

# **Sustainability in Municipal Water Utilities Operations: Among Regions and Scales**

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## **Abstract**

This paper explores several aspects of municipal water utilities (MWUs) operations across regions and economies of scale. It involves a case study consisting of 60 MWUs from all over Indonesia. The modeling is done to explain the influence of the region and a large number of customers on the operating indicators covering efficiency, water loss rate, tariff, employee expense, and non-operational cost, and financial indicator in the form of company's profit. The first and second models simulate the conditions between Java and outside Java, and Western Indonesia and Eastern Indonesia. The third to six models accommodate the economies of scale by the number of customers of less than 20,000, between 20,001 and 50,000, between 50,001 and 100,000, and above 100,000. The parametric statistical test is also performed to support the modeling. Impressive things can be found from the characteristics and problems of each model. The results are MWUs in Java and which have a number of customers above 100,000 are the best example.

## **Keywords**

Water management, Municipal water utilities, Economy of scale, Water tariff, Water loss

## **Biography**

**Marga Gumelar** is pursuing a master degree in management at Padjadjaran University and also a government internal auditor at the Financial and Development Supervisory Board (*BPKP*). He is interested in the field of water management research, especially safe water management, including water supply management issues, efficiency, tariff implementation, and asset management. During his lecture, he is also active as a presenter at some conferences.