

A social network approach to analyze governance of land, water and ecosystems: the case of Mkindo catchment, Tanzania

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Growing food for increasing populations without compromising the integrity of ecosystems is perhaps the world's largest water resources challenge. Furthermore, and given the cross-scale and multifunctional character of water, the decisions impacting on water and land use involve a range of stakeholders related to each other through complex governance arrangements. It is safe to say that any transformation path towards more sustainable and equitable water use will need to work through these complex webs of social relations. Uptil now there has however been a lack of empirical research that captures such cross-scale water governance networks.

Building on previous work (Bodin and Crona 2009, Ernstson et al. in press), this study is the first of its kind to apply social network analysis to organizations influencing both blue water (the liquid water in rivers, lakes and aquifers) and green water (the soil moisture used by plants) at the catchment scale. Using a questionnaire and semi-structured interviews, 70 organizations were asked about (i) their collaborative relations to state agencies, NGO's, and village associations, and (ii) their activities impacting on land and water use. The latter linked the relational data to a biophysical model of "blue" and "green" water flows. This data was complemented with documents and interviews.

Results show that there is currently no organization that coordinates the various land and water related activities at the catchment scale. Furthermore, there are important actors influencing water governance at the catchment scale, but they are not adequately integrated to the formal water governance system. Water user associations (WUA's) are in the process of establishment, and could bring together actors presently not part of the formal governance system. However, at the moment the establishment of WUA's seems to follow a top-down approach that fails to consider the existing informal organization of water users that are revealed through this social network approach. Instead of (just) imposing institutional arrangements we argue that it would be promising and effective to (also) identify and build on existing social structures. Social network analysis can help to identify existing social structures and points for interventions to increase the problem solving capacity of the governance network.

This study is part of comprehensive comparative research project that addresses small-scale water innovation, adaptive capacity, and multi-scale governance. Currently we are busy generating comparative social network datasets for catchments in Burkina Faso and Zambia.