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2017

### Report on the 2016 Texas Water Roadmap Forum

Rudolph A. Rosen

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# **REPORT ON THE 2015-2016 TEXAS WATER ROADMAP FORUMS**

By

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**Institute for Water Resources Science and Technology  
Texas A&M University – San Antonio**

Presented at the

**Texas Aquifer Conference**

**Austin, Texas**

**May 3, 2017**

# The Water Roadmap Forums

- Forums were held to build a path toward establishing consensus on means and directions to address important water-related topics in Texas.





# Introduction to Roadmapping

Compass



Goals

Pathways

Baselines,  
& Points of  
Departure

Metrics,  
Indicators, and  
Benchmarks of  
Performance,  
Excellence,  
and Success



GPS



Dashboard



# The Charrettes



# Water Forum I

- Define the most pressing water-related technology deficiencies for which applicable intellectual property or researched solutions may be available already.
- Invitation only.
- 100 participants
- February 2015







# Water Forum I

- Underwriter:
  - Wells Fargo Foundation
- Co-Sponsors:
  - Meadows Foundation
  - Texas Research and Technology Foundation
  - National Science Foundation Research Coordination Network on Climate, Energy, Environment and Engagement in Semiarid Regions (NSF/RCN-CE3SAR)
- Host:
  - Water Institute of Texas
- Supporters
  - AccelerateH2O
  - Meadows Center for Water and the Environment
  - STAR Park at the Texas State University

# Roadmap Forum II

## The Water-Energy-Food Nexus

- Identify and develop responses to local, state, national, and global challenges opportunities relative to water resources in research, education, outreach, and policy at the **WATER-ENERGY-FOOD Nexus**.



- Invitation only
- Two-day forum
- 125-75 participants
- November 2015





# Roadmap Forum II

## The Water-Energy-Food Nexus

- Co-Sponsors:
  - The Texas A&M University System
  - Area 41
- Host:
  - Institute for Water Resources Science and Technology, Texas A&M University-San Antonio.
- Supporter - Facilitator:
  - NSF/RCN-CE3SAR



# Roadmap Forum III

- Explore challenges identified in the first two forums:
  1. Communication,
  2. Water workforce education,
  3. Information management,
  4. Data access and research issues
- Focus on partnerships and funding
  - State Water Implementation Fund for Texas (SWIFT) (TWDB Sponsorship) and State Revolving Loan
- 60 participants
- November 2016

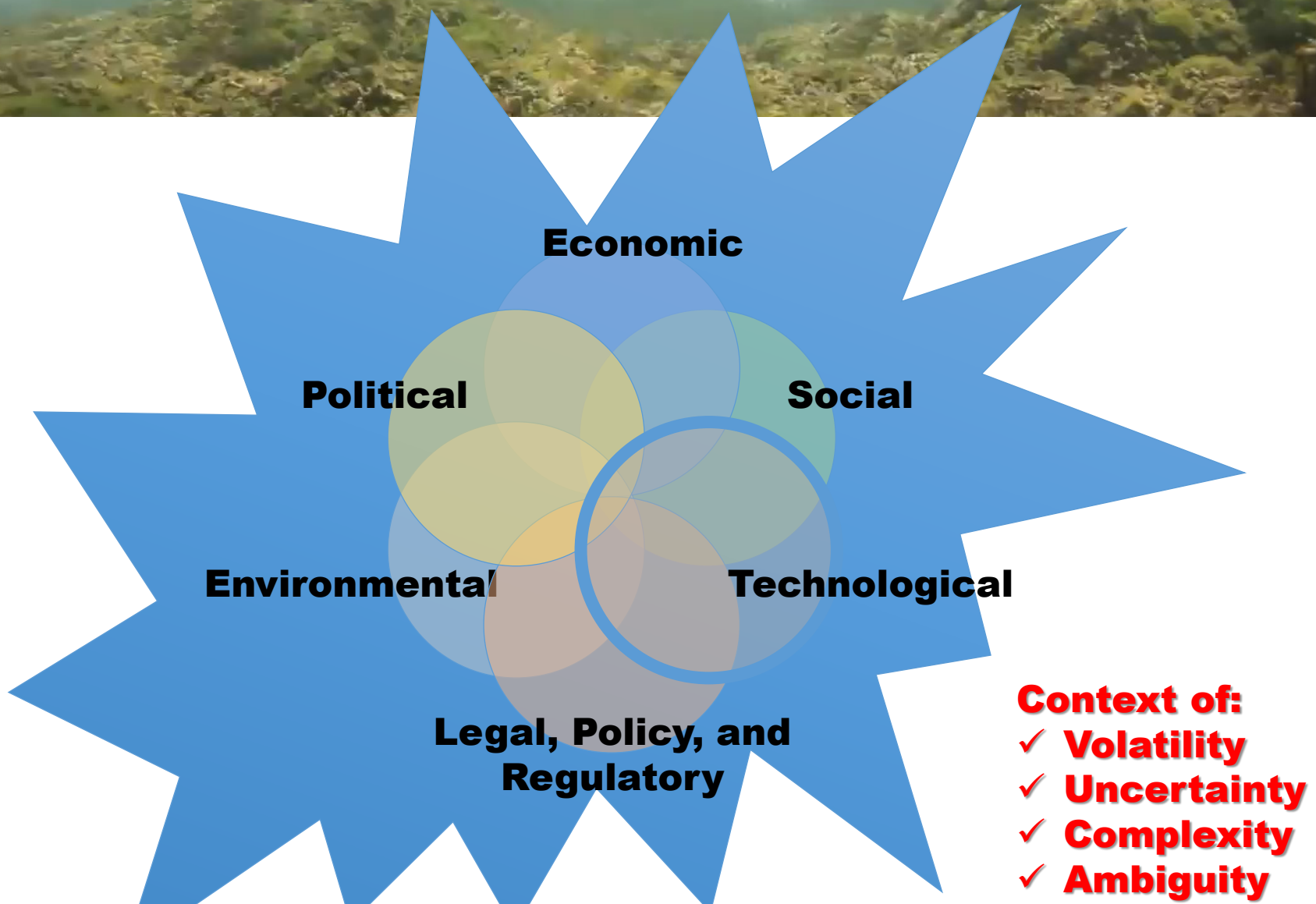


# Roadmap Forum III

- Sponsors:
  - Texas Water Development Board
  - NSF/RCN-CE3SAR and facilitator
- Host:
  - Institute for Water Resources Science and Technology, Texas A&M University-San Antonio



# The Complexity of Water and the Technology Fix



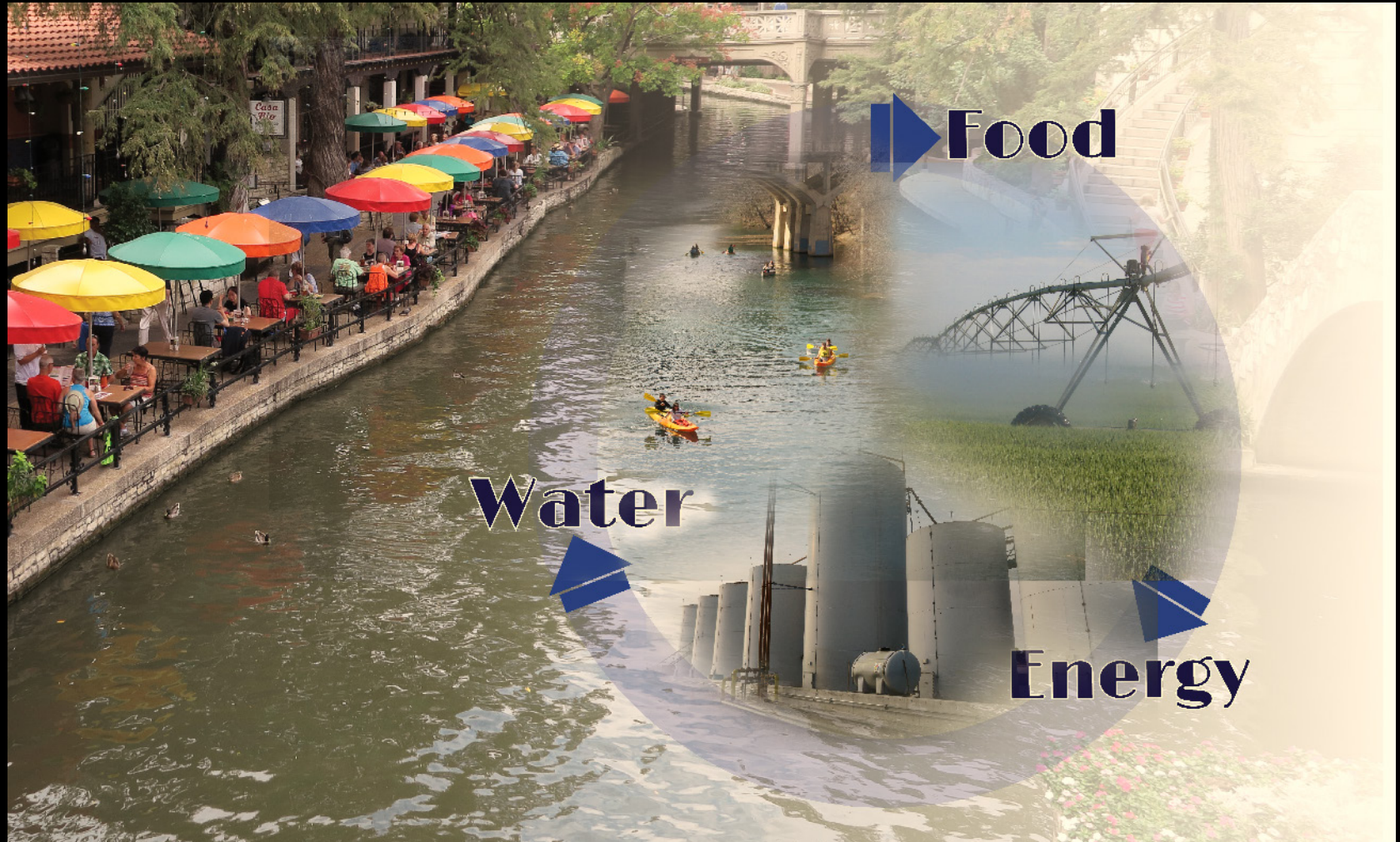


# Obstacles to Success

- Undervaluation of water.
- Counter-productive policies.
- Old and failing infrastructure.
- Inadequacy of higher education to adapt curricula to meet need.
- Failure to connect surface water and groundwater in policy and management.
- Investment and market challenges.
- Siloing of just about everything related to water.



# Nexus: water-energy-food





# Nexus: water-energy-food

- Water-food-energy systems lack coherence at the policy, regulatory and organizational levels.
- Education and research in these areas are fragmented and unconnected.
- Higher education is slow in responding to need for integrated curricula in water degree programs.
- Gap in public understanding about water matters.



# Third Forum - The Challenges

- Communication
- Information management
- Data access
- Education
- Research



# Third Forum Funding & Partnerships



- Texas Water Development Board
  - State Water Implementation Fund for Texas(SWIFT)
- Revolving loan programs



# Areas of Action



A series of regional research projects on various aspects of the water-energy-food nexus in Texas are in initial stages of work.



# Areas of Action



A water science and technology degree program is moving through the approvals at Texas A&M University-San Antonio designed to adapt to water workforce needs and resolve curriculum deficiencies noted at all three forums





# Areas of Action

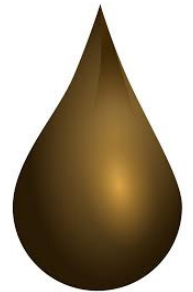
Initiatives from the third forum include proposed formation of a large-scale collaboration on improving dataset use and access, and initiation of discussions about partnerships with small communities to support water project financing through SWIFT.





# Beyond the Water Forums

- Impartial listing of positive actions that can be taken to solve pressing needs in the water sector.
- Compelling call for action, along with basic directions on how to proceed forward.
  - Agreement on need for urgency.
  - Information in the forum reports.
  - Participant consensus.
  - Statements of action.



# The Water Roadmap Forums








# The Reports

TEXAS WATER TECH ROADMAP FORUM

A Race Against Time



*"There is no resource more important to the sustainable growth of Texas than water."*


— Arden Johnson  
Texas Water Tech Roadmap Forum  
February 25, 2015

Texas Water Technology  
Roadmap Forum

Held  
February 25, 2015

RESOURCE NEXUS: WATER, ENERGY, FOOD

Water Forum & Tech Roadmap




*"The linkage between water, energy and food is key to the sustainable growth of Texas and security of all Texans."*

— Dr. G. Wayne Collins  
2015 Texas A&M University System  
Resource Nexus & Water Forum  
November 17, 2015

Resource Nexus:  
Water, Energy, Food


Water Forum & Technology Roadmap



San Antonio, TX  
November 17-18, 2015

WORKFORCE EDUCATION, DATA, & RESEARCH

2016 Texas Water Roadmap Forum



*"Vigorously defend the integrity of data and evidence in the management of water resources."*

— Dr. Cynthia Merrett

2016 Texas Water Roadmap Forum:  
Workforce Education, Data, and Research

Held at  
Texas A&M University—San Antonio  
San Antonio, TX  
November 29, 2016

<http://www.water-texas.org/water-forum-download/>