Scaling Knowledge Innovation to Smaller Water Providers: A Focus on Communities of Practice

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Abstract

The past 2 decades of research has demonstrated the value of co-production as a process that creates information that is usable to decision makers. However, research has also shown that those organizations that are already larger, more technically-capable, and located closer to the sources of new information are more likely to engage in co-production with boundary organizations. The question then arises of how smaller entities, who may actually have greater need for capacity, can benefit from investments in new science aimed at improving decision making for water management. In this project we conducted 5 case studies of the information use preferences and practices among small-scale water systems (small municipalities and Water Conservancy Districts) in the Upper Colorado River Basin to understand the opportunities and constraints for the uptake of new sources of information. Like previous work, results indicated that scale, skill, understandability, and lack of capacity limited the use of available information. Furthermore, entities did not engage in co-production with knowledge-related boundary organizations to any extent. However, small water providers did consistently mention the value of contact with other water systems in the area, and the value of being able to reach out to certain key individuals who were looked to as trusted sources of opinion on current information products and trends. Managers emphasized the importance of experience in operating a water system and involvement in operations as critical factors that engendered trust in these key individuals. Finally, certain water systems were seen as leaders in the local area, and constantly mentioned as sources of information and innovative ideas. These findings suggest the importance of both key individual practitioners in pioneering and disseminating new information, as well as more broadly the role of a community of practice in reaching small water providers. Implications for boundary organizations and emerging networks are discussed.

Scaling Knowledge Innovation to Smaller Water Providers: A Focus on Communities of Practice



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Western Water Assessment and Environmental Studies, University of Colorado Boulder PRESENTED AT:

WHAT DETERMINES INFORMATION USE AMONG SMALL WATER SYSTEMS?



We studied 5 small water systems on Colorado's Western slope to understand how smaller systems use information to manage drought.

BACKGROUND AND APPROACH

- · Many studies of use of information by water systems have focused on larger urban settings
- There is a need to understand how smaller systems use information to cope with drought and how they view new sources of information

This study examined the following aspects of small montane water systems:

- Factors motivating or constraining a change in how information is used
- · Managers' existing knowledge networks and information sources
- · Aspects of information sources that influence their likelihood of adoption

Methods:

- Selected 5 small water systems across a variety of contexts on the Western Slope of Colorado. Case study approach with interviews and documents.
- Conducted semi-structured in person interviews (n=14) with nearly all of the key decision makers in these very small systems in spring 2017
- · Transcription and coding in NVivo by lead author

RESULTS - INFO USE AMONG SMALL WATER SYSTEMS IN WESTERN COLORADO

Properties of small water systems in case study:

Organization type	Business type	Customer use	Storage	Total water/people served
Water conservancy district	Wholesale	Irrigation Augmentation	Total reservoir storage 44,000 AF	26,000 AF in annual contracts
Water conservancy district	Retail	Domestic use	Total reservoir storage 11,960 AF	33,000 accounts 80,000 people 10,000 AF per year
Water conservancy district	Wholesale	Irrigation Augmentation	Total reservoir storage 108,087 AF	1857 AF in augmentation 106,230 AF available for irrigation (amount used varies year to year)
Municipality	Retail	Domestic use Irrigation	No storage	3500 accounts 2000 AF per year
Municipality	Retail	Domestic use Irrigation	No storage	10,000 people 3377 AF per year

Findings:

- 1. Factors determining information use for drought:
- · Intrinsic factors: scale, skill, and understandability
- Contextual factors: capacity, experience with drought, generational turnover
- 2. Features of small water systems' current knowledge networks:
- Interpretation by peers
- Trust those who have direct experience using products and sources of info
- 3. Big differences between big and small systems:

Small systems have:

- Limited staff capacity
- · Limited ability to engage with boundary organizations and portals
- Trust in hands-on experience
- Limited or no ability for co-production

KEY TAKEAWAYS

- · Small water systems draw primarily on their professional networks and standard agency products for information
- Managers value "hands on" experience of other water managers and preferentially trust their interpretation and experience with information products -- in other words they look to their peers at successful (often larger) organizations for guidance
- Diffusion of innovation through trusted peer networks may be a more appropriate model of new tool and information uptake rather than boundary organization activities
- Future work on designing and disseminating usable science for smaller, lower capacity systems could focus on how to engage leaders and "early adopters" within communities of practice that these smaller systems will access and emulate

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ABSTRACT

The past 2 decades of research has demonstrated the value of co-production as a process that creates information that is usable to decision makers. However, research has also shown that those organizations that are already larger, more technically-capable, and located closer to the sources of new information are more likely to engage in co-production with boundary organizations. The question then arises of how smaller entities, who may actually have greater need for capacity, can benefit from investments in new science aimed at improving decision making for water management. In this project we conducted 5 case studies of the information use preferences and practices among small-scale water systems (small municipalities and Water Conservancy Districts) in the Upper Colorado River Basin to understand the opportunities and constraints for the uptake of new sources of information. Like previous work, results indicated that scale, skill, understandability, and lack of capacity limited the use of available information. Furthermore, entities did not engage in co-production with knowledge-related boundary organizations to any extent. However, small water providers did consistently mention the value of contact with other water systems in the area, and the value of being able to reach out to certain key individuals who were looked to as trusted sources of opinion on current information products and trends. Managers emphasized the importance of experience in operating a water system and involvement in operations as critical factors that engendered trust in these key individuals. Finally, certain water systems were seen as leaders in the local area, and constantly mentioned as sources of information and innovative ideas. These findings suggest the importance of both key individual practitioners in pioneering and disseminating new information, as well as more broadly the role of a community of practice in reaching small water providers. Implications for boundary organizations and emerging networks are discussed.

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