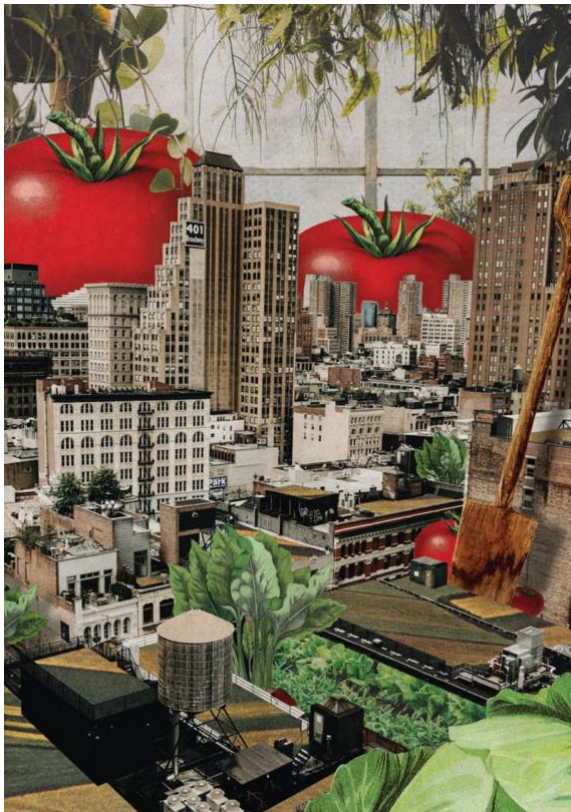


# TITLE OF THE DELIVERABLE

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## DOCUMENT INFORMATION

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# INTRODUCTION

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**Contemporary food systems face complex challenges** related to the need to ensure food security while simultaneously reducing the negative environmental impacts of food production. One of the key issues—both environmental and socio-economic in nature—is the inefficient management of food, resulting in excessive losses and waste. Food production, processing, and distribution require substantial inputs of natural resources, including water and energy, as well as a well-developed logistics and transportation infrastructure. These processes significantly contribute to greenhouse gas emissions, the rational use of urban land, and the degradation of ecosystems. In response to these challenges, the “*Action Plan for Synergies Between Circular Urban Agriculture and the Urban Environment*” was developed, based on research conducted within the FOCUSE project – “*Food production and supply through urban circular systems in European cities*” (2024–2027), funded by the National Centre for Research and Development under the Driving Urban Transitions programme. The project's goal is to develop integrated systems of food production, distribution, and consumption in cities, in line with the principles of sustainable development and the circular economy. One of the main components of the project is the analysis of the social conditions of urban agriculture, including practices related to the cultivation of edible plants and the consumption patterns of city residents. Findings from interviews and surveys, published in research reports (DOI: 10.34616/151357, 10.34616/151354, 10.34616/151355), have made it possible to identify the most effective directions for implementing urban agriculture practices in connection with bio-waste management systems. In light of these findings, it can be concluded that integrating efforts to reduce food loss and waste, recycle bio-waste, and develop urban agriculture creates a real opportunity to implement circular economy principles at the local level.

## CONCLUSION

- 1. The importance of biowaste in the municipal waste management system**  
Biowaste constitutes a significant fraction of municipal waste (approximately 23–29%), making it a key element in circular economy strategies. Its effective processing contributes to achieving EU goals on recycling and decarbonization.
- 2. Wrocław as an example of circular economy implementation**  
Wrocław's biowaste management system includes selective collection, composting, and the use of digestate. The production of e-compost from green waste and the planned expansion of the composting facility indicate consistent municipal efforts toward the circular economy and the management of local organic waste streams.
- 3. Infrastructure gaps and barriers**  
Despite progress, Wrocław lacks a full-scale anaerobic digestion facility for municipal biowaste. Currently, biowaste is mainly processed outside the city's administrative boundaries (e.g., in Żórawina), limiting the local use of energy and resources. Public protests against planned investments reveal the need for better

communication with residents and for the design of low-emission, odor-neutral technological solutions.

**4. The importance of education and public participation**

The high share of household biowaste and the importance of selective collection for achieving recycling targets highlight the need for continued educational efforts and the inclusion of residents in organic resource management. A free compost distribution program can support greater community engagement.

**5. The potential of the input-output system in waste management**

The input-output model enables the identification of sources, flows, and processing points of waste at the urban scale. Its application in Wrocław demonstrates the potential for integrating quantitative, logistical, and technological data to optimize biowaste management.

**6. Integration of urban agriculture with organic recycling**

Findings from the FOCUSE project indicate that combining urban agriculture with the use of e-compost and digestate can support local food systems, improve soil quality, reduce dependence on synthetic fertilizers, and create local nutrient cycles.

**7. The need for decentralization and in situ recycling**

According to new EU regulations, only selectively collected biowaste or waste processed at the place of origin will count toward recycling targets. This requires the development of home composting systems and decentralized solutions, especially in densely built-up urban areas.

**8. Recommendations for local and regional policy**

Municipal authorities should increase investment in biowaste processing infrastructure, update spatial development plans to include organic recycling logistics, and promote models that integrate biowaste collection with local food production.



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## ACKNOWLEDGEMENTS

