



**Abstract of Research Project**  
**XXXVI Cycle (A.Y. 2020-2021)**

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**RESEARCH PROJECT**

***Introduction and state of the art***

The Regulatory Authority for Energy, Networks and Environment (Autorità di Regolazione per Energia, Reti e Ambiente, ARERA) in 2017 introduced the resolution 917/2017R/idr, containing a specific Technical Quality Regulation about the integrated water services (RQTI) [1]. This regulation considers all the aspects related to the water supply, including the urban wastewater collection and treatment. It is a measure of great importance because it defines the technical standards to be fulfilled by the water service managers, using an innovative approach that guarantees benefits for the users. In this sense ARERA introduced a fairly complex system of rewards and penalties, linked to achievement (and maintenance) of defined quality levels of service. The achievements in terms of rewards and penalties are governed by macro-indicators and simple indicators that measure performance levels related to water leakages, service interruptions, quality of supplied water, adequacy of the sewage system, and water final treatments, including sludge disposal and quality of purified water. Each macro-indicator is composed of several indicators and for each indicator the introduced methodology defines classes based on ranges of values [2]. Based on the class, for each indicator the regulation defines the goals in terms of time and improvement percentage to pass to a higher class.

Every year the Italian water managers must report to the Authority their technical and economic performance, using specific forms. The evaluated classes are then used to rank the managers and only the best performing managers in Italy are allowed to increase the tariffs and hence the income, while the worst-performing managers must decrease tariffs and related incomes.

***Research objectives***

The research aims to find and apply innovative techniques to improve the macro-indicators of the technical quality of the integrated water service managed by Umbra Acque, which includes 8000 km of pipelines (6315 km of distribution networks and 1685 km of sewer networks) organized in 38 districts in an area of 4300 km<sup>2</sup> [3].



### **Methodology**

Initially, the research activities will point out and focus on the most critical macro-indicators, corresponding to low-level classes and ranking, and then proceed with all the others. To this aim the data provided by Umbra Acque relating to the years 2018, 2019 and 2020 will be analyzed, to identify the most critical indicators and related parts of the network that contributed to decreasing the performances. Then, the actions needed to improve performances of these and the other indicators will be analyzed and planned. As previously mentioned, attention will be paid to the state of the art and innovative techniques.

The required knowledge about GIS, statistics, and Italian regulations about the water sector, will be improved by taking specific courses on these topics.

### **Expected results**

Umbra Acque already defined some goals to be achieved in the next three years in terms of improvement in the indicator classification. The research activity is expected to help in achieving these results, which also guarantee the satisfaction and safety of the users and the reduction of the impact on the environment related to the management of the water resources.

### **Bibliography**

- [1] Autorità di Regolazione per Energia Reti e Ambiente, “Deliberazione 917/2017/R/IDR, Regolazione della qualità tecnica del servizio idrico integrato ovvero di ciascuno dei singoli servizi che lo compongono (RQTI)”, <https://www.arera.it/allegati/docs/17/917-17.pdf>
- [2] Autorità di Regolazione per Energia Reti e Ambiente, “Allegato A, Regolazione della qualità tecnica del servizio idrico integrato ovvero di ciascuno dei singoli servizi che lo compongono (RQTI)”, <https://www.arera.it/allegati/docs/17/917-17all.pdf>
- [3] Umbra Acque S.p.A., “Bilancio di sostenibilità 2019”, <https://www.umbraacque.com/territorio-e-sostenibilita/sostenibilita>