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RIVER LANDSCAPES AND THEIR MULTIPLE FUNCTIONS - THE ECOSYSTEM SERVICE CONCEPT AS A WAY TO SUPPORT INTEGRATIVE RIVER LANDSCAPE MANAGEMENT

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INTRODUCTION

The „Ecosystem Service" (ESS) concept has developed as a commonly applied assessment and communication tool, foremost in the scientific context. Although this concept is aimed at implementers in the practice and intended to be used as information tool for decision makers also in the water sector it is not clear which role this tool actually plays in policy and how it is perceived by the addressed actors. As these questions are also relevant for river management processes, this study aimed at (1) analysing perceptions, (2) detecting knowledge gaps and (3) identifying the practicability of the "ecosystem service concept" on the example of two case study rivers in Austria.

The Ecosystem Service Concept

According to the Millennium Ecosystem Assessment Report (MEA, 2005) as an important milestone in the history of the Ecosystem Service concept, the term "ecosystem services" describes "benefits people obtain from ecosystems". These include provisioning services such as food and water, regulating services such as regulation of floods, drought, land degradation, and disease, supporting services such as soil formation and nutrient cycling and cultural services such as recreational, spiritual, religious, and other nonmaterial benefits."

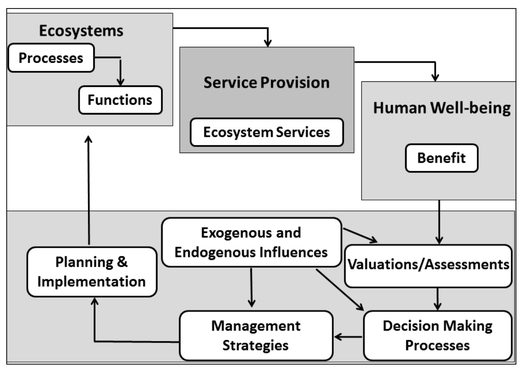

Fig. 1: Ecosystem services as interface between ecosystems and human well-being (based on Van Oudenhoven et al., 2012)

Due to the fact that only a small part of society is aware of ecosystem services at rivers or is responsible for maintaining them, the value of these services and the benefits we derive from them are often underestimated or even overlooked (Aronson, Gidda et al. 2009).

METHODS

Study area

Two Alpine rivers in Austria were selected as case studies for the investigations.

River Enns


Fig. 2: River Enns in Styria (Bild Hauer)

River Drau


Fig. 3: River Drau in Carinthia (IHG)

Methodical approach

The methodical approach of the study is displayed in figure 4. About 100 qualitative interviews and 400 quantitative interviews were led with lay people and experts of different thematic fields using an interview guideline and a questionnaire. The focus is on the (1) perception and awareness of the ecosystem service concept, (2) on the role of this concept in the interviewees' working life, and (3) its practicability. Furthermore, different forms of use of the "ecosystem river" that are in the foreground in Austrian river management as well as conflicts between them were discussed.

The qualitative interviews were recorded and transcribed using the software "F4". Subsequently they were analyzed thematically using the software "Atlas.ti". A deductive approach derived from the categories in the interview guidelines was chosen for building the framework for analysis.

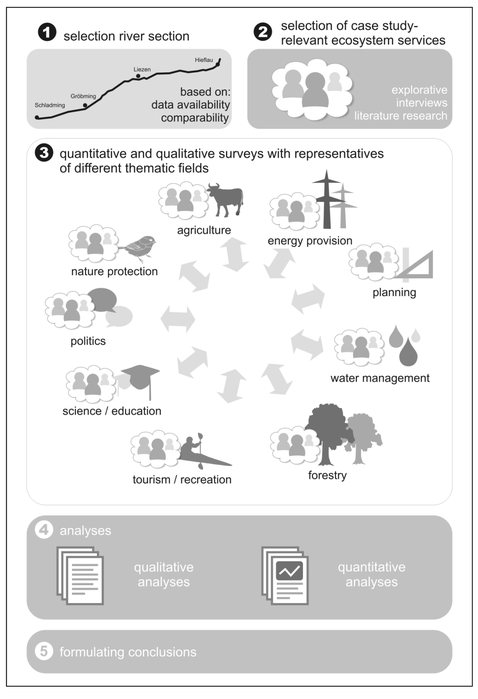

Fig. 4: Methodical approach of the study

FIRST RESULTS

Knowledge gaps regarding the ESS-concept

Preliminary results suggest that only experts and people in higher administrative levels know the "ecosystem service concept" relatively well; whereas a large part of implementers have not heard of this framework before. This is especially true in the field of river users, for whom it is not always completely clear what the concept means and aims at. Many interviewees associate the ES-concept with the concept of "landscape functions" and monetising of nature which has already been an issue in the 1980s (Vester, 1987).

Perceived practicability of the ESS-concept

Despite the conceded relevance of the concept, it currently only plays a minor role in the actual working environments of the interviewees. Other assessment and regulation systems, such as the Water Framework Directive, are seen as more important. It is stressed that through the application of the ecosystem service concept no redundancy to these systems shall result. However, it is seen as a tool that could potentially be useful, e.g. as a basis for argumentation for ecosystem conservation.

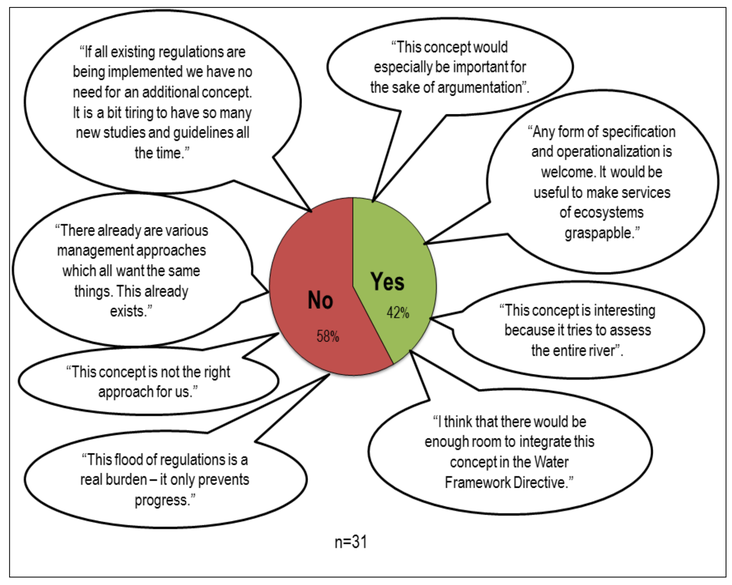

Fig. 5: Perceived practicability of the ESS concept, selected statements (based on Polt, 2013)

Perception of availability of ESS at the case study river Enns

„Cultural" and *„supporting services"* are perceived strongest by the interviewees. The highest distribution of values can be determined for *„provisioning services"*, especially for the factors „provision of energy" and „gravel mining".

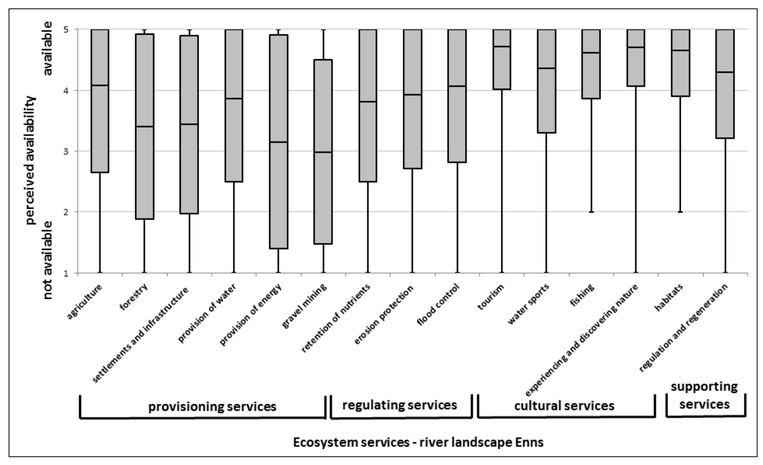

Fig. 6: Perception of ESS in the river landscape Enns (mean values, deviation, minimum & maximum values, n=165 interviewees)

CONCLUSION

Ecosystem service-concept

The results indicate a need for further research on possible knowledge gaps between scientific theory and practical application of the ecosystem service concept. Further efforts, also from the field of research will be necessary to improve the concept with regard to traceability and practicability. .

Perception of ecosystem services

The results suggest that a wide range of services has to be considered in water management. This applies in particular to *cultural* and *supporting services* as these forms of use often gain less consideration than the more easily, monetarily valued *provisioning services*. The fact, that different stakeholder groups do not only perceive „their" field of action as important but that they are aware of multiple services suggest a willingness to cooperate.

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