



A transdisciplinary approach for supporting the integration of ecosystem services into land and water management

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Transdisciplinary approaches are useful for supporting integrated land and water management. However, the implementation of the approach in practice to facilitate the co-production of useable socio-hydrological (and -ecological) knowledge among scientists and stakeholders is challenging. It requires appropriate methods to bring individuals with diverse interests and needs together and to integrate their knowledge for generating shared perspectives/understanding, identifying common goals, and developing actionable management strategies. The approach and the methods need, particularly, to be adapted to the local political and socio-cultural conditions. To demonstrate how knowledge co-production and integration can be done in practice, we present a transdisciplinary approach which has been implemented and adapted for supporting land and water management that takes ecosystem services into account in an arid region in northwestern China. Our approach comprises three steps: (1) stakeholder analysis and interdisciplinary knowledge integration, (2) elicitation of perspectives of scientists and stakeholders, scenario development, and identification of management strategies, and (3) evaluation of knowledge integration and social learning. Our adapted approach has enabled interdisciplinary and cross-sectoral communication among scientists and stakeholders. Furthermore, the application of a combination of participatory methods, including actor modeling, Bayesian Network modeling, and participatory scenario development, has contributed to the integration of system, target, and transformation knowledge of involved stakeholders. The realization of identified management strategies is unknown because other important and representative decision makers have not been involved in the transdisciplinary research process. The contribution of our transdisciplinary approach to social learning still needs to be assessed.