



**FEW Nexus Stakeholder
Information Sharing and Engagement Workshop**



The transfer of scientific knowledge into the hands of the stakeholders who will use these outcomes is an essential part of any project. The San Antonio Stakeholder Engagement Workshop “*The Water-Energy-Food Nexus (WEF) Stakeholder Information and Engagement Workshop*” took place January 10, 2018, at the Texas A&M University-San Antonio campus. Members of the water, energy, and food sectors came from governmental, business, and civil society institutions in the San Antonio region to interact with academia and learn of the outcomes of the work of the Initiative over the last two years. The Workshop was funded by WEFNI and by NSF award 1739977. The research reported there was also funded in part by NSF grant OAC-1638283. It should also be noted that the work with the San Antonio Case Studies will be continued, in part, through NSF 1739977.

Organizing Committee: (contact: wefnexus@tamu.edu). Rabi Mohtar, Jack Baldauf, David Baltensperger, Phil Berke, Ali Fares, Rob Hogan, Kent Portney, Susan Roberts, Rudolph Rosen, John Tracy, Bassel Daher, Lindsey Aldaco-Manner, Mary Schweitzer

The program for the day included:

- 10:00-10:05** Welcome Note (*Rudy Rosen and Mike O'Brien*)
- 10:05-10:15** Overview of Water-Energy-Food Nexus Initiative (*Rabi Mohtar*)
- 10:15-11:30** Science Panel (*Moderator: David Baltensperger*)
Panelists: Bruce Mc Carl, Kent Portney, Valentini Papas, Debalina Sengupta
 1. Key findings from water-energy, water-food, governance, & modeling groups.
 2. What are key challenges you face in conducting FEW nexus research?
 3. What are your needs from governmental and industry/business institutions?
 4. What do you have to offer governmental and industry/business institutions?
- 11:30-12:00** Q&A
- 12:00-12:45** Networking Lunch
- 1:00- 1:20** Engagement Activity 1 (*Elsa Murano, John Tracy*)
Are we asking the right questions?
- 1:20 - 1:40** Engagement Activity 2 (*Ali Fares, Jack Baldauf*)
Incentives, limitations, and opportunities of working across disciplines?

A full proceedings is in preparation and will be published. A brief summary of primary discussion points follows.

- **Governance:** There is a modest amount of communication *within* the water domain, but very little communication *between* the water, energy, and food/agriculture domains.
- **Modeling:** Data, *identification* of major WEF *alternatives*, mechanisms for *implementation and compensation*.
- **Water-Food:** *Multway approach* identifying energy, water, waste, and food centric scenarios; an *in depth understanding* of the effects of waste application on physical soil properties to allow informed waste management and irrigation decisions and *optimization* of variables contributing in biochar production, soil physical properties improvement.
- **Water-Energy:** *General framework* for a water network through a source-interceptor-sink model; *data collection* for generic water characteristics, water qualities for wastewater and treatment





methods; *cost data* compiled and cost curves constructed for various treatment strategies, and *optimization* based decision making framework.

Engagement Session 1: Are we asking the right questions?

1. Stakeholder Identification, trust, benefits, tradeoffs

- a. Who are the Stakeholders? What incentivizes them? Are they willing to accept changes in their status quo? How is societal perspective changed? Which opportunities/crises should be articulated to compel stakeholders to engage (Scare tactics? Resilience? How do we build these safeguards)?
- b. How do we identify *trustworthy* stakeholders and build confidence in the information provided? (Who is looking out for me? Who has my best interest in mind if I engage in the Nexus?)
- c. Who are the right experts? Are the right people/communities involved (public perception as part of solution, nonprofits)?
- d. What are the *trade-offs*? What are the non-monetary costs and benefits of different decisions?
- e. How does one group's planning/objectives differ from that of another? How does one leverage commonalities among groups?
- f. What are the legal limitations to private sector engagement? (How can government be influenced to benefit the nexus?)
- g. How can institutions from a variety of sectors to engage for the common good, rather than on individual accomplishments?

2. Application of research and action to policy.

- a. What steps are being taken to actually *apply* this research to policy? Are existing governance structures and funding mechanisms appropriate to the nexus (e.g., operational and strategic decision making)? What are the current effective practices? What are new strategies?
- b. What is the correct set of matrices for integrating FEW Nexus silos? Are we using the right metrics?
- c. How do we achieve: unbiased, globally optimum solutions? How do we educate different sectors, each with their own perspectives?. How do we break the barriers between local and regional perspectives? How do we manage across specific zones of influence, i.e. territorial, political, zone of influences, etc
- d. How do accomplish behavioral change, and in what ways do the approach and the modelling account for behaviors regarding WEF issues?
- e. *Life cycle analysis*. What are the elements of the life cycle analysis related to food, water, and energy? The entire nexus system approach has gaps that must be identified in terms of the deficiencies of the different components of the nexus. (Examples: supply chain, cost of distribution of food)

3. What are the predictors of the future?

- a. Are our estimations/predictions accurate? Are we using the correct data proxies? What if we're making policies with the wrong/inaccurate information?
- b. Political and cultural aspects must be included in the model.
 - a. Resilience to extreme events is an important factor to be included.

4. WEF System Values and evaluation?

- a. How do we demonstrate *equity and equality of benefits* to different groups?
- b. How can we *incentivize change* for water, energy, food nexus actions?
- c. **Is there** a more focused, directed pathway for science to impact policy?



Engagement Session 2: Incentives, limitations, opportunities of working across disciplines?

Incentives & Opportunities

- *Reward cross-disciplinary research* initiatives and multidisciplinary researchers: the current rewards structure is a barrier; create financial incentives.
- *Reward collaboration*: seek out skilled facilitators with cross disciplinary knowledge and the ability to communicate (engaging with more sustainability officers and planners).
- *Change the educating policy* to include people from other states not currently facing the problem.
- *Leave the Comfort Zone*: Learn and interact with different cultures/disciplines/sectors.
- *Reduce waste in food, water, and energy use. Optimize Land use* and development (consideration of urban agriculture).
- *Improve urban-rural dynamics*: Population issues, Cultural differences.
- *Value ecosystem services*, reduced development over recharge zones.

Limitations

- *Lack of coordination between agencies, sectors, and levels*: legal constraints to and lack of incentives for collaborating.
- *Communication and coordination between academia, policy makers, stakeholders, and industry leaders*: who is doing what? There is a need for a common, centralized platform for information sharing. Less technical jargon, more relevant terminology. Jargon: interdisciplinary and inter-sectoral.
- *Incompatibility of existing communication and decision making structures* with the reality of the challenges: can we improve these to better address the existing challenges?
- *Time and money*: who is going to pay for it? Can agencies take on new projects?
- *WEF database* is a 'larger beast,' than a one-water or one-energy database
- *Language* (units, abbreviations, addressing problems and solutions in a different word structure).
- *Planning Horizon* is different for water, for energy, and for food: the lack of common timelines (10 years vs. 50 years) causes ideological differences and creates barriers to working together.
- *Values-systems* across stakeholders are different (perceived conflicts and perceived accountability).
- *Conflict/competition* between local, regional, and global organizations and across industries: confidentiality, restricted data. Self-interest verses collective goals.
- *Legal/procedural barriers* (endangered species act).
- *Silos* are real.
- *Consider identification of shared priorities, common goals, and leveraged efforts where appropriate.*