



Water values: participatory water ecosystem services assessment for watershed management

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Water-related Ecosystem Services (WES), namely the multiple benefits produced by water moving through the landscape, constitute an overlap of the biosphere and the anthroposphere. On one hand, society acts as a driver of landscapes transformation, influencing the ecohydrological processes underpinning a large set of potential WES. On the other hand, society is a recipient of the WES provided by ecosystems.

Aiming at developing an interdisciplinary analysis framework to support the watershed management through the participatory evaluation of WES, the study considers the specific case of Figline and Incisa Valdarno municipality (Tuscany, Italy). The territory, part of the Arno River watershed, is situated in an area where water has a strong socio-cultural and economic relevance for the citizens.

The proposed methodology follows three steps: (i) biophysical assessment of the ecosystem capacity to provide WES; (ii) participatory valuation of WES; (iii) proposal of shared solution for water management at the municipality scale. Starting from the existing management plans released by the local river basin authority, a “participant guide” was realized to explain to all involved citizens the hydrology of the area. For the evaluation phase, four Open Space Technology meetings were then organized with local associations working on social and environmental issues. The proposal of shared water management solutions was discussed in a joint meeting with all previously involved participants, other citizens, local authorities and technical experts.

Results allows the identification of the main WES provided by the Arno River basin for the Municipality of Figline and Incisa Valdarno, their participatory valuation and the sharing of perspectives on the future development of the area. The most critical assets affecting WES provision were identified as the bad water quality of Arno River at the municipality and the low maintenance status of the riparian area bordering the municipality. Considering the perception of the water quality problem, the institution of a Payment for Ecosystem Services (PES) system can be considered. The participatory process expresses the need of a maintenance of riparian areas allowing also the recreational use of them besides the ordinary maintenance for hydraulic risk management. This operation is hindered by the current institutional setting present in the municipality, but it may become possible taking advantage of the new legal instrument of Watershed Contracts (Italian Contratti di Fiume).

The work served as a pilot implementation of the Law for Participation of Tuscany Region and provided a support tool for the watershed development strategy of Arno River, as prescribed by the EU Water Framework Directive. Water can be interpreted according to different scales of values: only by understanding the socio-ecological context and seeking an ideal convergence between different perspectives can lead to an effective watershed management. This study provides an overlap between social, biophysical and ecological analysis that give useful insights on the multiple roles of water in a watershed. The methodology was applied to a single pilot case study but, despite the limited generalizability of the results, it shows how the WES concept can facilitate a transdisciplinary translation of ecosystem thinking into water management.