



Spotlights of this issue

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The San Antonio Case Studies: Supporting the science for energy-water-food planning in San Antonio and surrounding regions, as climate alters water supplies. San Antonio demonstrates a complex resource hotspot in Texas. It also has promising potential for the competing primary resource sectors, if these are well planned and effectively allocated. The Texas A&M WEF Nexus Initiative (WEFNI) team has a vision for growth that will focus on the tight interconnectedness and respective trade-offs of the primary resource systems in San Antonio: home to a rapidly growing population, and sitting above the Eagle Ford shale play, and a site for major agricultural activity in its environs, this competing demands of the multiple stakeholders of San Antonio are an excellent foundation for properly studying the issues involved in learning to sustainably future resource allocation challenges for water, energy, and food.

The WEFNI team launched six projects in Fall 2016 to support the science needed for sustainable planning. These studies are expected to also provide the initial data and identification of research needs to competitively position Texas A&M for upcoming opportunities such as an Engineering Research Center (ERC), Science and Technology Center (STC), Research Coordination Network (RCN), Department of Energy and NSF calls. The projects, coordinated by members of the WEFNI leadership team (**Mohtar, McCarl, Portney, Pistikopoulos, Rosen, and Baldauf**), consist of 6 case studies, each of which is led by TAMU faculty with the assistance of a team of TAMU graduate students:

1. **Data & Modeling:** B. McCarl and G. Miller; supported by Y. Yang
2. **Energy for Water:** E. Pistikopoulos, S. Ma, Y. Li, M. El-Halwagi, A. Elwany, D. Sengupta, S. Chellam; supported by Z. Chang
3. **Governance & Financing:** K. Portney, P. Berke, G. Sansom, A. Vedlitz, and R. Mohtar; supported by L. Aldaco-Manner and B. Daher
4. **Tradeoffs and Decision Support Tools:** R. Mohtar and B. McCarl; supported by B. Daher and S. Beckner
5. **Water for Food:** C. Munster, A. Fares, K. Wagner, A. Jantrania, S. Ale; supported by S. Loy and J. Tahtouh
6. **Water for Energy:** M. Holtzapple, M. Bhatia, D. Burnett, and E. Pistikopoulos; supported by A. Mroue and J. Muell

A *Town Hall* in November 2016 brought the teams together to share project concepts, research questions, and identify the data available and needed. Teams discussed synergies and developed an interlinkages 'road map' to help align and identify the complementarity between the teams. in order to be ready to respond to upcoming calls for WEF nexus proposals (including NSF's INFEWS, DoE, NIFA). These are envisioned to become major milestones building toward the submission of ERC/STC or Belmont forum proposals in the coming 2 years. **The next Town Hall is scheduled for April:** if you'd like to become involved, send a note to wefnexus@tamu.edu.





FEW Nexus Workshop on Integrated Science, Engineering, and Policy: A Multi Stakeholder Dialogue

The NSF-FEW Nexus Workshop happened in College Station on January 26-27. Meant to build partnerships and create a road map for establishing a national Food-Energy-Water (FEW) Nexus [Community](#) of Science together with a platform to address the key research challenges, the symposium identified multiple and interdisciplinary research agendas for engineering, agriculture, geosciences, social, behavioral and economic sciences. Discussions focused on new approaches to innovative research and to data collection that will enhance longitudinal research capable of modeling and monitoring the processes associated with changes in climate, resilience, vulnerability, risk perception, and overall enhancement of sustainable management practices for primary resources. The kick-off included a live web session with **Dr. JoAnn Lighty**, National Science Foundation CBET Division Director. Dr. Lighty outlined the critical directions for the FEW Nexus arena. Her remarks were followed by an interactive session with broad audience participation.

10 BIG IDEAS formed the basis of the next session. Speakers briefly addressed their research areas in the context of FEW Nexus interrelations and the need for transdisciplinary collaboration to address the challenges to be identified during the workshop: ***Data and Modeling, Governance, Policy, and Financing, Governing Resources in Future Cities, Tradeoffs and Decision Support Tools, Energy for Water, Water for Food, Water for Energy Production, Food Processing and Waste, Soil-Food -Climate Nexus, and Engagement and Outreach: Community Building.***

Participants joined one of four breakouts that addressed research needs in the context of FEW systems: *Research, Education, Practice, and Capacity Building*. These sessions began the identification of synergistic research teams who will work together to develop FEW research proposals and other projects to be submitted to NSF, NIFA, DoE, Belmont, and other national and international agencies. Each group addressed five points: 1) defining the target FEW systems; 2) identifying the key challenges; 3) determining solutions to those challenges; 4) identifying the key potential impacts (social, environmental, economic); and 5) determining the resources needed for implementation. Day two began with a plenary session for two panel discussions that were live broadcast through workshop co-partner **Circle of Blue** and drew a global audience of more than 100, in addition to the 125 persons in the room. The first panel ***Science and Policy*** addressed questions of the characterization of the current state of FEW science and policy interactions nationally, the steps needed to improve science base decisions related to FEW resources, and potential policy changes that might improve the science-policy coherence in FEW resources. The second panel ***Industry and Technology***, discussed identifying incentives to innovation in FEW systems, the unique technological challenges and opportunities posed, and infrastructure and human capacity needs to foster those innovations in the FEW system. Afternoon sessions addressed pathways forward through building on the white papers that will be produced from the 10 Big Ideas session: establishing a ***Community of Science and Practice***, and ***upcoming calls for NSF-INFEWS and Belmont Forum***. The targets and priorities identified, the action & activities plan, timeline, teams and roles needed to accomplish the targets, and potential resources for implementation will become part of the proceedings to be shared with sponsors and participants in helping identify the next steps for expanding the Nexus program. Moving forward, Organizers will work with NSF, NIFA, and other agencies toward implementing the suggestions and establishing the FEW Nexus community of science and practice. For more information on the workshop, please visit: wefnexusinitiative.tamu.edu.

Other News:

[Gulf of Mexico Water Shed Conference](#) [DNC 2017](#) [XVI WWC](#) [Community](#)

Binational Perspectives on Gulf of Mexico Sustainability Workshop (March 8-10, 2017). Organized by TAMU Corpus Christi, sponsored by NSF, Texas A&M System, including Kingsville, CE3SAR, Architecture, and TEES, the meeting was to develop international research partnerships to advance scientific understanding and inform stakeholders on the impacts of environmental change on essential resources that affect countries bordering the Gulf of Mexico, input was provided by research leaders from private sector representatives and federal agencies in both the US and Mexico. The organizers are developing joint proposals to foster US – Mexico science partnerships. Workshop themes were:

- **Water, Energy, Food, Nexus:** Impacts of environmental change on fundamental global resources (*organized by Mohtar on behalf of the WEF Nexus Initiative*)
- **Utilizing global data sources for informed decision-making and sustainable action:** Predicting regional climate change, identifying sustainability metrics, and developing science-based policy and responses
- **Water resourcing in response to climate change:** Securing societal water quantity and quality needs while meeting environmental water requirements in a changing climate
- **Meeting the challenges of climate variability and change:** Impact of climate change on urban growth, human health and well-being



Making the Leap into the Nexus Rabi H. Mohtar will offer the keynote address at the 2017 World Water Day, March 22, in a live broadcast from the Vatican [<http://worldwatervalues.org/>]. Mohtar will discuss lessons learned from the Nexus to reduce dependencies and increase synergies between water and other sectors, calling for a change of the allocation paradigm that has been with us for centuries, but which will no longer carry us forward sustainably.



DNC 2017: SDGs & the NEXUS Approach: Monitoring and Implementation



Dresden Nexus Conference: 17-19 May 2017 (DNC2017) **Multifunctional land-use systems and Resources management in resilient cities.** Texas A&M WEF Nexus Initiative is a sponsor and co-organizer of the DNC. For more information visit dresden-nexus-conference.org. Reza Ardakanian, Director, UNU-FLORES, (On behalf of the DNC2017 Organizing Committee)



XVI World Water Congress, International Water Resources Association (IWRA) Cancun, Quintana Roo, Mexico. May 29-June 3, 2017. ***“Bridging Science and Policy”***, the Congress aims to bridge gaps and facilitate dialogue and collaboration among water communities and stakeholders by linking water professionals across disciplines and will include High Level Panels on topics like SDGs, Climate, IWRM, Nexus (*organized by Mohtar on behalf of the TAMU WEF Nexus initiative*) and Business, with the participation of public and private sector experts working on key global water agendas and strategies. Details at IWRA website or [IWRA XVI WWCongress Brochure](#).



The WEF Nexus Community now numbers 180 persons from Texas, 135 of these part of the TAMU System and an additional nearly 200 persons from across the USA and the world have indicated interest in being a part of the developing Community of Practice. To add your name to the Community, complete the form at wefnexusinitiative.tamu.edu/interested-form/ or, simply send an email with your contact information to: wefnexus@tamu.edu.

Become INVOLVED: contact wefnexus@tamu.edu
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