Changing Mindsets to Promote Sustainable Water Operations under Climate Change

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Presented to:
MSSC
Collaborations Key to Advancing
Research in Water Supply Diversification
And Sustainable Utility Operations

February 20, 2014

Changing Mindsets to Promote Sustainable Water Operations under Climate Change

- WaterRF Project #4264

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- Joint Sponsor: New York State Energy Research and Development Authority

- Research Team: Stratus Consulting and Clean Water America Alliance
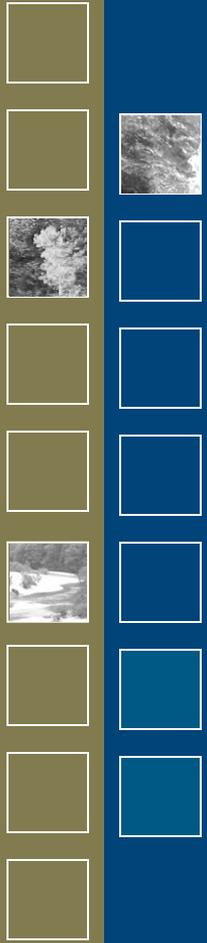
Research Question

- Challenges to providing safe, clean water
  - Aging infrastructure
  - Population growth and development
  - Climate change
  - Changes in energy costs
- How to address these challenges
  - Sustainable water operations
  - Change culture at utility, government, societal levels

Objectives

- Framework to change mindsets toward implementing sustainable water infrastructure and operations

- Guidance for sustainability water champions at water utilities

- New title: *Changing Organizational Culture to Promote Sustainable Water Operations: A Guidebook for Water Utility Sustainability Champions*

Main Topics

- Sustainability, culture change, and the water utility industry
- Assessing capacity for culture change
- Developing a strategy for culture change

Sustainability in the Water Sector: What is it?

- "…act in a manner that meets the needs of the present in ways that are economically viable, environmentally sound, and socially equitable, while ensuring that future generations will have resources to do the same." *Brundtland Commission*

- "…sustainable water infrastructure integrates traditional utility components with the protection and restoration of natural systems, conservation and efficiency, reuse and reclamation, decentralized technologies, green infrastructure, and low impact development…resulting in a triple bottom line of economic, social, and environmental [benefits]." *Aspen Institute*

Examples of Sustainability Initiatives in the Water Sector

- Green infrastructure
- Land use
- Transportation
- Water conservation
- Sustainable water facilities
- Education and outreach
- Other (e.g., biosolids management, utility-wide sustainability planning)

Sustainability in the Water Sector: What are the Challenges?

- □ Technological
- □ Economic and financial
- □ Political
- □ Regulatory
- □ Legal
- □ Public perception
- □ Organizational culture (aka "mindsets")

Mindsets = Organizational Culture

Organizational culture is a "*pattern of basic assumptions that a given group has invented, discovered, or developed in learning to cope with its problems of external adaptation and internal integration, and that have worked well enough to be considered valid, and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems.*"

Schein, 1984

Sustainability and the Challenge of Cultural Change

- Organizations trying to implement sustainable development find conventional operations challenged
- Commitment to sustainability requires redesign of organizations and basic operating practices
- Especially acute in water sector

What Water Utilities Tend to be…

- Large technical systems where change requires much time because of the material longevity and strongly established institutional and professional expertise structure

- Organizations in which incremental innovations are preferred, and systems undergo continuous improvement rather than radical restructuring

What Water Utilities Need to be…

- □ Comfortable with uncertainty as a "normal" condition of operations
- □ Comfortable with "solutions" as adaptive and experimental
- □ Disposed to accept flexible operating systems
- □ Willing to embrace functional integration
- □ Willing to maintain open flows of information
- □ Comfortable with extensive operational collaboration with external partners

Hence, the Challenge…

How do champions of sustainability facilitate deep-seated and lasting change in an organizational environment marked by conservatism and a strong bias for incrementalism and operational consistency?

Approach

- Literature review
- Utility interviews
- Expert workshop

Organizational Capacity for Change

The research team operationalized "changing mindsets" in terms of a construct known as organizational capacity for change (OCC)

- OCC is a broad and dynamic capability that allows an enterprise to adapt old operating models to address new contingencies as well as to create new capabilities
- OCC is a composite of multiple attributes demonstrated to influence organizational stability or propensity for change
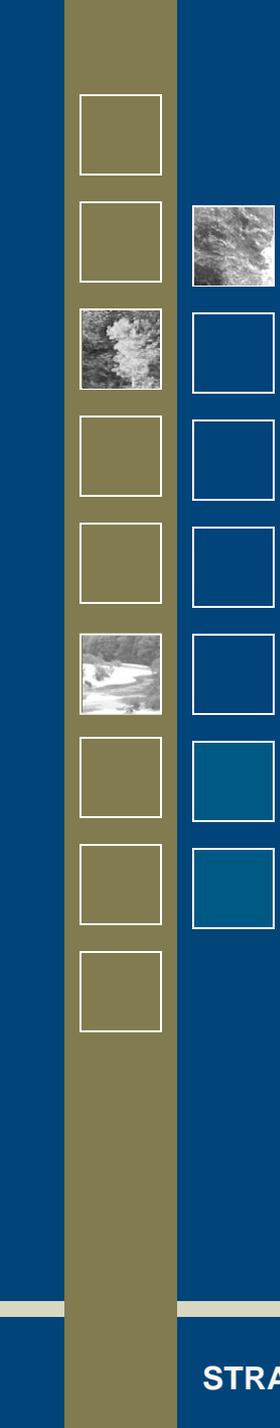
Attributes that Influence Organizational Capacity for Change

Internal to the organization
- Organizational structure
- Learning mechanisms
- Staff motivation
- Leadership style
- Leadership issue inclination

Attributes that Influence Organizational Capacity for Change (cont.)

- □ Management information system capacity
- □ Technical capacity
- □ HR practices
- □ Budgetary and financial models and systems
- □ Funding

Attributes that Influence Organizational Capacity for Change (cont.)

External to the organization

- Stakeholder and customer receptivity
- Policy and legal environment
- Regulatory restrictions

So to Remind,

- □ We're talking about water utility cultural change

- □ We've argued that different cultures have different capacities to embrace significant change

- □ And we've argued that various organizational attributes influence whether, how fast, and how deeply an organization can change

# Assessing Capacity for Organizational Cultural Change

For each attribute, use rubric to determine whether it is:

- Likely to facilitate transformation toward sustainable operations (Green),
- Likely to have an indeterminate or mixed influence on transformation toward sustainable operations (Yellow), or
- Likely to constrain transformation toward sustainable operations (Red).

Example of Self-audit Matrix Entry

Table 5. Organizational culture change self-audit matrix			
ATTRIBUTE	Likely to facilitate	Indeterminate or mixed	Likely to constrain
Organizational Structure	The utility exhibits a clear tradition and legacy of cross-unit interaction. Such interaction has occurred without policy change or protracted executive focus. The utility has historical examples of significant change. The utility may already include environmental or sustainability-focused staff in "operations" units. Staff characterizes the organization as "open," "adaptive," or "flexible."	Cross-unit interaction has occurred, but may be dependent on external imposition or intensive executive focus.	The utility is characterized by rigid demarcations of activity that tend to restrict cross-unit activities that would support a sustainability initiative. Little or no history of significant organizational change. Environmental or sustainability focused staff are employed only in non-operational units. Staff members characterize the utility as "conservative."
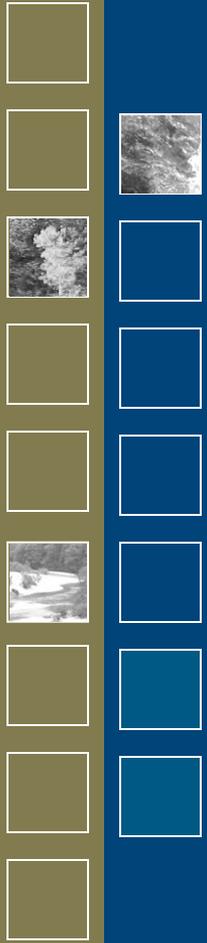
Select Attributes for Change

- Balance proposed sustainability activities with organizational capacity for change
- Considering yellow and red attributes:
  - Which attributes, if targeted, are most likely to facilitate efforts to achieve meaningful change?
  - Which attributes, if ignored, are most likely to impede efforts to achieve meaningful change?
  - Which attributes are likely impossible to change?
  - Should change in some attributes precede interventions in other areas?

Select Attributes for Change (cont.)

Weighted, multi-attribute matrix to help formalize selection of attributes

- Select assessment criteria (e.g., anticipated impact of the change)
- Assign rating (1-5) to each attribute (1 = changing attribute will have minimum impact; 5 = major impact)
- Prioritize each criterion
- Calculate ranking score

Select Attributes for Change (cont.)

Table 7. Sample Matrix to Compare Attributes for Culture Change						
Attribute	Attribute "Color"	Time to Accomplish	Staff Knowledge, Ability, Values	Impact of Change	Successful Examples	Ranking Score
Leadership	Yellow	4 x 1 = 4	4 x 0.5 = 2	5 x 1 = 5	5 x 0.3 = 1.5	12.5
Organizational Structure	Yellow	3 x 1 = 3	3 x 0.5 = 1.5	4 x 1 = 4	5 x 0.3 = 1.5	10.0
HR Practices	Red	2 x 1 = 2	2 x 0.5 = 0.5	4 x 1 = 4	2 x 0.3 = 0.6	7.1

Select Tools to Address Designated Attributes for Change

- *Organizational tools:* policies, training, HR incentives, improve management information systems, reorganize utility, revision of decision constructs (e.g., adopt life cycle costing)

- *Communication tools:* engage staff, communicate with staff, support inter-staff communication, communicate with leadership, community programs, stakeholder forums

- *Educational tools:* formal education, informal education, continuing education and training

Table 8. Organizational Tools and Methods Used by Water Utilities in Support of Sustainable Operations

INTERNAL TOOLS

Revise sustainability policies and plans
- Enact board or executive sustainability policies
- Integrate sustainability initiatives with long-range/comprehensive planning process

Enhance leadership
- Executive coaching
- External pressure
- Replace managers and/or executive leaders

Revise HR structures and incentives
- Align reward and incentive structures to match desired behaviors and targets
- Establish cross-organizational performance objectives
- Develop new or revised position descriptions
- Recruit new staff
- Revise performance agreements

Revise financial and accounting systems and policies
- Dedicated budget line
- Extramural funding
- Innovative financial instruments
- Train for and adopt life-cycle and/or full cost accounting models
- Train for and use Triple Bottom Line (TBL) accounting systems

Revise business practices and policies
- Conduct corporate reporting
- Seek rate increases
- Sustainability-focused fees
- Reorganize utility
- Work with contractors or consultants

Revise social and cultural policies
- Allow and/or encourage space and time for networking
- Cross-departmental units or teams, executive committees, staff working groups

Improve IT systems
- New and expanded platforms
- Revise IT system business rules

EXTERNAL TOOLS

Coordinate policy, regulatory, legal issues
- Craft supporting ordinances
- Facilitate enactment of overarching sustainability policies
- Ongoing negotiation

Table 9. Communication Tools and Methods Used by Water Utilities in Support of Sustainable Operations

INTERNAL TOOLS

Engage staff in sustainability
- Assign staff roles in sustainability decision-making or implementation
- Organize facilitated venues to imagine new ways of doing business
- Commit utility staff time to the role of internal communications
- Identify staff who have or will become champions for sustainability

Communicate directly with staff
- Early and frequent one-on-one/face-to-face communication
- Hold staff focus groups
- Articles in corporate newsletters

Encourage inter-staff communication
- Encourage participation in social networking forums
- Use change agents, internal networks, communities of practice
- Hold employee meetings and brown bag lunches

Communicate directly with leadership
- Leader persuasion

Other
- Establish communication guidance and tools

EXTERNAL TOOLS

Meetings with stakeholders
- In-person town hall meetings
- Meetings with affected community members
- Regular roundtable meetings with community stakeholder groups
- Meetings with industry and commercial stakeholder groups

Community or customer surveys
Electronic vehicles
Dedicated website
- Mobile applications
- Social media
- E-newsletters
- Online chats with utility staff or leaders

Marketing and print media
- Branding mechanisms
- Ads in public places
- News copy and press releases
- Bill stuffers

Community programs
- Sustainable product giveaways
- Community service projects
- Community events
- Community alerts and advisories (e.g., on flooding or CSO events)
- Unconventional media (art projects, poetry, music)
- Recognize stakeholder contributions to sustainability

Reporting
- Sustainability reports
- Guidance documents

Partner with stakeholders
- Advisory panels
- Partner with other agencies
- Partner with regional councils and other utilities
- Partner with stakeholders/outside community
- Joint ventures with outside organizations and businesses

Table 10. Educational Tools and Methods Used by Water Utilities in Support of Campaigns to Achieve Sustainable Operations

INTERNAL TOOLS

Provide information on sustainability
- Develop disciplinary and interdisciplinary clearing houses and/or bodies of knowledge
- Guidance documents for utility staff and managers

Training and continuing education
- Utility staff and supervisor training and certification
- Information products for internal training and education
- Training on social media and other types of electronic communication tools
- Encourage employees to enroll in classes at local universities or through on-line courses
- Partner with other utilities to provide training
- Partner with local universities

Informal education opportunities
- Tours of utility facilities
- Implement sustainability examples on utility grounds

EXTERNAL TOOLS

Primary and secondary school programs
- Curriculum on water sustainability and related water issues
- Science fairs
- Presentations to schools, recreation centers, and other organizations
- Utility internships for high school students

College and graduate school programs
- Curriculum on water resources management
- Speakers on specific water sustainability topics
- Utility internships for college students

Community education (for community groups, students, and other organizations)
- Provide utility tours and field trips
- Sponsor contests
- Distribute sustainability newsletters
- Develop information products for training and education (flyers, videos, brochures)
- Provide training workshops and speakers

Guidance documents
- For teachers (e.g., hands-on activities for school projects)
- For utility collaborators (e.g., on green infrastructure techniques)

Partner with stakeholders
- Local agencies whose goals align with water sustainability (e.g., transportation, parks and recreation, finance departments)
- Other utilities, NGOs, and other organizations in the region

Selecting Tools for Change

- ❑ Attribute(s) being targeted
- ❑ Target audience
- ❑ Phase of cultural change
  - Raising awareness
  - Developing a more in-depth understanding
  - Achieving a change in attitude
  - Engaging in ongoing dialogue and continuing education

Tool Selection Matrix: Identification Instrument

| INTERNAL OR EXTERNAL	INITIAL PHASE OF CHANGE	TOOL	ATTRIBUTE											
			Leadership Style and Issue Inclination	Organizational Structure	Learning Mechanisms	Staff Motivation	Information Management System Capacity	Technical Capacity	Human Resources Practices	Budgetary and Financial Models and Systems	Funding	Stakeholder and Customer Receptivity	Policy and Legal Environment	Regulatory Restrictions
COMMUNICATION TOOLS														
Internal		**Engage staff in sustainability**												
Internal	Yes	Assign staff roles in sustainability decision-making or implementation		Yes	Yes	Yes								
Internal		Organize facilitated venues to imagine new ways of doing business		Yes		Yes		Yes						
Internal	Yes	Commit utility staff time to the role of internal communications		Yes		Yes		Yes						
Internal		Identify staff who have or will become champions for sustainability				Yes								
Internal		Implement sustainability examples on utility grounds			Yes	Yes								
Internal		Develop communication and technical guidance and tools			Yes	Yes		Yes						
Internal		**Communicate directly with staff**												
Internal	Yes	Early and frequent one-on-one or face-to-face communication				Yes		Yes						
Internal	Yes	Hold staff focus groups				Yes		Yes						
Internal	Yes	Publish articles in corporate newsletters			Yes	Yes		Yes						
Internal		**Encourage inter-staff communications**												
Internal	Yes	Encourage participation in social networking forums and communities of practice			Yes	Yes								
Internal	Yes	Hold employee meetings and brown bag lunches		Yes		Yes		Yes						
Internal		**Leadership communication**												
Internal	Yes	Persuade leadership	Yes			Yes								
Internal	Yes	Persuasion by leadership	Yes			Yes								

Tools Selection Matrix: Communication Tools

ID#/Tool	Cultural Change Attributes	Description	Issues and Observations	Examples and Links
INTERNAL				
Engage staff in sustainability				
28. Assign staff roles in sustainability decision-making or implementation	Organizational structure Learning Mechanisms Staff Motivation	In most cases of organizational transformation, it is effective for utility managers to identify teams to help design and implement new programs.	Providing staff with leadership roles increases their sense of inclusion and their motivation to be a part of the change. Can require considerable planning time.	When the Alexandria Sanitation Authority made the transformation from a fully manual to a fully automated system, the utility integrated staff into different design teams. These employees had a role in the project and then held monthly meetings to share information. They'd attend workshops, meet with their colleagues, share information, and provide input on design. The utility selected champions as well as staff who might be resistant to the change.
29. Organize facilitated venues to imagine new ways of doing business	Organizational structure Staff motivation Technical capacity	Use of neutral, outside facilitators can help staff think outside the box and imagine new ways of doing business.	A facilitated process could be time-consuming and expensive. Management must think carefully about the process and establish reasonable expectations; for example, staff must understand how recommendations from the facilitated process will be addressed.	Many of the utilities we spoke with mentioned the need for culture change as a prerequisite for achievement of lasting sustainability. As an illustration, the Metropolitan St. Louis Sewer District (MSLSD) is in the midst of a cultural transformation with regard to storm water management. When this transformation first began, there was significant internal and external resistance to changing time-honored standards, practices, and roles. MSLSD has used a range of tools to address this issue, including use of outside facilitators to conduct charrette exercises.
30. Commit utility staff time to the role of internal communications	Organizational structure Staff motivation Technical capacity	This can be accomplished formally by dedicating a utility staff position to internal communications with staff, or more informally by designating existing staff to take on the role of communications liaison.	Helps ensure continual and thoughtful communication among utility employees by someone with enthusiasm and relevant expertise. As one utility expressed it, we are "never done trying to communicate." Can be expensive if a new position is created.	When transforming their utility to evaluate and improve productivity, King County added a full-time position devoted to internal communication. The Philadelphia Water Department (PWD) is using internal newsletters, videos, social media, and strategic planning to better communicate with utility employees.

Parting Thoughts

- Assess your utility's capacity for cultural change
- Review your utility's contemplated portfolio of sustainability activities in light of its capacity for cultural change
- Designate the attributes that must be changed in order to support a meaningful water sustainability program
- Identify and select organizational, communication, and education tools that can best address these attributes for change
- Develop an implementation schedule for change that takes into account the utility's capacity for cultural change vs. its desired portfolio of sustainability activities
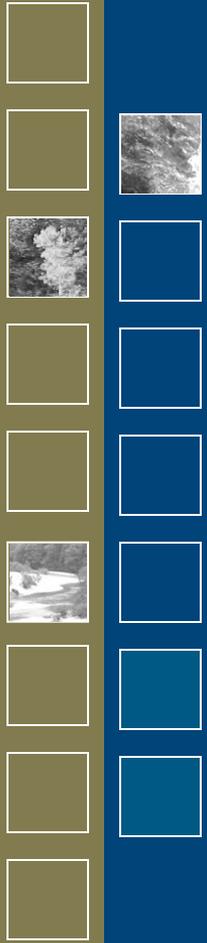
Questions?

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