

ACE INSIGHTS

Urban Agriculture

A Pathway to Food Security and SME Growth in Ethiopia's Urban Centers

by ACE Advisors

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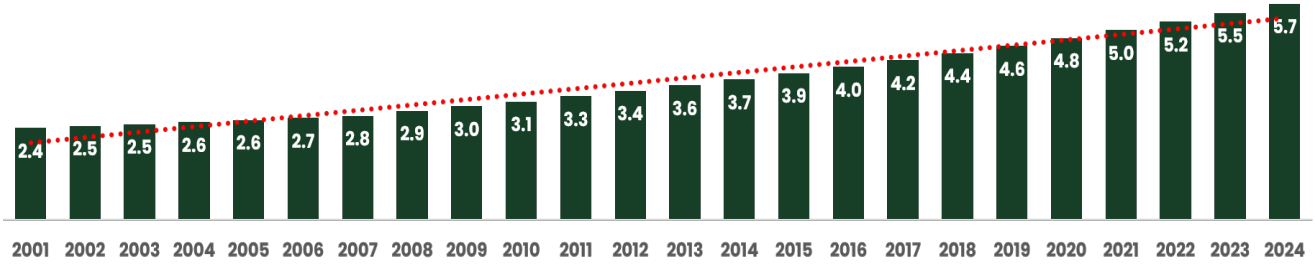
Urban agriculture (UA) has emerged as a modern solution to the challenges of food security and unemployment in rapidly urbanizing cities like Addis Ababa. By utilizing unused spaces for food production, UA reduces reliance on rural supply chains and lowers food prices by eliminating transportation costs. UA not only provides fresh, affordable produce for urban populations, but also offers business opportunities for small and medium enterprises (SMEs). SMEs involved in urban farming—such as vertical farming, beekeeping, and composting—can drive economic growth by creating jobs and promoting sustainable practices, while reducing the impact of food price inflation. Successful examples in cities like Hawassa and Chengdu, China demonstrate how urban agriculture can increase food self-sufficiency, resilience, and entrepreneurial growth.



Urban Agriculture and Food Security

Food security is a complex issue that has been defined in a variety of ways. According to World Food Security, food security exists 'when all people at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Ethiopia, a country that has a lengthy history of challenges linked to rural food security, is currently facing relatively new challenges related to urban food insecurity [1]. In urban contexts, food insecurity manifests differently compared to rural areas. Urban food insecurity often results from high food prices, low-income levels, and inadequate social safety nets. With urbanization intensifying in Africa and Asia, the projected population growth is set to add 2.8 billion urban residents by 2050[2]. In Ethiopia, the Central Statistics Agency forecasts that the urban population will triple, reaching 42.3 million by 2037, growing at an annual rate of 3.8%. Addis Ababa's populations alone has been growing significantly in the last two decades signalling that the rapid pace of urbanization presents significant challenges to food security in cities.

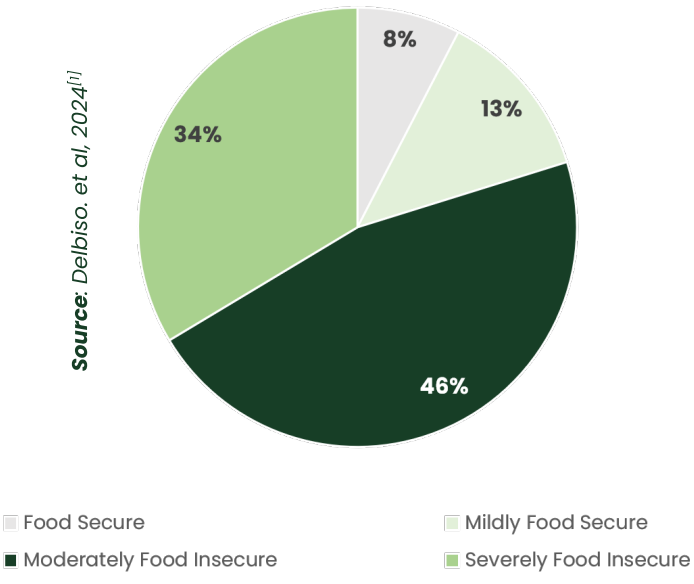
Addressing these challenges requires a multifaceted approach that includes strengthening rural-urban linkages, supporting value chains for nutritious foods, targeting social safety nets to improve livelihoods and access to healthy diets, and promoting urban agriculture.



Source: *Macro Trends, 2024*

Figure 1: Population Growth in Addis Ababa

Cities, with large populations in small areas, rely heavily on food from rural areas. This reliance becomes critical during crises, supply chain disruptions, and extreme weather events. Urban agriculture, using backyards, open spaces, and containers, helps cities grow food locally. The crops and livestock produced are consumed or sold, reducing transport costs and making food more affordable than rural-sourced options. By reducing reliance on external supply chains, urban agriculture enhances resilience against food shortages and price shocks, especially during crises like the conflict in northern Ethiopia, when food supply routes were blocked.



Source: *Delbiso, et al, 2024*[1]

Figure 2: Food Insecurity, Addis Ababa, 2022

Urban agriculture benefits the urban poor by lowering food prices, as it cuts out high transportation costs. With cheaper, locally produced food, low-income households can allocate their savings toward other essential needs. Additionally, fresh local produce improves nutrition for urban residents who otherwise rely on less healthy, low-cost alternatives. During crises, local food production helps prevent severe shortages, ensuring even the most vulnerable populations have access to affordable food.

[1] Delbiso, T. D., Asfaw, F. M., Moges, T., Ero, D., & Kotecho, M. G. (2024). Food insecurity among low-income households in Addis Ababa, Ethiopia. Heliyon, 10(8).

Food price inflation has had a profound impact on the Ethiopian economy, particularly for low-income households. Between 2019 and 2022, Ethiopia's food inflation rate rose sharply from 11.5% to nearly 43%, driven by rising oil and fertilizer prices, supply chain disruptions, and limited rural production capacity. As most urban residents are net buyers of food, inflation worsens poverty, reduces nutrition, and limits spending on essential services like education and healthcare. Urban agriculture can help mitigate this by employing sustainable practices, such as organic fertilizers, and reducing transport costs through local production.

With Ethiopia's food production relying heavily on smallholder farmers, disruptions to their productivity can lead to imbalances between supply and demand, causing price hikes. Urban farming can reduce this reliance by increasing local food production, diversifying sources, and making better use of urban spaces. Alongside its role in stabilizing food prices and improving nutrition, urban agriculture also holds potential to drive economic growth by creating new business opportunities for micro and small enterprises, fostering innovation and sustainability.

Urban Agriculture as a Catalyst for SME Growth

SMEs play a significant role in most economies, particularly in developing countries. SMEs account for the majority of businesses worldwide and are essential contributors to job creation and global economic development. They represent about 90% of businesses and more than 50% of employment worldwide. According to the Ethiopian Job Creation Commission report of 2020, 1.5 million SMEs running in the country employed 4.5 million labourers. This proves that SMEs can make significant changes in employment and the economy of Ethiopia. Urban agriculture is emerging as an important avenue for creating new business opportunities for SMEs. This sector not only addresses food security but also fosters economic development through job creation and innovation. Fresh Direct, a Nigerian startup, applies vertical farming by turning stackable containers into farms. Fresh Direct not only makes urban agriculture more accessible but also encourages youth participation in farming.

SMEs play a crucial role in urban farming, producing fresh fruits and vegetables that can then be sold directly to consumers through farmer's markets or local retailers and restaurants. SMEs can also venture into beekeeping and aquafarming to diversify their production streams. SMEs can also collect and process urban organic waste into high-quality compost, which can then be sold to other urban farmers and traditional farmers.



Zero-acreage farming, as defined by Thomaier et al. (2015), is a farming practice in spaces not traditionally used for agriculture. It includes vertical farming, which involves cultivating crops in vertically stacked layers; community-supported agriculture, a direct-to-consumer model where households subscribe to a farm and receive regular harvest shares; and rooftop gardens, which utilize unused spaces on buildings' rooftops. In Ethiopia, limited urban land, water scarcity, and the rise in urban population are common problems. Zero-acreage farming methods can address these issues with their potential to use limited resources, reduce transportation costs, and grow crops all year round. SMEs can utilize zero-acreage farming, which directly helps achieve food security by taking the strain off of traditional agriculture.

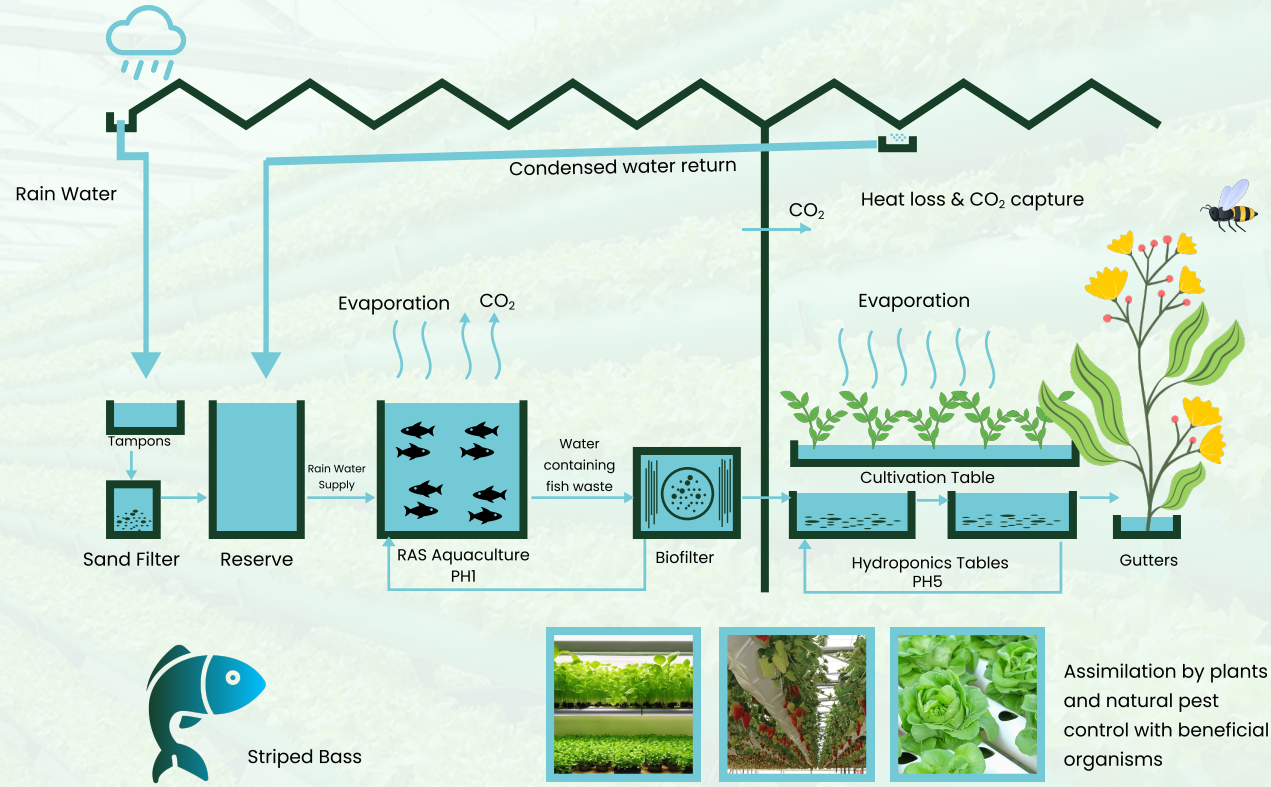
The success of SMEs in Ethiopia's urban farming will depend on **a collaborative effort between the government, NGOs, and the private sector.** The government can play a crucial role by designating suitable urban spaces for agricultural activities and providing financial incentives, tax eases, and regulatory frameworks to enable SMEs. NGOs can offer technical assistance, facilitate access to financing, engage local communities, and drive research and innovation. Meanwhile, the private sector can forge partnerships with urban farming SMEs by establishing agreements, supplying technology, and offering expertise. Ethiopia's urban farming ecosystem can be strengthened by fostering this multi-stakeholder approach. This will enable SMEs to overcome challenges, access resources, and scale up their operations, ultimately contributing to food security, job creation, and sustainable development in urban areas.

Let's examine some case studies to better understand how these concepts play out in real-world scenarios. These examples from Ethiopia and beyond illustrate urban agriculture's practical application and potential to address food security and stimulate economic growth.

Case Studies and Examples

Case Study: Aquaponics Hubs in Hawassa

Hawassa, a city in Ethiopia near a lake, benefits from abundant and inexpensive fish. This led residents to experiment with aquaponics, combining fish farming and hydroponic vegetable production. However, the fish farming component faced challenges, such as low profits and operational difficulties. As a result, some farmers transitioned to simpler hydroponic systems focused solely on vegetables.



Despite these setbacks, Hawassa successfully piloted a network of community-based aquaponics hubs that integrate fish farming and hydroponic production. These closed-loop systems maximize land and water efficiency, allowing urban residents to produce both protein and vegetables in compact spaces. The hubs also provide training, support, and shared infrastructure to local entrepreneurs, helping them establish small businesses that supply fresh food to local markets.

The Hawassa initiative demonstrates the potential of aquaponics and hydroponics as viable urban farming models, enhancing food security and fostering SME growth. Early challenges, such as poor water quality and fish health, provided valuable learning experiences that led to sustainable solutions. Ultimately, the initiative underscores the importance of adaptability and collaboration in advancing urban agriculture in Ethiopian cities.

Case Study: Urban Agriculture in Nairobi, Kenya



Nairobi, Kenya's capital city, has a rich agricultural history that shapes its urban landscape. Founded as a trading center in 1896, Nairobi has evolved into a vibrant city with urban agriculture at its core. Approximately 30% of the city's 985,016 households engage in farming, a practice that has grown significantly alongside the city's rapid population increase.

Urban farming thrives in diverse settings, from backyard gardens to open spaces under power lines. The City Council has established land use regulations, allowing mixed agriculture and residential developments primarily in Dagoretti and Kasarani. Urban agriculture provides a vital income source for many residents, especially women, who often head their households while contributing to local food production.

The farming systems in Nairobi are varied, including intensive vegetable production and small-scale crop-livestock systems. Some farmers even practice "sewage farming," utilizing wastewater nutrients for crops. Crops vary by area, with leafy vegetables dominating urban zones and staples like maize common in per-urban regions. Despite challenges like limited access to extension services, urban agriculture in Nairobi showcases the resilience of its people, highlighting the need for supportive policies to ensure sustainable development and food security.

Case Study: Urban Agriculture in Accra, Ghana



In Accra, Ghana urban agriculture plays a crucial role in residents' lives. With a rich history dating back to colonial times, the need for local food production surged during World War II. In the 1970s, the government launched "Operation Feed Yourself" to encourage citizens to grow their own food, sparking renewed interest in urban farming.

Today, urban agriculture is integral to Accra's culture, with studies showing that 75% to 90% of lettuce and spring onions consumed are locally grown. About 80,000 households engage in backyard farming, yielding crops like plantains and cassava, which provide fresh produce for families.

Aquaculture is also significant, with women making up 60% of fish farmers, primarily raising mudfish and tilapia for home consumption.

Despite its economic benefits, including employment opportunities and reduced food costs, urban agriculture faces challenges. Rapid urbanization and regulatory barriers limit farmers, while polluted water for irrigation raises health concerns.

Nonetheless, urban agriculture in Accra exemplifies resilience and ingenuity, enhancing food security and economic stability. Supportive policies and integration into urban planning are vital for its continued growth in this vibrant city.

Case Study: Urban Agriculture in Chengdu, China

Chengdu, the capital of Sichuan Province, spans around 14,000 km², with 3,600 km² as urban area. The city is renowned for its fertile soils and has been supported by the Dujiangyan irrigation system since 256 BC. In the mid-2000s, Chengdu's government implemented land reforms to balance urban and rural development through a "linkage" policy, allowing cultivated land to be converted for urban use if equivalent agricultural land was consolidated elsewhere. This policy resulted in a 55% increase in agricultural yield, a 38% rise in profits, and a shift to higher-value crops.

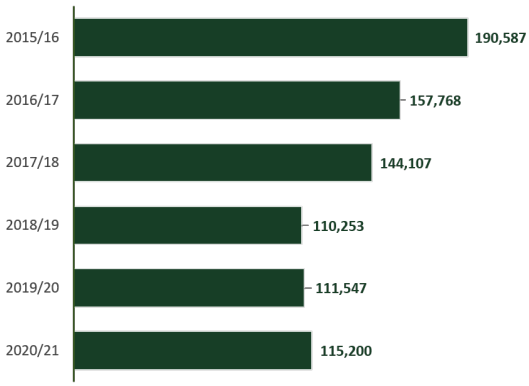


By 2019, Chengdu achieved an 83.82% self-sufficiency rate for staple foods, indicating strong food system resilience compared to cities like Singapore, which imports over 90% of its food. Chengdu supports food resource coordination through functional zones, including the Tianfu Modern Agricultural Industrial Park and Wenjiang High-Tech Industrial Park, fostering collaboration among agricultural actors.

However, Chengdu faces challenges related to sustainability. The land reforms, while increasing productivity, have led to topsoil degradation and potential long-term risks. These examples illustrate the potential and challenges of urban agriculture. Both Chengdu and Hawassa highlight the importance of community engagement and policy implementation in creating resilient agricultural systems, emphasizing the need to balance economic growth with ecological sustainability.

Challenges and Considerations

UA plays a crucial role in socio-economic development, food security, and livelihoods in Addis Ababa and surrounding towns. However, it faces significant challenges, particularly related to access to land. As a public asset, land is often allocated for residential and industrial projects, resulting in a dramatic decline in families involved in UA. For example, in Akaki sub-city, the number of SMEs engaged in UA fell from 14,632 in 2002 to 7,397 in 2007. As the demand for municipal and industrial land grows, UA's expansion is further restricted, limiting its economic potential.



***Source**: National Bank of Ethiopia, Annual Report, 2020/21*

In Addis Ababa, land scarcity discourages long-term investment in UA businesses, which often require large properties for activities like manufacturing and selling. Additionally, limited access to water and electricity exacerbates the challenges, as these resources are already scarce for daily use, let alone for agricultural purposes. The lack of strong government support and the perception of UA as a temporary hobby further hinder its growth.

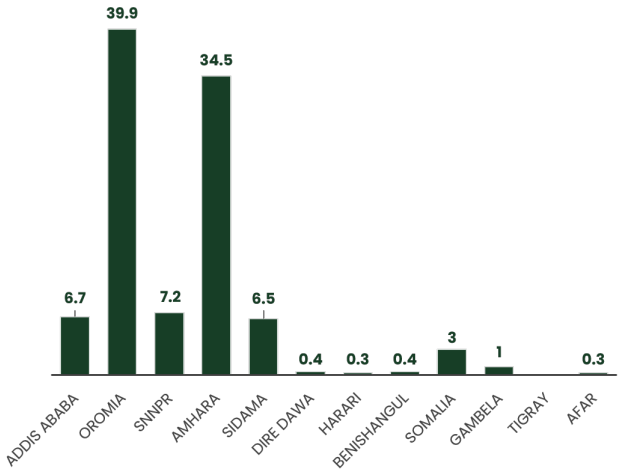


Figure 3: Number of SMEs in Ethiopia and their Regional Distribution

A central question is whether UA is a worthwhile investment in terms of achieving food security outcomes, especially when considering whether the same resources might be better spent improving rural agricultural productivity.

In comparing investments in UA with those aimed at rural agriculture, it is essential to recognize their distinct roles. UA has the advantage of proximity to urban populations, allowing for the quick distribution of fresh food, reducing transportation costs, and enhancing food availability in urban areas. These benefits are particularly important in times of crisis, such as during supply chain disruptions caused by conflict or extreme weather.

However, UA faces limitations in terms of scale and the types of produce it can offer. Fruits and vegetables, the primary products of UA, provide essential micronutrients but often lack calories, proteins, and other vital nutrients like vitamin B12, which are crucial for a balanced diet. While rural agriculture can produce these staples more efficiently, UA can complement rural efforts by addressing food security needs that are specific to urban populations, such as quick access to fresh produce.

Research on UA in cities like Chicago demonstrates that while UA can contribute to urban food systems, it is not sufficient on its own to fully meet the nutritional needs of an entire population. To maximize its impact, UA must integrate supplemental practices like animal husbandry and beekeeping, which can provide essential proteins and other nutrients. In this way, UA can serve as a part of a larger food security strategy, particularly in densely populated urban areas where rural supply chains may be disrupted.

From an investment perspective, improving resource efficiency is critical to making UA a viable long-term strategy. Implementing practices like drip irrigation, rainwater harvesting, and renewable energy utilization can significantly improve UA's sustainability. These practices minimize water and energy use while reducing dependence on chemical inputs through organic farming techniques, thus lowering environmental impacts.

While the resources allocated to UA could theoretically improve rural agriculture's productivity, UA offers specific urban benefits that rural investments may not address. For example, UA plays a role in urban waste management, utilizing organic waste for composting, and contributing to micro-climatic regulation through urban greening efforts. By transforming underutilized urban spaces into productive zones, UA enhances both food production and environmental sustainability in cities.

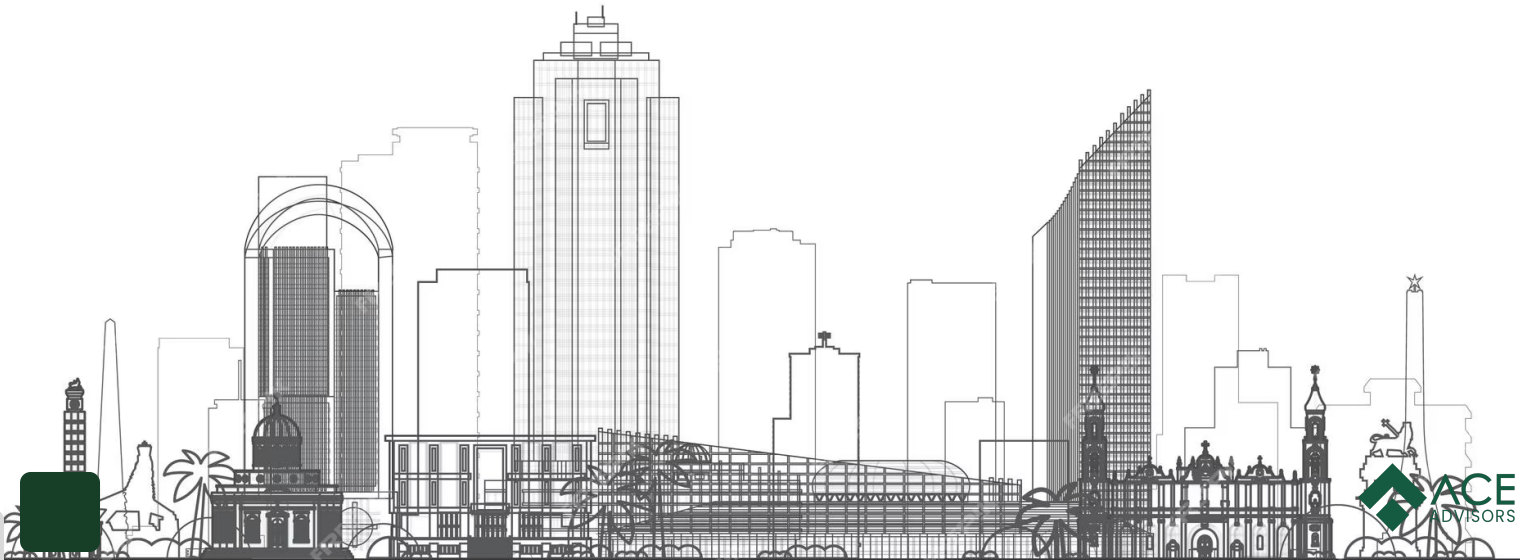
Conclusion

UA offers a modern solution to enhance food security, create jobs, and promote community resilience in Ethiopia. Beyond food production, UA supports economic development and environmental sustainability by empowering small and medium-sized enterprises, driving local economies, and providing nutritious food to urban populations. However, challenges such as limited land access, resource constraints, and insufficient government support must be addressed.

The return on investment in UA must be viewed not just in terms of immediate food production but also in its broader societal and environmental contributions. While UA may not replace rural agriculture in terms of sheer output, it serves a complementary role in urban food systems, offering fresh produce, supporting livelihoods, and contributing to urban sustainability. To fully realize its potential, UA requires coordinated efforts from government bodies, NGOs, and the private sector. These efforts should focus on improving access to land and resources, promoting sustainable practices, and integrating UA with broader food security strategies that include rural agriculture.

Collaborative action is required to unlock UA's transformative power. Stakeholders must invest in policies, infrastructure, and education to support UA, ensuring Ethiopian cities can thrive while building a foundation for sustainable urban growth. UA is not just an alternative food source; it is a critical pathway to a more sustainable, equitable, and resilient urban future. Embracing this opportunity is key to the long-term well-being of urban communities.

In summary, while the return on investment in UA may not surpass that of rural agriculture in terms of output, UA provides unique benefits that are critical to the resilience and sustainability of urban food systems, making it a worthwhile and strategic investment for Ethiopia's growing urban population.



Resources

- [1]https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-14-680
- [2]https://www.csis.org/analysis/growing-cities-growing-food-insecurity-how-protect-poor-during-rapid-urbanization
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