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# Assessing the economic viability of alternative water resources in water-scarce regions: Combining economic valuation, cost-benefit analysis and discounting

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## Description / Abstract

This paper demonstrates a comprehensive methodology for assessing the viability of an environmental management plan that has long-run economic and ecological impacts. The case study under consideration is the implementation of a water-resource management plan in a water-scarce region of the world, namely Cyprus. Specifically, this plan proposes to replenish a depleting aquifer with treated wastewater. The proposed methodology first identifies the key stakeholder groups (farmers and the general public) who are hypothesized to derive economic values (benefits) from implementation of this plan, and then uses stated-preference methods to capture the total economic value of these benefits. Benefits are aggregated over the relevant populations of these stakeholder groups and weighed against the total costs of implementing the plan in a long-run cost-benefit analysis (CBA). An econometrically estimated time-declining trajectory of discount rates is used for the CBA in order to assess the long-run sustainability of the plan. The results reveal that the net benefit trajectory estimated with the time-declining discount rate takes one and a half to three times as long to come to a plateau compared to the constant discount rates of 3.5 and 6%, emphasizing the importance of using declining discount rates and capturing the entirety of the benefits generated by such plans. This methodology is particularly recommended for providing much needed information to support the implementation of the EU Water Framework Directive, which advocates the use of CBA with consideration of the notion of sustainability for achieving the “good water status” for all European waters.

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