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Water-Energy-Food for Policymakers: What does it mean?

PROBLEMATIQUE

In developed and developing countries alike, there is increasing demand for water, energy and food. The growing thirst for these three essentials, combined with the realization that many traditional approaches to satisfy these needs are unsustainable (i.e. resulting in groundwater depletion, nutrient loading to waterways, climate change, etc.), is requiring society to find smarter and more integrated ways to provide these fundamentals.

The critical relationships between water, energy and food security (called the Water-Energy-Food or WEF nexus) are often overlooked in investments and policies focused on only one of the three. Overall, the concerns expressed by practitioners and researchers emphasize the relevance of WEF linkages presently and in the future for both people who have limited access to water, energy and food in sufficient quantity and quality, and for regions with rapidly growing demand for all elements of WEF.[1]

While recognition of these linkages is increasing, there is relatively limited understanding of how to advance from analysis, theory and research to action on the ground. There is need for practical guidance on how to operationalize WEF in a straightforward and policy-relevant manner.

IISD and WEF

The International Institute for Sustainable Development (IISD) has been engaged in research and policy development for WEF security through its participation in international dialogues, events and commentaries.

IISD has programs focused on water, energy and resilience (looking at food security) and integrates these in its WEF work to conduct biophysical, social and economic analyses and policy-relevant research on integrated approaches to decision-making.

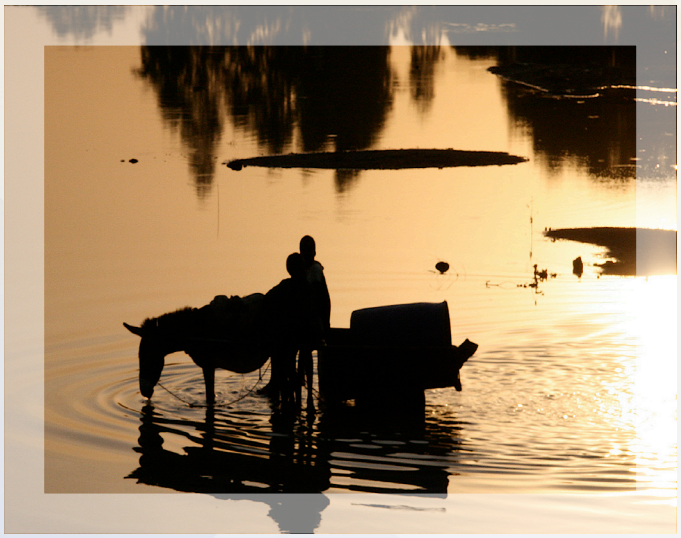
In Canada, IISD is designing and implementing WEF-inspired watershed-based management that realizes the multiple benefits of well-managed landscapes. Building on its expertise and knowledge of watershed-based ecosystem services, IISD combines principles of ecological design, stakeholder consultation, watershed modelling and policy research to develop practical solutions for WEF in the context of development interventions, including those related to agriculture and mining. In multiple countries, IISD is working with partners to identify, quantify, monitor and manage key natural, social, economic and social components of WEF security.

[1] Bazilian et al., 2012; Hoff, 2011; International Centre for Integrated Mountain Development [ICIMOD], 2012; World Economic Forum, 2011

"Any strategy that focuses on one part of the water-food-energy nexus without considering its interconnections risks serious unintended consequences." (World Economic Forum, 2011)

Scale: Local vs Global

IISD works at local and regional levels in watershed and community contexts to understand key WEF vulnerabilities and develop approaches for understanding, measuring, prioritizing and making decisions that are beneficial to water, energy and food—three foundational aspects of human security.



Improving WEF Security in the Lake Winnipeg Watershed

For more than eight years, IISD has been developing an award-winning approach that is improving WEF security in the Lake Winnipeg watershed. With its many partners, IISD is harvesting a common wetland plant, cattail (Typha), to demonstrate the use of such plants as a sustainable bioenergy source in such forms as condensed biomass (pellets, cubes, bales), syngas (synthetic gas), biochar and ethanol. The harvesting of cattail captures large amounts of phosphorus in the plant materials: 10 to 40 kilograms per hectare of harvested cattail. Since phosphorus is a significant cause of algal blooms on Lake Winnipeg, its removal through harvesting helps combat this problem. The phosphorus—which is an essential nutrient for agriculture—can then be recovered from the ash and used as fertilizer, contributing to food security. Other benefits include flood and drought buffering and habitat management.

IISD on the Ground: Engaging stakeholders for WEF security in Suriname

In Suriname, IISD is working with stakeholders to understand and improve WEF in the context of mining development. IISD is using analytical and collaborative approaches to help residents understand the impacts of development on their WEF systems, as well as to make informed decisions based on an awareness of related issues important to the region. This project is also showing that WEF monitoring should include both outcome and process-based indicators to improve WEF-related policies and decision-making.

- Outcome-based indicators measure changes in the physical and socio-economic environment (e.g. water quality, key aspects of food production, types of energy sources used, etc.).
- Process-based indicators ensure an integrated approach to design and implementation of actions (e.g. amount of stakeholder involvement in decision-making).

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