

Solutions Across the Water-Energy-Food Nexus

Wednesday, September 24th, 2014 - 13:30-15:00

Room 1.09

OVERVIEW

Water, energy and food are essential for human well-beings and sustainable development. The demand for freshwater, energy and food will increase significantly over the next decades under the pressure of population growth, economic development, technological changes, and climate change. The nexus has led to new demands for infrastructure and technology solutions for their security, and the need to balance competing demands on our natural resources whilst maintaining sustainable and productive landscapes.

The workshop focused on the use of Cleantech across water infrastructure systems that support the water, energy and food sectors. For example, cleantech for agriculture can mean precision irrigation, pump efficient solutions, use of treated waste water for irrigation and wetland management to reduce impacts from agricultural runoff. This also includes the integration of healthy ecosystems in well-functioning infrastructure built for irrigation, hydropower or municipal water supply, and in achieving the economic returns necessary to justify investments. Pathways for innovative financing of clean technology to support the water-energy-food nexus solutions, and the factors influencing these investments will also be explored.

The workshop was opened by Katharine Cross, IWA providing an overview of cleantech and the links to the water-energy-food nexus. This included a brief introduction to the [Nexus Dialogue on Water Infrastructure Solutions](#) which provides an opportunity to bring together a rich array of experience and practical knowledge across professional fields (including farming, energy-production, natural resource management and engineering) including clean technology. The nexus is being seen more and more as a framework for setting the value proposition of business and risk management.

Rodrigo Villarroel Walker, University of Georgia identified that cleantech means producing more with less in a way that is socially and economically acceptable. When technologies are developed there needs to be an understanding how there is potential for one technology to nullify or antagonise another. Rodrigo touched on the [BeCleantech](#) Initiative which is under the auspices of the IWA Specialist Group on Sustainability in the Water Sector. BeCleantech is a database of clean technologies, activities, and services mapped over the contours of the water-energy-food-climate nexus. BeCleantech aims to connect cleantech companies and organizations with each other, with experts in the field, research institutions, and with potential investors. Rodrigo and colleagues have analysed various clean technologies under the framework of the Water-Food-Energy Nexus. They found that at the initial stage government provided funds for cleantech research. The private sector comes in at a later phase. There is evidence that the National Science Foundation in the US has increased the amount for R&D over time and that there has been a shift in focus to include the nexus.

Brian Mergelas, WaterTap, focused on factors for success in investing in clean technology to benefit water, energy and food. There needs to be a strong value proposition, which also reflects economics - how you a technology will make money, but also how clients will save money, use less energy, be

more efficient . There must be a guarantee of return, therefore ways to minimize risk include bringing in government funding for the fundamental research. - If the commercial interest is gone, then consumers are more willing to engage which includes demonstrating how cleantech can reduce costs and improve efficiency. Barriers to innovation can range from the price of water to trade barriers.

Detlef Klein, GIZ focused his presentation on the water-energy-food nexus and drinking water supply in the context of international water policy and development cooperation. The regulatory environment is an important drive (and barrier) to enabling cleantech across sectors. However, certain factors need to be considered that do not compromise drinking water supply:

- Drinking water supply needs should be a priority
- Sharing monitoring information across sectors can identify externalities, which can be used in decision making process and the policy making.
- internalizing costs (e.g. levees on energy and food which include cost of water used).

A panel discussion facilitated by **Mark Smith, IUCN** included all presenters and two additional panel members - **Sam Keyanayagam, CH2M HILL** and **Petra Ross, ARCADIS**. The panel discussed approaches to innovation and investment in cleantech. The panel and workshop participants discussed how the efficiency market is 300 Billion USD and is primarily focused on urban areas; there is considerable potential for development in rural areas especially in agriculture where most water is used.

Disruptive change can bring forward these new technologies which not only need to be financed, but there also must be engagement with the end-users to provide solutions that are useful and meet varied needs across sectors. Most successful innovations are where there is a clear identified need and the approach to meeting that need or filling the gap is successful. At the same time, consumers need to be open to creative solutions.

IWA can have a role in highlighting expertise between (water-energy-food) sectors which can accelerate the process bringing innovation to the market. It was noted that exchange of technology usually happens when there is a footprint in more than one sector. IWA can highlight and bring these promote these cases through the member network as well as promoting joint conferences (e.g., water-energy).

Agenda

Time	Description	Presenter/Chair
13:30-13:35	Introduction to the workshop	Chair: Mark Smith, IUCN
13:35-13:45	Overview of the Nexus Dialogue on Water Infrastructure Solutions – challenges and solution with a focus on clean technology	Katharine Cross, IWA
13:45-13:55	Cleantech Innovation for Nutrient Recovery: Dynamics within the Nexus, Business Models, and Capital Attraction	Rodrigo Villarroel Walker, University of Georgia
13:55-14:05	Investing in clean technology for WEF Nexus – Factors for success	Brian Mergelas, CEO WaterTAP
14:05-14:15	WEF-Nexus and drinking water supply	Detlef Klein, GIZ
14:15-14:25	Q&A	Mark Smith, IUCN
14:25-14:55	<p>Feedback and discussion with a panel</p> <p>What drives innovation in companies that can provide benefits across sectors? What type of enabling environment is needed? How can investment be channelled to cleantech for the water-energy-food nexus? How are such solutions being scaled up? What are the gaps and challenges?</p>	<p>Chair: Mark Smith</p> <p>Panelists:</p> <ul style="list-style-type: none"> • Sam Keyanayagam, CH2M HILL • Petra Ross, ARCADIS • Rodrigo Villarroel Walker, University of Georgia • Brian Mergelas, CEO WaterTAP • Detlef Klein, GIZ
14:55-15:00	Wrap up and next steps	Chair: Mark Smith, IUCN