



## Institutional and Communication Challenges between Water, Energy, and Food sectors in San Antonio, Texas

*Southwest Texas faces a future with growing water scarcity. Meeting this challenge will require dialogue through communication links between those who use and provide water. Interests that must be involved in this dialogue include agriculture, municipalities, power generators, fossil fuel producers, and a collection of others. We have investigated current communication links as part of a Texas A&M - National Science Foundation project.*



### KEY MESSAGES

- We found **low levels of communication** between water, energy, and food stakeholders. Enhancing communication across sectors will be important to resolving regional water issues.
- We found **communication between water stakeholders** is greater among those attending regional water related events.
- Stakeholders told us there were **barriers to communication**. Principal among these were structural, financial, and capacity barriers; difference in terminologies, value systems; single item (siloe)-focus; lack of shared goals and projects; lack of incentives and institutional encouragement and barriers to collaboration.
- We were told there is a need for **more inclusive planning forums**, particularly ones including the **energy sector**.
- We believe stakeholders need to pursue **cross-institutional mechanisms** that promote higher levels of communication including **funding** and **time allocation**.

### Acknowledgments:

This research was funded in part by Texas A&M University Water Energy Food Nexus Initiative and based upon work partially supported by the National Science Foundation Award 1739977, Decision Support For Water Stressed FEW Nexus Decisions.

### Full Article:

Daher, B., Hanibal; B., Portney, K., Mohtar, R.H (2019) Towards Creating an Environment of Co-operation between Water, Energy, and Food Stakeholders in San Antonio. Science of the Total Environment 651 (2019) 2913–2926. DOI: 10.1016/j.scitotenv.2018.09.395.

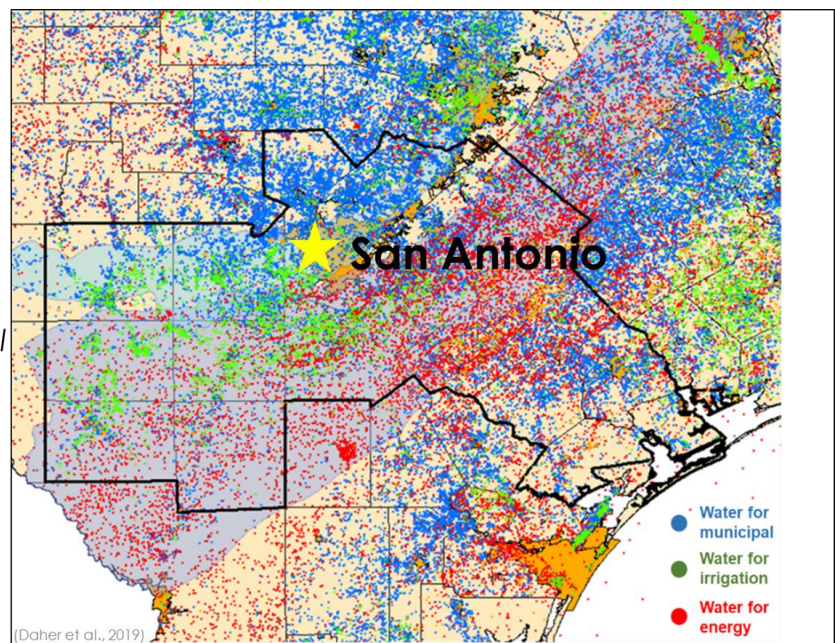
# Southwest Texas Hotspot & Stakeholder Communication

The Southwest Texas Region is home to a rapidly growing population with developing energy and agricultural sectors that compete for water, land, and financial resources. Despite the tight interconnectedness between water, energy, and food challenges, little is known about the levels of communication and coordination among the various officials responsible for making the decisions that affect the management and planning of the three resource systems.

It has been postulated that efficient communication is a prerequisite to developing resource allocation strategies that avoid potential unintended negative consequences that could result from inefficient allocation of natural resources and competing demands. A questionnaire was sent to public water officials in the region to gather information on stakeholder concerns, frequency of communication, and participation in engagement forums.

## Region I Projections 2020 - 2050

- Population: **+44%**
- Water demand: **+21%**
- In 2050:**
  - **49%** of water for municipal
  - **24%** of water for irrigation
  - **25%** of water for energy (manufacturing, steam electric power, mining)
- Water shortage: **+78%**  
28% of 2050 demand



*The map above shows groundwater well locations dedicated to municipal, energy, and agricultural use in the region. We can see how increasing water use may be creating competition between the three sectors.*

## Moving forward: challenges to address

- How can we move to more integrative agricultural, energy, municipal and industrial consideration in policy making and regional water planning?
- Can we better understand barriers challenging ability to coordinate actions across sectors?
- What means can we use to improve cross-sectoral communication and coordination? Can inclusive engagement and planning meetings and workshops enhance dialogue? How could we encourage organizations to better facilitate coordination within the operating procedures?
- At TAMU and in the research community we need to carry out transdisciplinary integrative research across sectors examining complementarities and coordination opportunities; make better use of case studies to illustrate successes, and; improve communication with decision makers and stakeholders.