
THE RECREATIONAL VALUES OF EUROPEAN COASTAL ECOSYSTEMS AND THE IMPACT OF CLIMATE CHANGE UPON THEM

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Abstract

This study investigates the economic value of recreational activities in European coastal ecosystems and the potential impact of climate change thereupon. The current values are estimated based on a meta-analysis of 315 value observations from 79 independent studies. Values are found to be significantly affected by characteristics of the valuation study, site-specific characteristics and context characteristics such as biodiversity richness and geoclimatic variables. Benefit transfer techniques are used to scale up values and assess the recreational benefits of coastal ecosystems in 14 European countries. Both the highest individual and aggregated willingness to pay for coastal recreation is found in Mediterranean countries. The impact of climate change on such values under the conditions defined by the four IPCC scenarios is assessed.

Keywords: Biodiversity, Coastal Systems, Economic valuation, Ecosystem services

For the purpose of this study, a large data set of non-market valuations of recreational activities in coastal ecosystems was constructed. In total, 320 primary valuation studies were retrieved and investigated. Of all studies, 79 were found to contain sufficient information for the meta-analysis. The total number of observations in the data set is 315.

The average willingness to pay (WTP) per person per year for recreational activities in the valued sites is estimated by means of meta-analysis. The explanatory variables include valuation study characteristics (e.g., valuation method, welfare measure), site characteristics (e.g., ecosystem type, type of ecosystem service provided) and context characteristics (e.g., GDP per capita, population density, richness in biodiversity, and temperature). Values were standardised to 2003 US\$ per person per year.

The results of the meta-regression show that the coefficients of most explanatory variables are statistically significant and with the expected sign. Recreational fishing produces higher individual values than non-consumptive recreational activities. Income effects and population density effects are identified. Values are significantly affected by richness and threats to biodiversity and are positively correlated with temperature. The explanatory value of the model is reasonably high (adj. $R^2 = 0.47$).

Benefit transfer techniques are used to scale up the values estimated with the meta-regression and assess the average individual WTP and aggregated WTP for coastal recreational activities in 13 European countries during the baseline year 2003. Table 2 presents the mean baseline values of WTP per person per year and the aggregated values of coastal recreational activities in the 13 European countries investigated. The highest individual and aggregated values are found in Mediterranean countries such as Italy, Spain and Greece.

The effect of climate change on the recreational values of coastal ecosystems in Europe is investigated based on the storylines of the four IPCC scenario families A1, A2, B1 and B2. The effect of climate change is introduced in the meta-regression model through changes in the values of the context variables and in the total number of tourist arrivals per year. The analysis of the results shows that coastal recreational activities in Mediterranean and Scandinavian countries have the highest potential to benefit from economically oriented policies such as those described in IPCC scenarios A1 and A2. Central and Northern European countries would similarly benefit in terms of overall social welfare from coastal recreational activities from conditions as in scenario A1 and A2, though to a lesser extent. Figure 1 presents as example the comparison of the estimates for scenarios A1 and A2 across individual countries.

References

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