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Building a Roadmap for Texas Water Security, Research, Outreach, and Education: The Texas Water Roadmap Forums

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**BUILDING A ROADMAP FOR TEXAS WATER SECURITY,
RESEARCH, OUTREACH, AND EDUCATION:
THE 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

51st Annual Meeting (2017)

of the

South Central Section of the Geological Society of America

San Antonio, Texas

March 13, 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.



- 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

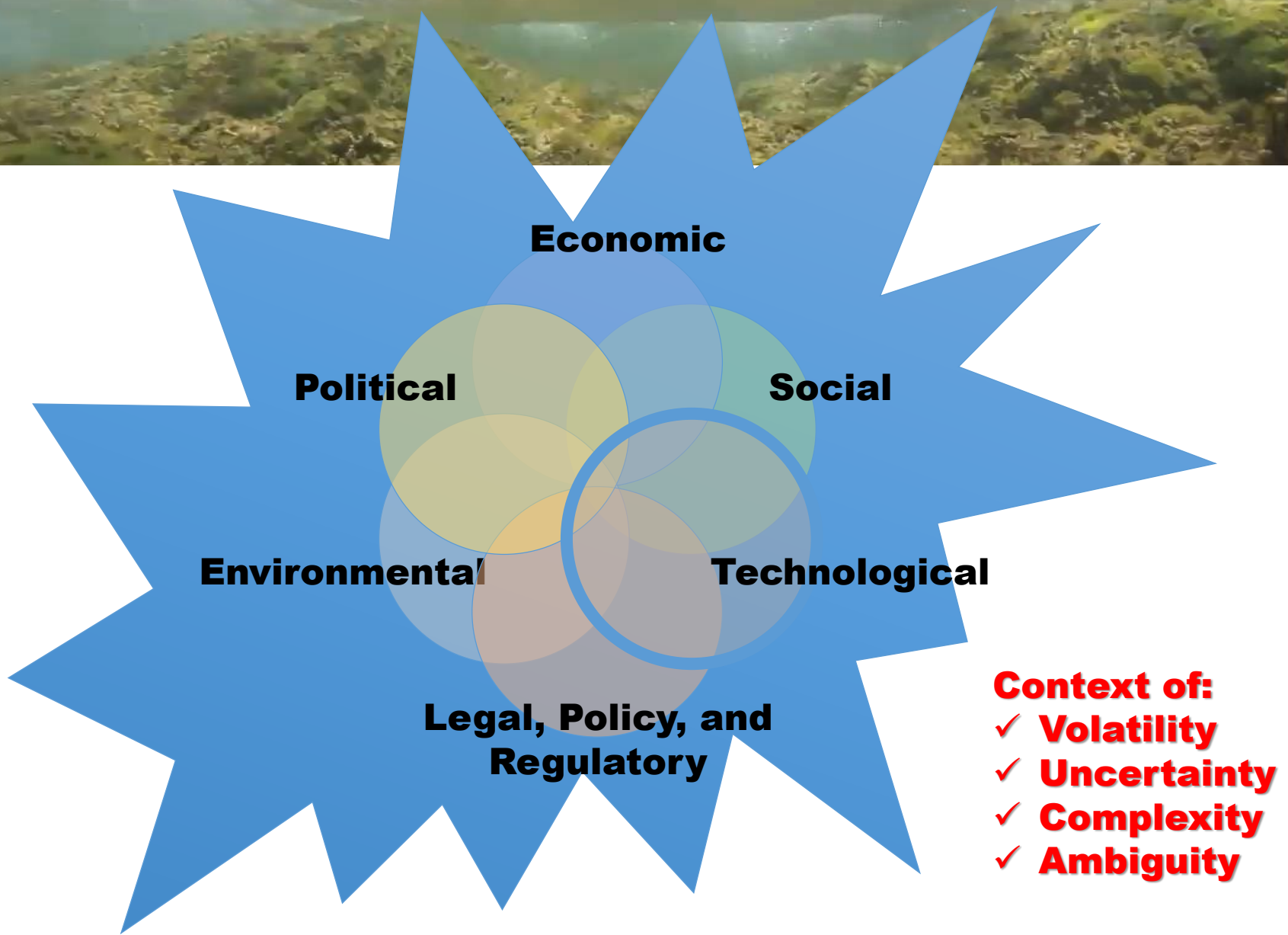
- Explore challenges identified in the first two forums:
 1. communication,
 2. workforce education,
 3. information management,
 4. data access and research issues
- Focus on partnerships and funding
 - State Water Implementation Fund for Texas(SWIFT)
 - State Revolving Loan
- 60 participants
- November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

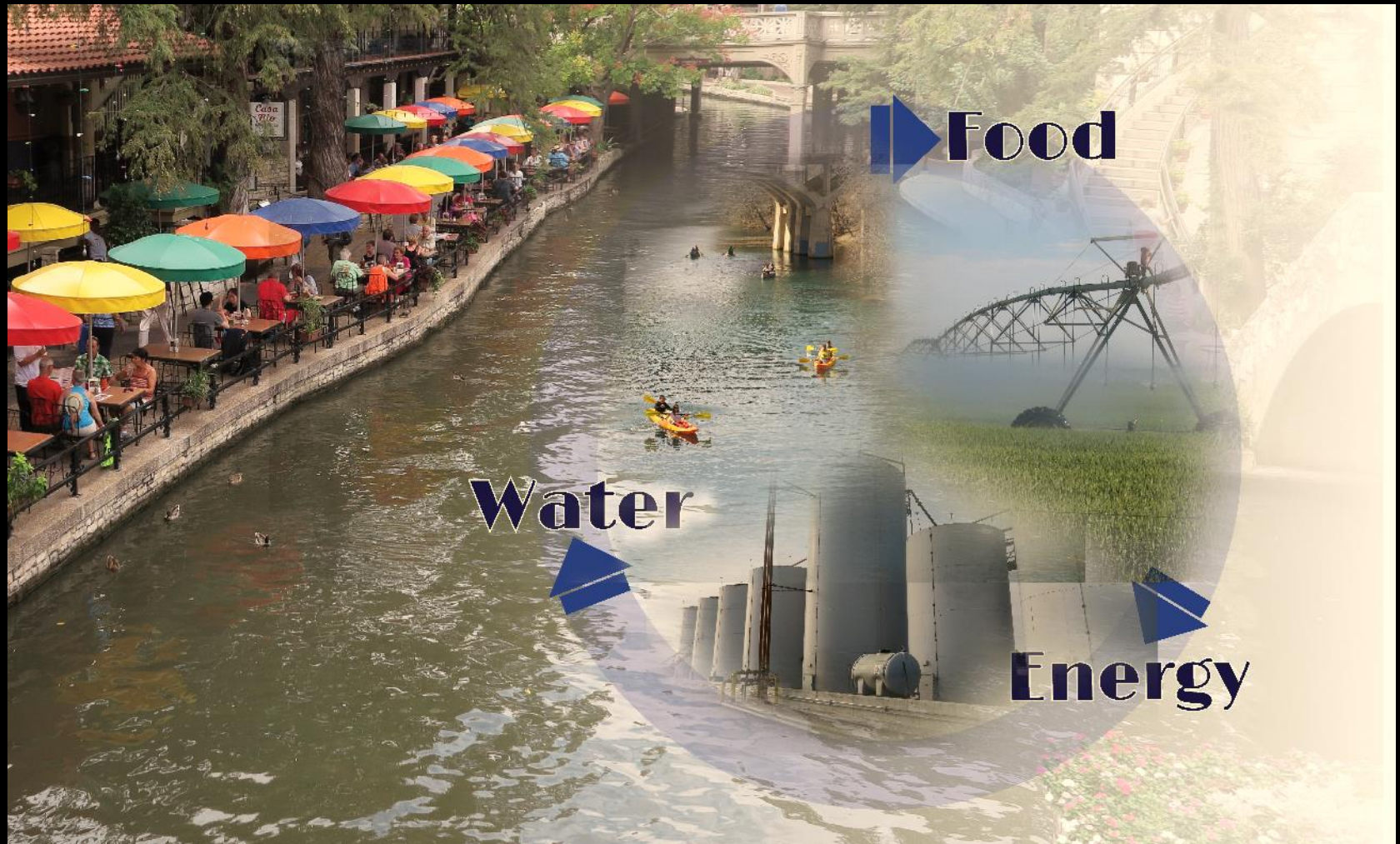




Obstacles to Success

- 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

- Education and research in these areas is fragmented and generally unconnected.
- Higher education 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

The Water Roadmap Forums



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 Texas Water Roadmap Forums


Acknowledgements

- National Science Foundation Research Coordination Network on Climate, Energy, Environment and Engagement in Semiarid Regions
- Wells Fargo Foundation
- Meadows Foundation
- Texas Research and Technology Foundation
- Water Institute of Texas
- AccelerateH2O
- Meadows Center for Water and the Environment
- STAR Park at Texas State University
- The Texas A&M University System
 - Area 41
 - Institute for Water Resources Science and Technology, Texas A&M University-San Antonio.
 - Texas Water Development Board
 - National Science Foundation Coupled Natural & Human Systems Grant #DEB-1518541
 - Cynthia & George Mitchell Foundation
 - Texas Water Research Network

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."


Texas Water Technology Roadmap Forum

Held February 25, 2015

— Dr. David Schmitt, Texas Water Tech Roadmap Forum, November 17, 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."

Resource Nexus: Water, Energy, Food Water Forum & Technology Roadmap




San Antonio, TX November 17-18, 2015

— Dr. David Schmitt, Resource Nexus Water Forum, November 17, 2015

WORKFORCE EDUCATION, DATA, & RESEARCH

2016 Texas Water Roadmap Forum



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

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

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

— Dr. Cynthia Manning, Workforce Education, Data, and Research, November 29, 2016

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