

A comparative analysis of ecosystem services valuation approaches for application at the local scale and in data scarce regions

ABSTRACT

Despite significant advances in the development of the ecosystem services concept across the science and policy arenas, the valuation of ecosystem services to guide sustainable development remains challenging, especially at a local scale and in data scarce regions. In this paper, we review and compare major past and current valuation approaches and discuss their key strengths and weaknesses for guiding policy decisions. To deal with the complexity of methods used in different valuation approaches, our review uses multiple entry points: data vs simulation, habitat vs system vs place-based, specific vs entire portfolio, local vs regional scale, and monetary vs non-monetary. We find that although most valuation approaches are useful to explain ecosystem services at a macro/system level, an application of locally relevant valuation approaches, which allows for a more integrated valuation relevant to decision making is still hindered by data-scarcity. The advent of spatially explicit policy support systems shows particular promise to make the best use of available data and simulations. Data collection remains crucial for the local scale and in data scarce regions. Leveraging citizen science-based data and knowledge co-generation may support the integrated valuation, while at the same time making the valuation process more inclusive, replicable and policy-oriented.

Keyword: Ecosystem services; Valuation approaches; Data scarce regions; Integrated valuation; Decision making