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**Abstract:** Recent world experience has increased awareness of the risks and consequences of water use decisions and the need for a new approach to decision-making that places greater emphasis on the involvement of local communities and communities of interest. Dealing with complexity, uncertainty and risk emerges as a shared need and responsibility for government and communities, highlighting the importance of mutual learning, shared knowledge and systems thinking. Local knowledge and effective long-term policy-stakeholder-research partnerships can support social learning and a more adaptive and resilient approach to irrigation, water and catchment management. In this paper we discuss challenges and successes the Cooperative Research Centre for Irrigation Futures (CRC IF) System Harmonisation program experienced working with five irrigated regions across Australia. We also draw from these different regional experiences some common lessons for harmonising irrigation systems and confronting complex water challenges.

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The role of engagement, collaboration and co-learning in delivering system harmonisation

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Introduction

Recent world experience has increased awareness of the risks and consequences of water use decisions and the need for a new approach to decision-making that places greater emphasis on the involvement of local communities and communities of interest. Dealing with complexity, uncertainty and risk emerges as a shared need and responsibility for government and communities, highlighting the importance of mutual learning, shared knowledge and systems thinking. Local knowledge and effective long-term policy-stakeholder-research partnerships can support social learning and a more adaptive and resilient approach to irrigation, water and catchment management.

In this paper we discuss challenges and successes the Cooperative Research Centre for Irrigation Futures (CRC IF) System Harmonisation program experienced working with five irrigated regions across Australia. We also draw from these different regional experiences some common lessons for harmonising irrigation systems and confronting complex water challenges.

Discussion

There is a need to ensure that management of Australia’s water resources takes place within a strategic, ecologically, culturally and economically sustainable framework. The Australian Government’s ten year $12.9bn Water for the Future initiative, and activities such as the development of a Murray Darling Basin (MDB) Plan, Sustainable Yields Assessments of the MDB, Northern Australia, Tasmania and southwest Western Australia, the National Irrigation Modernisation Program, and the Northern Australia Land and Water Taskforce are in recognition of the increased public, scientific and political focus on irrigation practice and water management in Australia.

The CRC IF System Harmonisation program involved researching the interfaces and relationships between irrigation and the ecological, social, economic and institutional systems of the regions within which irrigation takes place. Working with the communities and various levels of government, and guided by representative and skills-based steering groups, researchers developed new knowledge, tools and processes to support strategic thinking and decision-making about irrigation and water management. The five focus regions were the lower Burdekin (north Queensland), Macintyre Brook (southern Queensland), Western Sydney (New South Wales), Coleambally (New South Wales), and Limestone Coast (South Australia).

As issues of complexity, uncertainty, resilience, risk and the importance of adaptive management emerged through the research, the need for a whole-of-system approach to support communities and decision-makers act in a comprehensive, inclusive and transparent way became more apparent. The differences between regions and their readiness and capacity to adapt and change also became apparent, with each region focussing on different priorities and following a different pathway.

In north Queensland, the Burdekin Water Futures (BWF) group invested in development of an on-line Lower Burdekin Knowledge Platform (LBKP) to help develop a synthesised understanding of the biophysical, social, economic and governance issues relating to ecologically sustainable development, and to progressively understand and tell the story of how their catchment operates. Initially the focus of the LBKP was on establishing a content
management system to provide improved organization of data and information available to support understanding and management of the catchment. Focus then shifted more towards the concept of a knowledge space, the aim being to combine the strengths of the BWF learning network with enhanced organization of information and knowledge through the LBKP to improve capability for decision making regarding complex water management issues (Camkin et al, 2009).

In Macintyre Brook the community’s desire to build sustainability into their management and reporting arrangements lead to greater producer interest in how the catchment was characterized and monitored. The community’s need to manage risks associated with the adoption of particular water management policies encouraged researchers to develop tools that led to immediate enhancement of local water management.

The approach taken in Western Sydney and Macintyre Brook were different again, though with some commonalities to other regions, particularly the lower Burdekin. The key issues were identified through an intensive engagement process that established the stakeholders with strategic water management interests or hands-on water management interests. Once identified, researchers deliberately created a low risk space for continuing engagement to occur by initially focusing on the less contentious areas of understanding the water cycle (including its biophysical, economic, social, institutional, environmental and management parameters). This allowed (albeit in some cases slowly), the emergence, recognition and acceptance of important issues that needed investigation to enhance stakeholder understanding and decision-making capability in the region.

In the Coleambally and Limestone Coast regions the local communities were stressed from changes to water plans substantially reducing allocations. The researchers, Keremene and McKay, engaged in depth interviews with all groups in the chain of management. They then created a method to express the values and issues. This is called Photo-story and used was used as an exhibition to inform city dwellers in Adelaide and will be published as a book. Community reaction to the Photostory process and outputs has been positive and this methodology appears to have good utility for capturing and representing the strong personal views and connections to water in different regions.

Conclusions

The CRC IF System Harmonisation program encouraged a systems approach to address complex irrigation and water management challenges. Experiences with the five irrigation regions discussed in this paper highlight the need and opportunity to improve the way we approach engagement, collaboration, data, information and knowledge. They point to the importance of effective local leadership and strong policy-research-stakeholder partnerships, in forms that recognise regional context, and how we might develop this interface to support co-learning for improved irrigation, water and catchment management.

References