Strengthening Transboundary Water Security
Adaptive Management to Reduce Climate Change Vulnerability

Robert G. Varady
Christopher A. Scott
Udall Center for Studies in Public Policy
The University of Arizona

Presented at the joint session
“Water Security; science, systems and policy”
World Water Congress XV – International Water Resources Association
Edinburgh, Scotland – 26 May 2015
Mileposts for today’s talk

• What do we mean by “water security” and “adaptive capacity”?  
• Transboundary asymmetries  
• Water-climate research in border regions  
• Changing institutions  
• Transboundary science-policy dialogues for climate mitigation & adaptation  
• A water security network in the arid Americas and implications for elsewhere
What is “Water security”? 
Working definitions

Every person has access to enough **safe water at affordable cost** . . . **natural environment is protected** and enhanced. River basins & aquifers must be managed **sustainably** (Global Water Partnership, 2000).

[Water] . . . for **health, livelihoods, production**, . . . acceptable level of **water-related risks** to people, environments and **economies** (Grey & Sadoff, Water Policy, 2007).

Protection against **hazards such as floods and droughts** (UNESCO 2008).

. . . a **climate of peace and political stability** (UN Water 2013).

Adequate quantities and qualities . . . in the context of current and **future global change** (Scott, et al., 2013).
Adaptive capacity = Ability of a social or environmental system to:
• Respond to or recover from internal/external demands of environmental change
• Cope with consequences
• Engage in “social learning” leading to a desirable system state & reduced vulnerability

—Wilder, et al., 2013
Transboundary asymmetries

- Culture, language, economy
- Physical infrastructure & human resources
- Legal systems, regulation, enforcement
- Administration
- Robustness of institutions & civil society
Trajectory of water-climate research in border regions

• New institutions
• Involvement by stakeholders
• Adoption of “soft-path” approaches
• Joining of inter-related agendas—water policy & climate information
• Consensus on how to conduct water-climate research in border regions
• Need to distinguish between risk, vulnerability, mitigation, adaptation
Common themes in research on water, climate, vulnerability, adaptation

- Essential role of institutions
- Cooperation built on trust
- Public participation
- Information flows & access to comparable data
- Communities of practice that include transboundary institutions
- Thinking from as many disciplines and perspectives as possible
- Added degree of complexity of dealing with transborder setting
- Centrality of human agency
Changing institutions

• Institutions also must be able to adapt
• Are institutions . . .
  o Using best available data & research?
  o Well-connected to scientists & other researchers?
  o Employing current technology?
• Do they . . .
  o Have trained personnel?
  o Have flexibility & resilience?
  o Factor stakeholder input?
Changing institutions (2)

• Are they
  o Transparent?
  o Financially viable?
  o Employing sustainable policies & procedures?
  o Backed by appropriate authority?
  o Sharing best practices?
  o Adapting to climate change & other environmental forces?
Ingredients of effective transboundary science-policy dialogues for climate mitigation & adaptation

- Public participation
- Robust communities of practice
- Strong institutions, esp. binational/multinational institutions
- Interconnectedness of water management & climate mitigation/adaptation
- Access to comparable data & reliable information flows
- Significance of governance and soft-path solutions
- Need for trust
Water Security in the Americas
The International Water Security Network (IWSN)

Relationships & capacity-building
• Researcher-scientist networks
• Postgraduate student involvement
• Stakeholder engagement & workshops
• Development of communities of practice

Research
• Regional/local projects & transboundary settings
• Development of water-security index
• Identification of hotspots

IWSN partners
• Univ. of the West of England
• Monash Univ./South Africa
• Univ. of Arizona, Udall Center
Some implications from our Americas experience

- Framing water security & adaptive capacity
- Incorporating transboundary institutions
- Identifying & engaging key players
- Cross-border complications
- Factoring sectoral inter-connectedness
- Assessing, measuring, enhancing, security & capacity
Water Security and Adaptive Capacity in a Transboundary Context

The project is funded by Lloyd’s Register Foundation, a charitable foundation helping to protect life and property by supporting engineering-related education, public engagement and the application of research.

For more information, see: www.lrfoundation.org.uk