INTEGRATING ECOSYSTEM SERVICES VALUATION IN CORPORATE DECISION-MAKING: THE MANAGEMENT OF THE "CASCATA DA SERRA DA ESTRELA", A CASE STUDY FROM PORTUGAL

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In this paper we present an ecosystem services economic valuation of a small mountain watershed of about 7200 hectares, located in the Serra da Estrela (Portugal) in which several hydropower facilities are installed. The study area is located inside the Serra da Estrela Natural Park and integrates the EU Natura 2000 network (as the whole Natural Park). The case study emerged from recent worldwide initiatives regarding the inclusion of ecosystem services in corporate decision-making (TEEB for Business and WBCSD's EVI – Ecosystem Valuation Initiative). Under this approach it is assumed that ecosystem services generate concrete value for businesses and the wider economy, and their degradation gives rise to appreciable private and public costs. Besides to contribute to broaden this approach we address several methodological issues regarding ecosystem services valuation and cost-benefit analysis, both theoretically and in the context of corporate ecosystem services valuation. The inventory of ecosystem services provided by the target ecosystem was based on ecological characterization, published and unpublished studies, statistical data, expert opinions, data from our own field work and from a one day participatory workshop in which relevant stakeholders have been involved. The Total Economic Value (TEV) of the current situation (ecosystem status quo) was compared with a dismantlement scenario of the existing hydropower facilities and with three agro-forestry management scenarios for the study area: protection, conservation and silvo-pastoral (hydropower facilities persist in these alternative scenarios). Alternative management scenarios were used to test whether its implementation would represent a business opportunity, for the company holding the power production concession, regarding the operational costs originated from the current ecosystem functioning - namely sediments loading into dams – by estimating TEV changes across scenarios. For the purpose of TEV estimation of the considered scenarios, changes in the ecosystem biophysical output, in relation to the current situation, were quantified based on ecological and hydrological modeling. Net present value (NPV) estimations indicated that the current situation is preferable to any of the management alternatives foreseen, given the time horizon and discount rates considered. The large investments associated with the scenarios, either the investments associated with the dismantlement of the hydropower facilities or the investments associated with agro-forestry scenarios implementation, are the underlying reason. Thus, upstream investments to reduce siltation (through the implementation of agro-forestry alternative management scenarios) do not represent a business opportunity and do not contribute to increase the TEV of the target system. From our analysis several issues arose and have been extensively addressed along the paper (for instance regarding the need of hydroelectric energy prices policy redefinition based on avoided externalities, sensitivity of biodiversity economic value estimations regarding the valuation method and disparities between local stakeholders' perception of value and economic estimations of ecosystem services).