Treated wastewater reuse potential: mitigating water scarcity problems in the Aegean islands


School of Chemical Engineering, National Technical University of Athens, Zografou, Athens 15780, Greece, Tel. +30 2107723799; email: pstathatou@chemeng.ntua.gr (P.-M. Stathatou)

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ABSTRACT

Reuse of treated wastewater has been proven a reliable alternative water resource, which can constitute a significant component of integrated water resources management and provide an effective solution to cope with water scarcity conditions. In Greece, the recent introduction of the Joint Ministerial Decision 145116/11, which specifies requirements concerning the reuse of treated effluents, gives rise to the investigation of reuse potential in water scarce regions. As most Aegean islands struggle with water scarcity, due to their specific geomorphology, climatic conditions, and increased water demand during summer, the implementation of wastewater reuse in this region could provide a key solution to address water stress. The aim of this paper is to propose a step-wise approach for the analysis of treated wastewater reuse potential in the islands of the Aegean Archipelago, and the assessment of its contribution towards the mitigation of water scarcity problems. A Geographic Information System was used for the classification of the islands according to certain criteria (e.g. operative WWTPs, vulnerability to water scarcity, population density, etc.) and their clustering according to wastewater reuse potential. For the cluster of high reuse potential, the quality of treated effluents was compared to the standards specified by the Greek wastewater reuse legislation, to identify potential reclaimed water uses. The contribution of reclaimed water in alleviating water deficits in the islands with high reuse potential was estimated to be significant, thus indicating that it could be an effective option towards water scarcity mitigation.

Keywords: Reuse potential; Water scarcity; Reclaimed water; Integrated water resources management; Aegean islands

*Corresponding author.

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