STEER: Increasing good governance for achieving the objectives of Integrated Water Resources Management

More effective water resources management through improved coordination and cooperation

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ABSTRACT

In many regions of the world, different water uses are not coordinated sufficiently. This may cause a decline in water quality and/or quantity, with consequent conflicts among various water users as well as detrimental impacts on the environment. The STEER project studies water issues related to a lack of coordination among different water uses, with a focus on various aspects of the water governance and management system. Applying a diagnostic approach, STEER aims to find out which sets of factors are associated with certain regional coordination deficits. Based on the analysis, the project intends to develop recommendations how the respective situation can be improved through innovative forms of coordination and cooperation. In this way, STEER will contribute to the implementation of Integrated Water Resources Management by providing advice for more effective cross-sectoral governance.

INTRODUCTION

Water is a resource used by a range of different actors for a variety of purposes. Prominent examples are agricultural production, the generation of energy, and water consumption of private households. Water also represents a major habitat and is an essential element for countless ecological processes and associated environmental services. There is no sector of society not depending – directly or indirectly – on the availability of water in adequate quantity and quality (Rockström et al., 2014).

However, the diverse uses of water resources are not always free of conflicts. In many regions of the world, activities of water users are not coordinated sufficiently, leading to unsustainable use and a decline in the quantity and/or quality of water resources. To tackle such issues and deal with water more wisely, the concept of Integrated Water Resources Management (IWRM) has become popular worldwide in the last three decades. It strives to reconcile the water-related needs of different actors and regions and aims to achieve a more sustainable and equitable management of water resources. However, the implementation of IWRM faces several challenges. Among others, many problems have turned out to be too complex to be solved from a water-centered perspective. In such cases, sufficient knowledge about the causes of water-related problems is often available, but their solution requires the involvement of actors from other sectors – often with competing interests – and the adjustment of related structures. Aligning the activities of diverse water users requires effective cross-sectoral governance and good coordination mechanisms. This may for example include the modification of sectoral legislations, an adequate involvement of stakeholders in the development of sectoral strategies and plans, and new forms of voluntary cooperation crossing different sectors (Pahl-Wostl, 2015).

The STEER project explores innovative approaches for evaluating cooperation and coordination in order to solve use conflicts around water resources. Based on comprehensive analyses of inter-sectoral coordination problems in selected case studies, STEER develops recommendations to improve the situation in the respective region. Furthermore, STEER aims to examine under what circumstances lessons can be transferred to other socio-ecological contexts. In this way, STEER intends to improve cross-sectoral water governance and to support the achievement of Sustainable Development Goal (SDG) 6.5: successful implementation of IWRM worldwide.

Target groups for results of the STEER project will be professionals who aim to align different water uses and resolve water use conflicts through improved coordination. These are for example regional actors from the water sector (e.g. river basin organizations), national water ministries and authorities, and international organizations supporting a more sustainable management of water and related land resources. Insights from the project will also be of interest to consultants and scientists dealing with water governance and management.

METHODS

To study conflicts around competing water uses and develop recommendations for better cooperation and coordination, the STEER project has developed a diagnostic approach. It facilitates an assessment of typical characteristics of specific problem constellations and a subsequent identification of targeted solution strategies: systemic analyses allow identifying sets of factors that jointly represent the cause of a water use conflict, which can then be tackled with specific instruments. A diagnostic approach considers the respective local context, but it is not restricted to a specific context (Dombrowsky et al., 2014; Ostrom, 2007; Pahl-Wostl et al., 2012). Instead, it facilitates the development, adaptation, and transfer of strategies for better cooperation and coordination to similar problem constellations. In this way, the diagnostic approach supports inter-sectoral water governance. STEER tests its diagnostic approach in two empirical studies. **The first empirical study** covers five in-depth case studies: Emscher basin (Germany), Weser-Ems region (Germany), Guadalquivir basin (Spain, see Figure 1), uMngeni basin (South Africa, see Figure 2), and Kharaa-Yeroo basin (Mongolia). Each of these areas is characterized by one or more problems related to water quantity or quality, caused by insufficient coordination among water users from different sectors. For example, livestock farming and the cultivation of energy plants contribute to economic prosperity in the Weser-Ems region, but have also led to increased nitrate concentrations in the groundwater at several locations. This poses a challenge to the regional water supplier. In the Kharaa-Yeroo basin, insufficiently or untreated wastewaters from mining activities find their way into the river network, representing a risk to other water users and the environment. In the Emscher basin, main challenges arise from impacts caused by former mining, industrialization and urbanization in the region as well as from regulations that can impede or delay the current restoration process. Through comprehensive analyses, STEER investigates major problem constellations in all five case studies and develops recommendations for better inter-sectoral governance based on improved cooperation and coordination. Data is collected through document analyses as well as interviews with experts and stakeholders and is assessed systematically. A cross-case comparative analysis will serve to gain insights that may be applicable to other regions. The second empirical study will serve to validate these findings by means of fuzzy set Qualitative Comparative Analysis (fsQCA). In addition to the five case studies mentioned above, it will include

Figure 1: *Reservoir of Castril in the Guadalquivir basin (photo: © Andreas Plischke).*

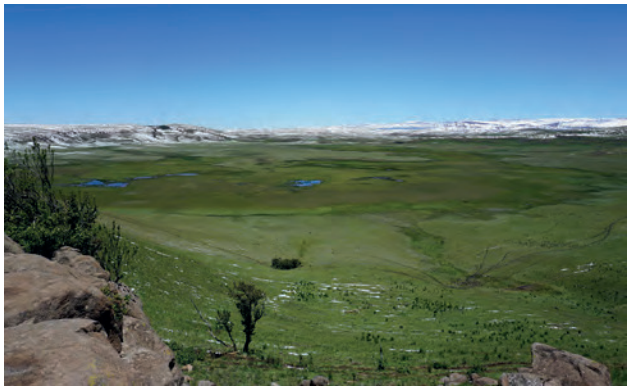

Figure 2: *The uMngeni Vlei, the source of the uMngeni river, is a protected RAMSAR site and suffers from cattle grazing. (photo: © Evelyn Lukat)*

about 15 further cases from different world regions. In this study, the diagnostic approach will be simplified to find out what combinations of factors result in positive or negative outcomes. This simplified approach will also be more amenable for further application in water management practice.

INTERIM RESULTS AND DISCUSSION

The STEER project developed a conceptual framework, which serves to operationalize the diagnostic approach. It guides both empirical studies sketched above, facilitating systemic analyses of water-related problem constellations and leverage points for cooperation and collaboration. Figure 3 shows the basic components of the conceptual framework.

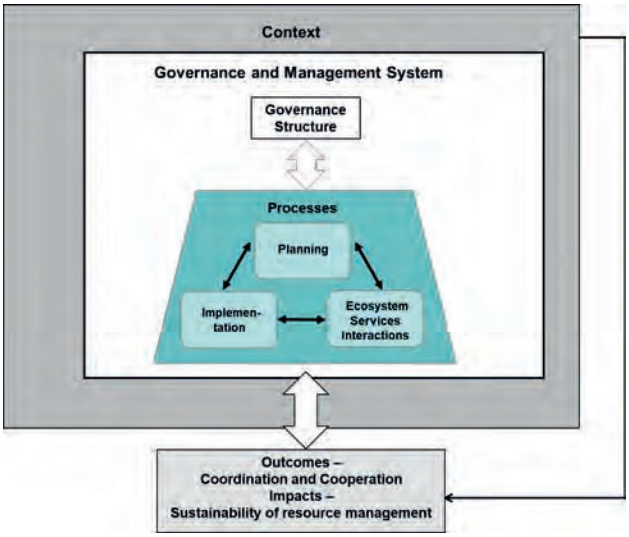

Figure 3: Basic components of STEER's conceptual framework.

The governance and management system comprises structures and processes designed to manage water resources and associated uses for various purposes. This system has a certain **performance** in achieving water-related goals, which can be assessed through the system's short- and medium-term **outcomes** (in terms of realized coordination and cooperation) and its long-term **impacts** (regarding the sustainability of dealing with water resources). The governance and management system is embedded in a broader environmental and societal **context**, which has an influence on how the system functions. Depending on the context conditions, a certain system may function well in one context but badly in another, which is reflected in processes within the system. The same applies to the impact of context conditions on the performance of the system: certain outputs of a governance and management system may translate into positive outcomes and impacts under some context conditions but lead to limited performance under others.

For each of the framework's basic components, various variables have been defined. These variables allow a comprehensive description of the situation in each case study. Hypotheses help to structure the empirical analyses. They reflect the current state of research regarding supposed links between governance aspects and associated performance in light of different environmental or social contexts. Supposed links, as formulated in the hypotheses, can be assessed with empirical data collected for the different variables. Some hypotheses will be examined in all in-depth case studies, whereas others play a role only in selected cases, reflecting regional circumstances and specific research interests of the involved scientists. This procedure allows both a common basis for comparative analyses and case-specific investigations.

Contacts have been established to the global process of monitoring SDG 6.5 on the implementation of IWRM. A first comparison of resulting country datasheets on national IWRM implementation (http://iwrmdataportal.unepdhi.org/iwrmmonitoring.html) and results of STEER case studies in respective countries suggest some differences. The results of the more detailed analyses conducted under the umbrella of STEER do not always agree with the scores obtained in the national monitoring processes. Furthermore, the diagnostic approach developed in STEER can support moving from monitoring at the national level to setting priorities and improving coordination structures and processes at the national and regional level.

CONCLUSIONS & OUTLOOK

Analyses of cross-sectoral coordination and coordination instruments have often focused on the national level. The regional level, where the consequences of insufficient coordination manifest themselves in tangible water management deficits, has received comparatively little attention. Furthermore, few studies have analyzed the effectiveness of coordination instruments and in particular combinations thereof with respect to reaching improved coordination outcomes. STEER will close this research gap and make innovative contributions to the science and practice of water governance and management.

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