

How Understanding Social Networks Can Help to Govern the Nexus: a Case from the Blue Nile Basin

The nexus in a nutshell

Water, energy, and food production are often managed as separate sectors, with little consideration of their interdependence. Increasingly it is recognized that unless this interdependence is taken into account, the three sectors cannot be sustainably and effectively governed. How to manage the complex links between water, energy and food, and the associated social, economic and environmental implications, is therefore a major policy question.

The links between water, energy and food have been described as the energy-water-food nexus. Essentially, a nexus approach is about understanding how energy, water and food systems inter-depend, with the ambition to reduce trade-offs and generate co-benefits through more integrated governance approaches.

Since challenges and solutions in the nexus are intricately linked, both biophysically and socially, no single actor can solve the challenges alone. Instead, various actors need to work together across sectors and scales to find comprehensive and sustainable solutions.

Social networks and the nexus – a new approach

This discussion brief is based on a scoping study of social networks linked to the governance of water, energy and food in the Tana and Beles basins in Ethiopia. The purpose is to highlight existing social networks relevant for governing the nexus and to discuss possible implications for operationalizing a nexus approach.

The brief draws on expert interviews and an organizational survey of 85 organizations, including sectoral ministries and agencies from different levels of government (federal, regional, local), non-governmental organisations (NGOs), and research and bilateral development organizations (see Table 1).

The survey asked representatives for information on how they perceive problems and possible solutions related to water, energy and food in the study area. We also asked respondents about which organizations they regularly collaborate with on water, agriculture and energy issues. The results were gathered into three social network data sets.

Table 1: Number and type of organizations included in the study

Type of organization	Number
Governmental organizations	56
Non-governmental organizations	8
Research organizations	6
Government-owned companies	4
Bilateral development organizations	3
River basin organizations	3
Other	5
Total	85

Why social network analysis?

There are four main reasons why social network analysis is useful for guiding the implementation of a nexus approach:

1. It is a powerful analytical tool to represent and understand relationships among interdependent actors.
2. It allows us to consider the effect of connections across sectors and scales, instead of looking at actors or sectors in isolation.
3. A network approach can highlight the formal and informal relations that shape governance dynamics.
4. Knowledge about existing organizational structures helps to identify points where effective interventions can be made.

In short, network analysis can provide guidance where complexity may hinder much needed action.

Aspects of the nexus in the Tana and Beles basins

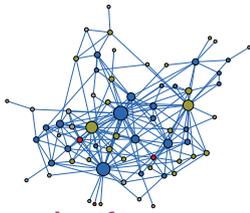
The Government of Ethiopia has identified the Tana and Beles sub-basins as a priority region for development and infrastructure investments in energy, water and agriculture. However, the ambition to increase agricultural and hydropower production is intricately linked to local people’s access to energy, water and food.

For example, the fact that local people depend on biomass for their energy needs is a major cause of deforestation and land degradation. The associated erosion and sedimentation affects agricultural productivity and hydropower production downstream, as well as ecosystems in and around Lake Tana.

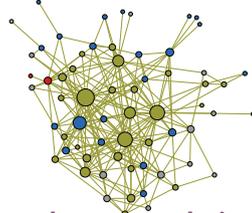


A recent inter-basin transfer from Lake Tana to the adjacent Beles basin for hydropower and large-scale irrigation has further increased existing interdependencies. If the region is to realize its development ambitions, there is a need for integrated approaches that take into account the multiple interactions between actors and their activities.

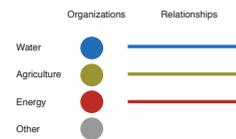
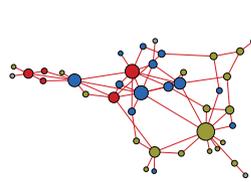
Water network



Agricultural network



Energy network



Networks of water, agriculture and energy relations in the Tana and Beles basins, Ethiopia

Note: The nodes represent organizations. The bigger the node the more influential an organization is. The colour of the node indicates which area of the nexus is the main priority for each organization.

Networks and the nexus: the findings

The study found that relationships in the networks are concentrated around a few key actors that are strongly connected to each other. Actors in the federal and regional public sector (i.e. line agencies) are particularly well connected. While local government organizations and NGOs are often located on the periphery of the networks, some bilateral development organizations are centrally placed.

A nexus approach can offer multiple gains, but only if there is meaningful collaboration across sectors and administrative boundaries. However, the study found that relationships in the networks appear instead to follow administrative and sectorial boundaries. Relationships also appear stronger vertically, in different levels of government (e.g. local, regional, national), than they are horizontally, at the same level of government but involving organizations from different sectors or locations (e.g. upstream and downstream).



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Although the analysis showed that relationships in the networks do cut across sectoral boundaries, the key question is do these relationships result in coordinated and integrated decision-making processes. Many respondents perceived a lack of coordination among various actors and their activities to be a key issue in the Tana and Beles basins.

Challenges and opportunities

Although there is increasing recognition of the need for integrated and coordinated approaches to planning, a fundamental challenge is how to implement integrated planning that is adapted and sensitive to local conditions.

A number of initiatives and projects aim to promote more integrated natural resource management and development interventions in the Tana and Beles basins. However, these initiatives are themselves sometimes in need of better coordination. There are also changes to the organizational set-up in Ethiopia that aim to facilitate and improve integrated planning and decision-making. For example, the newly established Abay, Tana, and Beles river basin organizations aim to improve coordination between multiple water users at the basin scale.

River basin organizations could be a means to align water resource management with hydrological boundaries, but since many water problems originate outside the water sector, taking river basins as a planning unit may create new challenges in relation to other policy fields, for example with energy or agriculture. The implementation of a nexus approach therefore requires the establishment of organizational relations and incentives that work across policy fields.

Policy considerations

To address nexus problems at a single system boundary limits the possibility to find truly comprehensive solutions. In order to implement a nexus approach, organizational arrangements that cut across hydrological, political and sectorial boundaries are needed.

Although individual actors cannot on their own create networks, they can support and facilitate partnerships and networking platforms. Well-connected government

actors can have a key role in this especially since institutional reform processes often need more time than the lifespan of external project interventions.

Building on and strengthening existing organizational relations can be an important prerequisite for more coordinated decision-making. A better understanding of existing organizational structures, including their strength and weaknesses, is critical to support the implementation of a nexus approach.