

## **Social science contributions towards a sustainable, integrated and adaptive water resources management**

*Bernd Hansjürgens*

Due to increasing water demand, global and climate change and a multitude of use conflicts the sustainable management of water is central for future societal developments. The goal is to promote economic and social developments by addressing and balancing diverse use interests, while simultaneously safeguarding water resources. However, current water management practices are far from fulfilling these objectives for different reasons. In some cases, adequate management structures and techniques are not available while in other cases existing management falls short in properly addressing the key problems. In recent years some significant advancements in water management have been initiated by introducing the concept of Integrated Water Resources Management (IWRM), which has become a widely accepted guiding principle in the water sector. However, to make IWRM successfully implementable another level of understanding with respect to target setting, instrument choice and governance is required. Three fields are therefore proposed to be prioritized, which include social science approaches:

**1) Target setting in IWRM – defining good ecological status and ecosystem functions.** We need to expand our classical concentration-based conservation approach to an integrated management approach which comprises external (e.g. reduction of emissions into the water bodies) as well as internal measures within the water bodies; How can the economic value of ecosystem services be quantified in an appropriate way?

**2) Defining measures and choosing instruments: from theory to practice.** For the effective implementation of measures aiming at a balanced allocation and protection of water resources, the applied instruments need to be carefully chosen and designed. Such water-related instruments include regulation (technical standards, performance standards, etc.), quotas, access rules and allocation procedures, as well as economic instruments (especially pricing instruments and payments for ecosystem services). These instruments need to be based on full cost recovery and the polluter pays-principle. In particular pricing has to be taken into account as a means to achieve sustainable water uses.

**3) Water governance: Adequate structures for decision support.** An effective and efficient water management cannot be adequately performed without the existence of an appropriate governance structure. Water governance refers to the way water resources are managed, namely who decides on what and according to which rules. In order to be able to develop adequate governance systems, we need a profound understanding about their functioning and design. We need to take account of the concepts of public goods and common pool resources. We need to include the different actors and stakeholders through participatory processes. We need to create decision-making arenas and adequate legal and institutional framework conditions at various governmental levels (i.e. global/European, national, regional, sub-regional etc.). We need to consider multiple problems of scale, fit, and interplay. Also, we need adequate governance solutions for transboundary water management and modes of conflict resolution.