

Abstract

Dissertation title: Structurization of municipal infrastructure projects financing.

Keywords water, sewage, sustainable, ESG, financing, models, structures, efficiency, local development.

The dissertation aims to propose an original conceptual model for structuring the financing of water and sewage infrastructure projects to achieve specific sustainable development goals. Author's intention was to provide a comprehensive tool that serves as a "roadmap" for planning financing, including the selection of financing methods, formal financing structures, and choosing various sources of infrastructure project funding. This roadmap aims to enhance the efficiency of public service management and support local development in line with sustainable development principles.

The realization of the main objective required the identification of several specific objectives, which correspond to the adopted structure of the work:

- (C1.) Positioning the research issues in a theoretical and conceptual context, particularly in public management and sustainable development theory, where infrastructure projects "operate" at the local level (Chapter 1).
- (C2.) Identifying key factors that affect the efficiency of public management (Chapter 1).
- (C3.) Determining the legal and organizational conditions for the functioning of municipalities as basic units of local government responsible for local development (Chapter 2).
- (C4.) Defining the role of infrastructure in local development from a theoretical perspective (Chapter 3).
- (C5.) Assessing the financial potential of local governments to implement infrastructure projects (Chapter 4).
- (C6.) Systematizing sources of financing for municipal infrastructure projects, significant from the perspective of water and sewage projects (Chapter 5).
- (C7.) Identifying models for structuring the financing of water and sewage projects under sustainable development conditions (Chapter 6).

- (C8.) Determining organizational and financial solutions in water and sewage management in municipalities based on selected cases (Chapter 7).
- (C9.) Verifying the author's model for structuring the financing of infrastructure projects (Chapter 8).

Achieving specific objectives (C1) and (C2) is necessary to "embed" the proposed model in a broader theoretical context. Achieving specific objectives (C3), (C4), and (C5) will allow for "embedding" the proposed model in the realities of local government operations and provide structured knowledge about decision-making conditions and responsibility distribution in investment planning. Achieving specific objective (C4) will also allow for properly positioning the proposed financing structuring model in a broader theoretical context, as well as indicating relationships between infrastructure development and sustainable development at the local level, which will then allow for indicating expected effects of implementing infrastructure projects. Achieving specific objective (C7) will allow for a comprehensive approach to possible solutions in the proposed model. Achieving specific objective (C8) will enable gathering empirical material for the conceptual financing structuring model. Ultimately, specific objective (C9) will establish the usefulness of the proposed model.

From an epistemological perspective, the dissertation aims to explain complex conditions for structuring infrastructure project financing. From a utilitarian perspective, it aims to create a new model procedure in structuring financing for water and sewage infrastructure projects in line with sustainable development principles, directed at decision-makers responsible for municipal water and sewage systems.

The specified scientific problem, identified gap in existing knowledge, and defined objectives allowed for formulating the main research hypothesis: Optimizing a model for structuring infrastructure project financing while adhering to sustainable development principles requires a multi-criteria approach. The following auxiliary research hypotheses were formulated:

- (H1.) Structuring infrastructure project financing using European Union funds requires compliance with ESG principles.
- (H2.) Reducing financial costs in structuring infrastructure project financing is possible through using European Union funds.
- (H3.) Using European Union funds in structuring infrastructure project financing allows for increased efficiency of infrastructure investments.

- (H4.) The primary criterion for optimizing a model for structuring infrastructure investment financing is price accessibility.
- (H5.) Applying a multi-criteria model for structuring infrastructure project financing positively impacts long-term economic, social, and environmental effects of implemented infrastructure projects.

The dissertation consists of 8 chapters.

Chapter 1 “Sustainable Development and ESG in Public Management” places the research problem in a broader theoretical perspective, focusing on public management's evolution and the factors critical for its effectiveness. Public management in the context of sustainable development involves implementing principles from Agenda 2030 and ESG strategies. Public institutions, including local governments, play a crucial role in achieving Sustainable Development Goals (SDGs) through resource management and policy design that address environmental, social, and economic needs. The chapter also highlights the importance of collaboration between various entities and social engagement.

Chapter 2 “Local Self-Government as a Determinant of Local Development” examines the legal-organizational conditions of municipalities as basic units responsible for local development. Chapter analyzes the evolution of local self-government from ancient times to the present and describes the principles governing contemporary local governance in Poland. The chapter emphasizes decentralization, transparency, and financial adequacy as key elements for effective service delivery and local development.

Chapter 3 “The Role of Infrastructure in Local Development” defines infrastructure's role in local development from a theoretical standpoint, highlighting its significance as social capital that is highly essential for socio-economic growth. It discusses different types of infrastructure: gray, green, blue, and brown, and their relevance to sustainable resource management.

Chapter 4 “Financial Condition of Local Governments (2004-2022)”, evaluates the financial potential of local governments in infrastructure projects implementation. It analyzes public finance management principles and the changes in public funds system from 2004 to 2022. The analysis reveals that financial constraints often hinder long-term infrastructure planning.

Chapter 5 “Financing Municipal Infrastructure Projects” with a focus set on systematizing sources of financing for municipal infrastructure projects, particularly water and

sewage systems underscores that sustainable financing goes beyond profit maximization by considering long-term value creation, including social and environmental aspects.

Chapter 6 "Models for Structuring Infrastructure Projects" identifies models for structuring water and sewage projects under sustainable development conditions. It discusses various models involving public-private partnerships (PPP) and municipal enterprises, emphasizing their advantages and challenges.

Chapter 7 "Case Studies in Pomeranian Voivodeship" analyzes water and sewage services in eleven municipalities through selected case studies. It illustrates practical challenges in infrastructure development within a sustainable framework, highlighting different organizational forms used by municipalities.

Chapter 8 "Proposed Model for Financing Infrastructure Projects" is a final chapter that presents an original model for structuring financing for water and sewage infrastructure projects within local governments' operational realities. The model incorporates demographic factors, macroeconomic modeling, demand forecasting, investment planning, tax modeling, financial condition analysis, cost forecasting, revenue forecasting, financing strategies, profitability assessment, price accessibility modeling, and project management.

The dissertation concludes that structuring infrastructure project financing using EU funds requires adherence to ESG principles to activate benefits from sustainable sources. It also notes that while EU funds can reduce financing costs significantly, they may lead to substantial tax burdens. The proposed model emphasizes price accessibility as a primary optimization criterion and integrates SDG and ESG criteria into project planning.

Overall, the dissertation achieves its main goal by proposing a conceptual model that aids in planning infrastructure project financing while supporting sustainable local development goals.