d·i·e

Deutsches Institut für Entwicklungspolitik

German Development Institute

NEXUS BRIEF No. 1/2016

Governing the Nexus between Water, Energy and Food: Instruments, Incentives and Mechanisms

Ines Dombrowsky, Waltina Scheumann and Babette Never

The nexus issue

The interdependencies when it comes to the use and safe provision of water, energy and food resources are becoming ever more apparent. For example, intensive agricultural activity in the upper reaches of rivers can deplete and pollute water supplies, exacerbate soil erosion and limit hydropower production downstream. If fish stocks are decimated through the operation of drinking water reservoirs and hydropower plants, then this can have a detrimental effect on the food situation for people living downstream.

Isolated sector policies competing with one another for resources do not offer any viable solutions to tackling these connected supply risks. The nexus approach works to counteract silo policies by promoting a connected means of resolving issues. This is primarily also a matter of governance. There are four challenges when it comes to governing the nexus between water, energy and food.

First, nexus governance must deal with the same market and coordination failures and information asymmetries as sectoral governance, but with more actors and a greater degree of uncertainty and risk. Consequently, one single policy instrument will barely suffice. *Second*, this plurality makes situation-specific solutions a more likely option than governance blueprints. *Third*, it is usually a large number of actors with different interests and resources for representing and asserting those interests who are affected. However, power imbalances often make it difficult to engage with the nexus. *Fourth*, there is the added difficulty in developing countries that these nations frequently already struggle with implementing sectoral governance, for instance, due to institutional weaknesses, data deficits and a lack of resources. Nonetheless, this does not mean that it is impossible to mobilise synergies and reduce negative intersectoral effects. Rather, there has simply been too little in the way of research activities and practical proposals to date with regard to governance of the nexus.

Research goals

The research project aimed to investigate the interplay between policy instruments with specific institutions, market conditions and constellations of actors in selected nexus situations. The following key questions were addressed:

- What factors cause negative intersectoral effects?
- How can incentive structures, governance mechanisms and policy instruments be used to reduce negative intersectoral effects and how can synergies be promoted between the sectors?
- What conditions are needed for the effective use of the relevant mechanisms and instruments, especially in developing countries?

Governance mechanisms may include inter-ministerial committees, while policy instruments can include standards and taxation. In order to address these questions, six case studies were conducted in a range of countries (Table 1).

Results

Each case study yielded specific findings, which are reflected in concrete recommendations for improving nexus governance on the ground. Additionally, the following project findings emerged at overall level:

Both governance mechanisms and policy instruments play a key role in dealing with intersectoral interdependencies. This is often implicit, with no mention of the term "nexus". Whether or not this term is used is, however, secondary, provided sufficient account is taken of intersectoral effects.

Effective nexus governance uses a practicable and socially acceptable combination of instruments to reduce negative intersectoral effects.

Table 1: Case studies: governing the nexus between water, energy and food		
Case study	**Nexus perspective**	**Mechanisms and instruments**
Sewage systems and energy: focus on urban India	Water and energy	Pricing policy, standards
Treatment and recycling of urban waste water (Brazil)	Water and energy (and food)	Pricing policy, standards
Drinking water partnerships with the agricultural sector (Germany)	Water and land/food	Cooperation agreements in water catchment areas
Payments for ecosystem services and the nexus between water, energy and food security (Colombia)	Water, energy and food	Payments for environmental services
Coordinating planning in the agricultural and water sectors (Zambia)	Water, food and environment	Interministerial mechanisms, permits and environmental assessments
Regional organisations promote nexus governance of hydropower generation activities along international rivers	Water, energy and environment	International river basin and regional energy organisations

Transaction costs for explicit nexus approaches should not be allowed to get out of hand.

Embedding a governance mechanism or policy instrument in an adequate and feasible combination of instruments increases the likelihood of effective implementation. The same applies to instruments already geared towards integrated use, such as payments for ecosystem services, as these instruments too can even go hand in hand with negative effects or may not necessary internalise all external effects.

Nexus governance is multi-level governance. Physical interdependencies do not usually coincide spatially with jurisdictional borders. Both intersectoral effects and the influence of regulation, financing and interest groups / stakeholders often extend beyond individual levels of governance.

Interests and power imbalances lead to a failure to take sufficient account of intersectoral interdependencies. Practical impacts include negative, inefficient cooperation, stagnation in decision-making processes and the perpetuation of silo policies, for example, if the environment ministry is unable to assert itself over and against the energy or agricultural ministry.

A shortage of data limits the effectiveness of instruments and cooperation activities. Examples include a deficient hydrological dataset and water register and a lack of information about nitrate values in water bodies or about the state of the sewage system.

Recommendations for development cooperation

- There is no such thing as "the one" nexus instrument. It is advisable to conduct an analysis of how different instruments, incentives and mechanisms can support one another. The specific combination used may vary depending on the nexus situation and the country in question.
- There is a need to identify spillover effects, the spatial reach of intersectoral interdependencies and central levers (e.g. pricing, command and control instruments) and take them into account by ensuring interaction between suitable governance levels.
- It is essential to carefully consider transaction costs, social effects and political feasibility when choosing specific instruments. Creative, socially-responsible solutions should be supported by comprehensive stakeholder participation.
- The position of affected actors and weaker negotiating partners should be strengthened through the provision of information, the communication of risks, the assessment of social impacts, and the use of stakeholder participation processes.
- Data shortages should be reduced by means of capacity development and support for the establishment of sustainable monitoring and data-management systems.

It is important to take account of the spatial reach of intersectoral effects in the multilevel governance system and to ensure appropriate participation by the affected sectors and stakeholders.

The project "Implementing the water-energy-food nexus: incentive structures and policy instruments" is being funded by the German Federal Ministry for Economic Cooperation and Development (BMZ). www.die-gdi.de/en/nexus/

waltina.scheumann@die-gdi.de

www.die-gdi.de
twitter.com/DIE_GDI
www.facebook.com/DIE.Bonn
www.youtube.com/DIEnewsflash