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# The quality of service: An overall performance assessment for water utilities<sup>☆</sup>

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## Abstract

Over the last decades, the delivery of water supply services has changed among regions and actors, in order to meet the changing needs. Those services can be balanced based on the relation between the obligations they must fulfill, the quality offered, and the associated price/value for money. Furthermore, due to the water services inherent characteristics, they are prone to poor quality of service (in general terms). Thus, global performance assessments are of paramount relevance under those constraints. In Portugal, the water regulator has developed a system of performance indicators (partial measures of performance) and, therefore, it is not possible to achieve the desired holistic performance evaluation (global measure). To enable such assessment, we propose an application based on the ELECTRE TRI-nC method to define quality of service categories and aggregate performance indicators. To obtain a coherent family of criteria (*i.e.*, exhaustive, cohesive, and non-redundant) we apply an iso-preference logic. The results obtained are presented through a geographical information system allowing for a clearer visualization of the overall performance of water utilities. The method proposed can be considered a suitable decision support system and useful regulatory tool, able to provide policy relevant outputs.

**Keywords:** Multicriteria, Decision support systems, Policy analysis, Quality of service, Water supply services, ELECTRE TRI-nC

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## 1. Introduction

The delivery of water supply services has changed over time, distinctively across regions and actors, in order to meet the changing needs of customers, citizens and society [1, 2]. Due to their very nature, these services can be balanced based on the relation between the obligations they must fulfill, the quality offered, and the associated price/value for money, to achieve a social and economic cohesion [3]. This way even if their scope (*i.e.*, activities included in the delivery) and organization may vary according to history and cultures of government intervention, the management of those services should follow the principles of transparency, nondiscrimination and proportionality.

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<sup>☆</sup>Case study: Portugal.

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