

## Infrastructure Asset Management

### Summary

The increasing challenges for organizations managing aged infrastructure that support societies, often with large intervention backlogs because financial resources may not be readily available, are being widely debated, particularly in the case of national, regional or municipal critical infrastructure of the water, energy and transportation sectors.

It is crucial that infrastructure organizations continuously improve their asset management capabilities, in order to systematically optimize the performance or the levels of service provided, modeling and forecasting the infrastructure life cycle costs, manage the risk of failure and find strategies to fund both short and long-term investment needs.

Asset management is a transdisciplinary approach that can be used by infrastructure and other type of asset-intensive organizations to address these challenges and maximize the value derived from their asset portfolio, while ensuring that the objectives of the organization are achieved and that the needs and expectations from its relevant interested parties are met.

The goal of the **Infrastructure Asset Management** university-industry cooperation project was to accelerate and boost the impact of asset management development programs in organizations managing critical infrastructure and specifically deploy mature asset management capabilities in water utilities.

The project established a structured asset management planning approach allowing infrastructure organizations to refine and capture life cycle management decisions while developing staff skills and competences based on life cycle thinking and the balancing of cost, risk and performance across all organizational functional units.

The formal structure and contents of the asset management plans resulting from the project are compliant with ISO 55001 requirements and follow relevant industry guidelines.

The outreach of the cooperation project included the cooperation with renown international asset management researchers and professionals, the creation of a national spin-off ([www.porvalor.pt](http://www.porvalor.pt)) and a wide dissemination of findings amongst the scientific communities and practitioners:

Almeida, N. (2021). Infrastructure and Building Asset Management: Fundamentals and overview of applications for asset-intensive organizations. In Course of Advanced Topics in Construction, PhD Program in Civil Engineering, Instituto Superior Técnico.

Almeida, N. M., Vieira, J., Silva, J. G., & Castro, C. (2021). The Impact of Asset Management Development Programs in Infrastructure Organizations. In Advances in Science, Technology and Innovation. [https://doi.org/10.1007/978-3-030-35533-3\\_29](https://doi.org/10.1007/978-3-030-35533-3_29)

Almeida, N., Trindade, M., Komljenovic, D., Finger, M. A conceptual construct on value for infrastructure asset management, in Utilities Policy, 2022, 75, 101354

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Maletič, D., Marques Almeida, N., Gomišček, B., Maletič, M., Maleti, D., Stjan Gomi, B., & Maleti, M. Z. (2022). Understanding motives for and barriers to implementing asset management system: an empirical study for engineered physical assets. In Production Planning & Control. <https://doi.org/10.1080/09537287.2022.2026672>

Patrício, H., & Almeida, N. (2021). A Common Risk Framework for Road and Rail Infrastructures. In Lecture Notes in Mechanical Engineering. [https://doi.org/10.1007/978-3-030-64228-0\\_11](https://doi.org/10.1007/978-3-030-64228-0_11)

Vieira, J., Cabral, M., Almeida, N., Gabriel Silva, J., Covas, D. (2020). Novel methodology for efficiency-based long-term investment planning in water infrastructures Novel methodology for efficiency-based long-term investment planning in water infrastructures. In Structure and Infrastructure Engineering. <https://doi.org/10.1080/15732479.2020.1722715>

### Project Reference

1018P.05257.1.01

### Leading Institution

IST-ID – Associação do Instituto Superior Técnico para a Investigação e Desenvolvimento (Portugal)

### Partners

AdSA – Águas de Santo André (Portugal)

### CERIS Principal Investigator

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### CERIS Research Team

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### Funding

AdSA – Águas de Santo André

### Period

2019-2021

### Total

77 800.00€

### CERIS

77 800.00€

### Project Website

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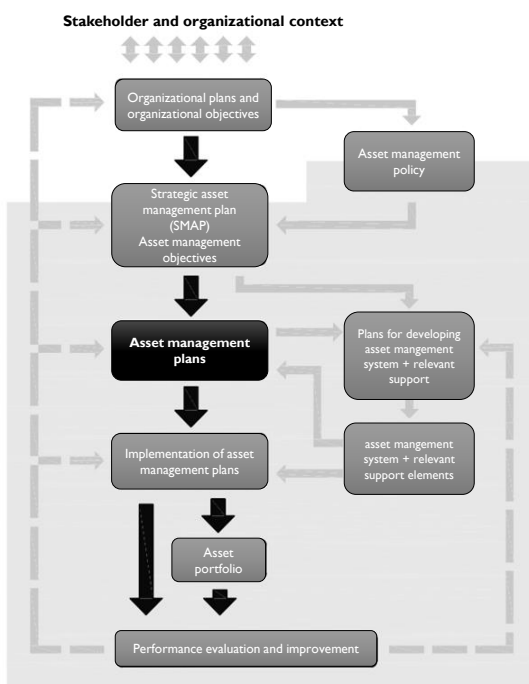


Figure 1. Asset management plans as key elements of an asset management system.

Salvado, F. Almeida, N. Azevedo, A. (2020). Future-proofing and monitoring capital investments needs throughout the life cycle of building projects, In Sustainable Cities and Society. <https://doi.org/10.1016/j.scs.2020.102159>.

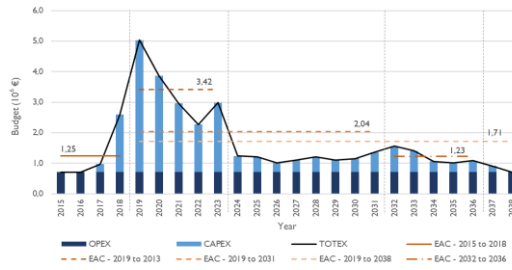


Figure 2. Sample output of a 20-year TOTEX planning exercise for a water supply asset system.