues. The council connects diverse people from the food, farming and community sector to develop innovative policies and projects that support a health-focused food system, and provides a forum for action across the food system. TFPC members identify emerging food issues that will impact Torontonians, promote food system innovation, and facilitate food policy development[17].

17 From Toronto Food Policy Council Website: http://tfpc.to/about.

4 Methodology

This study was conducted using different qualitative methods to assess local trends and perceptions. The study integrated key actors in urban agriculture in Maputo and Cape Town in the working process and in the verification of research results. Thus, the results can be generalized for the context of both cities. Furthermore, our work built upon local work and aimed to be part of local initiatives and existing projects, instead of creating parallel structures. The integration of local actors was done through regular communication during our stay, as well as through sharing our preliminary results with them.

The different methods listed on the left part of figure 6 all contributed to preparing stakeholder workshops conducted in both cities, which was the main occasion for the stakeholder dialogues. The methodologies selected for the workshops were chosen to enable active participation of all participants. The content discussed in the workshops and the results of the group work were then used as the basis of our recommendations, which were later complemented and verified through further literature research and semi-structured expert interviews.

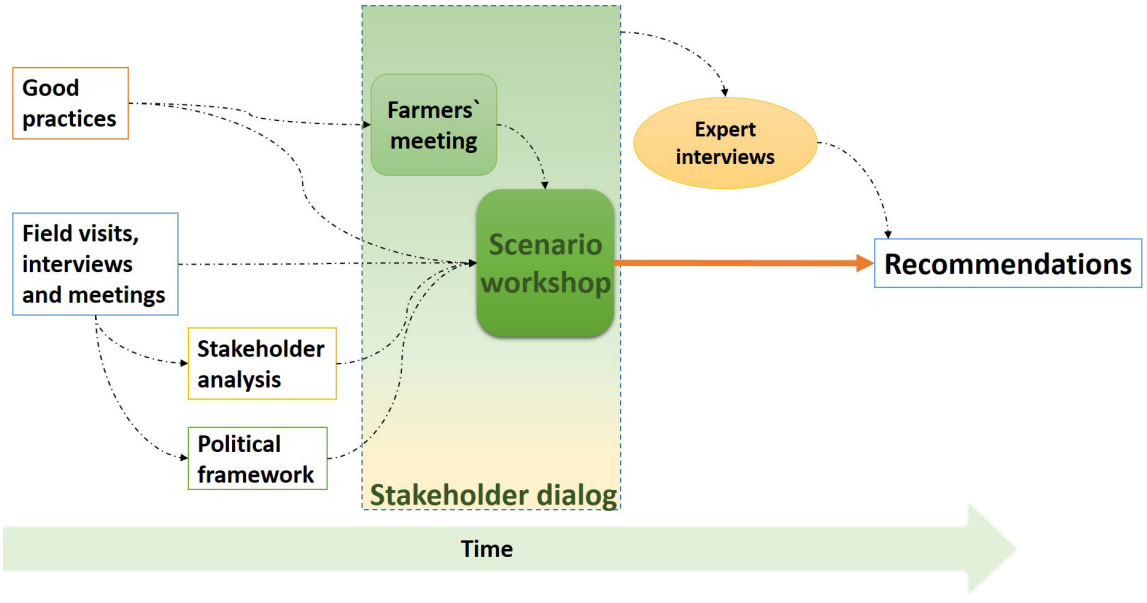

Figure 6: Methodology

Source: Own illustration.

4.1 Stakeholder analysis and mapping

This method was used to identify local organizations and actors working in urban agriculture. The use of a stakeholder mapping enabled a systematic illustration, using different colours to separate stakeholders according to their fields (i.e. research, policy, non-profit organizations). This mapping was then shared with local actors for comments and further information that they found relevant was added.

A stakeholder analysis can identify and categorize different actors who share an interest (Reed, Graves, & Dandy, 2009, p. 1935). Policy programmes that include a stakeholder analysis are usually more likely to succeed (Schmeer, 1999). A stakeholder analysis was conducted to identify and assess the different types of stakeholders involved in urban agriculture and their relationships with one another. Both the stakeholder analysis and the identification of key stakeholders were used as the decision-making basis for selecting interview partners and inviting workshop participants. The focus of the stakeholder analysis was on the actors at the policy level, but also on civil society, representatives of farmers, NGOs and enterprises, also considered were universities and research institutions.

The UFISAMO network of contacts and partners was broadened in order to understand the bigger picture of actors and institutions. Key actors were identified by their expertise and connections to urban agriculture, as well as their availability and openness to network and cooperate. Furthermore, connecting our work to local existing structures and interests was crucial to understanding the different perspectives of the actors, identifying structures and work that has already been done on the topic of urban agriculture, and to gain relevance for the sustainable continuation of the stakeholder dialogue. In this way, we were able to include the previous work of the stakeholders in the design and results of our project and to facilitate a higher level of participation.

The objective of the stakeholder mapping was to create a diverse image that reflects not only the multidimensionality of urban agriculture but also its different perspectives. The map served as the basis for the invitation list for the scenario workshop as well as for pre- and post-workshop interviews. It was updated on a regular basis and discussed during interviews. Moreover, in the last step of the scenario-building methodology of the workshop, key actors and institutions were identified and included in the map.

The results are visualized in form of a stakeholder mapping (see chapters 5.2.2 for Maputo and 5.3.2 for Cape Town).

4.2 Good practices identification and applicability

Since urban agriculture is practiced worldwide and most literature is based on case studies, good practices refers to the contribution of urban agriculture to city development in different cities. They served to inspire our research and local actors. The inspiration served to complement their vision of a positive future scenario for their cities.

Selection of experiences as good practices

The good practices were the results of research and preparation work done before and during our field trip. The experiences selected followed certain criteria based on six aspects that reflect evidences of the significant role of urban agriculture in the city development. For the selection of the experiences, the intrinsic characteristics of the cities of Maputo and Cape Town were considered.

Table 2: The aspects considered for selection of good practices

Aspect #	Description of the aspect
Aspect 1	The significance of urban agriculture within the legal and regulatory system of the city
Aspect 2	Existence and use of networks, meetings and other forms of exchange in the city
Aspect 3	Resilient practices within the urban food system of the city
Aspect 4	Role of urban agriculture activities within the economic system of the city
Aspect 5	Importance of ecological aspects considered within the city management
Aspect 6	Importance of social aspects considered within the city management

Source: Own illustration.

The good practices selected and the cities that implemented them were useful in the formulation of recommendations for both cities analysed. The results of the selected cities and their respective cases are presented in chapter 5.1.

4.3 Farmers' meetings

Local actors highly recommended conducting a farmers' meeting prior to the scenario workshop. They highlighted that bottom-up consultation is crucial when talking about the future of urban agriculture. Those who actively work in urban agriculture should have a say and influence in the decision-making process. Therefore, we organized farmers' meetings in Maputo and in Cape Town. The objectives

of the meetings were to share experiences from other parts of the world and to identify the positions and interests of the farmers. Our work focused on creating an open and inclusive process to establish a common vision and contribute to networking. During the meetings, the topics that are relevant for the farmers were discussed in order to take the essence of that debate into the scenario workshop, raise awareness among other stakeholders and foster empowerment. The meetings also served to identify farmer representatives in the scenario workshop. The methodology used in the farmers' meetings is outlined in the following chapters.

4.3.1 Participatory Mapping

For the farmers' meeting in Maputo, we chose participatory mapping as a tool to reflect the elements that the farmers themselves perceived as important. The methodology is based on the premise that the participants have expert knowledge of their environments which can be expressed in a way that is easily understood and universally recognizable. Since the predominant local language in Maputo is Changana, the participatory mapping enabled wide participation because it did not require writing skills or sophisticated articulation in Portuguese. Moreover, the map reflects the collective experience of the group that produces it. In a non-hierarchical setting, every group member can draw, paint and write what he or she finds important. At the same time, the process is as important as the results and it is not about elaborating an accurate geographical environment (Rambaldi et al., 2006). The creative process encourages participants to think big and focus on solutions rather than problems.

In Maputo, we decided to concentrate on future visions and the ideas and elements that came up during the process. We provided outlines of a map (in this case the districts KaMavota and KaMubukwana), the Casas Agrarias, and some other geographical references like rivers and the coastline. In so doing, the area could be easily recognized by the farmers and others. The farmers worked in small groups and were asked to (i) discuss their current situation, (ii) imagine the future they want to live in and (iii) draw on a map what they need to get there and where it should be located. The visualization was aided by some prepared icons (e.g. shovel, fork, tractor, money). In the end, one member of each group presented the results in front of the others.

It should be noted that participatory mapping does not seek to conform to cartographic conventions. It does, however, serve as an effective communication tool because it can bring the farmers' perspectives to the attention of decision-makers on a higher level. Therefore, the tangibility of the maps is another important feature, as we could return to them at different occasions, like in the scenario workshop.

4.3.2 World Café

In Cape Town we chose the methodology of World Café. This was applied to facilitate focused discussions on the topics that were deemed highly relevant according to interviews conducted with local experts. These were: seed sovereignty, access to land and water restrictions.

World Café is a social tool to engage people in a dialogue about one or many different topics, as well as an "easy-to-use method for creating a living network of collaborative dialogue around questions that matter in service to real work" (WCFF 2017). The tool is particularly suitable for larger groups of up to 20 participants, especially if the participants do not know one another.

To put on the event, the research team followed the guiding principles of the World Café Community Foundation[18]: to take context into account, to create a hospitable space that feels safe and invites people to contribute to the dialogue, and to connect diverse perspectives and to share collective discoveries.

The workshop was designed to enable the participants to exchange their experiences and knowledge about one topic in each table for half an hour, with the help of a host. The goal of the host was to encourage everyone to contribute to the discussion and consider different perspectives, and to provide input and raise key topics. Each host could decide how to take notes and present them to the attendees (e.g. flipchart´s paper, cards, etc.). At the end of each workshop, one participant representing one topic presented the most important aspects of their topics to the others.

4.4 Scenario-building Workshop

Scenario-building workshops, also referred to as scenario workshops, are used to obtain valid data from stakeholders and to incorporate their local experiences in the elaboration of possible future scenarios. Aside from data collection from interviews and desk research, the scenario technique enabled us, together with experts from different backgrounds, to validate this information and to

- Discuss different future scenarios for urban agriculture and develop a common vision,
- Support the dialogue between key actors in urban agriculture,

18 The World Café Community Foundation (2015): A Quick Reference Guide for Hosting World Café. California: www.theworldcafe.com.

- Strengthen the network and cooperation between stakeholders,
- Contribute to change processes by creating an open space for current debates.

This qualitative technique "offers an open process in which all futures and scopes of action that participants assume to be possible can be regarded and discussed" and aims to draw attention towards causal processes and points of decision-making (Berg, Beckmann, & Schelchen, 2016, p. 6).

This method will allow a scenario based on key factors elaborated by the participants. Also, scenario building supports an exchange of interests and positions between the actors to (i) understand the different perspectives of the primary stakeholders and (ii) elaborate a common vision of urban agriculture in each city.

The scenario-building workshop follows a multistep approach where (i) "complex problems are decomposed in key factors and (ii) reorganized via the means of various assumptions towards strategies and instruments" (Berg et al., 2016, p. 14). The resulting scenarios are a sequence of events that are hypothetical but seen as likely to happen, considering the current situation as a starting point. The research project chose a time frame of until 2030 for the scenario. This also coincides with the time frame of the Sustainable Development Goals (SDG) that form a global frame to achieve sustainability and resilience.

Considering that "scenarios project several possible pictures of the future, they do not predict what will happen but tell what could happen within a certain probability space over time" (Berg et al., 2016, p. 1), this method can be used as a strategy planning tool, helping the research group to assess the influence of key factors on transformation, and to show the participants pathways from the current trend to the desired future.

For the redesign and adaptation of this methodology, the research team has carried out the following activities (see figure 7):

- Revision and definition of the concept of sustainable urban development, resilient cities and how urban agriculture can be integrated in Cape Town and Maputo (literature review and interviews); the idea is that each participant starts from the understanding of a common definition of urban agriculture (see chapter 3.1),
- Assessment of interests, positions and priorities of stakeholders (see chapter 4.1 and 4.3.) in order to understand how they could participate in the elaboration of the scenarios, based on their expertise, mutual exchange and joint judgment (literature review, interviews and moderated discussion round),

- Extract and synthesize good practices from other countries (literature review and interviews) to be presented at the workshop as inspiration and to increase knowledge (see chapter 4.2).

Develop narrative linear scenarios through 5 steps. The guiding questions used during this process were: (i) Which factors influence urban agriculture in Cape Town and Maputo? (ii) Which socially inclusive and ecologically sustainable future pathways in the region are imaginable and realistic? (iii) Which policies, strategies, institutions and instruments do they require?

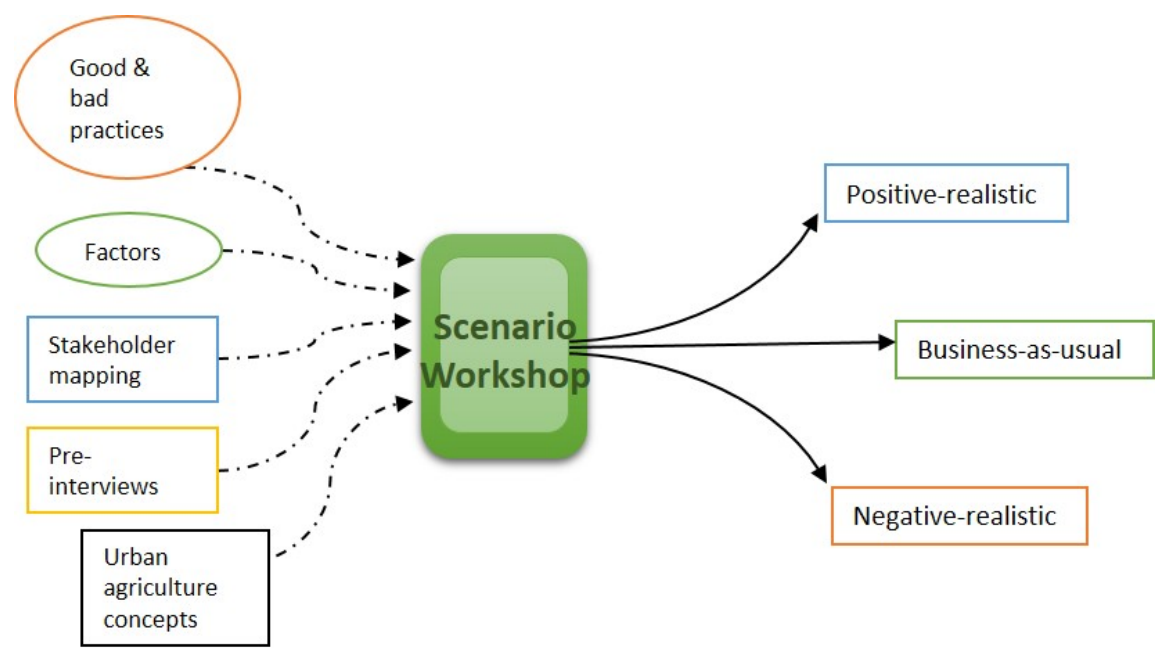

Figure 7: Scenario building for Maputo and Cape Town

Source: Own illustration.

We considered that a five-day workshop, as suggested by the manual developed by Berg et al. (2016) would be not possible due to time and budget constraints and availability of the stakeholders. However, we are also aware of the shortcomings of such an adaptation, namely that part of the systemic approach and build-up of methodology is affected. To ensure participation of the participant throughout the workshop, a precondition required by the method, we chose to reduce the workshop methodology from 11 steps, to 5 steps (see Berg et al, 2016 for the complete methodology):

Step 1 Discussing and determining factors of change (key factors): The participants identify and define factors that determine urban agriculture. The selected method was brainstorming in Maputo. In Cape Town, the research team introduced a list with 16 factors.

Step 2 Weighting and filtering of factors: The participants select factors that are particularly relevant for building scenarios of the future of urban agriculture, helping to create a matrix. This matrix is useful in categorizing the factors, taking into account their respective importance and the certainty of their future development and in doing so, reducing the reality to manageable amounts of information.

Step 3 Describing variations of the factors: For each key factor selected, participants were required to describe two to three possible variations (positive-realistic, business-as-usual and negative-realistic); the number of variation depends on the available time for this step during the workshop.

Step 4 Developing a narrative positive scenario: The variation of the key factors is the basis for developing the linear scenarios. In this step, the moderator describes a positive-realistic scenario based on the variations of each factor. This story serves as an inspiration to the participants. The moderator narrates only the positive scenario (see chapter 5.2.4 for Maputo and 5.3.5 for Cape Town).

Step 5 Identifying strategic measures and key actors: The participants develop scenarios through changes of factors that describe (i) the desired changed, (ii) the impact in the system, (iii) the key forces (actors) behind the factor and (iv) a suitable strategic measure to influence these forces (see chapter 5.2.5. and 5.3.5 for factors and recommendations).

4.5 Results and recommendations

The results of the scenario workshop were used as the basis of developing recommendations for both organizations that were represented in the workshop, as well as for those who could not participate but were considered to be important by the participants present.

The recommendations were elaborated through literature research and discussions with local experts through semi-structured interviews. The preliminary results of the workshops and interviews were also presented at the municipality as steps towards sensitizing policy makers by bringing their attention to the importance of including urban agriculture in their planning.

In the following chapter, the results of our research in Maputo and Cape Town are presented. Please note that given the differences between both cities, both in relation to the constellation of stakeholders and the particularity of the debate about urban agriculture, the results from each city are also very different from one another, without aiming to be a comparative approach.

5 Results

The methodologies used led to results on various levels. Some of them resulted from the literature research, especially good practices. But most of the results are the outcome of our field work and the stakeholder dialogue before, during and after the workshops with the different actors involved in urban agriculture in Maputo and Cape Town.

5.1 Good practices of integrating urban agriculture into urban development

As mentioned in chapter 3.2, urban agriculture can contribute to addressing urbanization challenges worldwide. Several good practices that support and put the multifaceted character of urban agriculture into practice have been identified as a result of our research. For this exercise, the work done by De Zeeuw et al., (2011), Dubbeling (2013), Mougeot (2010) was particularly helpful.

Going through all aspects (see chapter 4.2.1), one can observe that in terms of the significance of urban agriculture within the legal and regulatory system of the city (Aspect 1), some of the most predominant strategies for the success of cities have been:

- Outlining how urban food planning can help meet different and multiple policy objectives,
- Creating and facilitating a legal system for the implementation and long-term continuation of processes related to urban agriculture.

Second, in terms of the existence and use of networks, meetings and other forms of exchange in the city (Aspect 2), some strategies have been:

- Involving various (non-)governmental actors related to issues connected with food (e.g. health, agriculture, economic development, marketing, climate change, land use planning, social welfare, education and transport) with a co-ordinating unit,
- Creating a communication platform to link local, regional, and national food security, social welfare, economic and programmes for climate resilience,
- Building on existing local initiatives that support community-based and innovative private sector food projects,

- Increasing media attention and public dialogue on food issues and the multiple roles of agriculture.

Third, regarding the consideration of resilient practices within the urban food system of the city (Aspect 3), there are some measures that have supported cities in strengthening their capacities:

- Promoting and integrating urban agriculture in city planning, zoning and building standards,
- Promoting innovative forms of urban agriculture (e.g. using renewable energies and better mechanisms for storing water),
- Use of food labels for local, fair or organic production,
- Forming Food Policy Councils or similar technical advisory panels (see chapter 3.3).

Moreover, regarding the role of urban agriculture activities within the economic system of the city (Aspect 4), strategies have been:

- Supporting farmer markets and local food hubs[19],
- Supporting local small and medium enterprises in food processing and distribution,
- Short chain marketing and value adding by urban farmers,
- Leveraging financial resources for city level programmes.

From another angle, in regard to the importance of ecological aspects considered within the city management (Aspect 5), some of the successful strategies have been:

- Including urban and peri-urban agriculture and forestry in land use planning, city climate change adaptation and disaster risk reduction,
- Productive and safe reuse of urban waste and wastewater in urban agriculture,
- Reducing food waste and linking it to food banks[20],
- Avoiding soil sealing and considering the importance of organic matter in it,
- Considering the importance of biodiversity conservation in favouring ecosystem stability.

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19 The USDA-Agricultural Marketing Service in Food and Nutrition Farming defines a "food hub" as a centrally located facility with a business management structure facilitating the aggregation, storage, processing, distribution, and/or marketing of locally/regionally produced food products. Website: www.ams.usda.gov/services/local-regional/food-hubs.

20 They are non-profit organizations that storage and distribute food to those who have difficulty purchasing enough food.

Finally, considering the importance of social aspects considered by the city management (Aspect 6), some of the measures that helped cities to achieve more resilient livelihoods have been:

- Preferential public food procurement for the public sectors (hospitals, schools, offices),
- Supporting education and learning opportunities related to healthy food production and consumption,
- Supporting food projects for the disadvantaged urban population (e.g. soup kitchens and bakery schools),
- Integrating practical garden education into the school system.

Our approach has sought to bring these good practices and present them during the workshops in Maputo and Cape Town within the context of actual cities. To this end, some selection criteria beyond the good practices in urban agriculture were important for the final decision such as: the history of the city, climate, language and our knowledge about the cities.

5.1.1 Lessons learnt from around the world for Maputo

Belo Horizonte

The city of Belo Horizonte and Maputo share several characteristics, from colonial history and civil society structure to environmental and geographical conditions[21]. Moreover, Brazil, like Mozambique, also spent three hundred years as part of the Portuguese Empire; a characteristic that supports cultural references among the two societies.

The city of Belo Horizonte is the capital of Minas Gerais state and Brazil's sixth largest city, with a population 5.7 million[22] (FAO, 2014). At the beginning of the 1990s, Belo Horizonte, along with other Brazilian cities, suffered high rates of hunger and poverty. They were addressed by the government through the intensification of health programmes and the creation of the Secretariat for Nutrition and Food Security (SMASAN). This secretariat together with municipal government's Urban Agriculture Support Policy[23], structured efforts that permitted the

21 Area of Maputo is 346,8 km² ad of Belo Horizonte is 330,9 km².

22 5.7 million for the whole Belo Horizonte Metropolitan Region: urban and rural segments. The urban segment has 2.5 million inhabitants.

23 Created in 2011 (FAO, 2014).

multi-dimensional approach of urban agriculture to contribute to the full development of the social functions of the city. Based on FAO (2014) some of them are:

- Providing food and nutrition assistance to schools (200,000 school meals/day), 191 day care centres, 19 elderly homes, homeless and food banks (distributing 1,260 kilograms of food a day) (Aspect 6),
- Subsidizing food marketing in four popular restaurants (serving 14,000 low-cost and healthy meals a day) (Aspect 1, 4 and 6),
- Supply and food market regulation in 21 service points offering 20 food items against a set price (Aspect 1 and 4),
- Promoting farmers' markets and organic food fairs (see figure 8, left) (Aspect 4 and 5),
- Fostering urban agriculture: supporting 126 school and 48 community gardens and promoting fruit cultivation in open spaces (see figure 8, right) (Aspect 2 and 6),
- Promoting healthy eating habits and lifestyles through communication and education, including the training of food handlers (Aspect 2 and 3),
- Employment and income generation in bakery schools and pedagogical kitchens (Aspect 4 and 6),
- Establishment of a school food council, a municipal council for food and nutrition security, and a multi-stakeholder forum on urban and peri-urban agriculture (Aspect 3).

Figure 8: Sales point where farmers sell directly to consumers (left) and school garden in Belo Horizonte (right)

Source: FAO, 2014.

Havana

There are some similarities between the cities of Havana and Maputo, namely capital city status, geographical location (e.g. major port in the country), climate conditions (e.g. tropical savanna[24]) and single party administration of socialist character as part of its history. There was also diplomatic and some military support extended from Cuba to Mozambique (Cabrita, 2000). These characteristics contributed to choosing Havana to be presented in Maputo.

Since the revolution of 1959, being able to eat sufficient food has been asserted as a basic human right supported by the Cuban Government, primarily in the form of subsidies. In the mid-1980s, over 50% of the total foodstuffs consumed in Cuba were imported. This was possible because of the favourable terms of trade of the socialist bloc – especially for sugarcane – as well as by cheaply provided Russian oil, of which part was re-exported (Novo & Murphy, 2001, p. 329). After the Socialist Bloc disintegrated, Cuba lost access to cheap fossil fuels, direct food imports and the agricultural inputs, which threw the country into a severe crisis[25] that reduced food availability drastically. This was the main reason for the rise of urban agriculture.

Figure 9: Organoponic INRE1 in Miramar, Havana, Cuba (left) and Farmer member of INRE1 (right)

Source: Gonzales and Murphy, 2000 (left) and Tropical Resources Institute, 2016 (right).

24 www.wikiwand.com/en/Tropical_savanna_climate.

25 Referred in the literature as the "special period".

Following an "organoponic[26]" approach (see figure 9), gardens around the city were started to increase local self-sufficiency of food and reduce the need for transport, storage and other resource-demanding activities.

The support of urban agricultural production in Havana comes from two national programmes. The first one was implemented in 1997, where the government institutionalized the popular participatory activity, with appropriate legislation, to become the Urban Agriculture Movement[27] (Sabatino, 2017). Twelve years later, the government created a complementary programme for peri-urban agriculture, which seeks to transfer the "extremely positive experiences" of urban agriculture to the peripheries of Cuba's towns and cities (FAO, 2014). Based on FAO (2014), some of the practices that supported Havana's succeed in their efforts to improve its urban agricultural scene are:

- Recognizing crop and animal production as legitimate land use in the city's strategic plan (Aspect 1 and 3),
- Introducing measures (by the government) to grant vacant land free of charge for agriculture and to encourage the participation of women and youth (Aspect 1 and 6),
- Supporting the urban agriculture sector by having a Technical Advisory Board, representing 11 agricultural research institutes. Some sectors refer to agricultural supply stores, municipal seed farms, composting units, veterinary clinics, centres for the reproduction of biological pest control agents and the city's College of Urban and Suburban Agriculture (Aspect 3),
- Creating the Havana Provincial Office of Agriculture. This includes seven provincial technical departments and 15 municipal offices to assist the urban agriculture sector (Aspect 1 and 2),
- High-yielding production systems (for crops and livestock) complementing organoponic technology (Aspect 3 and 4),
- Marketing fresh produced crops through a wide range of outlets, including sales points located within 5 km of production (Aspect 4),
- Considering a holistic approach that acknowledges nature's contribution to fighting insect pests and for developing organic fertilizers (Aspect 5).

26 Cuban invention that considers high-yielding horticulture production systems that use organic substrates from crop residues, household wastes and animal manure (FAO, 2014).

27 National movement that generated valuable lessons in organic farming for Cuba (Sabatino, 2017).

5.1.2 Lessons learnt from around the world for Cape Town

Rosario

Rosario is similar to the city of Cape Town not only in terms of the complex city structure with its great metropolitan area developed primarily due to its dynamic port, but also regarding climatic conditions. Both cities share the same latitude with average temperatures of 17°C[28]. These characteristics play a role in city development, especially with regard to agricultural management.

Rosario is Argentina's third largest urban agglomeration and one of its most prosperous. Linked to the rich farmland of Santa Fe Province by road and river, its ports handle most of Argentina's exports of wheat, soybeans and vegetable oil. However, only 13 years ago, Rosario was a rusting industrial city in a nation whose economy had collapsed. Many of the city's steel, chemical and paper factories had closed, and one-third of the workforce was unemployed. In February 2002, the municipal government responded to the crisis by launching an urban agriculture programme in collaboration with two key partners. One was the national Pro-Huerta (Pro-Garden) programme, established in 1990 to foster small-scale, self-production of fresh food, mainly in low-income urban and peri-urban areas. The other was the Centro de Estudios de Producciones Agroecológicas- CEPAR (Centre for the Study of Agroecological Production), which had promoted vegetable gardening in the city's slums since 1987 (FAO, 2014).

In a nutshell, the following factors have been relevant for the success of Rosario's urban agricultural plan:

- Starting small, with 20 gardening groups including tools and seeds, and then gradually extending the programme throughout the city (Aspect 4),
- Funding for equipment, inputs and training workshops supported by technical teams. For example, one was formed by the municipality together with the CEPAR, Pro Huerta national programme and NGOs (FAO, 2014; Mougeot, 2006) (Aspect 2 and 4),
- Having a very clear vision of how to establish urban agriculture as a permanent activity in the city (see figure 10) (Aspect 1),
- Allowing long-term availability of suitable land for urban agricultural processes (Aspect 1 and 3),

28 Climate-data: www.en.climate-data.org.

- Constructing an academic-practical partnership between the National University of Rosario and local government departments for the previous analysis of the vacant space in the city (Aspect 2 and 5),
- Providing gardeners with security of tenure by approving an ordinance in September 2004 that established a rapid process of formalization that granted vacant urban land to residents for agricultural activities (Aspect 1 and 3),
- Establishing a system for the direct marketing of gardeners' production (Aspect 4),
- Supporting the diversification of the production portfolio (e.g. cosmetic products from natural ingredients such as nettle, aloe, and burdock, growing in Rosario's gardens) (Mougeot, 2006) (Aspect 4 and 6),
- Empowering women by giving them more chances to participate in the gardens' management teams (Mougeot, 2006) (Aspect 6).

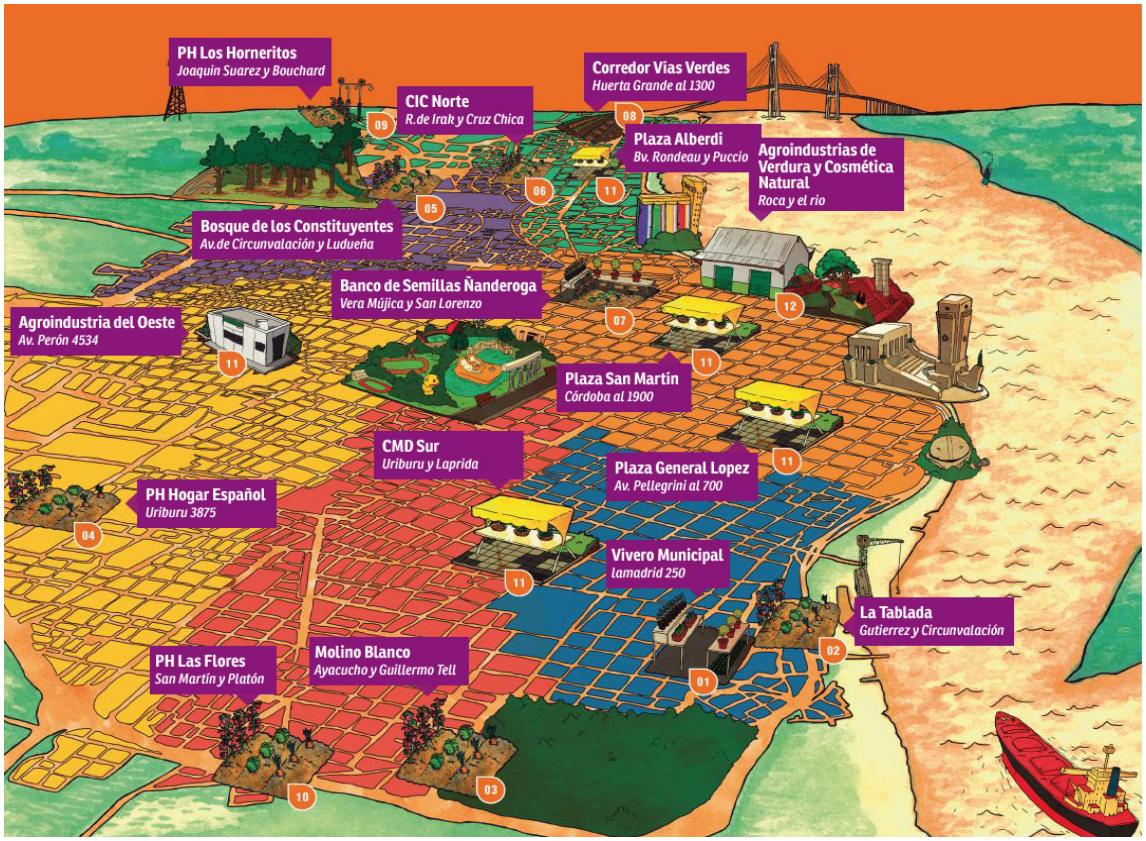

Figure 10: Agroecological spaces in Rosario

Source: Agricultura Urbana Rosario[29].

29 For more information visit: www.agriurbanarosario.com.ar.

Berlin

Like Cape Town, Berlin is a multicultural city with a historical background affected by war and enriched by migrants´ cultural assets. Moreover, an increasingly growing awareness with respect to food concerns is a relevant topic that the city addresses as part of its focus on sustainability and its participatory governance approach. These aspects, together with some of the characteristics that are listed below, supported our decision to present Berlin as an example in Cape Town.

Berlin's development of allotment gardens (*Kleingärten* or *Schrebergärten*) can be traced back to the middle of the 19th century when industrialisation lead to a dramatic increase of illnesses due to lack of healthy food, particularly among children. Especially during the First and Second World Wars, these gardens produced food and also served as temporary housing for dislocated people (Wunder, 2013).

The relevance of urban agriculture in Berlin has prevailed throughout its contemporary history. This can be attributed to the political will of the capital over the last 50 years, including the authorization to use the open urban (brownfield) space which became or remained underused after German reunification in 1990 (Viljoen & Bohn, 2014).

Currently, Berlin is the German city with the most diverse urban agricultural practices and with the most people participating in them (aprox. 70.000 people) (Wunder, 2013). In the last decades, Berlin became famous for being Germany´s urban gardening capital, as it holds over 100 community gardens. The roots of the Berlin garden lie in the intercultural gardens founded in the 1990s (Müller, 2011).

Some of the achievements of the urban agriculture framework in the city of Berlin, based on a number of sustainable measures, were:

- Government support via passing the federal law on small gardens (Bundeskleingartengesetz*)* to secure low rent to protect allotment gardens in the city during the economic recovery in the sixties and seventies (Aspect 1 and 3) (see figure 11)
- Establishment of several groups like Allmende-Kontor[30], Nachbarschaftsakademie[31] and AG Kleinstlandwirtschaft, that discuss the social and environmental impact of small-scale agriculture and community gardens in towns and rural areas all over the world. Activities also included several publications and the

30 For more information visit: www.allmende-kontor.de.

31 For more information visit: www.nachbarschaftsakademie.org.

organisation of national and international conferences (Halder, 2018; Wunder, 2013) (Aspect 2, 5 and 6)

- Supporting and formalizing local initiatives (e.g. Berlin's Agenda 21-Process[32]) that addressed the relevance of urban gardening at the local (neighbourhood) level, and which are now made nowadays at the entire municipal level (Aspect 1 and 3)
- Keeping continued communication among different stakeholders. For example, the exchange between the Berlin Senate and the gardening activists' network that resulted in the creation of *Werkstattgespräche urbane Landwirtschaft*[33]. This continuous platform of exchange between gardeners and city officials is one result of the networking done by Allmende-Kontor (Aspect 2)
- Considering initiatives that involve urban gardens to be part of social enterprises that pursue a not-for-profit goal while aiming for financial independence (e.g. Prinzessinnengärten[34] which started in 2009) (Aspect 4 and 6)
- Supporting the multi-dimensionality of urban gardens. For instance, establishing allotment and community gardens that serve the public interest by providing space for food production, the exchange of technical and cultural knowledge (of migrants), and enhance community building and social justice (e.g. raising awareness about gender inequality and refugee rights) and learning tools (e.g. school gardens) (Aspects 3 and 6)
- Having an interactive platform Stadtacker.net[35] and a *Gartenkarte* (Map of gardens) (see figure 12) in which most of the urban gardens in the city can be found, urban farmers can exchange experiences, organize themselves and learn more about other projects (Aspect 2)

As pointed out previously, these good practices are considered references for understanding how urban agriculture can play a role in a city's development. They were also used as inspirational experiences within the activities conducted in Maputo and Cape Town. Moreover, they were a provided a good start for conducting our field study. The results of this part will be presented in the following chapters.

32 www.stadtentwicklung.berlin.de/agenda21/.

33 It can be translated as "workshop dialogues about urban agriculture".

34 For more information visit: prinzessinnengarten.net.

35 For more information visit: www.stadtacker.net.

Figure 11: Urban agriculture in the centre of Berlin, after World War II

Source: Bundesarchiv, 1945.

Figure 12: The urban garden map of Berlin

Source: Berliner Gartenkarte: https://gartenkarte.de/.

5.2 Maputo

In the following section, the results of our work in Maputo will be presented. Since one of the main areas of focus of the project is the integration of urban agriculture on the policy level, it was proven to be useful to map out the political structures and responsible authorities. This is followed by a map of the relevant stakeholders in urban agriculture. Subsequently, the results of the two main events, a farmers' meeting and a multi-stakeholder scenario workshop, will be presented. The results are based on the methodology described in chapters 4.3 and 4.4. The key factors influencing urban agriculture in Maputo were supplemented by post-workshop interviews in order to create recommendations.

5.2.1 Political framework of urban agriculture

Going from the national to the city level, there are no specific policies or institutions in Mozambique aimed at urban agriculture as a phenomenon with specific characteristics. The debate about urban agriculture is still recent in Maputo, which is why our results are based on a small amount of data and political papers. However, we could identify relevant institutions and programmes that indirectly touch on the topic. The following overview of the main political actors, as well as current political tendencies like decentralization and the land use, help the reader to embed the debate onto the political scene.

The following organizational chart (see figure 13) visualizes the most relevant institutions (Ministries, Directorates and Departments) that were identified as crucial for the future of urban agriculture and for setting the topic on their political agenda. The structure is based on the final report of the study project "Urban Agriculture in Maputo, Mozambique" (Barghusen et al., 2016, p. 75) and was extended and reviewed during our time in Maputo.

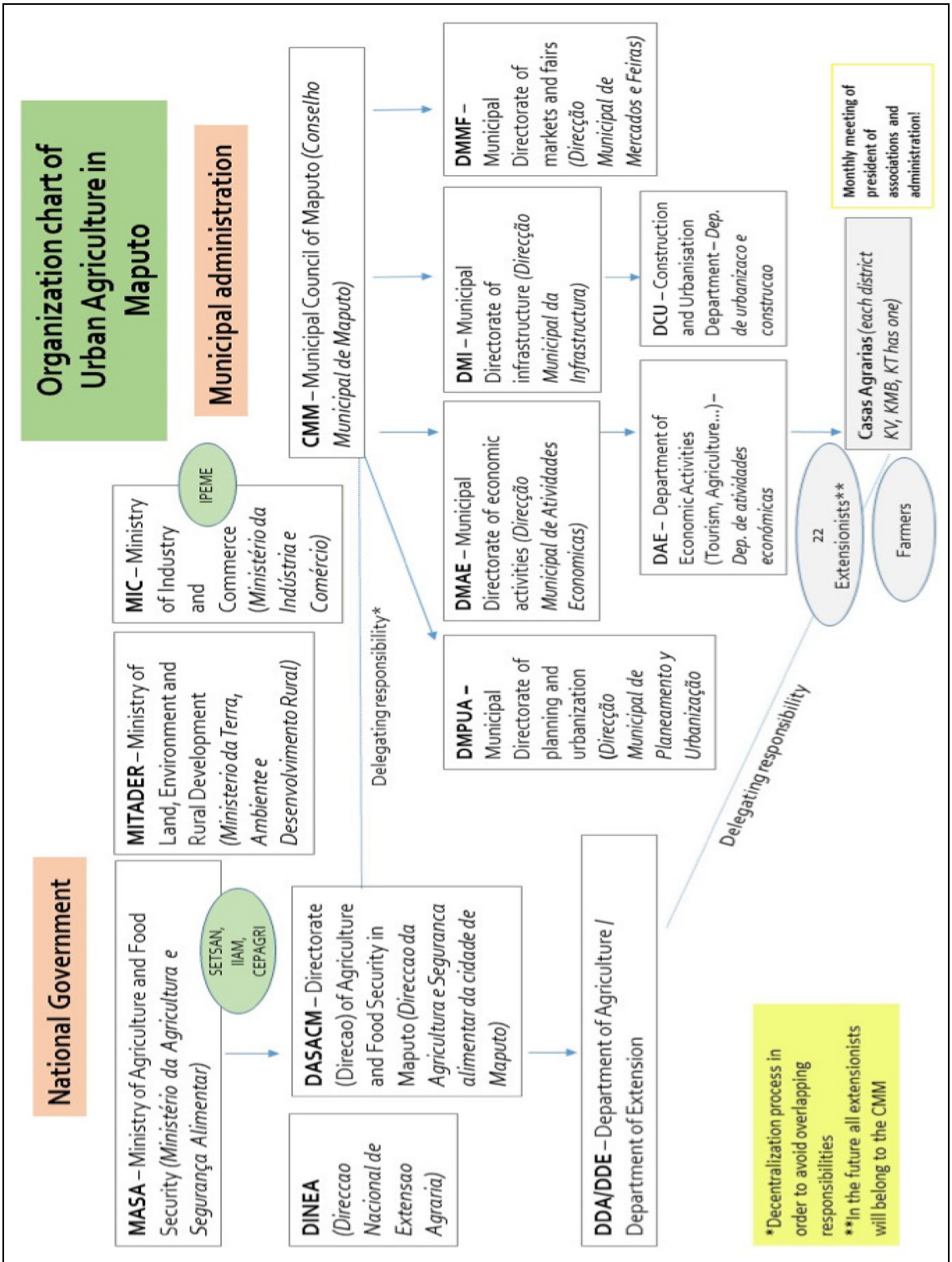

Figure 13: Political landscape of urban agriculture in Maputo

Source: Adapted and updated from Barghusen et al., 2016.

On the national level, the current strategic plan for Agricultural Development (PEDSA, 2010) harmonizes different strategic directives and has four pillars: (i) increase agricultural productivity, (ii) improve infrastructure for market access and investment, (iii) improve the sustainable use of natural resources and (iv) institutional empowerment. The support of agriculture per se also has an indirect effect on urban agriculture, however urban agriculture as a phenomenon with special characteristics is not mentioned a single time in the comprehensive document.

Looking at the city level, Maputo has some special characteristics that relate to political decisions in the country. Since the FRELIMO (Frente de Libertação de Moçambique) party decided to have national government structures within the cities, the state department DASACM (Direcção da Agricultura e da Segurança Alimentar da Cidade de Maputo) works together with the Municipality of Maputo CMM (Conselho Municipal de Maputo) on urban agriculture issues. According to interview partners from the Municipality[36], although this horizontal coordination functions well, the distribution of responsibilities sometimes remains unclear. It was mentioned that whoever wants to raise awareness and political legitimacy of urban agriculture, needs to involve responsible bodies from the national government (in this case the director of DASACM, Lúcia Luciano). Nevertheless, at the same time, decentralization efforts aim to avoid overlapping responsibilities. DASACM is thought to be outsourced to the city council and responsibilities from the DDA are planned to be transferred to the Casas Agrarias soon (Barghusen et al., 2016).

On the city level, there is no specific urban agriculture policy. However, there are programmes targeting agriculture in the city. The Extensionist Programme is the most relevant programme tackling urban agriculture in Maputo. It was created in 1987 and started in the year 2000 in Maputo. Currently, the city has 22 extensionists belonging to either DASACM or CMM. The different Casas Agrarias are the main extension offices supporting smallholder farmers and extensionists. Under the supervision of the CMM, they are the key actors between administration and farmers because they work in the field, teach farmers new production techniques, have knowledge about land and in some cases, establish market contacts. Throughout the process of decentralization, the administration of field extension services will be relocated, which means that all extensionists will belong to the Municipality in the future (Barghusen et al., 2016). However, the 22 extensionists are not enough for the 14,500 urban farmers in Maputo.

36 Interview with Estevão João and Matias Siueia, CMM, conducted on 02 August 2017 in Maputo.

Another crucial issue for the future of urban agriculture identified by the interviewed stakeholders is the access to land. When it comes to owning land, it is important to note that at independence in 1975, all land was nationalized. Due to Article 109 of the Constitution and Art. 3 of the Land Law, all land belongs to the state and shall not be sold, mortgaged or alienated (Barghusen et al., 2016, p. 84). A DUAT (Direito de Uso e Aproveitamento das Terras)[37] is a long-term user right that covers a period of up to 50 years after the fulfilment of the intended land-use. Most of the farmers in Maputo are organized in associations which enables them a better access to land use titles by applying for them directly at the CMM (Barghusen et al., 2016). However, requesting it at the CMM is a long and expensive process because the Land Registry Office has to confirm whether DUAT and the exploitation plan of the applicant are in accordance with land usage regarding urban planning (Barghusen et al., 2016, p. 4). At the same time, it remains unclear whether there is, in fact, functioning urban planning. Maputo has been characterized by unregulated expansion and informal urban planning for a long time and the director of the DMPUA, Euclides Rangel, confirmed that the major part of land in Maputo is informally planned[38]. This is due to rapid urban growth in the past decades, coupled with high levels of poverty (Jenkins, 2000; Jenkins & Andersen, 2011, p. 3). At the same time, there has been little consideration for urban agriculture in urban planning because agriculture has only been related to the rural areas of Mozambique for a long time (Masquete & Matias, 2016).

5.2.2 Stakeholder mapping

As part of preparation for the scenario workshop, we identified the key actors in urban agriculture who would create a multi-stakeholder dialogue on different levels (see chapter 4.1). The stakeholders and their respective institutions are visualized in a map, followed by a short description of the key actors (see figure 14).

37 According to the Land Law from 1997, a DUAT can be acquired (requested) in three ways: (i) Local community occupation governed by customary law (indefinite and inheritable), (ii) good faith occupation (after using the land for at least 10 years), (iii) granting and allocation of the land title by the State (formal authorization, renewable and inheritable). (i) and (ii) are reserved for national citizens.

38 Interview with Euclides Rangel, Director DMPUA, conducted on 08 September 2017 in Maputo.

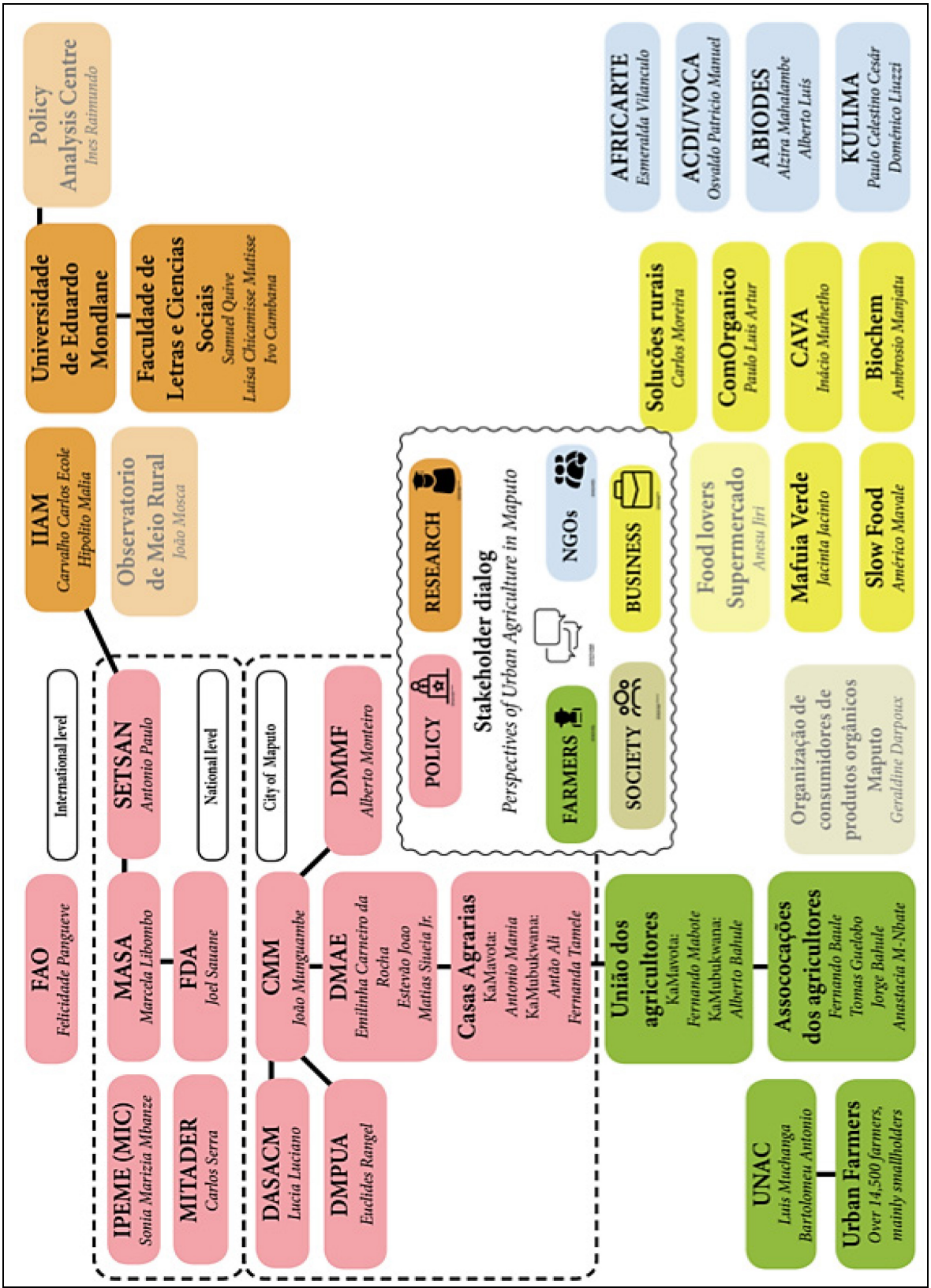

Figure 14: Stakeholder mapping Maputo

Source: Own illustration.

Governmental institutions

The national governmental institutions set the policy framework for urban agriculture. The Ministry of Agriculture and Food Security MASA (Ministério da Agricultura e Segurança Alimentar) with the affiliated Technical Secretariat for Food Security and Nutrition SETSAN (Secretariado Técnico de Segurança Alimentar e Nutricional) focus on the promotion of agriculture for food security, among other topics.

The Ministry of Land, Environment and Rural Development MITADER (Ministério da Terra, Ambiente e Desenvolvimento Rural) and the Ministry of Industry and Commerce MIC (Ministério da Indústria e Comércio) set the framework for land use and financial support for farmers, for example, through IPEME, an institute belonging to the MIC that supports small and medium enterprises to formalize, professionalize and grow. Their main services are providing management trainings, assisting in developing a business plan, packaging and barcodes, marketing strategies, access to finance and assisting small producers in legalizing its businesses. IPEME reinforces the importance to give added value to the vegetable produced in the city, such as cleaning, packaging and adding barcode to be able to place products in supermarkets.

Along with the above-mentioned Lúcia Luciano, director of DASACM, on the city level, we worked closely with the CMM, in particular with the Department of Economic Activities DAE (Departamento de Actividades Económicas). The DAE is coordinating economic and agricultural activities on the city level and is also the head of the Casas Agrarias in Maputo. Our key partners in the department were Estevão João (Head of Department) and his colleague Matias Siueia. Both showed a strong interest in creating a network and in promoting organic agriculture and urban agroecology. Furthermore, they are in continuous contact with the farmers through the Casas Agrarias. The Casas Agrarias are the centre of extension services and associations within the districts. They were especially interesting for our research because they are at the interface between administration and farmers, speaking the language of both. In Maputo, every district has a Casa Agraria and we were in regular exchange with the ones in KaMavota and KaMubukwana. They also were our main partners in helping us organize the farmers' meeting.

Another important actor is the Municipal Directorate of Planning and Urbanization DMPUA (Direcção Municipal de planeamento e urbanização) dealing with land issues and planning, which means that the land use for farming activities is also defined here. Apart from that, the Municipal Directorate of Markets and Fairs DMMF (Direcção Municipal de Mercados e Feiras) aims to incentivize vendors to

sell at the formal markets on the local level because this results in more dignity and valorisation of the products and their work.

Research

Our UFISAMO partners from the University Eduardo Mondlane UEM (Universidade Eduardo Mondlane), particularly the Faculty of Social Science and Philosophy have a range of experience in topics related to urban agriculture. We closely worked together with Prof. Samuel Quive and the PhD candidates Ivo Cumbana and Luisa Chicamisse, researching on consumer habits and organizational structures in urban agriculture. We also had the chance to test and discuss our workshop method with students from Prof. Quives master's programme *Sociologia Rural e Gestão do desenvolvimento*.

The Agrarian Research Institute IIAM (Instituto de Investigação Agrária de Moçambique) belongs to the MASA and is generating and disseminating knowledge on technological solutions for sustainable agricultural development, food security and nutrition.

NGOs and Civil Society Organizations

ABIODES (Associação para Desenvolvimento Sustentável) is a non-profit association promoting sustainable agriculture, providing trainings and introducing agro-ecological innovations. They have a large network that works on the ground with farmers and the Casas Agrarias. The NGO Kulima works to improve the socio-economic situation of disadvantaged communities. Kulima is specialized in food security and nutrition, among other things. Doménico Liuzzi, founder and national director of Kulima was involved in the process of creating the green belts in Maputo – the so-called *zonas verdes* – together with the first president of Mozambique, Samora Machel[39]. Another relevant NGO is ACDI/VOCA that fosters economic growth by providing technical and management assistance in the agricultural sector, e.g. by introducing new techniques. Working in KaMubukwana and Matola, they also promote better organization of the farmer's associations, extension services and organizational issues.

39 Interview with Doménico Liuzzi conducted on 04 and 06 September 2017 respectively in Maputo.

Business

ComOrganico and SlowFood promote local produce of quality in order to enhance the market for organic products with fair prices. They distribute and sell agro-ecological produce from Maputo, e.g. at markets like *Mercado da terra*. SlowFood also works as a caterer for organic products which is unique in Maputo. CAVA (Comércio, assistência e valorização agrícola) is an organization that promotes the production of national vegetables, connecting producers to supermarkets like Shoprite, and restaurants chains. It meets the expectations of these target groups and does the washing, selection and delivery of produce. Lettuce and cabbage are the main crops in Maputo, but they are of little value for supermarkets, which is why CAVA helps farmers diversify their crops. CAVA supports an inclusive and sustainable local produce growth.

Farmers' organizations

The National Union of Farmers UNAC (União Nacional de Camponeses) is a national alliance striving to achieve a greater role and presence of the farmers in Mozambican society. They are the local representative of the global peasant movement La Via Campesina. Moreover, the farmers in Maputo are organized in 34 associations. These are headed by a president who is elected every five years. Monthly meetings on the municipality level at the Casas Agrarias assure a constant information exchange (Barghusen et al., 2016). Since the different presidents play an important role in local political decision making, we were glad to have them at our farmers' meeting.

5.2.3 Results Farmers' meeting

In Maputo, we conducted a participatory workshop on the 15th of August 2017 with 22 farmers from KaMubukwana and KaMavota and eight agro-technicians or extensionists of the Casas Agrarias and of ABIODES and ACDI/VOCA. The objectives of the meeting were to learn more about their problems and needs, to get to know the perspectives and future visions of the farmers, and also to provide information about urban agriculture.

Figure 15: Participatory mapping at the farmers' meeting

Source: Own picture.

Main problems and challenges identified by farmers

Farmers believe that the agricultural lands in Maputo are not properly managed in terms of soil and water management, productivity and marketing of the products.

- Soils mainly range from saline to very saline, and thus demand adequate management for their renewal and productivity. However, on the other hand, one currently faces the often-exaggerated use of agrochemicals and the erosion and loss of soil material, due to the canalization of rain water from the city to the growing areas.
- Access to permanent water supply is also a key problem for farmers in the districts of KaMubukwana and KaMavotas, because they depend mostly on the deep well, the river and the rainy season. Also, watering the fields is done manually with help of cans, which results in the misuse of resources, especially in times of drought.
- Production is concentrated on fast-growing vegetables and salads, which are sold without any added value to wholesalers, who pay very low prices for the product. The producers themselves do not actively participate in the sale of

their products for various reasons: capital, education, high transactions cost, little negotiating power, disorganization, disinterest, etc.

- The producers indicate that the roads leading to the *machambas* are in poor condition, and the supply of inputs is far away from them.
- Unfortunately, agriculture extension systems in Maputo are still weak, both in terms of outreach capacity and the quality of services provided. There are only 22 technicians for 14,500 producers. Many NGO´s duplicated their work, and there is little identification of farmers with these service providers.

Farmers' suggestions related to their problems and needs

With help of examples of urban agriculture from around the world, as well as the development of a vision of a prosperous *machamba* using the participatory mapping, the following aspects were determined to be important:

- From the farmers' perspectives, to achieve the desired diversification of products and accordingly risk, it is necessary to access organic seeds through the creation of a seed and seedling plant. It is also important to have a suitable selection and adaptation of plants to suit different periods of the year and ongoing climate change.
- Another idea for diversification is through a community aviary breeding and a slaughterhouse in each district.
- Access to good quality extension and advisory services, provided by a coordinated and complementary public sector working with private companies, NGOs and farmer organizations. In this way, these professionals can become trusted expert contacts for farmers.
- Access to knowledge transfer related to different technologies, especially agroecology, e.g. the use of bio-pesticides based on tobacco and *piri piri* (common capsicum) that reduce cost production due to substitution of commercial agrochemicals.
- It is necessary to strengthen access to markets, and this can be made possible by (i) strengthening the self-organization of the farmers, (ii) improving roads for the proper transport of products and (iii) financing agro-processing plants to add value to the products.
- An irrigation system to reduce rainwater dependence, and a drainage system to avoid flooding during the rainy season, are key for the development of the *machambas.*

- Use of radio as a medium of communication about different topics, ranging from marketing to price information.
- Accessible input stores based on the needs of the farmers.
- Involvement of academia through a research centre, to support the perspectives of urban agriculture.

5.2.4 Scenario workshop

The scenario workshop in Maputo was a two-day workshop, which took place on August 23rd and 24th 2017 at the Eduardo Mondlane University (see annex for the detailed workshop programme), with approximately 18 to 25 participants each day (the number of participants fluctuated throughout the workshop). The participants were representatives of organizations from the public sector (CMM, SETSAN), farmers' associations from KaMabukwana and KaMavotas, civil society organizations (i.e. ABIODES, Kulima), research institutions (IIAM, UEM) and the private sector. A detailed overview of the participants and their organizations can be found on the participants list (see annex) and stakeholder mapping (see chapter 5.2.2), respectively.

The objective of the workshop was to bring different stakeholders in urban agriculture together to discuss the concepts of urban agriculture, develop different future scenarios of urban agriculture, while also creating a common vision. Through plenary discussions, small working groups, and presentation of results the participants could have discussions and work with people from different backgrounds. The scenario building workshop was the method applied (see chapter 4.4), the process (sequence of steps) and results of the workshop are described below.

Step 1: Discussing and determining factors of change (key factors)

Through small working groups (7-8 people), the participants brainstormed the most important factors that influenced the future development of urban agriculture. No maximum number of factors were set, so participants were free to suggest as many factors as they believed were relevant. The results were clustered, presented in plenary and discussed briefly.

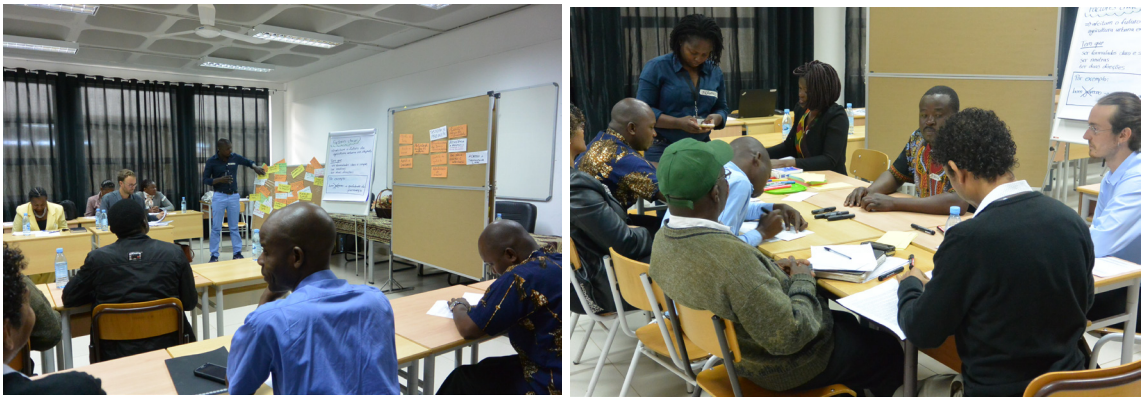

Figure 16: Participants brainstorming in working group (left) and presentation of results in plenary (right)

Source: Own picture.

Step 2: Weighting and filtering of these factors

The results of the three working groups and their key factors were merged (if they were similar), clustered and presented to the participants. This presentation made sure that participants agreed on the terms used and that their ideas were represented in the list. The participants were then asked to rate the factors according to what they believed to be the most important and relevant for the development of a future scenario for urban agriculture in Maputo. This ranking was made based on two criteria: importance and uncertainty. Table 3 shows the scores the selected factors were given by the participants.

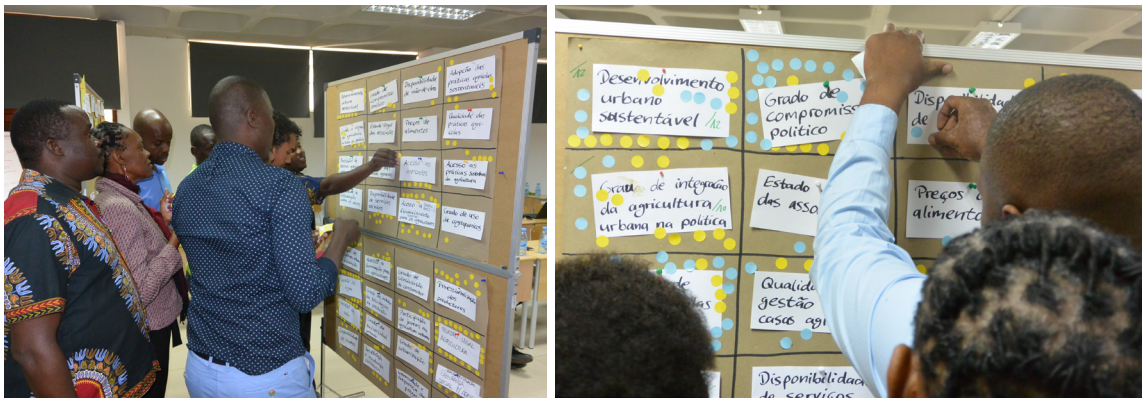

Figure 17: Participants voting for importance and uncertainty

Source: Own picture.

Table 3: List of factors with score of importance and uncertainty		
Factors	**Importance (0-22)**	**Uncertainty (0-30)**
Financial services	22	30
Market Access	3	13
Protection of agricultural land	22	24
Professionalization of the farmers	13	16
The communication between stakeholders	2	8
Climate change resilience	18	17
Water management	17	3
Soil management	18	4
Source: Own illustration based on workshop results.		

Important: After the vote, the factors were arranged in a matrix and the participants were asked if they agreed with the factors that were selected. This served to ensure their identification with the factors. The participants discussed and negotiated amongst themselves and included some factors that did not receive the highest votes, but were viewed as important factors that they would like to continue working on in the following exercises (i.e. market access and the communication between stakeholders).

Step 3: Describing variations of the factors

In working groups, the participants developed two possible variations (positive-realistic and business-as-usual) for each of the key factors identified. This helped in filing the key factors with details to help determine what it would look like if the factor continued the same development (business-as-usual) or improved from its current stage (positive-realistic).

Figure 18: Mwema Vaciqueto presenting variations of the factors

Source: Own picture.

Step 4: Developing a narrative positive scenario

The combination of different variations formed the positive scenario. These can be comprised of different arrangements, combining some positive-realistic with some business-as-usual variations or all positive-realistic variations. During the workshop, the positive scenario was read aloud by the moderator who combined all the positive variations in order to inspire the participants to imagine a future with the improvements they envisioned throughout the workshop (see the complete positive scenario below in box 3).

Step 5: Identifying strategic measures and key actors

The positive variations served as the basis for developing strategic measures to achieve the desired change. The participants developed the strategic measures and identified key forces through the use of a table with specific fields to be filled in (see figure 19). This step sought to collaboratively elaborate some actionable steps, identifying key forces or actors (organizations or persons), and strategic measures.

Figure 19: The table with strategic measures for water and soil management

Source: Own picture.

Box 3: Positive scenario from the scenario workshop in Maputo

"Imagine that it is 2030, we are all 13 years older and we are reunited here at the UEM again to talk about agriculture in Maputo. Now, there is joint planning done by all the actors, those who met 13 years ago, and other actors who came on board. Every three months, they gather to reflect about what is important to continue, to expand and to improve and make plans for the following period. Furthermore, the dialogue has continued and regular communication between the actors is done not only through meetings, but also through other means of communication such as phone calls, messages and emails.

Moreover, there are training programmes for farmers but the farmers themselves also teach academics about their practical knowledge. There is an exchange of agricultural practices, of organic agricultural practices and also conventional agricultural practices. Although now in 2030 there is almost no more use of conventional agriculture because people are aware of the negative impacts, especially on the environment. Therefore, people prefer to practice organic agriculture, taking care of the soil, stopping and reversing erosion and improving the quality of the soil and the quality of water. Water distribution has been improved, and so has water usage for agriculture through the adoption of automated irrigation systems, combined with manual irrigation, as it has been part of the culture; watering is good for the plants and soothes people's soul.

The farmers earned their statute, a Statute of Farmers, which gives official recognition of their profession as farmers; they now have an identification document that recognizes them as farmers. Thanks to this formalisation, the farmers can access affordable credit to finance their activities and invest in equipment and inputs. They also pay their contribution to the INSS (social security system), join the social security system, and know that by the time they reach the retirement age,

they will have retirement pension they can rely on, being rewarded for the hard work they have been doing their whole lives. Their children will follow their path because now agriculture is a practice that is appreciated by the society. The society is now aware of the importance of agricultural produce grown and consumed locally. The life of the farmers improved, they are nourishing themselves better, they have better access to the local markets; they no longer have to worry about losing their produce after the harvest for not being able to sell them. The relationship between consumer and producer improves, the consumers now knows where their food comes from, and the farmer can now share with the consumers how long it had taken for that food to grow. The consumers have also started to help the farmers. They come visit the farms regularly, bringing their children to the machambas, where their children will go pick up their food with their own hands."

5.2.5 Factors and recommendations

The following chapter presents the results of the workshop and a detailed in-depth analysis of the key factors identified by the participants, followed by specific recommendations for each factor. After the workshop, the results were verified through expert interviews and a literature review. The factors are listed in thematic order, starting with the necessary structures for urban agriculture, like financial services, market access and protection of agricultural land, followed by the professionalization of farmers and the communication between the stakeholders, and ending with the environmental factors, including climate change resilience, water management and soil management. All key factors are introduced with a problem statement. Afterward, the most important processes and the results of the scenario workshop are described and presented. Insights of expert interviews and literature research are included to form recommendations at the end of every chapter. The actors in brackets are the target group for the respective recommendation.

5.2.5.1 Financial services

In the scenario workshop, the participants named access to finance as the most important key factor that influences the future of urban agriculture in Maputo, although the subject was named only superficially in the farmers' workshop. Small agricultural producers face many hurdles, including limited access to financing. Only 1% of bank lending goes to the agricultural sector (IFC, 2014, p. 7). Without access to credit, poor families must rely mostly on the following informal mechanisms: family and friends, as well as community based savings groups like

Accumulating Savings and Credit Associations (ASCAs) and Rotating Savings and Credit Associations (ROSCAs)[40], including *Xitiques*[41] and the moneylender. These informal mechanisms are insufficient, can be unreliable and are often very expensive (CGAP, 2013; Ilal et al., 2016, p. 64).

Access to financial services is critical in order to provide funds for farm investments in increasing productivity, post-harvest practices, household cash flow, enable better access to markets and promote better management of risks. Access to finance can also play an important role in climate adaptation and can increase the resilience of agriculture to climate change, thus contributing to longer-term food security (World Bank, 2014, p. 7).

For the workshops' participants, access to financial services for small agricultural producers in Mozambique, including Maputo, is limited. Furthermore, high interest rates and lack of knowledge and information discourage farmers from asking for financial support. Using 2030 as reference year, participants at the workshop assumed that in a positive scenario, better access to financial services, as well as adjusted credit programmes could support access to other inputs such as land, water, seeds, temporary workers etc. intensify operations (e.g. irrigations systems). These conditions have a positive influence on smallholder productivity.

On the other hand, access to financial loans will also have a positive and strong influence on producer empowerment. By allowing small producers to have access to loans, further opportunities can be created (e.g. start a business or for adding value to their products) and facilitate market entry. Some of the farmers would also be willing to diversify their activities (e.g. small-scale poultry farming) and even improve their technological assets (e.g. purchase pumps and solar energy systems).

As strategic measures for reaching a positive scenario, participants have identified two work groups. One work group would try to generate conditions for financial institutions to offer suitable products to smallholder farmers by taking

40 A rotating savings and credit association is a group of individuals who agree to meet for a defined period in order to save and borrow together, a form of combined peer-to-peer banking and peer-to-peer lending (Ardener, 1995).

41 Xitique is an informal saving and credit arrangement based on mutual trust. "Termo de origem Bantu no grupo ou família linguistica Tsonga que significa sistema de empréstimo ou de poupança praticada entre membros de uma determinada comunidade, seja ela habitacional, religiosa,do local de emprego, ou outra, onde o valor da contribuição é fixado por mútuo consentimento entre os membros e entregue em períodos igualmente fixos e de modo rotativo a cada membro. O xitique ou xitike é praticado informalmente e não implica juros ou qualquer outa forma de obrigações finceiras e fiscais geralmente praticadas pelos bancos formais. Os seus mebros aderem de forma voluntária sem nenhuma escritura legal" (http://www.dicionarioinformal.com.br/xitique/).

agricultural particularities into account. Key actors[42] for these tasks would be the Bank of Mozambique, FDA, private finance institutions (BCI, BNI; ABC, Casa Comunitaria de Microcréditos and others) and NGOs like GAPI (Management and Funding Company for Promotion of Small Investment Projects, abbreviation in Portuguese). Secondly, participants argued that financial knowledge of producers should be strengthened and agricultural activities formalized to support requirements of financial institutions – the other work group should take the lead in this agenda.

Also, important aspects to be considered for financial support are payment of taxes NUIT, DUAT (land use title), elaboration of business plans or documents that support loan purposes, as well as understanding of interest rates, savings methods, etc. In this case, universities like UEM, and governmental departments such as DASACM and the Municipality of Maputo can be part of this work group. Casas Agrarias will be agents in charge of incorporating and promoting capacity building in financial aspects. Through their associations, small-scale farmers should participate in each group work to ensure that their interests are properly considered.

In an interview with Joel Sauane, credit analyst from the Agricultural Development Fund (FDA), many aspects contributing to the difficulty of providing and obtaining credits were mentioned. Such aspects mentioned included some of the risks associated with agricultural activity, such as seasonality and the associated irregular cash flows, higher transaction costs, and systemic risks, such as floods, droughts, and plant diseases. Additionally, financial literacy and the formality of small-scale farmers is low: on average only 40% of farms possess a DUAT (land use title). The percentage of registered farms is even lower at 28 % (Ilal et al., 2016, p. 100).

The formal banking sector perceives lending to small farmers to be risky, which might explain why bank loans in financial market are concentrated in medium and large companies, most of which produce products for export[43].

42 This Information was complete with interviews to Ms. Mbanze (Chef of the department of the Institute for the promotion and development of small and medium-sized enterprises IPEME) and Mr. Sauane (Chef of credits lines of the Agrarian Development Fund-FDA) realized in September 2017 in Maputo.

43 Loans start from 100 thousand MZN (approx. 15 thousand Euros), an amount of money that for small farmers is impossible to guarantee.

Recommendations

- Form a technical working group to develop an action plan about finance services tailored for small scale farmers, including key stakeholders, such as Bank of Mozambique, FDA, BCI, BNI; ABC, Casa Comunitaria de Microcréditos, GAPI
- Start a finance capacity building programme or assimilate the methodology Rural Invest[44] to provide small scale farmers with the tools they need to properly understand and reflect on the issues they face when they take out a loan (elaboration of business plans, or documents that support loan purposes as financial records). Key stakeholders for this are FAO, universities like UEM, DASACM, CEPAGRI, and the Municipality of Maputo
- Financing to formalize farm status (DUAT and NUIT), because many producers have not been formalized due to lack of capital. Thus, the municipality of Maputo and the organizations involved in these permits could finance this formalization process through their services
- Provide financial information to smallholder farmers about finance possibilities and products available to them through different channels like farmers organizations, fairs, Casas Agrarias, NGOs, and radio and television

The donor community can assist financial institutions in developing viable products, and provide examples of microfinance institutions in Latin America that have managed to overcome these barriers "through a mix of product, distribution, and collateral customization, all of which begin with a fundamental understanding of what smallholder clients want and need" (Triki & Faye, 2013; Zook, 2014).

5.2.5.2 Market access

Access to markets was one of the most important topics at the farmers' meeting, as well as at the scenario workshop in Maputo, regarding the future development of urban agriculture and the integration of smallholder farmers into the food system. Currently, urban agriculture is highly informal in Maputo (and in many other African cities). Urban farmers often lack transparency of prices and appropriate information on market conditions and processes, as well as physical access to formal markets. This makes them vulnerable to exploitation by retailers, and their produce could result in local over- or underproduction (Barghusen et al., 2016, p. 106; Mwangi & Markelova, 2009; Weinberger & Lumpkin, 2005).

44 Rural Invest is a toolkit designed to help with the preparation of sustainable agricultural and rural investment projects and business plans. For more information, see: http://www.fao.org/support-to-investment/knowledge-resources/learning-tools/ruralinvest/en/.

In Maputo, most of the vegetables produced are sold via informal street vendors or markets (see figure 20). Supermarkets play a minor role in promoting local products. The official municipality statistic states that Maputo has 63 markets (22 formal and 42 informal)[45] with approximately 17,000 retailers (Conselho Municipal de Maputo, 2010). The biggest and most important local market, the Central Market Zimpeto, works like a stock exchange. It is a reference for pricing policies, where stable prices for the primary crops are defined so producers, farmers and vendors have price certainty and can avoid losses[46,47]. There have been attempts to formalize urban production, e.g. by creating a label and certification system by the NGO ESSOR. However, an important part of urban agricultural sales remains informal (Barghusen et al., 2016, pp. 98, 110). Looking at the consumer side, the lower class consumes the highest share of urban agricultural products, primarily on informal markets where prices are cheaper. The high-income earners buy their food at formal markets or in supermarkets (Barghusen et al., 2016, p. 98, see also chapter 2.1.1).

In the positive-realistic scenario that the participants described for 2030, there are improved policies for consumer and producer protection. Moreover, there is a guarantee of a continuous supply of products to consumers and innovative technologies help to guarantee the quantity and quality of products. Possible actions to achieve the desired scenario are common and inclusive planning of the actors, better access, which means constructing roads, and increasing means of transport and further processing of agricultural products on the local level, and controlling and validating products.

Regarding common and inclusive planning of all actors, it was discussed that associations or other forms of collective action can help decrease market and price risks, reduce transaction costs and increase the farmer's negotiating power within the value chain (Barghusen et al., 2016; Birthal, Joshi, & Gulati, 2005; Mwangi & Markelova, 2009). Joint marketing strategies and the establishment of transportation facilities of agricultural produce from the field to the local markets is another major possibility for associations in the future. However, in Maputo, although most farmers are organized in associations, they do not use this structure to sell in bulk or negotiate joint access to markets. Their associative activities

45 Interview with Dr. Monteiro, Direção Municipal de Mercados e feiras, conducted on 08 September 2017 in Maputo.

46 Interview with Dr. Monteiro, Direção Municipal de Mercados e feiras, conducted on 08 September 2017 in Maputo.

47 Interview with Inácio Muthetho, Director Geral CAVA, conducted on 08 September 2017 in Maputo.

are sometimes limited to sharing a larger plot and obtaining a DUAT for it (Barghusen et al., 2016). During the workshop, it became clear that associations play an important role in the lives of the farmers and are likely to become even more important in the future (Barghusen et al., 2016, pp. 80, 109).

Figure 20: Odete Martamacamo, a young vendor selling in the streets of Maputo

Source: Own picture.

In a post-workshop interview with Dr. Arnaldo Monteiro, Municipal Director of Markets and Fairs[48], it came out that informality is one of the primary challenges that CMMF tries to resolve. At the same time, many stalls at formal markets remain empty. Vendors must only pay a symbolic tax, but many of them want to avoid the bureaucratic process of applying for a formal stall. Apart from that, the communication and divulgence of market-related information could still be improved, since there is no regular exchange between farmers and the CMMF.

48 Interview with Dr. Monteiro, Direção Municipal de Mercados e feiras, conducted on 08 September 2017 in Maputo.

One result of our workshop was learning that farmers do not feel they have enough access to markets due to bad roads, high transaction costs and little bargaining power (see chapter 5.2.3). Another challenge is the lack of trust between producers and intermediaries. During the workshops, it came out that many participants fear that they could be exploited by intermediaries. According to Mr. Monteiro, intermediaries or retailers are important for the value chain because they have a better understanding of demand and are able to channel goods efficiently. Aside from that, vendors are influenced by the socialist economy and might not be ready yet for the free market[49]. Transparency and access to information remain among the most important issues.

Looking at coordination between key actors, a lack of cooperation can be observed. For instance, it came out that CAVA and IPEME, both of which work on the commercialization of agricultural products, do not coordinate their activities, although they follow similar goals. Sonia Mbanze from IPEME also mentioned the lack of institutional coordination between IPEME and other governmental departments like the DAE and DASACM. She pointed to it as one of the main challenges to improving her work[50].

Recommendations

- Develop joint marketing strategies and establish a means of transporting agricultural produce from the field to the formal local markets (Casas Agrarias, DAE, CMMF),
- Improve communication and promotion of market-related information like access to stalls and price politics. This could improve the utilization rate of the stalls in the formal markets (Casas Agrarias, CMMF),
- Incentivize collective action by producer associations to improve their negotiating power and increase incomes (Casas Agrarias, CMM, DAE),
- Build trust through transparency campaigns between producers and intermediaries or retailers to extend the value chain and foster specialization (Casas Agrarias, CMMF),

49 Interview with Dr. Monteiro, Direção Municipal de Mercados e feiras, conducted on 08 September 2017 in Maputo.

50 Interview with Sonia Mbanze, Head of Technical Department of IPEME, conducted on 06 September 2017 in Maputo.

- Plan and organize production on a national level and make this data available to the local level. Place more political regulations on imports to foster local trade (MASA),
- Governmental support for initiatives like CAVA to organize production and quality control and foster diversification and high-value crops with further processing. More public-private cooperation of initiatives with similar goals (MASA, CAVA, CMM),
- Improve coordination within governmental departments on different levels, e.g. IPEME with CMM and DAE to meet the needs of farmers,
- Create a central database with free access mapping the production and services in the districts (CMM, CAVA).

5.2.5.3 Protection of agricultural land

In Maputo, like in many other parts in the world, land is a crucial asset for urban agriculture (see chapter 2.1.1). Its availability, accessibility and security are of particular concern to urban farmers who need to be able to rely on a long-term planning (RUAF Foundation, n.d.). For workshop participants in Maputo, the protection of arable land was a key factor in ensuring the future of urban agriculture in their city, however it remains uncertain how responsible authorities will set their priorities in the future. This is in line with studies stating that the value of urban agriculture as a productive sector – over 14,500 farmers work on over 1,300 ha of arable land – is underestimated on the administrative level and therefore not systematically integrated into urbanization policies and land use planning in Maputo. Additionally, conflicts of interest (selling vs. preserving) are omnipresent (Barghusen et al., 2016). Moreover, informal (and formal) settlements are constantly growing and the area of urban agriculture is likely to decrease in the next years (Barghusen et al., 2016, p. 92)[51].

Imagining a better future for urban agriculture in Maputo, the workshop participants defined the following situation for the year of 2030: existing land-use is updated regularly. The land registry and planning which areas are defined for agricultural use is thereby improved; as is the land-use management by the government to know the limitations of land and the urban edge. Furthermore, the commitment and coordination with other governmental organizations and ministries will increase.

51 On a national level, approximately 75% of urban residents in Mozambique currently live in informal settlements (Locke, 2014, p. 2).

Figure 21: Machambas in the zonas verdes of the district of KaMubukwana, Maputo

Source: Own picture.

Moreover, participants discussed suitable strategic measures and actions. They agreed on ongoing monitoring and mapping, preparing stakeholder data and making them available, introducing Information on land use and Communication Technologies (ICTs) like smartphones and mobile phones, as well as ICT courses provided by the universities and the MCTIC and Technological Institutes via the Casas Agrarias. In the discussion, the participants said that increased use of smartphones will help farmers to access useful information regarding their right to land and other issues.

The administrative level is central to the process of collecting data and making it publicly available. Therefore, strategic measures were discussed in a post-workshop interview with the Planning and Urbanization Department of the City. It was pointed out that since 2015, the Municipal Council is no longer accepting changes in land use (from agricultural use to construction), in order to foster agricultural practices. Except for Katembe, where the DUATs will soon be allocated, all urban areas are registered, and users have received their DUATs. Furthermore, there are several urbanization plans where definitions of areas and insight can be provided at the department[52] (see chapter 5.2.1).

52 Interview with Euclides Rangel, Director DMPUA, conducted on 08 September 2017 in Maputo.

The difference between administrative and farmers' perspectives regarding land access demonstrates how necessary an ongoing dialogue is to adequately work on urban agriculture issues in city development. The successful integration of urban agriculture into urban land use is a complex task requiring a multi-stakeholder approach. We have formulated the following recommendations:

Recommendations

- Provide regular updates to urbanization plans and the promotion of urban agriculture through zoning (CMM, DAE, DMPUA, DMI),
- Improve access and transparency of land-related issues. Support the CMM Project "Open Dataton" which is funded by the World Bank and supported by other partners, including Standard Bank[53],
- Use GIS tools to register and monitor land use, and use it as a basis for a transparent taxation and activity evaluation system. When integrated into local government and planning processes, the GIS database can contribute to raising public awareness about the situation of urban farmers and help to improve extension services. It can also be used by town planners for further analysis and planning purposes (CMM, DMPUA, DAE, UEM) (Dongus & Drescher, 2006),
- Improve coordination with other departments and ministries like MITADER, since urban planning needs to acknowledge that urban agriculture falls under the jurisdiction of several different levels and types of authorities, e.g. agriculture, forestry, parks and gardens, public works and urban planning.

5.2.5.4 Formalization and capacitation of farmers

During the workshop, one of the three working groups had the opportunity to discuss and develop different possibilities for the future of farmers and their skills linked to the development of agriculture in the city.

Supporting a framework that permits including farmers into different national systems that ensure basic needs (e.g. health care, social protection system or INSS and retirement pension) has been difficult to design and implement in countries in the Global South, including Mozambique. Moreover, the acknowledgment

53 The project is comprised of events and different workshops, among others the "Analysis and Visualization of Geo-referenced Data". It has the objective of opening up approved, ratified, actualized and digitalized data of the country's capital and its use through technological solutions. On the long term this could enable transparency, improve the quality of life of its citizens and foster the quality of services provided to the residents of the city. More information: http://www.verdade.co.mz/economia/63470-open-dataton-maputo-2017-municipio-de-maputo-incentiva-jovens-a-desenvolver-solucoes-de-base-tecnologica.

of farmers' activities and contribution to city development has been equally difficult for ordinary citizens of Maputo[54] to understand, which contributes to the inherited marginalization of the agricultural sector (including farmers), as explained by Mosca (2014).

Figure 22: Anastacia Nhate discussing the role that farmers should have in Maputo

Source: Own picture.

Two interlinked aspects related to this topic were enthusiastically discussed during both the group work session and the plenary.

Formalization of the profession *agricultor/produtor* (farmer)

As proposed by the majority of working group participants, supporting the formal status of farmers should be included into the INSS and allow access to the title granting use and enjoyment of land or DUAT (see chapter 5.2.5.1 Financial Services). These two factors also contribute to greater appreciation of their work and role in city development. Moreover, the idea of creating the *carrera do agricultor* (farmer profile) in the form of a joint dual-programme among academic and

54 Interview with Estevão João, Director DAE, conducted on 04 September 2017 in Maputo.

technical institutions was proposed by Estevão João as a fundamental factor that supports the role of farmers in the current urban scene[55]. For this purpose, many decision-making agencies and academic organizations should assume the coordination of this proposal. Coherent support from other actors (e.g. private sector and NGOs) may help create awareness to achieve this goal.

Capacity development for farmers

The second aspect discussed involves opportunities for farmers to have access to educational programmes and training programmes that permit them to develop additional or complementary capacities[56] (e.g. managerial topics and knowledge about useful equipment) and not only be part of the conventional support with focus on the provision of seeds and consumer goods (Mosca, 2011). During the discussion of positive variations during the workshops, it was concluded that it is important to work jointly with research organizations and technological institutes focused on agricultural topics, as well as with technical organizations or experts that focus on communication[57]. Farmers should consistently work together with their associations, Casas Agrarias and the municipality to adapt and complement education proposals. Governmental agencies (e.g. MASA and MINED) should support the initiative by monitoring the quality and focus of the programmes and certifying their validity.

- With respect to the equipment or level of technology that can be employed, the discussion focused on the inclusion or improvement of the use of ICTs (Information and Communication Technologies) to solve some problems related to access to useful information[58]. This also relates to the technicians, who can also profit from ICTs to improve communication with farmers and other technicians (Angello, 2017).

55 Interview with Estevão João, Director DAE, conducted on 04 September 2017 in Maputo.

56 Interviews with Estevão João, Director of DAE and Doménico Liuzzi, Director of the NGO Kulima conducted on 04 and 06 September 2017 respectively in Maputo.

57 Interview with Alzira Mahalambe and Alberto Luis, Project Leader and technician respectively of the NGO ABIODES conducted on 08 September 2017 in Maputo.

58 A particular case from Jorge Bahule, president of the Association 10 de Novembro in KaMubukwana is a good example on how access to information can be useful to collect and contrast data with regard to his association. He knows very well all aspects regarding his community but lack of information related to the city structure, data and programmes. Similarly, he is a self-taught photographer that continuously looks for learning more about his passion. His main thematic focus of his work is the development of the *machambas.*

Recommendations

Legal context:

- Regularize and clarify the framework established by the *DUAT* as part of the professionalization strategy that allows producers to understand and set timeframes to plan their activities (DASACM),
- State and formally recognize the carreira do agricultor through designing a joint programme among academic, technical institutions and the Ministry of Education. This should have value equivalent to a first university degree (B.A. or B.Sc.) with theoretical and practical components (CMM, DASACM).

Capacity development of farmers:

- Enable academic institutions (e.g. UEM through their agriculture, social, management and technological study programmes) to set the framework for the implementation of the joint dual-programme degree (MINED, UEM).
- Complement theoretical knowledge with field work done in the *machambas* and in the managerial sector with partners such as ABIODES and Kulima. They have already shown interest in supporting different phases of the career (e.g. through seminars, internships, degree thesis, etc.) and realize that their benefit could be great[59],
- Design and implement programmes that permit farmers to profit from activities that take place in advance stages of the value chain. This supports the consolidation of strategic alliances which permit practical knowledge transfer (Kulima, ABIODES, Casas Agrarias),
- Implement adjusted Information and Communication technologies (ICTs). Farmers within associations could be better organized and decide with greater judgement how to improve their conditions (Casas Agrarias, CMM, UEM). Moreover, facilitate internet connections and a plan-setting for taking advantage of open online courses that can be personally and/or technically interesting for farmers (Casas Agrarias, CMM),
- Award farmers that perform well and are identified as role models by different stakeholders (Casas Agrarias, CMM),

59 Interview with Doménico Liuzzi , Director of the NGO Kulima and Alzira Mahalambe, Project Leader of the NGO ABIODES conducted on 04 and 06 September 2017 respectively in Maputo.

- Support the exchange of knowledge among farmers. A "farmer to farmer"[60] approach permits a more suitable knowledge transfer to meet farmers´needs (Casas Agrarias, CMM, NGOs).

Capacity development of technicians:

- Provide soft-skill courses that include ways to improve communication skills of technicians to create a better technician-farmer relationship[61] (NGOs, Casas Agrarias),
- Create a platform that permits exchange of experiences and information beyond technical expertise. The Casas Agrarias as liaisons among many actors are called on to promote this measure,
- Bringing experiences from other farmers around the world to support the technical knowledge of technicians could create and improve their messages[62] (CMM, UNAC, UEM).

5.2.5.5 Management of communication lines among actors

This factor was defined as the set of all methods and processes (e.g. planning, implementing and monitoring forums and/or networks) that supports channels of communication for exchange among actors[63].

Although this was not considered to be one of the most important factors during the short-group discussions, the plenary argued to include it as one of the key factors after realizing the need for a platform to continue the discussion and/or a more organized way to communicate better.

Promoting communication among actors has been, according to previous research, a challenge that involves not only personal and organizational motivation from all sides, but also a difficult task when a structure or platform that pushes better exchange among actors does not exist (Victor, Ballantyne, Le Borgne, & Lema, 2013).

According to the workshop positive variation, regular communication should be established in a participatory manner[64]. This approach is supported by Victor et

60 Concept used by Food First Front. For more information visit: www.foodfirst.org.

61 Interview with Estevão João , Director DAE, conducted on 04 September 2017 in Maputo.

62 To set a farmer-to-farmer relationship that improves agricultural practices has been noted by representatives of UNAC as a useful method for increasing confidence and acceptance.

63 Definition discussed in the plenary.

al. (2013) who state that communication combines different "energy sources" to power different phases of platform development. When achieved on multiple levels, this collective work is considered to be a tool for knowledge exchange and synergy creation (OECD, 2015).

To set up a platform for exchange is a mechanism for addressing current issues around urban agriculture and the flow of communication among different actors involved. Regarding this last point[65], although the communication among farmers from different communities in Maputo continues to be strong and fluent, other channels remain one-sided (i.e. between producers and extension workers), partial (i.e. between municipality and unions), disorganized (when related to the municipality and NGOs) and poor (between municipality and MASA[66]). The reason for this is basically that the commitment that different actors (e.g. politicians) show is minimum, unclear or only superficial. For example, the recommendations that some policy makers present as strategies for solving farmers' problems are often not reviewed by their counterparts. This creates a feeling of disregard and contempt.

Among the main actors who should be involved in the effort of reorganizing and improving the communication quality and channels are, on one hand, government agencies working close or linked to the decision-making authority, such as MASA, MITADER, SETSAN; research institutions from the government (e.g. IIAM), universities in Maputo (e.g. UEM) and from the international community (e.g. FAO); and organizations or agencies working directly with the farmers in the city (e.g. associations, NGOs and municipal council). Further concrete recommendations are the following:

Recommendations

Extensionists

- To improve and enrich knowledge, a platform for regular exchange of ideas and information among extensionists should be supported and promoted. A cross-cutting communication dynamic not only fosters interaction, but allows them to enrich their technical knowledge and broaden their perception of pro-

64 Also discussed in interviews with Estevão João, Director of DAE and Alzira Mahalambe and Alberto Luis, Project Leader and technician respectively of the NGO ABIODES conducted on 04 and 08 September 2017 respectively in Maputo.

65 According to what was discussed in the workshop.

66 Also discussed in interview with Estevão João, Director DAE, conducted on 04 September 2017 in Maputo.

jects, organizations and laws playing a role in the urban agricultural scene (CMM, ABIODES, Kulima and other NGOs),

- An update and overhaul of educational programmes (curricula) by educational centres training extensions could support an even more comprehensive understanding of current urban agricultural issues.

Other actors

- Actors working on urban agricultural topics have been working in partial isolation. To avoid this pattern, an interactive sharing platform can be promoted and managed by a local or international research organization. UNAC, CMM and/or the FAO, as experienced entities coordinating and implementing seminars, workshops, conferences, etc., could act as key drivers for implementing this measure (UNAC, CMM, FAO and NGOs),
- Universities, particularly UEM, are called to work as platforms to exchange of ideas and support joint work in urban agriculture. Moreover, as academic institutions, their quantitative and qualitative research can continually support the efforts and initiatives proposed by other private and public organizations (UEM-Faculty of Sociology with other faculties),
- Synergies should be sought and joint initiatives developed with the objective of complementing efforts. For example, designed working partnerships (i.e. internships, exchange programmes, practical courses and/or thesis topics) between academic and practitioner organizations support the flow and quality of communication. Organizations such as ABIODES and Kulima are open to supporting joint programmes (UEM, ABIODES, KULIMA and other NGOs),
- Policymakers should more frequently and efficiently (including feedback loops) review the recommendations or strategies that they propose to help farmers to overcome short and long-term problems. Moreover, the communication among them should be organized and shared (using one online calendar as an option) to save time and be more effective.

5.2.5.6 Climate change resilience

Mozambique, with its long coastline, weak infrastructure and severe droughts in the last years, is one of the countries in Africa most vulnerable to extreme weather patterns (INGC, 2009). Future scenarios indicate sea level rise, more intense cyclones, land right conflicts due to permanent inundation, water shortages, degrading land due to saltwater intrusion, escalating food shortages, more epidemics and an exponential increase in the spread of wildfires and damage. How-

ever, Mozambique has an adaptive capacity with substantial well-kept natural resources. Therefore, the extent to which this vulnerability will increase depends on political decision makers. In the scenario workshop, the participants prioritized climate change resilience – together with soil management – as the third most important key factor that influences the future of urban agriculture in Maputo.

The participants described the term climate change resilience as having "the capacity to deal with external factors like inundations". The positive scenario the participants imagined for the year 2030 included different aspects: construction of infrastructure that can hold back water during inundations, use of good organic agriculture practices and the cultivation of drought- and flood-tolerant crops, as well as increasing the population's awareness of climate change and its impacts. On one hand, the suggestions were very technical, but on the other hand, the aspects of education and sensitization played a big role in the discussion. These aspects are meant to contribute to a higher productivity of crops, improved availability of water and a reduction of the risk of calamities (e.g. inundations, droughts) and other environmental risks (e.g. erosion). As actors responsible for positive change, participants identified organizations like MITADER, MASA, CMM, FAO, UNAC, the farmers' associations, NGOs (ABIODES, ACDI/VOCA, Kulima) and other civil society organizations. As first steps towards strategic measures, participants named and discussed three issues: development of a consistent and inclusive action planned by all stakeholders, as well as the monitoring of this plan by organizations like MITADER or MASA. Furthermore, the FAO was named to support financing projects regarding climate change resilience.

Climate change resilience is a term that describes the capacity of a system to resist the stress imposed upon it by climate change, and also to adapt to the impacts of climate change (Tyler & Moench, 2012, p. 1). The concept of climate resilience differs from the concept of climate change mitigation. While the first concentrates on strengthening a system against the impacts of climate change, the aspect of mitigation means a contribution to reducing the risks and impacts of climate change itself. In the group work where participants developed positive variations, both concepts got mixed up. This led some participants to state that urban agriculture cannot prevent climate change or contribute to a climate change strategy.

For urban agriculture, the concept of climate change resilience seems to be more applicable, because urban agriculture strengthens the urban food system. For example, regarding the concept of food sovereignty, urban agriculture gives people the possibility to produce their own food and to not depend so much on

the supply by retailers and supermarkets in the case of decreasing food production due to effects of climate change. Different actors mentioned that new technologies and practices must be developed and adapted by the farmers to be able to continue cultivation even in situations of prolonged droughts and heavy rainfall and inundations. Of course, urban agricultural land, together with other green urban spaces, can also contribute to climate change mitigation on a small scale, sequestering carbon dioxide in plant biomass or reducing the emissions of carbon dioxide due to shorter ways of food transport in the city.

In summary, Maputo, especially the poorer urban population, is very vulnerable to climate-related disruptions, and there is a need for investment in infrastructures and capacities to adapt to climate-related impacts. There is a lack of planning for climate adaptation in cities. Reaching beyond focusing on climate impacts to integrate ecological, infrastructure, social and institutional resilience factors and urban agriculture can and should be part of a climate change resilience strategy (Demuzere et al., 2014, p. 1). Furthermore, stronger political engagement in climate change mitigation, on the national and international scale, would be reasonable, regarding the risks facing Mozambique that were mentioned at the beginning of this chapter. In 2012, a National Climate Change Adaptation and Mitigation Strategy was developed and published by the Centro de Gestão do Conhecimento em Mudanças Climaticas (CGCMC). Including the perspectives and ideas of the actors of urban agriculture in this strategy could make it more holistic and accepted in the society, therefore leading to a rise in climate resilience.

Recommendations

- Develop an action plan or climate change resilience strategy, which tackles issues like infrastructure projects, awareness campaigns, drought and flood-tolerant plants etc.; include urban agriculture with all stakeholders and/or integrate the potential and urban agriculture perspectives within existing strategies, e.g. the National Climate Change Strategy (MITADER, MASA, CGCMC, CMM, FAO, UNAC, the farmers' associations, NGOs like ABIODES, ACDI/VOCA, Kulima, other organizations of the civil society; the monitoring should be done by MITADER),
- Finance more climate-related projects to support the mitigation and adaptation to climate change (CMM, FAO etc.).

5.2.5.7 Water management

On one hand, smallholder farmers in eastern and southern Africa are very dependent on rainfall distribution. Over 95 % of the land used for food production is based on rain-fed agriculture (Rockstrom, 2000). On the other hand, climate change is altering "the distribution of precipitation, and intensity and frequency of precipitation events could potentially exacerbate both flooding and water scarcity" (Anisfeld, 2011, p. 102). Urban dwellers living in flood-prone areas are likely to experience more intense and longer floods and resulting landslides.

Since the mid-1990s, access to potable water has increased in the urban areas of Mozambique. In 2010, an estimated 78% had access, up from 56% ten years earlier (UN-HABITAT, 2010). At the same time, the city of Maputo suffered from severe droughts in recent years. Indeed, the participants of the scenario workshop identified this factor as crucial for the development of urban agriculture.

During the discussion of variation, the participants agreed that good and sustainable practices would lead to preservation of the natural water reserves, while new artificial reserves are created. Moreover, the group also discussed the importance of informing the population and politics about the severity of water shortage in the country, to lead to better rationing of water. As a result of water scarcity, the pressure on the farmers to employ other agricultural practices, like planting drought-tolerant crops, also increases. As actors responsible for positive change, the participants identified organizations like the National Water Directorate, Ministry of Health, SETSAN, DASACM (technicians), CMM (technicians), farmers, NGOs and research institutions (UEM, IIAM). The idea was to form a technical working group including all the different actors to develop a consistent plan of action as the first step in this strategic measure. The second idea was to start an awareness campaign on all levels to reach the population and institutions.

Aside from the availability of water, the quality of water was also raised as an issue critical for the future of agriculture. Participants pointed out that the supply of low-quality water for agriculture affects agriculture activities in Maputo. On the one hand, one participant pointed out that the only water quality evaluation done focuses on the consumption of water by the population, without regard to the characteristics of water needed for agricultural practices. On the other hand, urban agriculture itself can decrease water quality using high and inappropriate amounts of pesticides and fertilizer, leading to water contamination. For this reason, it is crucial that farmers are informed about these risks and are trained in water management issues.

Recommendations

- Form a technical working group to develop an action plan about water management, including all key stakeholders (National Water Directorate, Ministry of Health, SETSAN, DASACM, CMM, UEM, IIAM),
- Start an awareness campaign about water conservation (CMM),
- Ensure that the usage and conservation of water is included in capacity building done by the extension agents (CMM, Casas Agrarias).

5.2.5.8 Soil management

Healthy soil is a primary basis for life. It is essential for food production, regulates water cycles, recycles plant and animal matter, and regulates biological and chemical cycles (African Centre fo Biodiversity, 2016). Increasing demographic pressure and shifting patterns of land tenure in Africa, from communal, land-based systems to privatized models, increasingly limit the amount of arable land available to small-scale farmers, forcing them to cultivate more intensely or to expand into marginal lands. Erosion-induced loss in soil productivity is a major threat to food security. There is sufficient evidence of a relationship between changes in productivity and cumulative water erosion (Tengberg & Stocking, 1997).

In general, soil management relates to the protection of soil quality. Soil quality can be defined as soil's capacity to function. Important functions of soil include the "water flow and retention, solute transportation and retention, physical stability and support, retention and cycling of nutrients, buffering, and filtering of toxic materials and the maintenance of biodiversity and habitat" (Andrews et al., 2004: 1). In agriculture, soil quality usually refers to the production of crops. The existence of fertile soil is a basic requirement for agriculture, and soil protection is crucial to producing healthy food. For example, bare or poor soil cover can result in productivity decline within five years; moderate cover indicates a period of 20-50 years; and good cover, 100-200 years (Tengberg & Stocking, 1997). In the scenario workshop, the participants prioritized soil management – together with climate change resilience – as the third most important factor in influencing urban agriculture in Maputo.

In the positive-realistic scenario for 2030 developed during the group work on the scenario workshop, soils are conserved because of good agricultural practices. Furthermore, there are negotiations between urban farmers and authorities about relocating the urban drainage system to prevent further erosion of arable land. The first aspect was discussed while focusing on farmers' possibilities to adapt their practices, e.g. using fewer agrochemicals to reduce salinization. The second

is a problem specific to Maputo: there are heavy rainfalls during the rainy season in summer in Maputo and the surface in the city is usually sealed by buildings and streets. Therefore, the rain must be channelled towards the outer city areas like the *zonas verdes* where these huge quantities of water contribute to soil erosion (see chapter 5.2.5.7). On an impact level, improvements in soil management should lead to a higher soil quality and more security to maintain soil (e.g. reducing erosion). As responsible actors for a positive change, the participants identified organizations like SETSAN, DASACM (extensionists), CMM (extensionists), research institutions (UEM, IIAM etc.) and NGOs. As first steps of strategic measures, the idea was to form a technical working group including all the different actors to develop a consistent plan of action. The second idea was to start an awareness campaign on all levels, from the population to institutions.

Reducing soil contamination due to agrochemicals and contaminated water was mentioned as a key challenge by various stakeholders. This issue is also linked to the factor of market access. Contaminated soils lead to higher pesticide residuals in the produced food and due to tests, these products are not accepted in many supermarkets, which apply their own health standards (e.g. Shoprite). The strategic measures that were mentioned in the scenario workshop of building a technical work group to bring together different stakeholders and develop a plan of action, as well as the development of an awareness campaign regarding soil erosion and contamination, were confirmed in the interview with Matias Siueia Júnior[67]. Furthermore, he pointed out the importance of good agricultural practices[68], like crop rotation, better irrigation systems, and the use of compost that can contribute to soil conservation. According to Siueia Júnior, fundamental research, like soil mapping and classification, is needed as a basis for the evaluation of soil management.

Recommendations

- Form a technical working group to develop an action plan related to soil management, including all key stakeholders (DASACM, CMM, SETSAN, UEM, IIAM, NGOs like ABIODES),
- Start an awareness campaign about soil conservation (CMM),
- Finance fundamental research like soil mapping (CMM, UEM),

67 Employee in the city municipality, office of economic activities, and soil scientist.

68 Nicole Paganini (PhD candidate) focuses on this aspect in her work within UFISAMO.

- Reduce soil erosion in the *zonas verdes* by restructuring the urban drainage system (Department of Urbanization) and the apply good agricultural practices by the farmers (Casas Agrarias, NGOs like ABIODES).

Reduce the use of agro-chemicals and contaminated water in urban agriculture to reduce soil contamination and increase the value of the food produced (Casas Agrarias, NGOs like ABIODES)

5.2.6 Analysis of the results

This chapter analyses the diverse results of our research in Maputo, regarding the six aspects of good practices described in chapter 4.2.1. With this in mind, we can address the question of existing and necessary conditions of urban agriculture for a future that includes all actors. The analyses are not only comprehensive, but offer important insights that incorporate the various results of our work.

Aspect 1: The significance of urban agriculture within the legal and regulatory system of the city

Urban agriculture as such is a rather new concept in Maputo, although agriculture is practiced intensively in the city, particularly since it was promoted in the 70s and 80s (see chapter 2.1 for the history of the green zones). It seems to be a blind spot for the government, as there are no specific policies in place for urban agriculture. Agriculture continues to be treated as a rural issue, thus the characteristics and challenges of urban agriculture have not yet been recognized.

There is no clear information about regulations and support offered to the farmers, as well as responsibilities of the ministries and departments. The main support offered by the municipality identified was technical support through the extensionists and the Casa Agrarias, which act as a direct contact point between producers and municipality near the plots. However, this is hardly sufficient since there are only 22 extensionists for more than 10 thousand producers.

The municipality also organizes markets to enable farmers to sell their produce directly. However, the level of attendance of markets remains low since farmers still choose to sell their produce to informal intermediaries to avoid the bureaucratic processes in applying for a stall in the markets offered by the municipality. There is great potential to increase attendance at these markets, enabling direct sales from producers to consumers, since access to market has been mentioned as one of the main difficulties for farmers in both workshops (see chapter 5.2.5.2 for more recommendations related to access to markets). The city of Rosario mentioned in chapter 5.1.2 is exemplary in promoting agricultural markets – one of the strongest pillars of the promotion of urban agriculture and its products.

Furthermore, our recommendation is that the departments working in urban agriculture maintain regular communication and coordination amongst themselves to ensure effective means of intervention and efficient use of resources. The creation of an urban agriculture unit[69], for instance, could help to coordinate different activities, actors and organizations working on the topic. This relates to the second aspect of this chapter, as there are currently no institutionalized network or meetings dedicated to urban agriculture.

But above all, it is important to mention that urban agriculture should be recognized as a formal activity and supported through specific policies. For instance, simplifying and accelerating the application process for the land use title (DUAT) helps protect the farmers and their right to use the land and avoids activities seen as illegal. Additionally, the city planning department should be involved in actively protect agricultural land and monitoring these regularly.

A first step in increasing the significance of urban agriculture within the legal and regulatory system of the city is supporting and formalizing local initiatives and involving local actors (see chapter 5.1.1 on how Belo Horizonte achieved this integration).

Aspect 2: Existence and use of networks, meetings and other forms of exchange in the city

As mentioned above, the discussion and analysis of urban agriculture as part of the development of the city in Maputo is relatively new. There is an emerging body of work in this topic conducted within the UFISAMO research project at the University Eduardo Mondlane. Some of the positive results come from isolated initiatives based on the enthusiasm of individuals for a specific topic (e.g. CMM economic activities department promoting agroecology). However, there is not yet a network dedicated to urban agriculture, resulting in duplicated initiatives. Some civil society organizations offered similar training programmes to the same farmers. However, with a coordination network in place, the organizations could build on each other's work.

There are many possibilities to connect stakeholders working in the same domain. In the context of urban agriculture, the most common forms are: meeting platforms (online and face-to-face); meetings coordinated by a unit or committee (usually anchored in the municipality in the department of urban agriculture or economic development) and food policy councils (see chapter 3.3 for the

69 The Urban Agriculture Unit of the City of Cape Town could serve as inspiration (see chapter 5.3.2).

achievement of institutionalization by the city Toronto). As an initial step toward the creation of a network, we encouraged workshop participants to meet up again. The UFISAMO partners at UEM agreed to host an initial meeting, but a network needs time, resources and commitment. Thus, it is uncertain whether these meetings will continue to take place.

However, aside from the research community and city administration, it is important to keep farmers in the dialogue. To do this, meetings shall take place both in the university and near the *machambas*, to enable the farmers to take part in the conversations.

Aspect 3: Resilient practices within the urban food system of the city

The discussion on food flows and the food system is new and almost inexistent in Maputo. Firstly, urban agriculture needs to be recognized and formalized so it can be considered in the city planning. Second, the formation of Food Policy Councils, as mentioned in the aspect 2, would be a first step into resilient practices.

Many farmers that participated in the farmers' meeting mentioned that they follow agroecological practices, with little to no addition of agrochemicals in their cultivation. This shows that there is awareness of the benefits of organic production, although lower output, slower growing cycles and initial investment in organic manure have been mentioned as challenges in adhering to organic production. A workshop participant who commercializes agroecological produce also mentioned the use of a peer-reviewed participatory certification system for agroecological products. This process is adapted to the local context and involves technicians, producers and consumers[70]. The main challenges for selling these produce, however, are the prices and lack of appreciation by consumers, resulting in the present low demand for agroecological products.

Aspect 4: Role of urban agriculture activities within the economic system of the city

Urban agriculture plays an important economic role in Maputo because it is the main livelihood strategy of many. Thanks to the (still) large area of land dedicated to agriculture, it enables a large number of people to live from agricultural activities that provide them income beyond subsistence farming practices.

Although agricultural produce from the *zonas verdes* currently have low added value, this offers great potential for investment in crops with higher added value,

70 The experiences gathered in Cape Town with participatory guarantee systems (PGS) could serve here as inspiration. PhD-candidate Nicole Paganini of UFISAMO is currently working on this aspect.

or to add value through processing. This would also help to access further markets because the leaf vegetable market is presently highly competitive and offers low returns. This aspect was mentioned in the workshops and should be regarded as a possible strategy for improving the livelihoods of smallholder farmers in Maputo.

An important aspect mentioned in both workshops was the access to financing. Most of the city's farmers have small plots and consequently, their small-scale production cannot allow them to absorb the cost of large amounts of formal loans. Additionally, these farmers also do not keep records of their production, which makes it hard to assess their actual production and investments. The lack of funds may explain their low ability to invest in more productive crops and to diversify their production via animal farming. There is the potential to develop credits targeting smallholder farmers (see chapter 5.2.5.1 for more recommendations on access to credit), as solving these obstacles is an important beginning to improving their income and lives.

Another important aspect discussed in both workshops was small-scale farmers' access to markets. In this aspect, the problems are structural (i.e. lack of roads, nearby markets, transport, credits to finance added value), and relate to coordination and knowledge. It seems that farmers are not able to sell their products directly because of disinterest, lack of negotiation power or lack of knowledge. Promoting markets is a good start in this regard (see chapter 5.2.5.2 for more recommendations on access to market).

Aspect 5: Importance of ecological aspects considered within the city management

Through urban agriculture, relevant aspects of the development of green spaces in the city can be considered. The *machambas* play an important role in ecosystem services like groundwater renovation, countering air and sound pollution. They are also the last urban refuge for many birds, snakes and insects.

Some farmers are aware of the negative consequences of extensive use of pesticides and the benefits of an agroecological approach. However, agroecology practices are currently not promoted by the government and only few organizations support or give information about agroecology. Therefore, it is important to generate information and knowledge about agroecology and to develop transitional strategies to make agroecology more accessible and popular.

Salinization of soil and erosion is clearly of great concern to farmers due to land loss and lower productivity. Irrigation systems currently in use are not effi-

cient; only few producers use sprinklers or other efficient methods and the assimilation of such technology remains a challenge.

Another problem is the sewage system. It currently causes flooding in the rainy season, which washes away soil nutrients and destroys production.

Aspect 6: Importance of social aspects considered by the city management

While urban agriculture offers occupational possibilities for each citizen in the city, it is especially valuable to low-income families and helps them work and obtain income. In Maputo, most of farmers are women. This may be explained by their marginalization and lack of access to decent employment opportunities.

Currently, farming is not formally recognized as a profession. Farmers do not have access to social protection. If an accident occurs or the farmer retires due to his or her age, they must often rely solely on family support. If their family cannot support them, however, they struggle to survive as they do not receive retirement funds.

Farmer formalization is an important aspect in the further development of urban agriculture in Maputo. The existence of farmers' associations offers great potential for farmers to leverage this form of organization and lobby for their formalization and rights. Furthermore, it also facilitates the process of reaching farmers to offer them support, instead of having to approach each single farmer. This also improves their bargaining power and reduces transaction costs for purchasing inputs or selling channels.

Urban agriculture is an entry point to approach different topics related to nutrition, health and ecology. The extension of this practice to schools, communities and universities offers the possibility of environmental education and sensitization of citizens to the importance of agricultural practices and their multiple dimensions.

5.3 Cape Town

In this chapter, the results of our work in Cape Town are presented, starting with the conducted stakeholder mapping, followed by an analysis of the political and legal framework, continuing with the results of the farmers' meeting and the scenario workshop, and ending with our analysis and recommendations.

5.3.1 Political framework of urban agriculture

In South Africa, there is a broad set of policies and framework in place, they define areas that are of priority for the government. The Right to Food is a Constitutional Right in South Africa. At the same time, the South African household survey showed that an estimated 20% of South African households have inadequate or severely inadequate food access (Du Toit, 2011), see chapter 2.1.2 for more estimates on household food insecurity in Cape Town.

In the following section, some strategies, publications and briefing documents on food security are described in a brief overview. The information provided is not exhaustive but it serves to demonstrate the continued effort of the government in analyzing and tackling the issue of food insecurity.

Food Insecurity

National Government: Department of Agriculture, Forestry and Fisheries

As a response to the challenges of food insecurity in the country, the South African government approved the Integrated Food Security Strategy (IFSS) in 2002. The strategy seeks to "streamline, harmonize and integrate diverse food security sub-programmes in South Africa" (NDA, 2002, p. 5), in other words, it aims to integrate the many previously isolated policies tackling the challenge of food insecurity in the country.

In 2011, the Department of Agriculture, Forestry and Fisheries published a document titled "Food Security" with the goal of identifying research gaps of literature on food security studies in South Africa and recommend future research on how the agricultural sector can contribute significantly to food security in the country (Du Toit, 2011). The same document outlines the role of the various departments of agriculture (national and provincial) in addressing household food insecurity.

Provincial Government: Department of the Premier, Western Cape Government

In 2016, the Department of the Premier of the Western Cape Government approved the "Western Cape Household Food Security and Nutrition Strategy", a comprehensive study on the situation of food and nutrition security in the Western Cape. The Strategy identified opportunities for achieving short, medium and long-term objectives to address the challenges and causes of food insecurity. It considers the role of departments that shape the food system and its interface with the province's citizens. The strategy is transversal, evidence-based and contributes to a more coherent and targeted approach to addressing household food

insecurity in the province and has been supported by a consultative process (SADC Research Centre, 2016).

Municipal Government: City of Cape Town

The "Food System and Food Security for the City of Cape Town" published by Battersby et al. in 2014 is an in-depth analysis of the issue of food insecurity in Cape Town, including important findings on the current state of food security, followed by key recommendations for the City of Cape Town.

Urban Agriculture

Supporting agricultural activities is one of the main strategies to increase food security. Along the same lines, promoting urban agriculture is the strategy to improve food insecurity in the cities. According to Battersby et al. (2014), the promotion of urban agriculture has been the major food security intervention at the urban scale. It has consistently been the point of entry for the national government to engage with the urban food security challenge.

At the national level, urban agriculture is mentioned in the Strategic Planning document from the Department of Agriculture, Forestry and Fisheries (DAFF) from 2013: "While urban agriculture is supported by various levels of government and certainly by civil society organizations, there remains a need to create an encompassing strategy on urban and peri-urban agriculture. The purpose of such a strategy would be to promote best practices, enhance the role of agriculture in urban and peri-urban livelihoods, and improve coordination and cooperation among main players in this field. One particular focus of such a strategy could be to use agriculture to support residents of informal settlements on the fringes of towns and cities (DAFF, 2013, p. 5)."

The provincial government of Western Cape encourages urban agriculture, explicitly supporting vulnerable groups – black citizens and female single-headed households – as the main strategy against urban food insecurity (Western Cape Government, n.d.). The Department of Agriculture (DoA) of the Western Cape Government provides support to farmers through the Farmer Support and Development (FSD) Programme. The FSD Programme predominantly supports smallholders but does not exclude the commercial sector. The services provided include:

- Advice on land leasing,
- Providing inputs, tools and fences (if needed),

- Providing extension support and facilitating training to farmers on crop, soil management, compost production, and record-keeping (Schmidt, 2017; DoA WC website).

The municipal government of the city of Cape Town promotes urban agricultural activities through the "Urban Agriculture Policy" passed in 2007 (a newer version from 2013 is under review) and "Food Gardens Policy in support of Poverty Alleviation and Reduction" (Policy number 12399c). Both policies address food security through promoting urban agriculture, home and community gardens.

The Urban Agriculture Policy understands urban agriculture in a broader definition that is not limited to home and community gardens. It sees urban agriculture in a holistic way that can, on the one hand, contribute to food security through diversification of diet, and on the other, create income generating opportunities through selling produce, as well as other related activities, such as processing and transporting produce.

The revised Urban Agriculture Policy includes a broader understanding of urban agriculture, highlighting the multidimensionality of urban agriculture including its social, economic and ecological benefits. However, the document has not been approved since it was reviewed in 2013. Local actors who had access to the document could not share it with us, but did share their positive opinions about the changes in the new document. Interestingly, at the time of this study (September 2017), the website of the Sustainability Institute showed the status of the review of the new urban agriculture policy as *completed*. However, none of the local actors interviewed could tell us what happened to the new version or when it was due to be assessed or approved.

The Urban Agriculture Policy passed in 2007

The policy gives formal recognition and status to urban agriculture in the city of Cape Town. It creates a common vision for urban agriculture in the city with the vision of a prosperous and growing urban agricultural sector (City of Cape Town, 2007). Further objectives are:

- Identify key enabling imperatives and strategic objectives to guide urban agricultural development,
- Clarify the role and responsibilities of stakeholders,
- Introduce consulting forums for stakeholder participation and consultation

- Establish an institutional framework that can facilitate the development of urban agriculture,
- Create an urban agricultural assistance programme by the City.

The policy aims to allow previously disadvantaged people to participate in the land redistribution for agricultural development programme (redress imbalances) and facilitate human resources development (technical, business and social skills training).

Furthermore, it aims to include urban agriculture in land use management and physical planning (giving it formal status). The policy seeks to identify and release municipal land for urban agricultural purposes, provide subsidized water for vulnerable groups, and present a specific strategy for livestock keeping. It also cites criteria for assistance, classifying farmers into four types: (i) home-based activities, (ii) community based activities, (iii) micro farmers, and (iv) small emerging farmers. The policy ends with key actions and time frames (although the table only contains activity, outputs and lead agents without mentioning a specific time frame). The main implementing department of the Urban Agriculture Policy is the Urban Agriculture Unit located within the Economic Development Department (see chapter 5.3.4 for further details regarding the urban agriculture unit).

The Food Gardens in Support of Poverty Alleviation and Reduction Policy

The Food Gardens in Support of Poverty Alleviation and Reduction Policy (Policy number 12399c) is designed to direct the work of the Social Development and Early Childhood Directorate. It seeks to address food insecurity through the establishment of sustainable food gardens and to alleviate poverty through linking food gardens with early childhood development to provide nutritional meals (City of Cape Town, 2013).

According to (Battersby et al., 2014, p. 117), the new Strategic Development Plan for the Promotion and Development of Urban Agriculture in the City of Cape Town (2013/2014-2015/2016: A multi-year programme)[71] has seven key focus areas, which seek to translate the Urban Agriculture Policy into concrete actions. These focus areas are:

71 The policy mentioned could not be found online, thus the information provided is based on Battersby et al., 2014.

- Awareness and advocacy for urban agriculture,
- Policy, legal and regulatory framework,
- Research, knowledge and technology transfer,
- Multi-stakeholder participation, communication and the urban agriculture network,
- Production and marketing – horticulture,
- Production and marketing – keeping urban livestock,
- Youth Engagement.

The extent of government support for urban agriculture in the Cape Town

The issue of urban agriculture touches on issues across agricultural activities, agricultural land regulations, nutrition and food security, and urban spaces and planning.

Between July 2010 and June 2013, the City of Cape Town supported 201 community gardens within the city, the majority of those being vegetable gardens, totalling 1849 beneficiaries. The supported projects are widely spread across the city, with high concentration on low-income and high-unemployment areas. In addition, the Social Development and Early Childhood Development Directorate supported another 38 projects (Battersby et al., 2014).

The provincial Department of Agriculture supported 114 community gardens between 2008 and 2014, with 756 beneficiaries. The majority of the projects produce vegetables (106 out of 114). Some gardens receive support from both City and Province (Battersby et al., 2014).

5.3.2 Stakeholder mapping

Just as in Maputo, we identified key actors within urban agriculture in Cape Town to initiate multi-stakeholder dialogue. Below you will find a short description of the key actors and a stakeholder mapping.

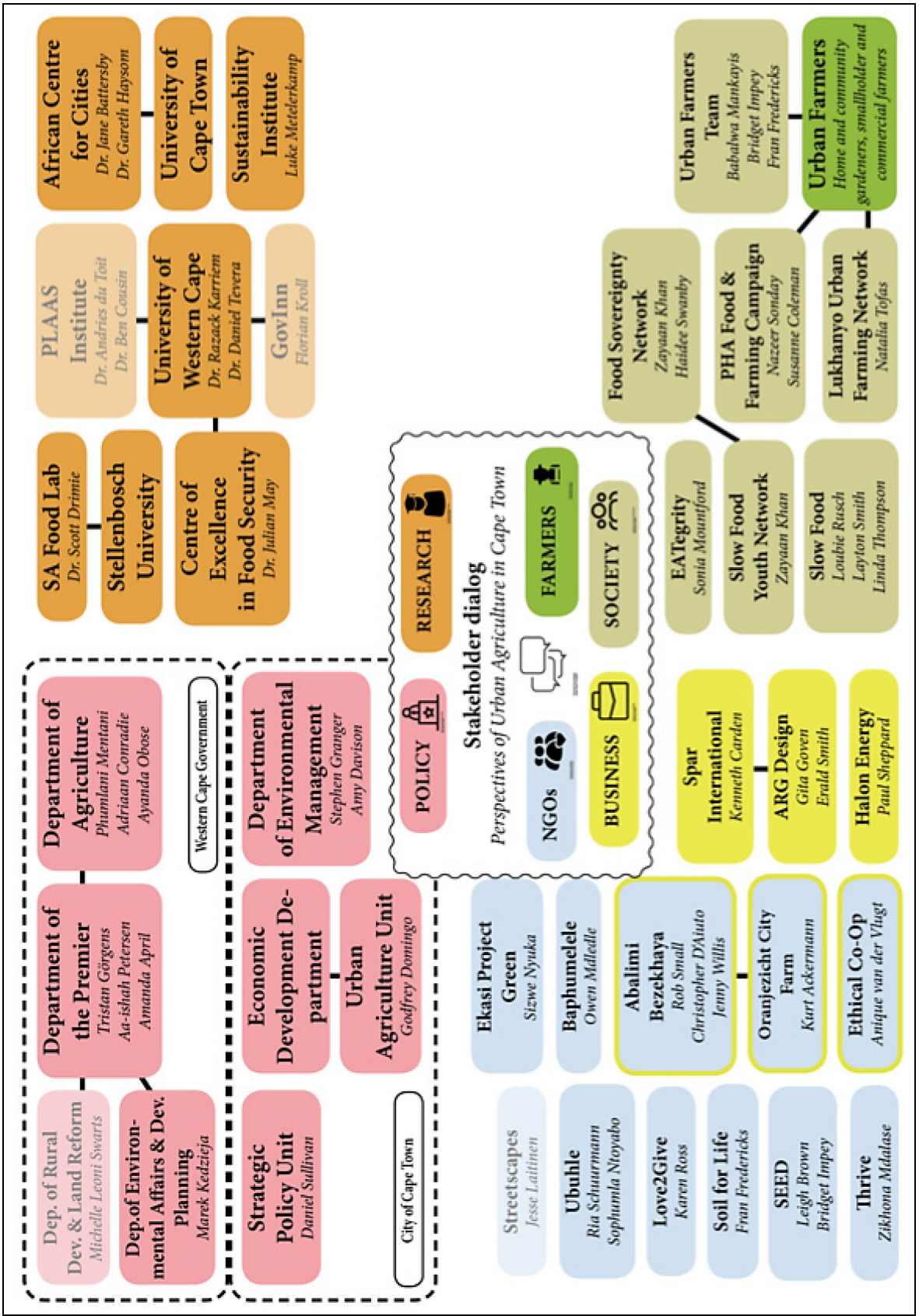

Figure 23: Stakeholder mapping Cape Town

Source: Own illustration.

Governmental institutions (City of Cape Town)

The Urban Agriculture Unit was the result of the Urban Agriculture Policy published in 2007. It is located at the Directorate of Economic and Human Development of the City of Cape Town. Its key function is to promote urban agriculture as "an important element for poverty alleviation and of economic development" (Urban Agriculture Policy, 2007). The Unit also supports urban farmers through, for example, capacity building, helping to facilitate access to land, water, markets etc., and helping them establish partnerships with all stakeholders. The Urban Agriculture Unit started with three permanent employees. However, due to restructuring processes and cost-reduction measures, today only Mr. Godfrey Domingo works in the office. Despite its importance, its impact remains limited with only one person working in the unit. According to Godfrey Domingo, the existence of the unit is in threat, as it has been suggested to merge the Urban Agriculture Unit with other units at the Social Development and Early Childhood Directorate which work with the food gardens.

The Environmental Management Department is supposed to help implement the City's Environmental Strategies, working with a range of other departments and external partners to ensure Cape Town's long-term environmental sustainability. The department is organised in branches. There is no branch that deals with urban agriculture, but there is an Environmental Planning and Sustainability Branch that should be included in a dialogue about the ecological dimensions of urban agriculture.

Governmental Institutions (Western Cape Government)

The Department of the Premier provides legal and corporate services to the Premier, Director-General and other departments of the Western Cape Government. Mr. Tristan Gorgens is the acting director of the Human Development Directorate in the Policy and Strategy Unit and has been identified as an important change agent in the provincial government.

The Western Cape Department of Agriculture provides development, research and support services to the agricultural community in the Western Cape. Mr. Ayanda Obose is a Senior Agricultural Advisor of the Farmers' Support and Development Office. He is in charge of giving technical support and supervision to the household gardeners in Khayelitsha and is very interested in urban agriculture, especially the detection of land that is more suitable for small-scale farming in the city.

The role of the Department of Environmental Affairs and Development Planning is two-fold: safeguarding the natural environment of the Western Cape for future generations while sustainably developing the landscape. Mr. Marek Kedzieja is the head of the Environmental and Spatial Planning Office for the West Coast and the metropolitan area. He attended our scenario workshop in Cape Town and showed interest in urban agriculture.

Research

The African Centre for Cities is doing interdisciplinary research and teaching regarding the dynamics of unsustainable urbanisation processes in Africa, while keeping an eye on identifying systemic responses. Dr. Jane Battersby-Lennard and Dr. Gareth Haysom work on urban food systems and can be identified as key stakeholders regarding the academic discussion about urban agriculture in Cape Town.

The University of the Western Cape (UWC) is a national university, committed to teaching, learning and research; nurturing the cultural diversity of South Africa; and responding in critical and creative ways to the needs of a society in transition. The Institute for Social Development, represented by Dr. Razack Karriem, and the Department of Geography, represented by Dr. Daniel Tevera, are UFISAMO partners.

The Centre of Excellence in Food Security was launched in 2014 to undertake innovative research to enable South Africa to tackle the challenge of food security and nutrition. It is hosted by the UWC and by the University of Pretoria, but researchers come from many different universities in South Africa and international partner universities.

PLAAS is an abbreviation for the Institute for Poverty, Land and Agrarian Studies. It was founded at the UWC in 1995 and has provided research and postgraduate training programmes, as well as advisory services, facilitation and evaluation.

GovInn is a Centre for the Study of Governance Innovation and is also part of the UWC. They see themselves as a "research and innovation laboratory".

The Southern African Food Lab (SAFL) was founded in 2009. SAFL facilitates the interaction, communication, and collaboration between different stakeholders to highlight the need for and to design and implement coherent, systemic responses to the food system through collaborative learning and experimental action. Dr. Scott Drimie from the SAFL supported our research project via advisory services from the beginning.

NGOs

Abalimi Bezekhaya is an urban agriculture and environmental action association operating in the townships of Khayelitsha, Nyanga and surrounding areas of the Cape Flats in Cape Town. They are UFISAMO partners and the oldest urban agriculture NGO in Cape Town and were founded in 1982 as a church body, supporting household and community gardeners with inputs and capacity building. Liziwe Stofile and Babalwa Mankayis are two field workers, trainers and changemakers at Abalimi.

SEED was founded 1998 as a spin-off from Abalimi. It focuses on capacity building of youth, regarding climate adaptation, social cohesion, and self-sufficiency in townships.

Soil for Life started in 2002 with the vision to "help people to create their own sustainable home food gardens, however limited their resources". They focus on simple and achievable paths to a healthier life. They conduct trainings and workshops and offer venues.

The Oranjezicht City Farm is a neighbourhood NGO in the city centre. They organize a market at the V&A Waterfront, sell vegetable boxes, have a focus on education, and conceive and conduct Food Dialogue about the food system. The results of these dialogues have been published. Kurt Ackermann, the founder of the project, has a strong network of city officials.

Business

The Ethical Co-op was founded in 2005 as consumer group that wants access to ecologic and healthy products. They are based in Cape Town, but they get their product supply nationwide, mainly in the Western Cape province and preferably from urban farmers that are PGS-certified.

ARG Design is a design, architecture, and town planning office. They aim to mainstream regenerative design and development throughout the built environment. They are planning an agri-hub on the edge of the Philippi Horticultural Area.

Halon Energy is an energy management company that focuses on energy efficiency, power security, and energy generation, with the long-term goal of achieving complete energy autonomy for their clients. They also run rooftop and vertical gardens in Cape Town.

Civil Society

The PHA Food and Farming Campaign was founded to conserve the agricultural land at the Philippi Horticultural Areas. They are a group of activists, represented by the farmer Nazeer Sonday.

Slow Food and Slow Food Youth Network are international organization that stand at the crossroads of ecology and gastronomy. The organization was founded in 1989 as a reaction against upcoming fast food chains. In Cape Town, Loubie Rusch and Zayaan Khan are prominent voices of the Slow Food Network, promoting the use of indigenous food plants.

5.3.3 Farmers' meeting

In Cape Town, the research team conducted the farmers' meeting with the methodology of world café on the 5th of October 2017 with the participation of around fifty farmers and NGO representatives, especially from Cape Flats, with districts of Mitchell's Plain, Gugulethu, Nyanga, Langa, and Khayelitsha. The objectives of the meeting were to get to know the perspectives and future visions of the farmers, and to learn more about their problems and needs, but also to provide information on urban agriculture for the scenario building workshop.

Figure 24: Discussion in one of the tables of the world café

Source: Own picture.

The topics of seed sovereignty, access to land, access to water and water management were selected during desk work and were recommended to experts in interviews as the most important topics in the city, since they are key to the development of urban agriculture in Cape Town. The idea of limiting the discussion to these three topics was to be able to have more time to listen the point of view of the farmers, as well as to give more time to discussions about possible strategies and solutions that farmers consider appropriate for these aspects. The results of the discussions at each table will be presented below. We ended the world café with a plenary discussion on (self)organisation of farmers.

5.3.3.1 Seed sovereignty

Seed sovereignty is, according to COPAC (2016)COPAC (2016), the freedom of a country or community to control its seed and seed systems, without any interference from outside forces or bodies. As part of a bigger framework -food sovereignty- seed sovereignty emphasises the farmers' right to breed, trade, save and sell diverse seeds, which are not genetically modified, owned and/or controlled by seed corporations.

In all groups, the discussion on seed sovereignty revolved around topics affecting their capacities and rights to improve their seed production, saving and management. In fact, one of the participants mentioned that for many farmers the connection between having seeds and accessing to food is crucial: "saving seeds is food security".

From the governmental level down to practical knowledge about how to improve these aspects, including seeds as farmers' assets has been, per table discussion, "a controversial and not promoted issue", which relates to the rights and capacity development of small-scale farmers in the city. According to them, policies and mechanisms that control food supply (including seeds) are focused on supporting commercial farmers and promoting large-scale production of agricultural commodities.

From a capacity development perspective, many farmers agreed that their expertise for producing seeds must improve. To this end, centres or platforms that offer technical courses (i.e. practical and useful information) and mentoring (i.e. motivation and young people's involvement) should be designed and developed. The three main objectives of the centres or programmes would be: (i) diversification of crops, (ii) saving, trading and selling seeds and (iii) exchanging information and experiences.

Figure 25: Beans from the urban farm of Sibongile Sityebi

Source: Own picture.

An important point complementing this approach is the need for adjusted low-tech innovations that support farmers in activities that improve their performance. One example is the reuse of clean bottles and jars for storing seeds. Another example that was supported by most of the participants referred to the co-production of seeds in the same space where normal production is done.

From the government side, farmers would be glad to receive more coherent support that considers them a crucial part of the food system in the city of Cape Town. Moreover, they argued that by creating a specific seed law, as part of the food system regulations, the support to small farmers would be more prominent.

The conclusion drawn from the discussion table was that it is necessary to create a platform for the exchange of ideas, and for organization and planning. Most of the farmers agreed that it could be similar to ILIMMA, or a "reloaded" version of it, which could serve as platform for bringing different farmers to work together in distinct areas of Cape Town. Together with the NGOs, a new union of city farmers could be also established and play a relevant role in seed-related decisions and food sovereignty decisions.

5.3.3.2 Access to land

"No one protects us and our land. Even tomorrow they can send us away. Without a lease agreement, you can be kicked out anytime". This quote from one of the participants underlines that no matter if one is farming on an open governmental space or on his own private land or on a school or church property, without a lease agreement[72] no one knows how long he or she can use the land. The obstacles to receiving a lease agreement are different in nature. Initially, the long bureaucratic process discourages many farmers from applying or renewing their contracts. Furthermore, it is expensive, takes a long time and, according to the participants, the process is unfair, regarding race and class. As one of the participants mentioned: "I have a lease agreement, but you know what, the most striking thing is that it took almost four years just to renew it. It is not easy to get until a white lady accompanied us to the City of Cape Town and then it worked". A lot of governmental land in Khayelitsha, so-called open space that could be used for agriculture. Other unused areas that have been cleaned up and fenced by the neighbourhood and used for farming now are not appreciated or legalized by the government. Further problems relate to security or stigmatization by others who regard farming as backwards. However, sharing food with neighbours helps to raise awareness and a sense of community.

Strategies and solutions to assure access to land

Solutions provided to the above challenges included finding out how people manage to get it right, referring to examples like a community garden in Somerset West that could serve as a role modele for community-owned gardens. Another woman shared her success story about growing on a school property. Participants said it was encouraging to get the community, schools, churches and landowners involved. In the end, it all goes back to the lease agreements. When the results were presented in front of the rest of the group, the farmers agreed on the advantage of having a community network that can help to fight for land and a lease agreements.

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72 A lease agreement is a simple contract between the landlord (lessor) and tenant (lessee) stating what the tenant will pay monthly for rent and for how long. It outlines and details the obligations and responsibilities of both parties. According to Section 3(d) of the Subdivision of Agricultural Land Act 70 of 1970 ("the Act") no lease shall be entered into, unless the Minister of Agriculture has consented in writing, in respect of a portion of agricultural land of which the period is: (a) 10 years or longer; or (b) is the natural life of the lessee or any other person mentioned in the lease; or (c) which is renewable from time to time at the will of the Lessee, either by the continuation of the original lease or by entering into a new lease (https://www.legalnature.com/article-center/lease-agreement/understanding-your-lease-agreement).

5.3.3.3 Access to water and water management

The water restrictions are affecting the work of farmers, causing less productivity and reduction of production area. They discourage farmers to continue investing in inputs or to expand the area of cultivation, thus directly affecting their production and income. The participants shared that due to the water restriction level 5 (see box 5), they are not allowed to use hoses (there is patrolling to control water usage) and they are not allowed to water with municipal water. A participant of the Philippi Horticultural Area mentioned that despite his borehole being 30m deep, the water that comes out is still salty water due to the severity of droughts. The participants also mentioned that manual watering (from alternative water sources) is only possible on small-scale farms but not viable for bigger farms. Some mentioned being displaced from their farms due to the water shortage.

Box 4: Level 5 Water Restrictions[73]

Level 5 water restriction introduced by the City of Cape Town from 03 September 2017, until further notice, means effectively for all citizens that:

- All water users are required to use no more than 87 litres of municipal drinking water per person per day in total, irrespective of whether at home, work or elsewhere
- No watering/irrigation with municipal drinking water allowed. This includes watering/irrigation of flower beds, lawns, vegetables, agricultural crops, other plants, sports fields, golf courses, schools, educational facilities, nurseries, parks and other open spaces, customers involved in agricultural activities, etc.

Strategies and solutions to overcome water restrictions

When asked about their strategy of dealing with water restrictions, participants shared their approaches to overcome their problems, see below for few examples:

- Practices to keep moisture in the soil by covering the surface with cardboard or plastic (using a big sheet and punch holes) or mulching using green manure with weeds,
- Diversification of crops to test adaptability, combined with different soil preparation,

73 For more information see: www.capetown.gov.za/thinkwater.

- Recycling greywater, including use of biodegradable soap,
- Use of drip irrigation to reduce water usage,
- For water storage, jojo tanks (see figure 26),
- Home-made irrigation systems with pet bottles (strategically placed over the garden, punching very small holes to ensure slow dripping),
- Use of aquaponics systems (high initial setup costs and technical know-how were mentioned as potential limitations).

Overall, it is safe to say that information about regulations and support given by the municipality is not available to all farmers, causing fear of sanctions and uncertainty of water supply, threatening farming activities. The same can be said of water saving techniques and strategies for farming with little water. If this knowledge could be made available to all farmers, there is great potential for farmers to continue their activities while also creating awareness on being frugal with water usage.

5.3.4 Scenario Workshop

On the 12th and 13th of October 2017, we organized a two-day scenario workshop about the future role of urban agriculture in Cape Town at the Sustainability Institute in Stellenbosch (see annex for the detailed workshop programme). The aim of the workshop was to discuss different future scenarios for urban agriculture, to understand different perspectives and create a common vision among the actors, and to develop policy recommendations leading to achieving positive change. Moreover, we wanted to support ongoing exchanges between the different actors and build upon already realized workshops, research and projects.

Over 30 people involved in different ways in urban agriculture took part in the scenario workshop. They included farmers from the Cape Flats and the Philippi Horticulture Area, different NGOs and networks, scientists from the University of the Western Cape and the Stellenbosch University, politicians from the Government of the Western Cape and many more dedicated individuals (see annex for list of the participants).

Figure 26: Discussion among the workshop participants

Source: Own picture.

Just as in Maputo, we chose to work with the scenario building method because it is a strategy planning procedure that presents several plausible future paths, assesses the influence of key factors on transformation, and shows pathways to develop from the current trend to the desired future. The scenario workshop methodology follows a sequence of steps:

Step 1: Discussing and determining factors of change (key factors)

Step 2: Weighing and filtering these factors

Step 3: Describing variations of these factors

Step 4: Developing a positive narrative scenario

Step 5: Identifying strategic measures and key actors

Contrary to the scenario workshop in Maputo, we prepared a list of factors based on pre-workshop meetings with local actors, interviews and literature reviews. The factors were then discussed at the beginning of the workshop and participants were asked if a topic was missing or if something should be reformulated. The discussion focused on definitions of key factors: access to land and market access. After the discussion, the listed key factors were weighted based on their importance and uncertainty. The prioritized key factors were:

- Access to land and functional framework,
- Market access and nutrition,
- Stewardship of nature,
- Alliance-building of the actors,
- Awareness and behaviour change.

At the end of the first day, Gita Goven of the architecture, town planning and design office ARG Design, presented a possible future agri-hub project as part of an integral housing project at the edge of the Philippi Horticulture Area. Loubie Rusch of the Slow Food Network then gave a tour through the indigenous food garden in front of the Sustainability Institute.

On the second day, three working groups of five to six people continued describing future variations of the factors, which were used to create a scenario in the plenary. The last part of the workshop was the development of recommendations to realize a positive change of the key factor. The results of the group work were presented by the participants in the meeting.

Similar to the scenario workshop in Maputo, participants developed scenarios throughout the scenario workshop, mainly describing possible variations of the key factors. The positive-realistic scenario was narrated by the facilitators in the plenary (see box 5 for the positive-scenario).

Box 5: Positive scenario from scenario workshop in Cape Town

"Imagine the year 2030, we are all 12, 13 years older, and you are sitting on a bench in a beautiful garden, maybe on your farm, in your backyard or in the community garden in your neighbourhood. You are hearing the birds singing and the bees humming and while you are sitting on the bench, you are reasoning about the positive changes regarding urban agriculture and the urban food system in Cape Town. The Urban Agriculture Unit is now an agricultural help desk with public servants that are willing to help the farmers, simplified procedures, public participation and transversal working groups that are willing to work together. A complete and transparent mapping of all land available for urban agriculture has been done and published.

Community markets, with the farmers, as shareholders are promoters and supporters of fairness. Cheap food prices are taxed, including costs for the society and the environment that are the result of an unsustainable food system. Consumers are informed and understand aspects regarding nutrition and the social and ecological benefits beyond food production. Governmental organizations are aware of the importance of having a good understanding and (spatial) planning in a resilient city. There is sustainable use, preservation and restoration of natural resources and natural areas. There are corridors linking these natural habitats to support and assure the distribution of animals and plants. Integrated management strategies, including topics like the conservation of biodiversity, indigenous plants and indigenous food, are implemented.

Through awareness education at schools and the inclusion of the knowledge of the elders, a positive change in the behaviour of children and young people is achieved. There is a "healthy" relationship to nature based on conservation and access for everyone, e.g. by "getting our hands dirty": recycling and re-usage of water or planting gardens in backyards are common practices. Urban agriculture produces abundant local food adapted to local conditions like drought and salty soils. There are networks, platforms, meetings and roundtables established to bring together all different stakeholders on a regular basis and to allow new relationships between the actors to grow in a natural way. There is official space for the informality of urban agriculture and big and small businesses are partners supporting each other. All the different NGOs have strong connections with each other and have developed a joint training programme for the farmers. All of these new developments contributed to a healthier, more sustainable and more resilient city."

5.3.5 Factors and recommendations

After presenting the positive-realistic scenario in the meeting, the participants went back to their work groups and developed strategic measures to achieve positive change related to one of the factors that they previously worked on. The results, including literature review and expert interviews, are presented below.

5.3.5.1 Access to land and functional framework

Initially identified as two separate factors, access to land and a functional framework were merged by the participants. Participants saw issues related to land access as often being related to the legal and functional framework. To the

participants, access to land meant ownership or leasing of land, availability of land, mapping of available land and procedures to get permissions. Functional framework refers to formal procedures, such as registering and applying for licenses in governmental institutions, as well as protecting these lands from development and other uses.

According to the participants, the procedure to obtain licenses is comple and involves filling out different requests at different departments of the municipality or provincial government (depending on which government owns the land). The application procedures and responsible departments are unclear to the farmers, increasing the barriers for the application[74]. According to Aa-ishah Petersen, from the Department of the Premier of the WCG, delays are due to governmental internal approval processes, which often depends on the willingness of the clerk. Obose, from the Department of Agriculture, adds that delays are also due lack of coordination and indecisiveness on the part of decision-makers.

It is important to note that there are two different permissions that the farmers need to obtain. The first one is obtained directly with the entity or organization that is operating in that particular space. For example, if a farmer finds an empty ground in the school area, she can approach the school and ask for permission to cultivate in that plot. This process usually takes up to one month – an agreement is signed between the school and the farmer. The second step is to go to the municipality to lease or buy that land; a procedure that is usually the lengthiest. The illegal status usually refers to the governmental permit, even though the farmer already possesses an agreement with the establishment (i.e. a school). This illegal status has further consequences – as townships continue to develop quickly, with construction of residential and school buildings, farmers who had been cultivating for years can lose their plots to a new development, either because they could not obtain a license or because they have not been given a lease renewal.

It became evident that urban farmers do not understand how provincial and municipal governments operate and which issues falls into each one's jurisdiction. To reduce application time, it is helpful to first find out which government owns the land and to then begin with the inquiry and application process. However, this

74 According to Ayanda Obose from the Department of Agriculture of the WCG, the application processes have been reported to take between 5 to 8 years. In the meantime, the farmers are farming in the area, thus being considered illegal and having no protection for their investments in the land.

information is not easily accessed. As a result, farmers must go to different departments without knowing where they will in fact find the information they need.

With these challenges in mind, the group suggested creating awork group body to support farmers in the city. This work group body shall design policy to regulate and operationalize a help desk to assist urban farmers.

Furthermore, all the information disseminated by the government must be in languages accessible to the regular citizen. The participants noted the need for improved coordination between various departments at both national, provincial and local levels to ensure thatthis could be achieved. A number of departments have a G.I.S department. Therefore, the existing information can be merged to map the missing data.

Recommendations

- Create a working body group to design policy to regulate and operationalize a help desk to assist the urban farmer; involve the department of the premier to help with coordination, as the department has oversight of various departments (Department of the Premier, WCG and City of Cape Town).
- Conduct regular mapping of available land and make updates; coordinate between government departments (city, province and national government), and especially the G.I.S departments, to compile existing data and complement missing data. All municipal and provincial department have a G.I.S department.
- Involve the private sector to help compile and map existing lands (i.e. private architecture firms).
- Involve universities to help manage this data (i.e. to compile mapping of available land) and make it available to the public (UCT and UWC).
- Create a strategic overview of processes that help identify departments responsible for leasing and make this information accessible to farmers (i.e. through NGOs), in local languages and in simple language (e.g. with graphs and drawings) (Urban agriculture unit, City of Cape Town and Department of Agriculture, WCG).

5.3.5.2 Market access

Market access linked to consumer awareness was discussed as one of the most important factors in the scenario workshop. This has to do with the fact that in Cape Town, like in many other cities around the world, there is not enough infrastructure and little attention is paid to direct local marketing and processing of

locally produced food. Small-scale farmers, in particular, struggle to access markets and retailer structures (RUAF Foundation, n.d.). The largest distributor of vegetables in Cape Town is the central market in Epping. 60% of all vegetables are sold there. The missing 40% are distributed via contract farming or direct purchase (Dolch, 2017, p. 65).

The Epping market is designed for large commercial farmers from the Philippi Horticulture Area or surrounding regions (see chapter 2.1.2). This makes it difficult for emerging farmers or smallholder farmers to compete because they cannot keep up with the prices, and transportation costs from their production sites to the central market are often too high. Currently, there are very few local community markets in the Cape Flats where a large part of the urban food production is taking place. Efforts to establish a market platform in this area have failed thus far (Dolch, 2017, pp. 69–72).

Looking at urban community farmers, the UFISAMO analysis of vegetable value chains (Dolch, 2017) makes clear that this group is facing challenges such as lack of marketing platforms, no direct marketing of their produce and high transport costs. Most of the farmers have little knowledge about the value chain and limited bargaining power due to their high dependency on the NGOs that support them (Dolch, 2017, p. vi, vii, 72). Apart from that, small-scale urban farmers have difficulties competing with large-scale producers who operate within well-organized distribution systems and with low production costs (Dolch, 2017, p. 72).

In the positive-realistic scenario for 2030 developed during the workshop, community markets are promoters and supporters of fairness. The neighbourhood, as well as the broader consumer base, are informed and aware of nutritional aspects and the benefits of locally produced food.

The government equalizes food prices, including health, social and environmental aspects and selling good food at a fair price. There are regulations in favour of smallholder farmers. Supermarkets assume responsibility and advertise local organic produce and retailers adjust their selling structures to accommodate smallholder farmers. All this leads to a physically and mentally healthier community, where people are thriving instead of surviving, a healthier competition, an informed and empowered younger generation, decreased levels of crime, greater levels of entrepreneurship and local ownership, as well as a healthy environment due to less food miles.

The strategic measures that have been discussed to reach the desired situation reflected the systemic view that is necessary when dealing with market access. The suggested actions evolved around the creation of fair markets, awareness-

raising and access to data. Regarding fair markets, participants agreed that holding multinational food producers accountable would be necessary to create space for agro-ecological and fair livelihoods. However, they felt it would be a tedious process to change the logic of large corporations.

Community markets and cooperation with retailers

A community market near the production site could assure access for smallholder farmers and raise awareness of local produce. It could also be a business opportunity, including local farmers as shareholders. At a future date, the market could serve as an inclusive space that is a hub for processing, reusing water and waste, as well as education, following the training models of NGOs like Abalimi and Soil for life or, in terms of capacity building, entrepreneurship initiatives like KG Business development. Along with creating new business opportunities, the participants agreed that it is important to look at pre-existing structures, such as street vendors who are important for the local supply (Dolch, 2017, vi).

Post-workshop interviews revealed that it is crucial to resolve logistical issues like cold storage and transportation of smallholder farmers' goods before starting a community market. A four-step approach to establishing a community market in Cape Town was suggested. It starts with (i) supporting existing structures, like street vendors, and expanding promising existing marketing channels like box schemes; and moves to (ii) resolving logistical issues like transport for smallholder farmers, e.g. shared service provided by NGOs and cold storage. The plan continues with (iii) creating decentralised mobile markets on wheels as an interim solution – or intermediate step – before creating a fixed entity that could fail as in the past. The final step is achieving an (iv) inclusive community market as a fixed entity near the to the production site. Another practical suggestion regarding logistics is to collaborate with car manufacturers who could reduce their carbon footprints by supporting locally produced food. Decisive factors for success are constant quality control and having a long-term business model that includes a broad range of actors. Moreover, further workshops with farmers, NGOs and retailers on practical solutions like logistics are necessary to initiate the next step and implement the ideas that have been discussed for a long time.[75]

Kenneth Carden, Consultant for Spar International, underlined the importance of public-private cooperations to realize community markets or agri-hubs. These opportunities for private sector collaboration have long been underestimated. In

75 Interview with Sonia Mountford, founder of EATegrity, conducted on 26 October 2017 in Cape Town.

alignment with the discussions of the workshop, he confirmed that Spar can serve as an entry point for smallholder farmers due to its decentral distribution system. In contrast to supermarkets like Woolworth, which has only two distribution centres in the whole country, Spar is a logistical enterprise specialized in distribution, with six distribution centres nationwide. Moreover, the company is interested in promoting nutritious food.[76]

Awareness-raising and data

Apart from that, it was discussed in the workshop that awareness-raising and transparency are connected to creating fair conditions. Examples provided included nutrition campaigns in community newspapers, small-scale farmers' associations for knowledge exchange, and visits to existing markets. Looking at the consumer side of urban agriculture, current buyers of the different marketing channels – box schemes, restaurants and lifestyle markets – are similar. Their income is above average and they demand sustainable, locally and organically produced food (Dolch, 2017, p. vii, 72). Consumer habits in the Cape Flats are different and there is less demand for fruits and vegetables. According to workshop participants, the challenge lies in sensitising those with low incomes who are not able to value organic production and certification.

Box 6: Good practice examples on market access improvement

KwaZulu-Natal, with its capital Durban, could serve as an example of good practice for the Western Cape and Cape Town. The recently launched project "Rapid Agrarian Socio-Economic Transformation" (RASET) establishes agri-parks and includes capacity building for small-scale farmers. Spar is one of the companies that has committed to sourcing food products from emerging small-scale black farmers in the province. Johannesburg could also serve as a good practice example because, in contrast to Cape Town, it has an active network of farmers, and the University of Johannesburg (UJ) organizes workshops and trainings on a regular basis, allowing more exchange and empowerment.

On the international level, the municipality of Budapest serves as an example of how a weekly organic farmers' market can be established. The city administration assists the local organization of urban and peri-urban farmers Biokultúra in achieving this goal. The City of Valadares in Brazil has even gone one step further in prioritizing the marketing of urban agricultural products. The city has created incentives for the formation of cooperatives, has created sales and distribution centres and farmers' markets, and directly purchases agricultural products to supply to schools, community kitchens or hospitals (RUAF Foundation, 2017).

76 Interview with Kenneth Carden, Spar International, conducted on 30 October 2017 in Cape Town.

When discussing access to data, one of the participants mentioned that there is no central database of NGOs and other organizations that are already supporting small-scale farmers and growers. A holistic baseline study on small-scale farming activities and the urban food systems would show that there is a need for support, such as logistical support, and also high demand. This might help to accelerate political action.

Recommendations

- Public and private actors expand existing channels for community farmers like box schemes – through Harvest of Hope, Ethical Co-Ops and the Oranjezicht City Farm – as well as restaurants, lifestyle and organic markets and processors,
- The provincial government facilitates marketing for poor urban farmers providing them access to existing city markets following the example of KwaZulu-Natal (DOA, DPME),
- NGOs assist farmers in accessing both existing and future markets by providing a vehicle that all the farmers can use (Abalimi),
- Spar International supports smallholder farmers in selling their local organic produce,
- Car manufacturers help create decentral markets on wheels as an intermediate step in supporting locally produced food,
- The City of Cape Town assists in establishing a community owned farmers' market and assists with infrastructure development, providing licenses and controlling product quality (City of Cape Town, DOA, DOH, NGOs and Spar International),
- Universities work together with NGOs to create a central database on small-scale farmers and urban farming activities (UWC, UCT, SU, Abalimi, Soil for Life, SA Food Lab). The database is publically available and shows the need for political farmer support,
- Public and private actors form partnerships to create community markets or agri-hubs. A first step is to organize an interdisciplinary workshop on logistics with retailers to determine how to shorten the supply chain (EATegrity, Spar International). This could result in an interdisciplinary committee that meets regularly,
- Farmers organizations and NGOs know about, and have access to, capacity building initiatives like KG Business Development and ICT4WOMEN,

- The Western Cape Government (DOA, Department of the Premier) incentivizes smallholder farmers to organize, as in Johannesburg, to improve their negotiating power and facilitate knowledge exchange.

5.3.5.3 Stewardship of nature

Stewardship is an ethical concept that focuses on responsible planning and management of any kind of resource. Worrell & Appleby (2000) defined natural resources as "(…) the responsible use (including conservation) of natural resources in a way that takes full and balanced account of the interests of society, future generations, and other species, as well as of private needs, and accepts significant answerability to society."

During the discussion section of the scenario workshop, the participants determined that the key factors soil and water management and climate change resilience should not be discussed separately. Instead they suggested including the factor of stewardship of nature, including all the topics previously mentioned, as well as an awareness in urban society about ecological issues like the real price of food, including costs to society and the environment (e.g. the costs for the health system due to too much sugar and fat in the food, or the costs of conserving biodiversity after the impacts of agrochemicals on living organisms). Although soil and water management were previously chosen as key factors, they were also included in the discussion about stewardship of nature. In the process of weighing and filtering the factors, climate change resilience was prioritized by the participants as the fourth most important factor, and water management as the fifth most important factor in influencing the future of urban agriculture in Cape Town.

The following positive vision was described in the positive-realistic scenario for 2030 developed during the scenario workshop: there is a sustainable use, preservation and restoration of natural resources and natural areas. There are corridors linking these natural habitats to support and assure the distribution of animals and plants. Integrated management strategies, including topics like the conservation of biodiversity, indigenous plants and indigenous food are implemented. Through awareness education at schools and the inclusion of the knowledge of the elders, a positive change in the behaviour of children and young people is achieved. There is a "healthy" relationship to nature based on conservation and access for everyone. For example, by "getting our hands dirty", meaning recycling and re-use of water or planting gardens in backyards are common practices. Urban agriculture produces abundant local food adapted to local conditions like droughts and salty soil. On the impact level, this positive change would lead to healthy, sustainable and resilient cities with regenerative systems and processes.

The main strategic measures identified were the education of the next generation and especially in school gardens, as well as the creation of awareness in the whole society through mainstream media, and the creation of alliances to put public pressure on responsible actors. Therefore, educational plans have to be developed together with the Department of Education of the Western Cape, Slow Food and various NGOs, like Soil for Life or SEED. Different newspapers, as well as radio and television stations, have to be involved in the awareness-raising campaigns to increase media impact. Furthermore, change agents, like Tristan Görgens of the Department of the Premier of the Western Cape, Stephen Granger of the Environmental Management Department of the City of Cape Town, Adriaan Conradie of the Department of Agriculture, Tatjana von Bormann of World Wildlife Fund and Rupert Koopman of CapeNature, shall be identified and supported. Additionally, the accountabilities of existing strategies must be assured.

Cities are complex socio-ecological systems and their long-term challenges like environmental changes, resource limitations, growing inequality etc. require interrelated policy responses (Grove, 2009). The City of Cape Town developed many different approaches to tackle these challenges, e.g. in 2001 the Integrated Metropolitan Environmental Policy (IMEP) was adopted and various strategies were developed to reach goals in the sector. Furthermore, the City of Cape Town is part of the C40 Cities Climate Leadership Group (C40), a global network of cities which aim to facilitate the dialogue and act on climate ambitions. It is also part of the 100 Resilient Cities network (100RC) of the Rockefeller Foundation, which is dedicated to helping cities around the world become more resilient to physical, social and economic challenges. However, all of these sustainability and resilience strategies depend on a meaningful implementation "on the ground". Many environmental issues, for example, the creation of a sustainable and resilient urban food system, depend on transversal working groups where different departments and other organizations and individuals can coordinate their efforts[77]. Regarding the environmental education, Amy Davison mentions the Environmental Education Program where topics like biodiversity, pollination and efficient use of natural resources and energy are promoted at primary and secondary schools.

77 Interview with Amy Davison, senior professional officer at the Environmental Management Department of the City of Cape Town.

Recommendations

- Strengthen the Environmental Education Program in school curricula and include environmental issues as transversal topics in other school subjects (Department of Education, NGOs like Soil for Life and SEED),
- Start an awareness campaign focusing on the stewardship of nature (Environmental Management Department, newspapers like Vukani or Vision, radio and television stations, e.g. News24, Cape Town TV, SABC, especially their TV programme 50/50),
- Form more transversal working groups in the governmental institutions to tackle complex socio-ecological issues like climate change, sustainable water management or a resilient urban food system.

5.3.6 Analysis of the results

Analogous to chapter 5.2.6, the following chapter analyses the diverse results of our research in Cape Town, regarding the six aspects of good practices of other cities described in chapter 4.2.1.

Aspect 1: Significance of urban agriculture within the legal and regulatory system of the city

As mentioned in chapter 5.3.1, there are comprehensive policies regarding food security. Moreover, urban agriculture is considered to be a phenomenon that has special characteristics on the national and on the local level. The provincial government supports urban agriculture, explicitly that which is practiced by vulnerable groups. There is also the food gardens policy that aims to establish sustainable food gardens in a broad range. The unique urban agriculture policy of 2007 – the first of its kind on the entire continent – provides a broad and inclusive view, and the revised urban agriculture policy of 2013 includes an even broader understanding of urban agriculture, highlighting its multidimensionality and its social, economic and ecological benefits (see chapter 5.3.1).

It can be said that, at least officially, the city of Cape Town is outlining the advantages of urban agriculture and promoting its future development. However, the renewed urban agriculture policy was never published, and when it comes to its practical implementation, the actors we spoke with showed us a different picture. When speaking with farmers about legal issues and land tenure, the conversation always came back to the lease agreement. Applying for it is expensive and takes a long time and without this authorization, farmers can lose their land anytime, which makes long-term planning difficult. In the scenario workshop, the ac-

tors pointed out that even if there are good policies, there is a lack of transparency and it remains unclear which department is responsible for what. Talking about the current and severe water crisis, many farmers stated that municipal information about regulation and support is not available for them. Talking to insiders, it also came out that there are opposing interests within the city's administration and it remains unclear where the city sets its priorities. It is at the Philippi Horticulture Area where these contestations over the use of land become most visible (see also chapter 2.1.2).

All in all, it can be stated that, in contrast to cities like Rosario, Cape Town does not have a very clear and transparent vision for establishing urban agriculture as a permanent activity in the city (see chapter 5.1.2).

Aspect 2: Existence and use of networks, meetings and other forms of exchange in the city

In dealing with urban agriculture networks in Cape Town, we were astonished by the amount of research, workshops and exchange that had already taken place for a very long time and on a very high level. However, many of these discussions are happening more often on the scientific level, e.g. the impressive work of the Southern African Food Lab we closely cooperated with, or the outstanding research of the African Centre for Cities.

When talking to farmers, it was often mentioned that there is a lack of dialogue and coordination between the different organizations, NGOs and initiatives like Soil for Life, SEED and Abalimi. Farmers underlined how important it is to have a community network, e.g. to fight for land and lease agreements and to exchange important information to find out how other farmers have found solutions to similar challenges. We tried to initiate some initial steps for more networking, but it lies in the hands of the local actors to institutionalize a network. Furthermore, there are no interactive and innovative platforms, such as those in Berlin (see 5.1.2). At the farmers' meeting, we introduced a new networking method in the form of an interactive map with all the gardens in the city that allowed the farmers to easily share contact details and get an impression of the urban agriculture panorama of Cape Town.

Apart from that, although there is a lot of awareness among those who are actively engaged with the topic, it was often noted that the broader consumer base is not aware enough and that media attention and public dialogue needs to be increased to include the wider public. On the government level, representatives stated that there is a need for transversal working groups in governmental institu-

tions to tackle complex socio-ecological issues like climate change, sustainable water management and how to achieve resilient urban food systems.

Altogether, it can be stated that even though there are many workshops and meetings happening in Cape Town, the farmers' perspectives are often not actively included. Having farmers take part in our multi-stakeholder workshop was positively received by the participants. One of them mentioned at the end of the scenario workshop: "I have been to so many workshops about urban agriculture but this is the first time that those who are farming are given the possibility to actively take part". Therefore, it might be worth trying to create a broad platform involving multiple actors on a regular basis and on many levels, to avoid that actors continue working in isolation, as it was mentioned by many of our partners.

Aspect 3: Resilient practices within the urban food system of the city

Urban agriculture in Cape Town was seen as part of the urban food system by many actors. The debate at the scenario workshop showed that there is a profound understanding of the concept of urban food systems among nearly all actors involved in urban agriculture in Cape Town, and many actors are interested in a positive change towards greater resilience and sustainability. However, at the moment, there isn't a food policy council or other instruments to develop a holistic food strategy for the city. When it comes to fostering innovative forms of urban agriculture as described in chapter 5.1, the city could take other cities like Rosario or Berlin as good practice examples.

Aspect 4: Role of urban agriculture activities within the economic system of the city

Market access for small-scale farmers is one of the main challenges in the city of Cape Town. Although there are community markets in the Cape Flats, access to markets for many farmers and the access to good food for many consumers could be improved to foster short chain marketing and value adding by urban farmers.

Workshops and plans often do not include multiple actors and should also consider the private sector to understand how to improve market access, logistics and how to shorten the supply chain. KwaZulu-Natal, with its capital Durban, could serve as a good practice example for the Western Cape and Cape Town. A recently launched project establishes agri-parks, includes capacity building activities for small-scale farmers. Cooperation with retailers like Spar could be a good starting point in Cape Town.

The city of Cape Town could assist in establishing more community owned farmer's markets and could assist with infrastructure development, licenses and

the control of product quality. Furthermore, at the moment, there is no central database of market-related small-scale farming activities that shows the need for political farmer support.

Aspect 5: Importance of ecological aspects considered within the city management

There are many related and important ecological topics that we did not work on in our study, including waste, biodiversity and ecosystem services. However, the Philippi Horticulture Area should be mentioned here because the area has great potential to be an important part of a resilient urban food system and for ecosystem services like groundwater renovation, which might be crucial for the future water management of the City of Cape Town.

Another important contribution of urban agriculture and its various actors is raising awareness of ecological topics, like the carbon footprint of conventional food production with its long transport distances, or the possibility of including edible indigenous plants in urban gardens and farms to reduce the amount of water, fertilizer and pesticides necessary.

Aspect 6: Importance of social aspects considered within the city management

Urban agriculture as a learning platform connected to education in schools, training of farmers and community support is already widely practiced in Cape Town. Bottom-up community building is considered to be the solution for many of the farmers' problems. In the education sector, there could be deeper relationships with schools and universities, following the example of Johannesburg where the university organizes workshops and training programmes on a regular basis, allowing more knowledge exchange and empowerment.

Robbery and stigmatization were also often mentioned by farmers. As part of the "100 Resilient Cities" network,[78] unemployment and social cohesion is a main concern of the city administration, however, this seems to be limited to security aspects.

Altogether, Cape Town can serve as a good practice example in many areas. Nevertheless, putting this good will into practice is still a challenge and does not cover all aspects identified in the beginning of the study (see chapter 4.2.1). Farmers in the city face many challenges and feel that it is entirely up to them to determine whether or not change will happen.

78 http://www.100resilientcities.org/cities/cape-town/.

Figure 27: Philippi Horticulture Area (left) and Philippi Horticulture Area Food and Farming Campaign headquarter (right)

Source: Own picture.

6 Conclusions

Urban agriculture in its many forms, ranging from being a subsistence practice to medium-scale commercial farms, has the potential to contribute to the urban food system and to more-sustainable urban development if its particular characteristics related to the cities' contexts, people and structures are considered. However, it is not a panacea to address all social, economic and ecological problems that are present in the cities nowadays, so it is also important to point out its limitations.

In our study of Maputo and Cape Town, the creation or continuation of a multi-stakeholder dialogue that brough together many different actors working in urban agriculture, from policy makers, scientists, NGOs and civil society to farmers and gardeners, was the key to create a common vision and develop future strategies and recommendations. This stakeholder dialogue in form of interviews, field visits, a farmers' meeting and a two-day scenario workshop made it possible to gain a better understanding of the multidimensional characteristics and challenges of urban agriculture and its interlinkages.

Maputo, with its huge green zones inside the city and its well-organized farmers, has a great amount of potential in urban agriculture. Our scenario workshop was the first one of its kind in the city, and created a multi-stakeholder dialogue where all different actors were actively involved in the working process. The challenges that have been mentioned were very diverse, ranging from the lack of market access due to transportation issues, to soil erosion because of heavy precipitation in the rainy season. Therefore, the recommendations developed were very different for the various types of stakeholders. This ranges from from technical issues, like mapping available arable land, to governance issues, pointing out the importance of transversal working groups involving many different actors. The University of Eduardo Mondlane – a partner of UFISAMO – and the Municipality of Maputo plan to continue the dialogue with a follow-up meeting. Furthermore, the Director of the DAE, Estevão João, strives to promote the normalization of agro-ecological practices in the city. In the proposal PAUO (*Política de Agricultura Urbana Orgânica*), the DAE wants to regulate the quality of the produce and discourage the use of chemicals. The Forum of Urban Agriculture (*Fórum da Agricultura Urbana*) that the DAE is planning, aims to institutionalize the meetings between key actors and to promote good practices. This aligns with our recommendation to create an institutionalized forum consisting of key actors.

In Cape Town's urban agriculture policy, urban agriculture is primarily seen as a possible way to support poor communities and households to increase their incomes and food security. We saw the urban agriculture landscape in Cape Town to be very diverse, ranging from small home and community gardens in the townships to medium-scale farmers at the Philippi Horticulture Area (PHA), with many different NGOs, research institutions and individuals that are involved in the topic. During our stay, there was a large debate about the future of the PHA. Moving forward, the area has great potential to be an important part of a resilient urban food system and for ecosystem services like groundwater renovation, but it is under the threat of being used for housing and sand mining. Furthermore, the urban agriculture policy of the City of Cape Town was renewed in 2013 but is still under review, which is an evidence of the opposing interests within the city administration. The discussion in our stakeholder dialogue was not only about urban agriculture, but also about the urban food system as a whole, addressing complex questions about the real price of food (including social and economic costs of big-scale agriculture) and questioning the dominance of big supermarket chains and consumer behaviour. The recommendations that were developed in Cape Town were very diverse, including practical suggestions ranging from conducting a workshop about logistics for smallholder farmers, to awareness-raising about ecological problems connected to food production and consumption. As a result of our meetings and workshops, two networking meetings at the NGO SEED and the Western Cape University took place and supported the creation of a "growing network" (see figure 29).

In Maputo and Cape Town, urban agriculture has different characteristics, challenges and potentials:

Maputo has large areas of arable land in the middle of the urban area and well-organized and empowered urban farmers. But it lacks specific strategies or political institutions that deal with urban agriculture issues and there is no differentiation between rural and urban agriculture. There is political will to make agriculture more sustainable and productive, as it is seen to be of importance for economic development and national independence.

In Cape Town, the opposite is the case. Land is scarce and many farmers are limited to their backyards and depend on NGOs. However, the level of the academic debate and the political institutionalisation are much higher. It must be mentioned that Cape Town faced severe droughts in the last years resulting in water restrictions that will probably be intensified throughout the next years and have strong effects on all activities in the city, including urban agriculture.

Figure 28: Activity conducted during the network meeting at SEED

Source: Own picture.

In summary, we want to state that urban agriculture contributes to the goal of making both Maputo and Cape Town more sustainable, but that the continuous dialogue which includes all different types of actors, as well as formal recognition by city officials, is crucial. There are still many possibilities for improvement, but due to its multi-dimensional nature, urban agriculture has the potential to be part of a transdisciplinary and holistic solution for the urban challenges of the 21st century. Facing urbanization, the most important question in the future might be the availability of arable land in the city. Politicians and academics must create and maintain the dialogue and urban gardeners and farmers must be creative and adapt to new circumstances and ideas, and together farm the city for a better future.

Limitations of our study

Due to time constraints, it was challenging to identify, contact and involve all the various key stakeholders in Maputo and Cape Town. We are aware that the selection of actors taking part in the workshop and in our interviews is not representative of the diverse landscape of urban agriculture in both cities. Aside from

this, it was not possible to compare the situation in both cities in a concluding analysis because the local context is very different.

The debate about urban agriculture is very new in Maputo. This can hold potential because it opens up the opportunity to learn, connect and create synergies. However, its novelty is also its main challenge. Urban agriculture was often mixed up with agroecology, rural and organic agriculture, and there are no specific policies referring to urban agriculture or officials dealing with the phenomenon. This made it harder for us to identify entry points for discussion.

In Cape Town, the debate is not new, but it seems that currently the water- and the housing crisis are more present, considered more urgent and are likely to be prioritized by city officials. Urban agriculture in Cape Town has also been critically debated for such a long time that it is hard to find new ways of discussing the issue.

As previously mentioned, urban agriculture is not the solution to these urbanization challenges, but rather a complementary approach for a sustainable future. The starting point of our research was that urban agriculture is a widespread phenomenon that cannot be denied and should be taken into consideration. However, this view is not widespread throughout all levels.

In the end, no matter which topic it relates to, a stakeholder dialogue needs continuity, a strong civil society, political will (e.g. via allocating it money or employing a person responsible for it) and institutionalized structures like policies, forums, food councils or websites. We tried to support exchange, but whether or not it will continue lies in the hands of the actors on the ground.

7 Recommendations

General recommendations for urban agriculture have been formulated in many publications (Mougeot, 2010; Redwood, 2012; WinklerPrins, 2017). This study seeks to provide recommendations for the respective local context with practical applicability. In the following pages, the recommendations for different target groups in Maputo and Cape Town are summarized and listed. The main target groups in both cities are policy actors, NGOs and research institutions. The recommendations are based on the workshop results, as well as post-workshop interviews.

7.1 Maputo

7.1.1 Recommendations for policy actors

The key actors are CMM (CMMF, DAE, DMPUA), DASACM, Casas Agrarias, MASA, CEPAGRI and IPEME.

Baseline studies and awareness

- Create a central database with market and land-related data (mapping the production and services in the districts and regularly updating urbanization plans). Make it accessible to the public and improve communication and announcements of relevant information.
- Finance fundamental research done by UEM and other universities on soil mapping, improve registration and monitoring of the land use using GIS software in cooperation with research institutions.
- Build trust through transparency campaigns, consider producer-retailer relationships to extend the value chain, foster specialization, raise knowledge about the registration of land use.
- Raise awareness about soil conservation, the reduction of agro-chemicals and contaminated water in urban agriculture to increase the value of the produced food.

Capacity building and exchange

- Start a finance capacity building programme on financial issues or assimilate the "Rural Invest" methodology from FAO to provide small-scale farmers with the necessary tools to apply for credits (e.g. elaboration of business plans and helpful documents like financial records).

- Set up a platform for exchanging experiences (including good practices from around the world), building farmers-to-farmers relationships to improve agricultural practices and their empowerment. At the same time, set up a platform for the exchange between technicians to improve their knowledge of projects, organizations and laws.
- Form a technical working group to develop an action plan related to soil management and include all key stakeholders (DASACM, CMM, SETSAN, UEM, IIAM, NGOs like ABIODES).

Provide infrastructure

- Elaborate joint marketing strategies for farmers and establish transportation facilities to bring agricultural produce from the field to the formal local markets by using the structures of Casas Agrarias and associations in cooperation with CMMF.
- Reduce soil erosion in the *zonas verdes* by restructuring the urban drainage system and applying good agricultural practices by the farmers.

Cooperation and coordination

- Acknowledge that urban agriculture falls under the jurisdiction of several levels and authorities and improves the coordination within governmental departments and institutions, e.g. between IPEME, CMM and DAE to better meet the needs of urban farmers.
- Build public-private partnerships with organizations that are active in Maputo, like CAVA, e.g., to improve planning and organization of the production and quality control and to foster diversification.
- Develop a climate change resilience strategy and an action plan including urban agriculture with all key stakeholders (MITADER, MASA, CMM, FAO, UNAC, the farmers associations, NGOs like ABIODES, ACDI/VOCA, Kulima and other civil society organizations) and monitoring done by MITADER.

7.1.2 Recommendations for NGOs and other civil society organizations

The key actors are FAO, ABIODES, Kulima and ACDI/VOCA.

Capacity building and technical solutions

- Help the municipality start a finance capacity building programme using the proven FAO methodology "Rural Invest" to provide small-scale farmers with the tools they need to apply for credits (e.g. elaboration of business plans and keeping helpful documents like financial records).

- Help farmers reduce soil erosion in the *zonas verdes* by applying good agricultural practices in cooperation with Casas Agrarias.
- Reduce the use of agro-chemicals and contaminated water in urban agriculture to reduce soil contamination and to increase the value of the produced food in cooperation with Casas Agrarias.

Coordination and knowledge sharing

- Develop a climate change resilience strategy and an action plan including urban agriculture together with all key stakeholders (MITADER, MASA, CMM, FAO, UNAC, the farmers associations, NGOs like ABIODES, ACDI/VOCA, Kulima and other civil society organizations) and monitoring done by MITADER
- Form a technical working group to develop an action plan related to soil management, including all key stakeholders (DASACM, CMM, SETSAN, UEM, IIAM, NGOs like ABIODES). Cooperate with the UEM and other research institutions to improve the flow and quality of information between academia and the field, and to support joint programmes, e.g. through internships, field studies, exchange programmes, practical courses or related theses. The CMM, FAO and UNAC, as experienced entities coordinating and implementing seminars, workshops and conferences, could act as key drivers for pushing forward an interactive knowledge-sharing platform

7.1.3 Recommendations for universities and other research institutions

Capacity building

- Start a finance capacity building programme on financial issues or assimilate the "Rural Invest" methodology from FAO to provide small-scale farmers with the necessary tools they need to apply for credits (e.g. elaboration of business plans and keeping helpful documents like financial records).
- Formally recognize a technical career for producers (carrera do agricultor) by designing a joint dual-programme among academic, technical institutions and the Ministry of Education. This should have an equivalent value to a university career with theoretical and practical components. For example, the UEM through their agriculture, social, management and technological study programmes could set the framework for the implementation of this degree. It can be complemented with field work in the *machambas* and in management with partners such as ABIODES and Kulima to provide opportunities like financing, further studies, commercial exchange and networks.

Cooperation and dissemination of research results

- Work on platforms for exchanging ideas and supporting joint work in urban agriculture. The CMM, FAO and UNAC as experienced entities coordinating and implementing seminars, workshops and conferences, could act as key drivers for pushing forward an interactive knowledge-sharing platform.
- Form a technical working group to develop an action plan about soil management, including all key stakeholders (DASACM, CMM, SETSAN, UEM, IIAM, NGOs like ABIODES).
- Cooperate with organizations like ABIODES and Kulima to improve the flow and quality of information between academia and the field, and to support joint programmes, e.g. through internships, field studies, exchange programmes, practical courses or related theses. Make sure that the quantitative and qualitative research related to urban agriculture is publically available and can support the efforts and initiatives of other private and public key actors (e.g. promote fundamental research on soil mapping in cooperation with CMM).

7.2 Cape Town

7.2.1 Recommendations for policy actors

The key actors are the City of Cape Town and the Western Cape Government (DOA, DPME, DOH, Dep. of the Premier).

Provide infrastructure

- Facilitate marketing for poor urban farmers by providing them access to existing city markets, following the example of KwaZulu-Natal (Provincial government; DOA, DPME).
- Assist in establishing a community owned farmer's market, including infrastructure development, licenses and the control of product quality (City of Cape Town, DOA, DOH, NGOs and Spar International).

Capacity building and education

- The Western Cape Government (DOA, Department of the Premier) provides incentives for the organization of smallholder farmers to improve their negotiating power and knowledge exchange, following the example of the city of Johannesburg.

- Strengthen the Environmental Education Program in the school curricula and include environmental issues as transversal topics in other school subjects (Department of Education, NGOs like Soil for Life and SEED).

Coordination between governmental bodies

- Form more transversal working groups in the governmental institutions to tackle complex socio-ecological issues like climate change, sustainable water management or a resilient urban food system.
- Create a working group to design a policy to regulate and operationalize a help desk to assist urban farmers; involve the Department of the Premier to help with coordination, as the department has an oversight of various departments.
- Coordination between government departments (city, province and national government), especially the G.I.S departments to compile existing data and add to missing data.

Data collection and dissemination of land-related information

- Conduct regular mapping of available land and include updates involving the private sector (i.e. architectural firms) to help compile and map existing lands.
- Involve universities in managing this data (compilation of mapping of available land) and make it available to the public.

7.2.2 Recommendations for NGOs and other civil society organizations

The key actors are Abalimi, Soil for life, EATegrity and SEED.

Providing market access

- Public and private actors expand existing marketing channels for community farmers such as box schemes, as well as restaurants, lifestyle and organic markets in order to expand their negotiating power.
- Assist farmers in accessing existing and future markets by providing a vehicle (with cooling capacity for transporting fresh produce) that all the farmers can use as a shared service.
- Assist in establishing a community owned farmer's market, including infrastructure development, licenses and the control of product quality together with city departments and, for example, Spar International.
- Form partnerships with private actors to realise community markets or agri-hubs. A first step is organizing interdisciplinary workshop on logistics, together with retailers, to find out how to shorten the supply chain.

Awareness-raising and baseline studies

- Cooperate with supermarkets and media to raise consumer awareness about the food system and the true cost of food.
- Collaborate with universities to create a central database of small-scale farmers and urban farming activities. The database will be publically available and show the need for political farmer support.
- Create a strategic overview of processes that help identify departments responsible for land-related issues like lease agreements and make this information accessible to farmers (i.e. through NGOs), in local languages and in simple language (e.g. with graphs and comics).
- Strengthen the Environmental Education Program in the school curricula and include environmental issues as transversal topics in other school subjects together with the Department of Education.

7.2.3 Recommendations for universities and other research institutions

The key actors are UWC, UCT, US and SA Food Lab.

Capacity building and education

- Provide programmes that include capacity building, technical assistance for farmers and educational programmes to support the organization of smallholder farmers, improve their negotiating power and knowledge exchange, following the example of the University of Johannesburg.

Coordination and cooperation

- Form more transversal working groups in governmental institutions to tackle complex socio-ecological issues like climate change, sustainable water management or a resilient urban food system.

Data collection and dissemination of land-related information

- Conduct regular mapping of available land and include updates involving the private sector (i.e. architectural firms) to help compile and map existing lands.
- Assist governmental and non-governmental actors in managing land-related data (compilation of mapping of available land) and in making it available to the public.
- Assist NGOs in creating a central database of small-scale farmers and urban farming activities (UWC, UCT, SU, Abalimi, Soil for Life, SA Food Lab). The database is publically available and shows the need for farmer support.

8 Bibliography

Angello, C. (2017). Urban Agriculture and the Use of ICTS in Accessing and Disseminating Livestock Husbandry Information in Urban Areas of Tanzania. A Review of Related Literature. *Library Philosopy and Practice (E-Journal)*. Lincoln.

Anisfeld, S. C. (2010). *Water resources*. Washington, D.C: Island Press.

Arndt, C., Haidle, I. (2004). *Urbane Gärten in Buenos Aires*. Technische Universität Berlin, Berlin.

ASLA (American Society of Landscape Architects). (n.d.). Green Infrastructure: Overview. Retrieved January 23, 2018, from https://www.asla.org/ContentDetail.aspx? id=43532.

Avila, C. J., & Van Veenhuizen, R. (2002). The economics of urban agriculture. *Urban Agriculture Magazine*, *7*, 1–4. Leusden: RUAF Foundation.

Barghusen, R., Bayer, S. T., Kiesler, T., Krupp, L., Mahlkow, H., Feitosa Maia, E., Müller, L. F.C., Neuwald, M., Spath, K., Wagner, N. (2016). *Urban Agriculture in Maputo - Status Quo*. Self-publishing.

Battersby, J., Haysom, G., Tawodzera, G., Mclachlan, M., Crush, J., Lombard, T., Labuschange, I., Bitzer, V., Simpson, N., Rattle, J., Duncan, S., Marshak, M., James, J., Kroll, F. (2014). *Food System and Food Security Study for the City of Cape Town*. Cape Town: Briefing Paper - Self-publishing.

Berg, C., Beckmann, G., & Schelchen, A. (2016). *Scenario Building for Development Cooperation – Methods Paper – Example of Rural Transformation in Sub-Saharan Africa*. Berlin: Albrecht Daniel Thaer-Institut für Agrar- und Gartenbauwissenschaften. http://doi.org/http://dx.doi.org/10.18452/18003.

Birthal, P. S., Joshi, P. K., & Gulati, A. (2005). *Vertical Coordination in High-value Food Commodities: Implication for Smallholders*. *MTID Discussion Paper*. International Food Policy Research Institute, Washington, DC.

Budesarchiv. (1945). Baumloser Tiergarten. Berlin: Bundesarchiv.

Cabrita, J. M. (2000). *Mozambique: The Tortuous Road to Democracy*. London: Palgrave Macmillan UK. http://doi.org/10.1057/9780333977385.

Central Intelligence Agency. (2017). The World Factbook 2017. Retrieved January 23, 2018, from https://www.cia.gov/library/publications/the-world-factbook/fields/2212.html.

CGAP (The Consultative Group to Assist the Poor). (2013). *Advancing Financial Inclusion to Improve the Lives of the Poor - 2013 Annual Report*. Washington, DC.

City of Cape Town. (2007). Urban Agricultural Policy for Cape Town. Cape Town, South Africa.

— (2013). Food Gardens Policy In Support Of Poverty Alleviation And Reduction: Policy number 12399C. Cape Town, South Africa.

— (2016). *Integrated Development Plan 2012 – 2017 2014/15 Review*. Cape Town, South Africa.

CMM (Conselho Municipal de Maputo). (2016). Plano de Accão para Produção Agrária e Pesqueira - 2017. Maputo, Mozambique.

COPAC (Co-operative and Policy Alternative Center). (2016). *Advancing food sovereignty through Seed Saving-An activist guide*. Johannesburg.

Crush, J.S., & Frayne, G.B. (2011). Urban food insecurity and the new international food security agenda. *Development Southern Africa*, *28*(4), 527–544. http://doi.org/10.1080/0376835X.2011.605571.

DAFF (Department of Agriculture Forestry and Fisheries). (2013). *Strategic Plan 2013/14 to 2017/18. Department of Agriculture, Forestry and Fisheries*. Pretoria: South Africa.

DASACM (Direcção da Agricultura e Segurança Alimentar). (2017). Ponto de situação do PAPAP-2017. Maputo, Mozambique.

De Zeeuw, H., Van Veehuizen, R., & Dubbeling, M. (2011). The role of urban agriculture in building resilient cities in developing countries. *Journal of Agricultural Science*, *149*(S1), 153–163. http://doi.org/10.1017/S0021859610001279.

Demuzere, M., Orru, K., Heidrich, O., Olazabal, E., Geneletti, D., & Orru, H. (2014). Mitigating and adapting to climate change: Multi-functional and multi-scale assessment of urban green infrastrucutre. *Journal of Environmental Management*, *146*, 107–115. https://doi.org/10.1016/j.jenvman.2014.07.025.

Dolch, E. (2017). *Analysis of urban vegetable and chicken value chains in Cape Town*. UFISAMO. Berlin: Self-publishing.

Dongus, S., & Drescher, A. W. (2006). The use of GIS, GPS and aerial imagery for mapping urban agricultural activities on open space in cities. *GIS Development Weekly*, *2*(12), 2.

Drescher, A. (2001). The integration of Urban Agriculture into urban planning – An analysis of the current status and constraints, 343–357.

Dubbeling, M. (2013). CITYFOOD : Linking Cities on Urban Agriculture and Urban Food Systems RESILIENT. Leusden: RUAF Foundation.

Du Toit, D. C. (2011). *Food security*. Pretoria: Department of Agriculture, forestry and fisheries. South Africa.

Erdogan, B., Abbott, C., & Aouad, G. (2010). Construction in year 2030: developing an information technology vision. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, *368*(1924), 3551–3565. http://doi.org/10.1098/rsta.2010.0076.

FAO (Food and Agriculture Organization of the United Nations). (2012). *Growing Greener Cities in Africa. First status report on urban and peri-urban horticulture in Africa*. Rome: Food and Agriculture Organization of the United Nations.

— (2014). *Growing Greener Cities in Latin America and the Caribbean. An FAO report on urban and peri-urban agriculture in the region*. Rome: Food and Agriculture Organization of the United Nations.

Frayne, B., Pendleton, W., Crush, J., Acquah, B., Battersby-Lennard, J., Bras, E., Chiweza, A., Dlamini, T., Fincham, R., Kroll, F. (2010). The state of urban food insecurity in

southern Africa. *Urban Food Security Series*, (2), 1–51. Kingston and Cape Town: Queen's University and AFSUN.

Freeman, R. E. (2010). *Strategic management: A stakeholder approach*. New York: Cambridge University Press.

Golden, S. (2013). *Urban Agriculture Impacts: Social, Health, and Economic: A Literature Review*. Davis.

Goldt, M., Richter, J., Wiesiolek, L., Münnich, G., Halder, S., Jung, M. (2013). Berlin Gartenkarte. Berlin.

African Center for Biodiversity. (2016). Soil Fertility : Agroecology and not the Green Revolution for Africa. Johannesburg.

Grove, J. M. (2009). Managing densely settled social-ecological systems. In *Principles of Ecosystem Stewardship: Resilience-Based Natural Resource Management in a Changing World* (pp. 281–294). New York, NY: Springer New York. http://doi.org/10.1007/978-0-387-73033-2_13.

Hagey, A., Solana, R., & Flournoy, R. (2012). *Growing Urban Agriculture: Equitable Strategies and Policies for Improving Access to Healthy Food and Revitalizing Communities*. Oakland.

Halder, S. (2018 forthcoming). *Gemeinsam die Hände dreckig machen. Aktionsforschungen im aktivistischen Kontext urbaner Gärten und kollektiver Kartierungen*. Bielefeld: Transcript.

Haysom, G., & Battersby, J. (2016). Why urban agriculture isn't a panacea for Africa's food crisis. *The Conversation Africa*. http://doi.org/10.13140.

Hemmati, M. (2007). Participatory Dialogue: Towards a Stable, Safe and Just Society for All. *United Nations Publications*, 1–187. New York.

Heuser, A., Pohl, C., Urhahn, J., & Buron, S. (2015). *Unser Essen mitgestalten! Ein Handbuch zum Ernährungsrat*. Berlin: INKOTA-netzwerk.

Hoornweg, D., & Munro-Faure, P. (2008). Urban agriculture for sustainable poverty alleviation and food security. *Position Paper, FAO Africa*.

Hovorka, A. J. (2006). Urban agriculture: Addressing practical and strategic gender needs. *Development in Practice*, *16*(1), 51–61. http://doi.org/10.1080/09614520500450826.

Ilal, A., Armando, M., Bihlmayer-Waldmann, J., Costa, X., Demuth, A., Köster, L., Massinga, A., Mateus, O., Mora, M., Pöhlmann, R. (2016). Financing value chains of perennial fruit crops in Mozambique. *SLE Publication Series*, (S263). Berlin.

INGC (Instituto Nacional de Gestao de Calamidades). (2009). *Synthesis Report. INGC Climate Change Report: Study on the impact of climate change on disaster risk in Mozambique*. (B. Van Logchem & R. Brito, Eds.). Maputo.

Jenkins, P. (2000). Urban management, urban poverty and urban governance: planning and land management in Maputo. *Environment and Urbanization*, *12*(1), 137–152. http://doi.org/10.1177/095624780001200110.

—, & Andersen, J. (2011). Developing cities in between the formal and informal. In *ECAS 2011-4th European Conference on African Studies: African Engagements: On Whose Terms?* (pp. 1–16). Uppsala: Conference Proceedings.

Jennings, S., Cottee, J., Curtis, T., & Miller, S. (2015). Food in an Urbanised World. The Role of City Region Food Systems in Resilience and Sustainable Development, 1–80. Rome.

Kuenkel, P., Gerlach, S., & Frieg, V. (2011). *Working with Stakeholder Dialogues: Key Concepts and Competencies for Achieving Common Goals. A practical guide for change agents from public sector, private sector and civil society*. Norderstedt.

Lin, B. B., Philpott, S. M., & Jha, S. (2015). The future of urban agriculture and bio-diversity-ecosystem services: Challenges and next steps. *Basic and Applied Ecology*, *16*(3), 189–201. http://doi.org/10.1016/j.baae.2015.01.005.

Locke, A. (2014). Mozambique land policy development case study. *Evidence on Demand*, 1–24. http://dx.doi.org/10.12774/eod_hd.march2014.locke.

Lovell, S.T. (2010). Multifunctional urban agriculture for sustainable land use planning in the United States. *Sustainability 2010*, *2*(8), 2499–2522. http://doi.org/10.3390/su2082499.

Masquete, J., & Matias, L. (2016). *Integração do uso agrícola no planejamento urbano: uma abordagem a partir do contexto de moçambique*. Maceio.

Morgan, K. (2015). Nourishing the city: The rise of the urban food question in the Global North. *Urban Studies*, *52*(8), 1379–1394. http://doi.org/10.1177/0042098014534902

Mosca, J. (2011). *Politicas agrárias de (em) Moçambique, 1975-2009*. Maputo: Ecolar Editora.

— (2014). Agricultura familiar em Moçambique: ideologias e politicas. Maputo: Ecolar Editora.

Mougeot, L. (2000). Urban agriculture: Definition, presence, potentials and risks, and policy challenges. *Cities Feeding People Series*. Ottawa: International Development Research Centre (IDRC).

— (2006). *Growing better cities: urban agriculture for sustainable development*. *In Focus* (Vol. 19). Ottawa: International Development Research Centre (IDRC). http://doi.org/10.4337/9781781954829.00006

— (2010). *Agropolis:"The Social, Political and Environmental Dimensions of Urban Agriculture."* Ottawa: Earthscan and the International Development Research Centre.

Müller, C. (2011). Urban gardening. Über die Rückkehr der Gärten in die Stadt. München: Oekom Verlag, 9–19. http://doi.org/10.1515/9783110250862.1.

Mwangi, E., & Markelova, H. (2009). Collective Action and Property Rights for Poverty Reduction: A Review of Methods and Approaches. *Development Policy Review*, *27*(3), 307–331. http://doi.org/10.1111/j.1467-7679.2009.00448.x.

Nasr, J.L., Komisar, D., & Gorgolewski, M. (2013). Urban agriculture as ordinary urban practice: trends and lessons. *CPUL City: Making Urban Agriculture happen.* Routledge, London.

NDA (National Department of Agriculture). (2002). *The Integrated Food Security Strategy for South Africa*. Pretoria, South Africa.

Novo, M. G., & Murphy, C. (2000). Urban Agriculture in the City of Havana: A Popular Response to a Crisis. *Growing Cities, Growing Food: Urban Agriculture on the Policy Agenda*, 329–347. Feldafing, Germany.

OECD (Organisation for Economic Co-operation and Development). (2015). Policy dialogue, knowledge sharing and engaging in mutual learning. *OECD Post-2015 Reflections, Element 9, Paper 1*, 1–20. Paris.

Pimbert, M. P. (2009). Towards Food Sovereignty. *The Gatekeeper Series*, (gatekeeper 141), 1–20. http://doi.org/ISSN 1357-9258.

Pothukuchi, K., & Kaufman, J. L. (1999). Placing the food system on the urban agenda: The role of municipal institutions in food systems planning. *Agriculture and Human Values*, *16*(2), 213–224. http://doi.org/10.1023/A:1007558805953.

Prové, C., Dessein, J., & Krom, M. de. (2016). Taking context into account in urban agriculture governance: Case studies of Warsaw (Poland) and Ghent (Belgium). *Land Use Policy*, *56*, 16–26. http://doi.org/10.1016/j.landusepol.2016.04.025.

Rambaldi, G., Corbett, J., Olson, R., McCall, M., Muchemi, J., Kyem, P. K., Weiner, D., Chambers, R. (2006). Mapping for change: practice, technologies and communication. *Participatory Learning and Action*, *54*(April), 1–154. London: IIED.

Redwood, M. (2012). *Agriculture in urban planning: Generating livelihoods and food security*. London: Routledge. http://doi.org/10.4324/9781849770439.

Reed, M., Graves, A., & Dandy, N. (2009). Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of Environmental Management*, *5*, 1933–1949. http://doi.org/10.1016/j.jenvman.2009.01.001.

Rockstrom, J. (2000). Water resources management in smallholder farms in Eastern and Southern Africa: an overview. *Physics and Chemistry of the Earth, Part B: Hydrology, Oceans and Atmosphere*, *25*(3), 275–283.

RUAF (Resource Centre on Urban Agriculture and Food Security) Foundation. (n.d.). Urban agriculture: what and why? Retrieved January 24, 2018, from http://www.ruaf.org/urban-agriculture-what-and-why.

Sabatino, C. (2017). *Sustainable Urban Agriculture in Cuba*. Washington, DC: World Bank.

SADC Research Centre. (2016). Western Cape Household Food Security and Nutrition Strategy. Cape Town: Western Cape Government.

Schmeer, K. (1999). Guidelines for Conducting a Stakeholder Analysis. *MD: Partnerships for Health Reform*, 1–42. Cambridge: Abt Associates Inc.

Schmidt, M. (2017). *Status quo and Value Chains of Urban Agricultural Activities in Maputo*. UFISAMO. Berlin: Self-publishing.

Smit, J., Nasr, J., & Annu, R. (2001). Urban Agriculture; Food, Jobs and Sustainable Cities, 1–29. http://doi.org/10.1016/S0022-3182(97)70254-1.

Spada, M., & Bigiotti, S. (2017). Peri-urban agriculture and cultural heritage. The public potential of the in-between areas. *The Journal of Public Space*, *2*(2), 51. http://doi.org/10.5204/jps.v2i2.92.

Steel, C. (2008). *Hungry City: How Food Shapes Our Lives*. *Random House Group Ltd*. London: Vintage Books.

Tengberg, A., & Stocking, M. (1997). Erosion-induced loss in soil productivity and its impacts on agricultural production and food security. In *Paper presented at the FAO/AGRITEX Expert Consultation on Integrated Soil Management for Sustainable Agriculture and Food Security in Southern and Eastern Africa, Harare, Zimbabwe* (pp. 8–12). Harare: Conference paper.

Triki, T., & Faye, I. (2013). *Financial inclusion in Africa: an overview*. Tunis: African Development Bank.

Tyler, S., & Moench, M. (2012). A framework for urban climate resilience. *Climate and Development*, *4*(4), 311–326. http://doi.org/10.1080/17565529.2012.745389.

UN-HABITAT (The United Nations Human Settlements Programme). (2010). *Mozambique Cities Profile*. Nairobi: UN-HABITAT.

UNDESA (United Nations Department of Economic and Social Affairs). (2014). *World Urbanization Prospects: the 2014 Revision, Highlights (ST/ESA/SER.A/352)*. New York.

United Nations. (2014). The World Statistics Pocketbook. Retrieved January 23, 2018, from http://data.un.org/CountryProfile.aspx?crName=mozambique.

Victor, M., Ballantyne, P., Le Borgne, E., & Lema, Z. (2013). Communication in innovation platforms. *Innovation Platforms Practice Brief*, (7), 1–4.

Viljoen, A., & Bohn, K. (2014). *Second nature urban agriculture. Designing productive cities*. *Urban Research & Practice*. http://doi.org/10.1080/17535069.2015. 1090807

Von der Haide, E. (2014). *Die neuen Gartenstädte: Urbane Gärten, Gemeinschaftsgärten und Urban Gardening in Stadt-und Freiraumplanung. Internationale Best Practice Beispiele für kommunale Strategien im Umgang mit Urbanen Gärten*. Munich.

Weinberger, K., & Lumpkin, T. A. (2005). Horticulture for Poverty Alleviation: The Unfunded Revolution. *The World Vegetable Center Working Paper*, 1–28. http://doi.org/10.2139/ssrn.781784.

Western Cape Government. (n.d.). Department of Agriculture. Retrieved January 24, 2018, from https://www.westerncape.gov.za/dept/agriculture.

White, S. A., & Hamm, M. W. (2017). A view from the south: Bringing critical planning theory to urban agriculture. In *Global Urban Agriculture* (pp. 12–23). Wallingford: CABI. http://doi.org/10.1079/9781780647326.0012.

WinklerPrins, A. M. G. A. (2017). *Global Urban Agriculture*. Baltimore: CABI.

World Bank. (2014). *International Finance Corporation (IFC) annual report 2014 : big challenges, big solutions : Main report (English)*. Washington, DC.

—(2016). The United Nations Population Division's World Urbanization Prospects. Retrieved January 23, 2018, from https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS.

Worrell, R., & Appleby, M. C. (2000). Stewardship of natural resources: Definition, ethical and practical aspects. *Journal of Agricultural and Environmental Ethics*, *12*(3), 263–277. http://doi.org/10.1023/A:1009534214698.

Wunder, S. (2013). Learning for sustainable agriculture: urban gardening in Berlin. Ecologic, Berlin.

Zook, D. (2014). Understanding Smallholders' Financial Needs is Key First Step. Retrieved January 1, 2018, from http://www.cgap.org/blog/understanding-smallholders-financial-needs-key-first-step.

9 Annexes

Annex 1: Scenario workshop programme Maputo

	O futuro do agricultura urbana no Sul da África: Diálogo, networks e futuros cenários em Maputo
Participantes/ Público-alvo	Representantes do sector público (ministérios e município), ONGs e sociedade civil, instituições de pesquisa e representantes dos agricultores e sector privado
Data	23/08 e 24/08 (4a e 5a feira) das 8:00 às 17:00 horas
Organizadores	Equipe da SLE (6 integrantes) e projeto UFISAMO (Departamento de Sociologia da UEM)
Objetivos	Os participantes irão: • discutir sobre conceitos da agricultura urbana e chegar a um entendimento comum; • reconhecer as vantagens da integração da agricultura urbana no planejamento e desenvolvimento urbano; • conhecer o papel e desafios de diferentes actores e refletir sobre a importância de fazer *networking;* • conhecer possível cenários futuros da agricultura urbana em Maputo; • planejar os primeiros passos de estratégias concretas para alcançar o cenário desejado pelos actores da agricultura urbana em Maputo; e • reconhecer a necessidade de um diálogo regular entre os actores e formular os próximos passos para criar um fórum de diálogo contínuo e permanente.
Conteúdo	• Conceito do workshop de cenários (fatores-chave, cenário); • Conceitos da agricultura urbana, agroecologia, sistemas de alimentos urbanos (urban food system) e soberania alimentar; • Exemplos de boas práticas em outras cidades; • Entender o trabalho e os interesses dos actores presentes e envolvidos na AU

Quarta-feira 23.08.2017	Quinta-feira 24.08.2017
• Abertura oficial • Introdução do workshops e métodos • Definição dos conceitos • Input: boas práticas • Identificando factores-chave	• Bem-vindo ao evento & revisão do dia anterior • Apresentação: boas práticas • Desenvolvimento dos cenários lineares
Almoço	*Almoço*
• Ponderação e filtragem dos factores-chave • Variação dos factores-chave • Fim do primeiro dia e feedback (comentários finais)	• Desenvolvimento dos cenários através da mudança dos factores-chave • Validação de estratégias e próximos passos • Encerramento final do evento e feedback (comentários finais)

Quarta-feira, 23.08.2017

Horário	Programa (sujeto á alteração)
8:00-8:30	Chegada dos convidados Abertura oficial com presença de autoridades, participantes e cobertura de mídia
8:30-9:00	Contexto do projeto de pesquisa (SLE) e UFiSAMO
	Coffee break
9:15-10:15	Início do workshop Apresentação dos participantes presentes Recolher e compartilhar as expectativas e experiências dos participantes Apresentação da programação do dia
10:15-11:00	Apresentação do conceito de Workshop de cenário Conceitos da agricultura urbana, agroecologia, urban food systems, soberania alimentar, etc (boas práticas)
11:00-11:15	Identificação e definição dos factores-chave
11:15-12:00	Factores-chave: Trabalho em grupo
	Almoço
13:00-14:00	Factores-chave: Apresentação
14:00-15:00	Apresentação: agrupamento / resumo dos factores-chave Factores-chave: priorização/ distribuição de peso
15:00-15:30	Factores-chave: filtrar e reduzir Apresentação dos factores-chave finais
	Coffee break
16:00-17:00	Feedback Programa para o dia seguinte Fim do primeiro dia Trabalho em grupo

Quinta-feira, 24.08.2017

Horário	Programa (sujeto á alteração)
8:00-9:00	Boas vindas Resumo da quarta-feira Programa do dia
9:00-10:00	Desenvolvendo uma narrativa linear dos cenários (elaboração de estratégias): meia hora por cenário
	Coffee break
10:30-11:00	Exercício sobre mudanças e interdependências
11:00-12:00	Analisando trajectória e força das interdependências dos factores
12:00-13:00	Desenvolvendo cenários através da mudança de factores (elaboração de estratégias): trabalho em grupo
	Almoço
14:00-14:30	Desenvolvendo cenários através da mudança de factores (elaboração de estratégias): trabalho em grupo
14:30-15:30	Apresentação do trabalho feito com todos
15:30-16:00	Discussão: validar estratégias e próximos passos
	Coffee break
16:30-17:00	Encerramento e feedback

Annex 2: List of participants scenario workshop Maputo

1. Dia_Quarta-feira, 23 de agosto de 2017

	Nome	Organização	Email
1	Anastacia Nhate	Uniao KamaVota	/
2	Paulo Celestino Cesár	KULIMA	pcelcesar@gmail.com
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5	Jacinta Jacinto M.	Mercado da Terra	/
6	Emeralda Mariano	FLCS	emeralda.mariano3@gmail.com
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8	Luisa Mutisse	UFISAMO	
9	Osvaldo Patricio Manuel	ACDI/VOCA	omanuel@acdivoca-mz.org
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11	Carlos Moreira	Solucões Rurais	info@solucoesrurais.co.mz
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27	Pevvvan Luis	UEM/FAEF	personluis001@gmail.com
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29	Alberto Bahule	UDAAK	/
30	Paulo Luis Artur	Comorganico	comorganico@gmail.com
31	Antão Ali	CMM-CAB	anemam2012@gmail.com
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33	Felicidade Pangueve	FAO	felicidade.panguene@fao.org
34	Emilinha Rocha	CMM	emiliacarneiro@yahoo.com.br
35	Alcidio Victor Parkuque	UEM (estudante)	alcidioparkuque@gmail.com

2. Dia_Quinta-feira, 24 de agosto 8:00 a 17:00 horas

	Nome	Organização	Email
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12	Antonio Mania	CMM	anoniomania@gmail.com
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Annex 3: Scenario workshop programme Cape Town

The future role of urban agriculture as part of a resilient urban food system in Cape Town

Who we are and what we do

We are 6 researchers (Severin Halder, Patrick Dolle, Michelle Yang, Jessica Agüero, Enrique Fernandez and Celia Schmidt) from Germany, Brazil and Peru working for the Centre for Rural Development (SLE) at the Humboldt University in Berlin. We are working in a project that is embedded in the wider research project on **Urban Agriculture for Food Security and Income Generation in South Africa and Mozambique (UFISAMO)**.

Within a period of six months, we are discussing the role that urban agriculture can play for a sustainable urban development in Maputo and Cape Town. After having finished the first phase in Maputo, we will conduct a two-day future scenario workshop in Cape Town with different key actors involved in urban agriculture (e.g. farmers, NGO representatives, scientists, politicians). We aim to build upon already realized workshops and research in this field and try to align with key actors on the local level.

Objectives of the Workshop

- Discuss different future scenarios for urban agriculture as part of the food system
- Support the dialogue between key actors in urban agriculture
- Strengthen the network and cooperation developing a common vision
- Contribute to change processes by creating an open space for current debates and offering people the chance to "think big"

Where and when?

12th & 13th of October

9 am until 5 pm

Sustainability Institute

Lynedoch Road, Lynedoch
Stellenbosch, 7603, Südafrika

Methodology

We are working with the **scenario building method** as a strategy planning procedure that presents several plausible future paths, assesses the influence of key factors on transformation, and shows development pathways from the current trend to the desired future. It allows a participative, interactive atmosphere and might lead to unlocking day-to-day dynamics and discussions as it invites the participants to create a future vision.

Thursday, 12/10/2017

Time	Content	Methodology
Arrival and coffee		
9:00 –9:15	Welcoming, introduction and presentation of UFISAMO group	
9:15 – 9:45	Beginning of workshop: Presentation of two days program and objectives Presentation of the WS concept and connection to the Cape Town context	Input: Objectives and program Input: Scenario and Scenarios Workshop
9:45 – 10:15	Presentation of participants, presentation of today's program	Round with icebreaker
10:15 – 11:00	Presentation and discussion of the concept of urban agriculture and its multiple dimensions	Input and plenary discussion
Coffee break (11:00-11:30)		
11:30 – 13:00	**Step 1: Discussing and determining factors of change** Presentation: Concept of key-factor Presentation of the prepared list of key factors and discussion Discuss the provided definitions of the factors	Input: What is a key factor and why are they important for the construction of scenarios? Discussion: Are the participants satisfied with the list? What is missing / what should be re-formulated?
Lunch break (13:00-14:00)		
14:00– 15:30	**Step 2: Weighting and filtering of factors** Presentation: Certainty and Importance Identification of set of factors that is most relevant for building the scenario	Interactive plenary method using the matrix of certainty and importance
Coffee break (15:30-16:00)		
16:00– 16:45	Time to reflect during a visit of the Indigenous Food Garden	
16:45 -17:00	Feedback of the day and goodbye	

Friday, 13/10/2017

Time	Content	Methodology
Arrival and coffee		
9:00 – 9:30	Welcoming of participants, wrap-up of the first day, program of the day	Input
9:30 – 10:00	External Input	Input and Discussion
Coffee break (10:00-10:30)		
10:30 – 11:00	Introduction of the group work, division into three working groups	Input
11:00 – 12:30	**Step 3: Describing variations of the key factors** Developing a matrix with factors and their variations Revisiting (and redefining, if necessary) of the definitions of the factors	**Group work** elaborating narrative variations of the key factors What shapes can the factor possibly take in 2030? How can these variations be described in brief?
Lunch break (12:30-13:30)		
13:30 – 13:45	Development of narrative linear scenarios using the results for all 6 factors **Step 4: Developing a narrative positive scenario**	Plenary discussion bringing the factors with their variations described in Step 3 in an order that will produce a meaningful story
13:45 – 14:00	Introduction of the group work, division into three working groups	Input
14:00 – 15:15	**Step 5: Developing scenarios through changes of the factors**	**Group work** developing scenarios through changes of factors that describe the desired change, important effects, key forces and suitable strategic measures to influence these forces (1 factor per group)
Coffee break (15:15-15:45)		
15:45 – 16:45	Presentation of results and discussion	
16:45 – 17:00	End of the workshop	

Annex 4: List of participants scenario workshop Cape Town

12.10.17

Name	Organization	Focus	Email
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Mathunzi Mentjies	Lukhanyo Urban Farming Network		
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Jeremy Jones	Lukhanyo Urban Farming Network		
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13.10.17

Name	Organization	Focus	Email
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List of SLE publications since 2000

All studies are available for download at www.sle-berlin.de.

Severin Halder, Jessica Agüero, Patrick Dolle, Enrique Fernández, Celia Schmidt, Michelle Yang: *Perspectives of Urban Agriculture in Maputo and Cape Town – Dialog, networks and future scenarios.* Berlin, 2018 S275,1

Severin Halder, Jessica Agüero, Patrick Dolle, Enrique Fernández, Celia Schmidt, Michelle Yang: *Perspectivas da Agricultura Urbana em Maputo e Cidade do Cabo – Diálogo, redes e cenários futuros.* Berlin, 2018 S275,2

Klaus Droppelmann, Peggy Günther, Franziska Kamm, Ulrike Rippke, Carolin Voigt, Bartosz Walenda: *Cassava, the 21st century crop for smallholders? Exploring innovations along the livelihood-value chain nexus in Malawi.* Berlin, 2018 S274

Emil Gevorgyan, Elena Ammel, Rebekka Goeke, Julia Legelli, Sönke Marahrens, Florian Neubauer, Colleen O'Connor: *Closing the Knowledge Gap: Circular knowledge exchange on African indigenous vegetables for improved food and nutrition security in Kenya and Tanzania.* Berlin, 2018 S273

Camilo Vargas Koch, Constantin Bittner, Moritz Fichtl, Annika Gottmann, Vanessa Dreier, Wiebke Thomas: *Entwicklungsalternativen in Bergbauregionen Perus – Umweltauswirkungen des Bergbaus und Einkommensalternativen in der Landwirtschaft in Junín und Cajamarca.* Berlin, 2017 S272, 1

Camilo Vargas Koch, Constantin Bittner, Moritz Fichtl, Annika Gottmann, Vanessa Dreier, Wiebke Thomas: *Alternativas de desarrollo en las regiones mineras de Perú. Impactos ambientales de la minería e ingresos alternativos en la agricultura en Junín y Cajamarca.* Berlin, 2018 S272, 2

Susanne Dollmann, Erik Burtchen, Diana Diekjürgen, Laura Kübke, Rebecca Younan and Sophia-Marie Zimmermann: *Keep the bee in Ethiopia's wheat-belt. Challenges for apiculture integration in the intensified agricultural landscape of Arsi-Zone*. Berlin, 2017 S271

Rainer Tump, Johanna Damböck, Patric Hehemann, Victor Kanyangi Ouna, Oscar Koome Mbabu, Lukas Nagel, Manuel Risch, Anne Wanjiru Mwangi, Fanni Zentai: *Land Corruption Risk Mapping, Developing a handbook on how to identify and tackle corruption risks in land governance*. Berlin, 2017 S270, 1

Rainer Tump, Johanna Damböck, Patric Hehemann, Victor Kanyangi Ouna, Oscar Koome Mbabu, Lukas Nagel, Manuel Risch, Anne Wanjiru Mwangi, Fanni Zentai: *Handbook on Land Corruption Risk Mapping. How to identify and tackle corruption risks in land governance.* Berlin, 2017 S270, 2

Michaela Schaller, Elena Ingrid Barth, Darinka Blies, Felicitas Röhrig, Malte Schümmelfeder: *Scaling out Climate Smart Agriculture. Strategies and guidelines for smallholder farming in Western Kenya*. Berlin, 2017 S269

Christian Berg, **Mirco Gaul**, Benjamin Korff, Kathrin Raabe, Johannes Strittmatter, Katharine Tröger, Valeriya Tyumeneva: *Tracing the Impacts of Rural Electrification in West Nile, Uganda – A Framework and Manual for Monitoring and Evaluation.* Berlin, 2011 S245

Hildegard Schürings, Nicole Bendsen, Justin Bomda, Malte Landgraff, Peter Lappe, Eva Range, Catharina Weule: *Réduction de la Pauvreté par la Microfinance? Analyse Participative des Clubs d'Epargne et de Crédit au Cameroun.* Berlin, 2011 S244

Heidi Feldt, Jan Kleine Büning, Lea Große Vorholt, Sophie Grunze, Friederike Müller, Vanessa Völkel: *Capacity Development im Bereich Management natürlicher Ressourcen – Wirkungen und Nachhaltigkeit*. Berlin, 2010 S243

Markus Fiebiger, Sohal Behmanesh, Mareike Dreuße, Nils Huhn, Simone Schnabel, Anna K. Weber: *The Small-Scale Irrigation Farming Sector in the Communal Areas of Northern Namibia. An Assessment of Constraints and Potentials*. Berlin, 2010 S242

Ekkehard Kürschner, Christian Henschel, Tina Hildebrandt, Ema Nevenka Jülich, Martin Leineweber, Caroline Paul: *Water-Saving in Rice Production – Dissemination, Adoption and Short Term Impacts of Alternate Wetting and Drying (AWD) in Bangladesh.* Berlin, 2010 S241

Helge Roxin, Heidi Berkmüller, Phillip John Koller, Jennifer Lawonn, Nahide Pooya, Julia Schappert: *Economic Empowerment of Women through Microcredit – Case Study of the "Microfinance Investment and Technical Assistance Facility" (MITAF) in Sierra Leone*. Berlin, 2010 S240

Alfred Gerken, Daniela Bese, Andrea Düchting, Henri Gebauer, Christian Rupschus, Sonja Elisabeth Starosta: *Promoting Regional Trade to Enhance Food Security. A Case Study on the Border Region of Tanzania and Zambia*. Berlin, 2009 S239

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Ina Dupret, Anna Heinrich, Christian Keil, Fabian Kienle, Caroline Schäfer, Felix Wagenfeld: *30 Años de Cooperación entre Bolivia y Alemania en el Sector de Riego. Impactos Logrados y Lecciones Aprendidas*. Berlin, 2009 S237

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