The Water Food Energy Nexus:

FINDING SECURITY BY REVIEWING THE LITERATURE

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- Investigation of the conceptual change in water governance from Integrative Water Resource Management (IWRM) to the Water-Food-Energy (WFE) nexus

Water Governance

- Water is a connected resource, with linkages to a number of fields including “energy, trade, and agriculture,” necessitating a focus outside of the “water box.”
- “The nexus thinking and IWRM principles are aligned.”
- Exploring the subtle and nuanced changes.

Steps in Water Governance

- So called “traditional” approaches focused on a hydrological solution.
- IWRM has circulated in academic and policy circles since the 1950’s. After a period where it was not frequently engaged, academics and policy makers “rediscovered” the paradigm in the 1990’s.
- IWRM attempts to reflect larger issues within the sustainable development field by considering social, environmental, and economic costs/benefits

Steps in Water Governance

- The Water-Food-Energy nexus is the recent entrée to the discussion of water governance and management.
- The WFE nexus's roots in the 1930's and interlinkages between these specific sectors in the development of the American Tennessee Valley Authority (TVA).
- Theoretical, suggestions of connections to the systems focus emphasized in the early 1970's through such works as *The Limits to Growth*.

- Initial steps started linking the analysis of two or more sectors together.
- Experts have suggested one of the first major and widely read reports in this lineage was 2006 United States Department of Energy study for Congress.

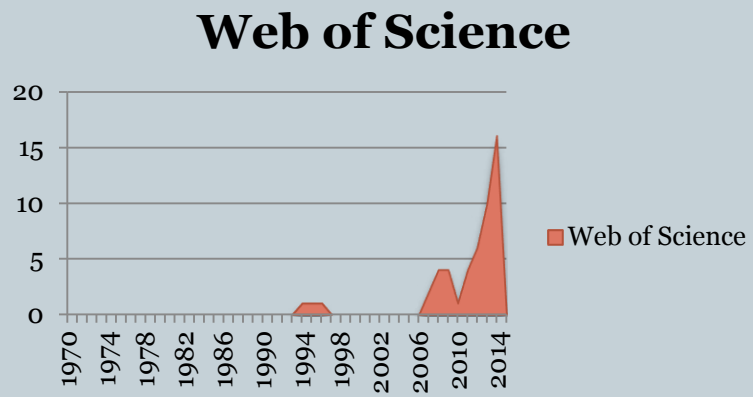
- WFE nexus has been described as an attempt to understand the “options and strategies to minimize negative impacts while enhancing the synergy benefits.”
- In an oft-cited statistic, 70 percent of consumptive water use is devoted to the irrigation of crops.
- At the same time, agricultural runoff is a major cause of water pollution. Energy production is linked to water and food in many ways; the consumptive use of water for traditional fossil fuel and nuclear energy production.

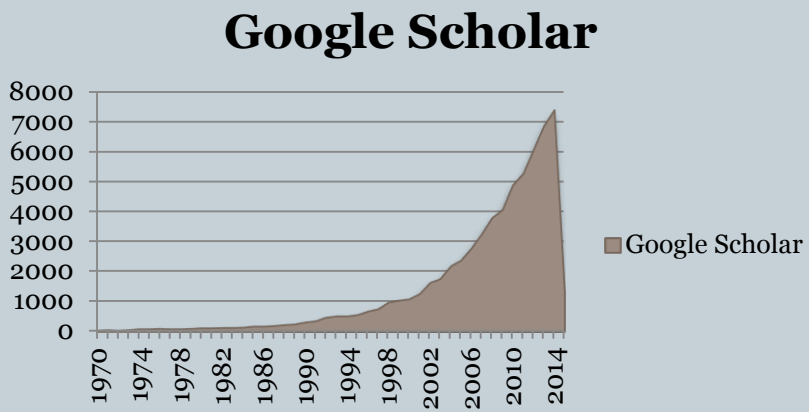
- Themes and characteristics of the literature.
- Related sectors should be included in the paradigm including; trade, land, irrigation, climate change, or (more broadly) the environment.
- Developing framework documents to distribute and weigh competing water needs such a piece by the International Centre for Integrated Mountain Development aimed at a “system-wise approach, rather than a sectoral approach.”

Rise of the Nexus

- Starts came at the 2008 World Economic Forum, shifting the debate to focus on connection to the economy.
- Bonn 2011 Nexus Conference, the 6th World Water Forum, the World Congress on Water, Climate and Energy, the Water–Energy–Food Security: New Challenges and New Solutions for Water Management and the United Nations Conference on Sustainable Development (Rio Conference)

- The WFE nexus's rise in popularity can be seen by a marked and steady increase in citations.
- Largely mirrors its development and use at international conferences and early policy documents





Discourse of Development

- Escobar, discourse of development has come to be used to justify certain types of thinking about the world while rejecting others.

- The first examination focused on identifying key themes and issues that have emerged from key texts from the grey literature of the WFE nexus.
- In the second method, abstracts from Web of Science's top 40 cited relevant academic texts each focused on WFE and the IWRM.

First Results

- Top words. “Water” was by far the most frequent word found (5001 times). This is nearly five times as frequent as the second ranking word “energy” (1082 times) or third ranking “food” (892 times, agriculture was 15th with 338 appearances).
- The 4th most common word was “security” (697 times). The 6th most common was “economic” (512 times). “Management” and “development” were 9th and 10th (417 and 414 times respectively).
- Suggests predominating focus in this group of key policy documents produced by international institutions with issues of financial stability and the broader use of natural resources for economic ends through active and intentional human activities.

Word Cloud

asia
may
2008
per
sector
development
land
management
resources
2010
production
countries
resource
security
trade
also
food
one
many
new
climate
world
demand
investment
sustainable
water
future
use
agriculture
economic
energy
nexus
global
2009
public
supply
2011
forum
scarcity
private
growth
international
change
business
report
systems
policy
agricultural
people
need

Second Study

- The second study focused on understanding the WFE nexus by contrasting the themes in scholarly work as seen by words used in the abstracts with similar words in the IWRM literature.
- Water was the most common on both lists.
- Energy, food, and nexus appeared next in that order for the WFE list while management, integrated, and resources were 2nd, 4th, and 5th for the IWRM list.
- Confirming the findings from the earlier examination of key grey literature texts, “security” was the 6th most common word on that list confirming its central role for the WFE nexus.

- Words associated with environmental concepts appeared six times (environmental, ecosystem, ecological, ecosystems, natural, and sustainable) on the IWRM list, four of these terms were in the top 12 words.
- This observation can be compared with the WFE list which includes these words only three times (environmental, sustainability, and sustainable) with only one appearing in the top 12.

Related to Human Rights

- Looking at the words “right” and “rights” shows that they appear five times in the IWRM abstracts but only once in the WFE nexus abstracts. Interestingly, searching of key words related to these traditionally disadvantaged groups shows no appearences for; women, woman, child, children, or indigenous.

Very Cloudy

Water Food Energy Nexus

Integrated Water Resources Management

Implications

- As United Nation's Secretay General Ban Ki-Moon said to the World Economic Forum Water Initiative in early 2009, "we have the economic crisis, the food crisis, the energy crisis…"
- Water security is a concept which focuses on the "dual productive / destructive potentials of water, indicating its inherent economic, social and environmental complexity."

Implications

- Water has been said to create “interlinked, geophysical, socio ecological and economic systems” resulting in a “global water system” (Bogardi et al., 2012).
- A water security focus overlooks the role of water for vital ecosystem health and functioning, principlely waters role in ecosystem services.
- Regarding human uses, there is reduced support for equity issues.

David Tickner @david_tickner · May 25

Listening to #water allocation talks at #**WWCXV**. Lots of tall about the "value" of #water rights. I think they're confusing value with price.

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