

Sustainable Urban Development through Zfarming: Exploring Opportunities and Challenges in Sri Lanka

A. Senalankadhikara^{1*}, C.D. Udawatthe², P. Kaluthanthri³

¹*University of Sri Jayewardenepura, Nugegoda, 10250, Sri Lanka*

²*University of Sri Jayewardenepura, Nugegoda, 10250, Sri Lanka*

³*University of Sri Jayewardenepura, Nugegoda, 10250, Sri Lanka*

**amandra.gayathri@gmail.com*

The integration of green urban architecture with food production, termed Zfarming, presents a promising strategy for addressing food security and sustainability challenges within Sri Lankan urban agriculture. This study examines the potential role of Zfarming by assessing its advantages and drawbacks. Through the analysis of 32 international documents, it becomes apparent that Zfarming performs multiple functions, producing both food and non-food items that exert positive impacts on urban environments. Notably, Zfarming contributes to environmental conservation by preserving resources, reducing waste, and minimizing food transportation distances, thereby aligning with Sri Lanka's environmental preservation objectives. From a social perspective, Zfarming enhances community food security, offers educational opportunities, and strengthens connections between consumers and food production, which is particularly pertinent to Sri Lanka's close-knit communities. Economically, Zfarming offers benefits by potentially generating public advantages, such as job creation and increased local economic activity, and producing marketable products that are vital for Sri Lanka's economic development. However, the implementation of Zfarming in Sri Lanka encounters several challenges. Although certain technologies are available, adapting them to local contexts and integrating them into existing infrastructure remains problematic. Additionally, high initial investment costs and concerns regarding exclusivity and social acceptance necessitate careful consideration. Despite these obstacles, evidence from international case studies indicates that Zfarming can address specific issues relevant to Sri Lanka, such as urban food production and the need for sustainable water and waste management practices. Effective management, tailored to the local context, is crucial for the successful implementation of ZFarming. Ultimately, while ZFarming shows significant promise for enhancing food production and urban sustainability in Sri Lanka, its successful implementation requires meticulous management and contextual adaptation to achieve its full potential.

Keywords: Food security, Sri Lanka, Sustainability, Urban Architecture, Zfarming

Acknowledgement: This research was financially supported by the Research Council, University of Sri Jayewardenepura, research grant no: ASP/01/RE/MGT/2022/43 and the Center for Real Estate Studies, Department of Estate Management and Valuation.