



## **TERMS OF REFERENCE FOR A DIRECTED PROJECT**

- KEY STRATEGIC AREA 4** : Water Utilisation in Agriculture
- THRUST 3** : Water Utilisation for Poverty Reduction and Wealth Creation in Agriculture
- PROGRAMME 1** : Sustainable water-based agricultural activities in rural communities

**TITLE: Sustainable urban agriculture for addressing food, nutrition security and socio-economic development in high population areas**

### **Rationale**

While most of South Africa's populace has always resided in rural areas, current trends show a declining trend in rural populations with net gains in urban areas. There is significant rural-urban migration as people move to seek employment. In addition, growing populations within these urban areas are creating informal settlements. Most townships and informal settlements face multiple challenges, including limited access to safe water and sanitation; affordable energy for domestic, agricultural and other economic purposes; and food and nutrition insecurity. The poverty-unemployment-inequality nexus, a legacy of Apartheid, creates challenges regarding food access and livelihoods for the urban poor. The growing poverty-unemployment-inequality nexus necessitates changing how cities and towns perceive agriculture as a farm or rural activity. Currently, urban agriculture does not play a significant role in the food systems of South African cities and the livelihoods of the urban poor. However, urban agriculture offers an opportunity to change some of these dynamics and create new opportunities within cities and towns that could support new livelihoods and strengthen existing livelihoods. Urban agriculture can increase access to healthy food and is particularly important for the urban poor, who mainly access food through cash purchases. Urban agriculture has the potential to contribute towards food security in urban areas, it needs to be factored as part of the urban economy. The spin-offs created from these activities can support local food systems, create new local markets that create jobs, and expand income generation capacities for the urban poor. Advances in technologies around hydroponics, aquaponics, and vertical farming also mean that it is possible to practice agriculture in places with little land available. Also, these technologies are water and energy-efficient, which means they would not create a new burden on strained water,

energy and land resources. It also creates opportunities for young unemployed people to be involved in advanced forms of agriculture, hence addressing the challenge of urban youth unemployment.

From the perspective of food systems, South Africa faces several challenges, and these include high unemployment, inequality, poverty, lack of job opportunities etc. At the consumer level lies the triple burden of malnutrition, which includes undernourishment (not enough food), malnourishment (imbalanced and inadequate diets), and diet-related non-communicable diseases such as stunting, obesity, etc. (DoH 2013). Consumption is influenced by urbanising and westernising lifestyles such that cheap, convenient, and packaged food takes precedence over traditional, nutritious, and fresh, diverse farm-based food (Van der Hoven et al. 2013). Post-apartheid market liberalisation has facilitated the penetration of cheap and calorie-dense low-nutrient foods into local markets and incentivised the export of high-quality foods such as fruit and vegetables to foreign markets (Porkka et al. 2013). As a result, even though South Africa is regarded as food secure, food access and utilisation remain inadequate (Kummu et al. 2020) with increasing household food insecurity. Poor urban people living in densely populated areas are particularly vulnerable to food and nutrition insecurity due to their dependence on regionally and globally traded stocks (Haggblade et al. 2017) and processed and prepared foods (Haysom and Tawodzera 2018).

Ecologically, food production in South Africa faces risks from limited water resources (Harris et al. 2020) and projected climate change impacts (Scheelbeek et al. 2020). Urban agriculture (UA) can incorporate diversity, redundancy, and robustness into food systems at multiple levels. From the supply chain perspective, UA can make urban food supply less vulnerable to production shocks such as droughts (Heslin et al. 2020) and distribution shocks such as global or local trade disruptions (Kummu et al. 2020); similar to the food shocks that were experienced during the early stages of the COVID-19 lockdown and more recently during the social unrest in KwaZulu-Natal. Ecologically, UA can reduce impacts from large-scale farming and transportation (Sarkodie et al. 2020) and enhance urban ecosystems' structural and functional diversity (Kremen and Merenlender 2018, Leclère et al. 2020). Socio-economically, it can provide urban residents alternatives while improving access and affordability of fresh and nutritious foods (Augstburger et al. 2019, Bergius and Buseth 2019). UA can take several forms, from intensive indoor vertical farms to communal agroecological spaces, with several intermediate configurations of social, ecological, and technological variables (Armanda et al. 2019). We propose to identify feasible, scalable models of sustainable UA for the South African context.

In the broader socio-economic sense, unemployment and inequality manifest in income and food poverty and limited opportunities for the poor to engage in either primary production or secondary activities to secure an income (StatsSA 2017). Particularly in cities, legacy spatial planning also constrains access to green fields and green space, which can often be a source of food or materials to support the household economy (Sardeshpande and Shackleton 2020a,b, Venter et al. 2020). The Water Research Commission propose that UA can offer solutions to several of these challenges by increasing urban availability, and consequently, affordability and accessibility of fresh and nutritious foods, offering smallholders and urban residents the opportunity and infrastructure to produce food for subsistence as well as economic use, and creating localised, devolved food systems to improve urban sustainability and resilience.

**Overall aim:**

Urban agriculture offers livelihood opportunities and social cohesion opportunities as people in urban spaces start to work together. Based on the socio-economic and social-ecological setting of urban areas in South Africa regarding food and nutrition security, the Water Research Commission seeks to commission an integrated urban agriculture intervention with the overall aim to showcase how sustainable agriculture can be implemented in poor and densely populated areas in Johannesburg, Polokwane, Mbombela and eThekweni Municipality to address food and nutrition security, and socio-economic development. These should showcase innovations aligned to the agriculture-environment-health nexus, water-energy-food nexus, crop diversification, hydroponics, etc. In addition, such integrated urban agriculture should create sustainable opportunities for high-risk groups; Young, Old, Pregnant, and Immuno-compromised (YOPI), to participate and benefit.

**Specific objectives:**

- i. To assess the food and nutrition status within selected urban areas and identify, through co-creation platforms, the range of crops (including fruits trees) that are best suited to UA given biophysical constraints and nutritional requirements in Johannesburg, Polokwane, Mbombela and eThekweni Municipality.
- ii. To identify, map and monitor urban spaces best suited to UA given biophysical and infrastructure considerations and food and nutrition status within Johannesburg, Polokwane, Mbombela and eThekweni Municipality.
- iii. To implement integrated and sustainable urban agriculture interventions that address food and nutrition security, socio-economic and socio-ecological outcomes in Johannesburg, Polokwane, Mbombela and eThekweni Municipality targeting 2000 households
- iv. To co-develop and co-implement a programme of capacity development aimed in support of sustaining the urban agriculture interventions?
- v. To mainstream outputs and outcomes of the integrated urban agriculture interventions into policy and practice.
- vi. To develop urban agriculture guideline based on the four study sites

**Deliverables:**

Urban areas lack access to clean, safe water and energy. There is limited land available for agriculture. Innovative urban agriculture that maximises land, water and energy efficiencies is required. Crops that are water efficient and nutrient-dense would be ideal. WEF nexus innovations and technologies such as vertical agriculture, which minimise space, use less water, produce more food, and have less energy requirement, show promise in such settings. Where there is land available, promoting water and energy-efficient irrigation technologies such as drip and sub-surface irrigation could go some way in improving crop-water productivity. While circular economy approaches are ideal for informal settlements that are off-grid. The Water Research Commission aims to benefit 2 000 households in Johannesburg, Polokwane, Mbombela and eThekweni Municipality. As it is most unlikely that a single organization will have all the expertise required, it is strongly recommended that a consortium of experts and organizations, including public and private partners with full appreciation of the food and nutrition security challenges, nutritional deficiencies of the YOPI and agricultural innovations is formed to provide the highly

specialised knowledge required. Ability to demonstrate leverage funding and integration with ongoing activities will be advantageous as it strengthens the feasibility and sustainability of interventions.

**Impact Area:**

Empowerment of Communities and other related Knowledge tree impact areas  
The estimated budget over a 60-months long study period is available from KSA 4.

<b>Time Frame</b>	<b>: 5 yrs.</b>
<b>Budget for 1st year</b>	<b>: R 1 000 000.00</b>
<b>Retention payable on approval of final deliverable</b>	<b>: R 1000 000.00</b>
<b>Total Funds Available</b>	<b>: R 5 000 000.00.</b>

**Budget breakdown:**

AVAILABLE BUDGET OVER THE PROJECT PERIOD OF FOUR YEARS: **R 5 000 000.00**

2021/2022:	R 1 000 000.00
2022/2023:	R 1 000 000.00
2023/2024:	R 1 000 000.00
2024/2025:	R 1 000 000.00
2025/2026	R 1 000 000.00
<b>Total</b>	<b>R 5 000 000.00</b>