

Summary

Contemporary society faces an escalating problem of generating vast amounts of waste, posing a serious challenge in the context of a growing population, rapid technological development, and pervasive consumerism. In this situation, the introduction of modern waste management solutions becomes essential. This doctoral dissertation examines the potential for transforming the municipal waste management system in Gdynia in accordance with the concept of a zero-waste city.

Gdynia, recognized as a leader in Poland in innovative management and sustainable development, stands out for its range of pro-environmental initiatives, making it an ideal subject for research into the implementation of the zero-waste city concept.

Seven research questions were posed in the dissertation. Based on these, the primary objective was defined as assessing the readiness of Gdynia's municipal waste management system for transformation toward the zero-waste city model and identifying the necessary actions to facilitate this transition. To achieve this main objective, eight specific sub-goals were outlined.

The central hypothesis of the study posits that Gdynia's municipal waste management system is not yet prepared for transformation in line with the zero-waste city concept. Achieving this transformation depends on meeting a set of requirements in key areas such as legal regulations, technical and technological infrastructure, environmental awareness among residents, and the organization of the waste management system. Only when these conditions are fully met can the system be considered ready for transformation. This hypothesis was positively verified during the research, confirming the necessity of fulfilling these requirements to enable the system to successfully undergo the transformation process.

The dissertation consists of five chapters. The first chapter discusses the evolution of the definition of municipal waste, analyzes the situation in Poland and the European Union, and presents the ecological, material, and energy consequences of inadequate waste management.

The second chapter focuses on the key concepts that form the foundations of modern waste management: sustainable development, the green economy, the circular economy, and the zero-waste city concept. These approaches serve as critical starting points for transforming contemporary cities seeking to minimize their environmental impact.

The third chapter is devoted to the analysis of environmental policy instruments supporting the development of zero-waste cities, with particular emphasis on legal regulations, economic tools, and educational initiatives. It highlights the most important legal and financial

mechanisms, as well as the role of ecological education in shaping pro-environmental attitudes, which together contribute to the effective transformation of cities toward sustainable waste management.

The fourth chapter provides a detailed overview of Gdynia's municipal waste management system by analyzing the barriers and potential solutions in the city's transition toward a zero-waste model. Research using the fuzzy Delphi method helped to systematize the main challenges and proposed solutions, forming the basis for developing recommendations to support this process.

The fifth chapter is dedicated to the environmental awareness of Gdynia's residents. Based on survey research, the level of environmental awareness was determined, and social groups in need of additional education were identified, along with proposed actions to support the transformation of the city's waste management system.

The conclusion presents the key findings from the entire dissertation, along with recommended actions, discusses encountered limitations, and suggests directions for further research.

The dissertation emphasizes the need for a comprehensive approach that integrates policy, economics, education, sociology, management, and urban planning to achieve sustainable development and reduce the negative impact of waste on the environment.