

# Application of the analytic hierarchy process to sustainability of water supply and sanitation services: the case of Algeria

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## Abstract

The aim of this paper is to develop a methodological tool for comprehensive evaluation of sustainability of water supply and sanitation services (WSSs) considering all quantitative and qualitative effective factors using the analytic hierarchy process. The proposed method has a significant advantage that determines which aspects have more priority and which ones are less important; hence, it gives a very good guideline for planning and implementation of a country's projects for sustainable development in WSSs. Additionally, the application of the proposed method is shown for Algeria as a case study. six dimensions, 12 criteria and 50 indicators were defined as three different levels of hierarchy for this purpose. Moreover, the matrices of pairwise comparisons were obtained by judgments of 12 experts in different involved fields including policy makers, managers and scientists. According to the results, the most important dimensions were economic (38.3%) and technical (26.1%) aspects. Furthermore, the financial autonomy (18.7%) and technical performance (18.4%) had the highest and transparency (2%) and organization (2.8%) had the lowest weights among all criteria. In addition, indicators with a high overall weight are: operation and maintenance cost, grand balanced budget, reliability, small budget balance, opportunity cost and state subsidy rates for investments.

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