

Cost-effectiveness analysis for sustainable wastewater engineering and water resources management: a case study at Minho–Lima river basins (Portugal)

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ABSTRACT

A cost-effectiveness integrated methodology applied in a water resources management and sanitation project in Minho and Lima's region (Portugal) is presented. First, environmental objectives and programmes of measures (PM) are established and priorities are identified using a cause-effect assessment matrix and a global effectiveness index. Aiming to achieve more demanding goals, some complementary actions are considered, including "decentralized low-energy wastewater treatment plants construction". A geographic information system was used to select potential implementation sites, and suitable treatment processes for each location are identified. The centralized and decentralized wastewater treatment plants combination is promising, achieving a cost-effectiveness attendance of €1510/equivalent-inhabitant in Minho–Lima river basins.

Keywords: Cost-effectiveness analysis; Sustainable wastewater treatment; Water economics; Water Framework Directive (WFD)

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