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### The Route to Water Security For Texas: The 2015-2016 Texas Water Roadmap Forums

Rudolph A. Rosen

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# **THE ROUTE TO WATER SECURITY FOR TEXAS: THE 2015-2016 TEXAS WATER ROADMAP FORUMS**

By

**Rudolph Rosen, Ph.D.**

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

Presented at the

**9th Annual LinCP Forum**

**Austin, Texas**

**April 7, 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.





# The Charrettes and Roadmapping



# 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





# 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**.



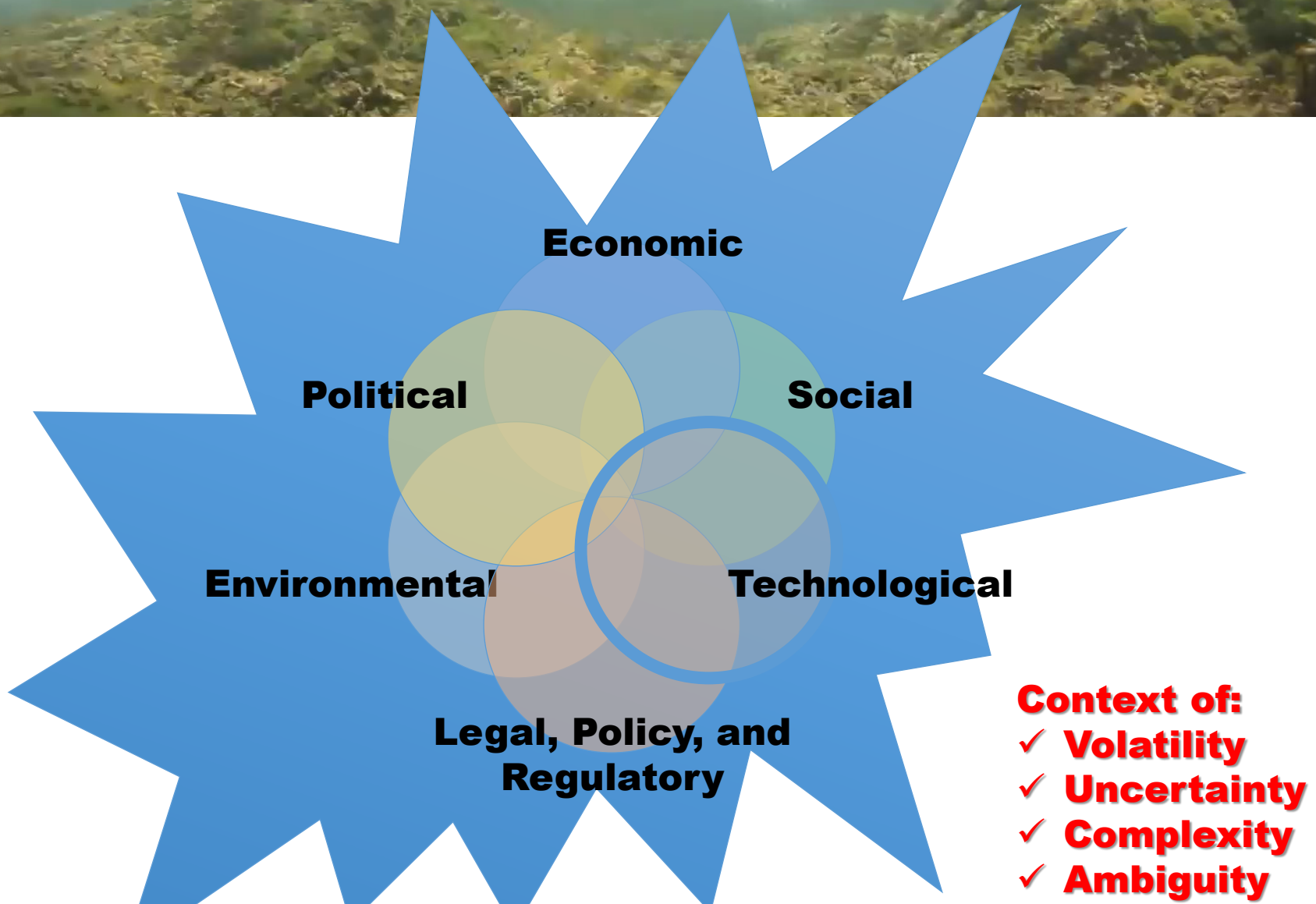
- Invitation only
- Two-day forum
- 125-75 participants
- November 2015



# Roadmap Forum 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

# The Complexity of Water and the Technology Fix



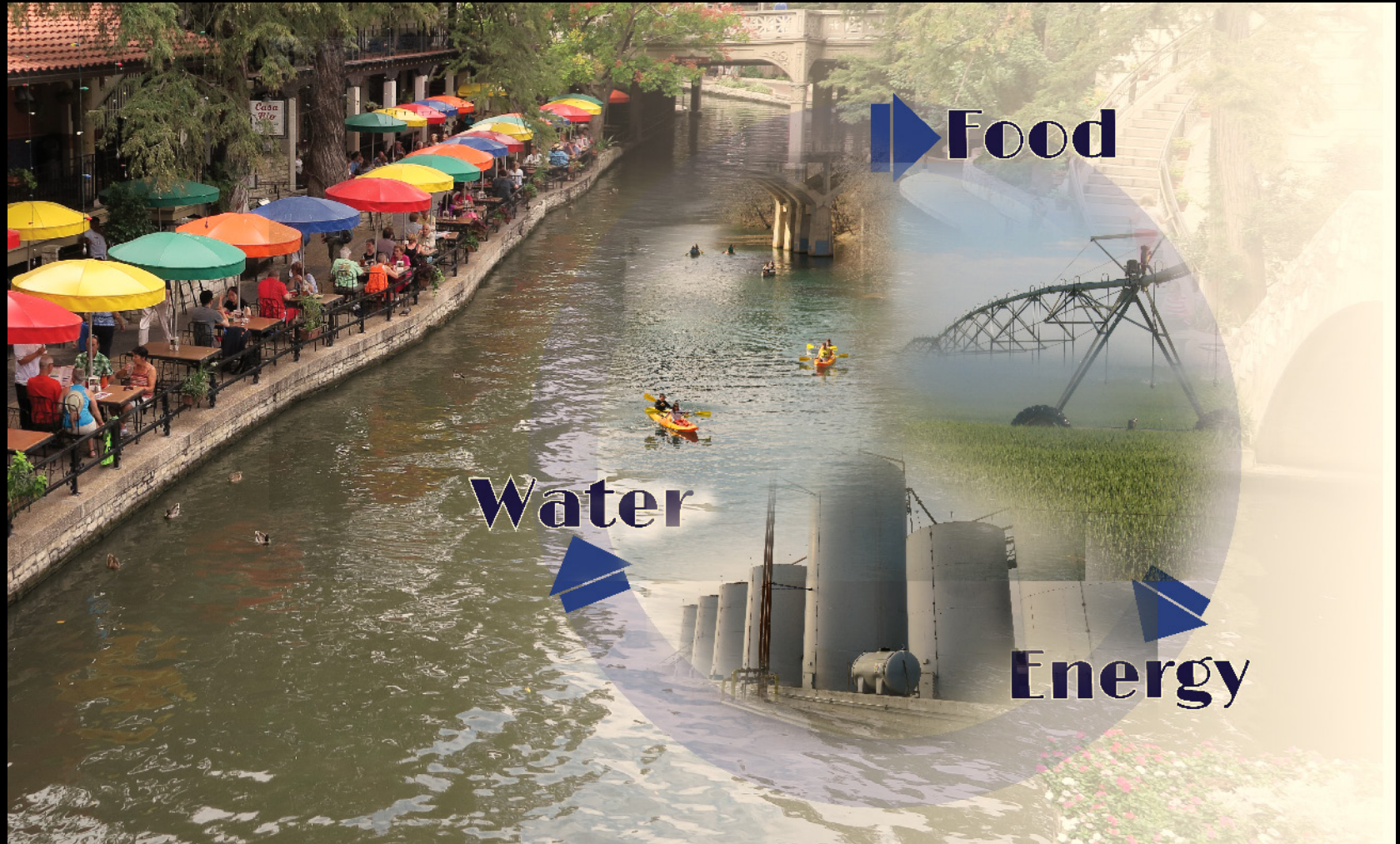


# Obstacles to Success



- 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

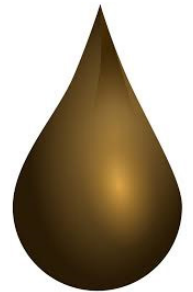


Although too early to assess, initiatives from the third forum include formation of a large-scale collaboration on improving dataset use and access, and initiation of discussions about partnerships with small communities to support water project financing through SWIFT.



# 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 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 Gribble  
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/>