Productivity Commission Inquiry into Australia's Urban Water Sector

Comments 27th October 2010 by Brian Head, University of Queensland

Introduction

The terms of reference of this Inquiry focus on efficiency considerations; I would prefer to think of these issues through the lens of effectiveness. The public interest objectives in the urban water sector are wide-ranging, and call for a comprehensive approach to protecting public health and safety, providing secure and reliable water services, having strong regard to environmental sustainability, and achieving these goals with demonstrable economic efficiency.

There have been urgent new challenges for water policy, planning and delivery in many cities around the world. Water policy in many jurisdictions has been marked by crisis response rather than steady long-term planning which anticipates the need to cope with volatility, uncertainty and unpredictable variations. In many countries the challenge for the urban water sector has been exacerbated by growing populations, diminishing groundwater, drought and severe variability in rainfall, climate change predictions of change in regional outcomes, and serious debates over the trade-off between competing uses – ecological, residential consumption, agricultural irrigation, and industrial uses. Governments and other stakeholders have engaged in considerable rethinking of goals, structures, processes, policies and programs.

In Australia the urban water reform process began with structural efficiency issues, corporatisation and associated governance arrangements; a further phase focused on economic efficiency in pricing and allocation; and recently the urban water sector entered a phase which requires clearer recognition that the processes to achieve sustainability goals involve multi-layered objectives (triple-bottom-line) and multi-stakeholder participation. This overall pattern of reform has been compressed into a short timeframe and placed great pressures on all key participants – political leaders, water utility leaders, departmental managers of water policies and programs, diverse industry sectors, urban planners, and residential consumers. There are contradictory directions at work, with

centralisation of authority and new legislated standards/rules (generally seen as necessary in order to promote reform), alongside the emerging need for diverse stakeholder input to address multiple goals and to facilitate behavioural changes in patterns of water consumption. Regulatory prescription alone is insufficient to achieve enduring change and innovative flexibility. The breadth of sustainability goals, and the range of technical, educational, economic and social adjustment strategies to promote these goals, point strongly to the need for collaborative and joined-up processes. The administrative culture of the water sector, based on technical expertise and precise operating procedures, is not always conducive to the new requirements and directions to achieve sustainable triple-bottom-line solutions.

I have attempted to distil a few key propositions to aid discussion of current strengths and weaknesses and the scope for further reform.

Basic propositions

- The structure of the urban water sector in Australia remains highly diverse, making generalisations difficult, but the quality of reporting on key aspects of operational performance is improving across the sector.
- The administrative culture of the water sector, based on technical expertise and precise operating procedures, is not always conducive to the new sustainability directions and the requirements for achieving sustainable triple-bottom-line solutions.
- The technical and professional skills required to lead and manage the urban water sector are increasingly diverse, and extend beyond engineering and management skills to a wide range of social, economic, ecological and health sciences.
- Water professionals are well networked through professional associations and informal networks; however this valuable networking is insufficient for ensuring that cooperative and innovative approaches are designed and implemented.
- Even in jurisdictions where there is a high level of organisational integration across the diverse functional elements of the urban water system[1], effective

[1] For example, planning and management for catchment land-use, dams and reservoirs, pipelines, water purification plants, sewerage and wastewater plants, stormwater management, reticulation to firms and households, retail and billing functions.

communication and close alignment among these functional elements remain major challenges; these challenges are even greater where there is substantial functional separation.

- In all jurisdictions, the core responsibility for developing and implementing integrated strategies for sustainability (including triple-bottom-line goals for water sustainability) is diffuse and uncertain.
- Water policy and management have demonstrated an ongoing capacity in recent decades for evolution and adaptive change, but the need for broad dialogue to optimise learning and to promote innovation is not clearly recognised in some jurisdictions.
- Future organisational cultures need to be aligned in two directions: firstly, to ensure high-reliability technical management and risk mitigation of water supply and water quality; and secondly, to facilitate *smart adaptiveness*, including:
    - knowledge, expertise and knowledge-sharing across disciplines;
    - learning capacity within each single organisation, between organisations, and across systems;
    - collaboration on key issues across stakeholders and organisations;
    - long-term planning capacity, including capacity to respond to shocks.
- There is insufficient research about the most effective methods for sharing knowledge among the stakeholder groups.
- The role of the National Water Commission in providing strategic policy advice and performance reporting frameworks under the National Water Initiative, and the role of the Productivity Commission in examining broad issues of efficiency and effectiveness, are highly valuable contributions to improved policies and better coordinated programs.

CONTEXT

The key organisational dimensions and challenges in urban water reform are closely grounded in the institutional histories of water planning and management in each jurisdiction. In recent years this history has been dominated by the water reform process in each jurisdiction and the associated restructuring of roles (Pigram 2007). At the same time there has been a parallel process of broader concerns about sustainability across the spheres of economic, social, environmental and natural resource outcomes, and concerns to establish triple-bottom-line approaches to monitoring and reporting (Dovers 2005). All of these trends have had deep implications for the changing skills and capacities of diverse water sector organisations, for the nature of their inter-organisational relationships, and for the possibility of organisational learning (Head 2010a).

In the coming years, issues concerning the provision of safe, reliable and affordable water (including various uses of recycled water) and issues concerning effective approaches to demand management, are best managed with the appropriate involvement of four key groups of stakeholders:

- firstly, the water professionals who plan and operate water systems, noting that water utilities comprise several professions (e.g. operations engineers, hydrologists, financial managers);
- secondly, the policy and regulatory decision-makers, noting that their organisational backgrounds may involve somewhat different perspectives;
- thirdly, expert consultants and independent science researchers, whether in universities or consultancy firms (noting that many social and technical disciplines are relevant, such as urban planning, public health, ecological sciences, law, corporate governance, economics and communications); and
- fourthly, the urban developers and the diverse consumers and users of water for different purposes, including domestic, industrial and agricultural.

These groups typically have different perspectives (see Garvin 2001; Steel et al 2004). Their different viewpoints and needs for information/support should be recognised in developing a comprehensive approach that warrants the trust and confidence of all stakeholders. The need for knowledge-sharing is well established in related fields of natural resource management and public health (e.g. Bosch, Ross & Beeton 2003;

Schaefer & Bielak 2006). In some respects the challenge for urban water reform is to face some of the same challenges that have been experienced in regional natural resource management (Head 2009a) and in rural water reform such as the MDB (Connell 2007), where the scale of shocks and adjustments have been severe and the need for new policy instruments very pressing.

BARRIERS

From the perspective of organisational culture and professional capacity, the current influences and constraints affecting further reform and innovation are closely linked to the increasing clash internationally between two paradigms for water systems – the traditional supply-driven technical system, and the new overlay of sustainability-driven innovation and cooperation (Gleick 2000). In international development, as noted by Gleick (2002: 373):

> The traditional hard-path approach has produced, and will continue to produce, enormous benefits, such as clean water supplies, irrigation and improved human health. But increasingly it is also spawning ecologically damaging, socially intrusive and capital-intensive projects that fail to deliver their promised benefits. The soft path requires governments, communities and private companies to collaborate to meet water-related needs, rather than merely to supply water…..

In the context of advanced industrial societies, these are complementary rather than exclusive choices. Nonetheless, there has been a notable shift over recent decades from an expert-bureaucracy model of water management towards a broader professional-managerial model in which organisations need to interact and collaborate to achieve several goals simultaneously. Engineering, economic, legal, ecological, public health and urban development issues cannot be sensibly tackled independently of each other. Overarching frameworks concerning ‘sustainable’ development need to be unpacked and interpreted in practical situations. Methods need to be found for allowing and facilitating the knowledge exchange and cooperation that is necessary for tackling the complex ‘wicked’ problems that seem to be intractable and ongoing (Head 2008a, Head 2010b, Head 2010d).

Some of these characteristics are outlined in Table 1 below.

Table 1: Water management styles – traditional and future

1970s	*2001 and beyond*
• Singular problem	• Inter-related problems
• Locality-based technical planning	• System-based spatial planning
• Solve today's problem	• Anticipate tomorrow's problems
• Disciplinary professional skills	• Interdisciplinary professional skills
• Engineers	• Engineers, biologists, public managers, spatial planners, etc
• Hierarchical, top-down	• Networks, participation

Source: adapted from Van der Brugge & Rotmans (2007), 261.

OPPORTUNITIES

The opportunities for reform and innovation, and pathways for moving forward, are not to be found solely in training expert managers to meet performance targets and in building better databases to improve evidence-based decision-making (Head 2010c), water planning and performance monitoring. The new and broader policy directions need to be supported by appropriate organisational design and organisational cultures. Without supporting cultures, and associated skills in knowledge-sharing and stakeholder engagement, the desired shift towards sustainability will be truncated and one-sided. This shift applies equally to political leaders and to professional managers, industry as well as community groups.

The high-level objectives of water sustainability and water security are increasingly defined in legislation. This is important to reorient the policy system, but more consideration is needed concerning the enabling conditions – standards, incentives, etc – that will facilitate the introduction of sensible innovations. Regulation can create the space for innovation and point towards desired objectives, but regulation cannot generate

the innovation process and cannot prescribe the scale at which changes can occur (from the micro/household level through neighbourhoods to sub-regional development scale).

Collaboration is a necessary mode of planning and management for the future, but the methods and techniques for collaboration are not easy and are likely to be more attractive to some groups than others (Head 2008b). The need to assess the risks arising from climate change provides major impetus for collaboration, both in relation to socio-economic and environmental adaptation strategies and in relation to greenhouse gas reduction strategies (Head 2009b).

Working productively with stakeholder groups is not 'core business' for most elements of the water sector, except for occasional consultation exercises concerning a specific project or plan. In future it will be important for engagement and collaboration to be more extensive and purposeful. To take one simple example, different stakeholder groups, including regulators, researchers and managers, have varied perceptions of risk and varied expectations regarding the likely level of consensus on water reuse issues (Baggett, Jeffrey & Jefferson 2006). The implications of this diversity need to be further explored as part of building a more diverse water system.

In regard to the availability of information about water issues, there is a massive amount of research and other data available but little is effectively communicated and accessed. Even among scientists, there is a range of views about the proper role of science in seeking to inform policy either directly or indirectly (Steel et al, 2004). The majority of applied scientists wish to influence natural resource policy and practice domains, but find it difficult to disseminate their work in ways most conducive to achieving this desired influence (Holmes & Clark 2008; Pannell & Roberts 2009). It would be useful to find productive ways to promote interaction and discussion of these findings, and for policy issues to be taken up directly by researchers. Little is known about how scientific findings can be most effectively communicated, accessed, and taken up in the 'managerial' sectors of water policy and planning, water regulation, and water operations management. There are political, organisational and cultural obstacles to accessing and making use of the findings on the part of policy and regulation officials.

In the era of water sustainability policy and practice, the role of *trust in institutions* becomes even more paramount (Hardin 2004; Kramer & Tyler 1996). Water

sustainability is an area of policy and practice where it is crucial to maintain widespread confidence and stakeholder trust in organisational expertise and in the sincerity of consultation and participatory opportunities. Trust can break down where decision-makers and advisors are seen to be less than fully competent in protecting public safety and long-term sustainability outcomes. Confidence is necessary in relation to the professionalism of water management and their scientific advisors (issues of technical expertise and breadth of knowledge); the quality of regulatory arrangements (appropriate standards, incentives and flexibility); and the quality of consultation and participation (legitimacy of governance arrangements).

Institutional arrangements for policy and regulation need to keep up with the insights emerging from R & D and from professional best-practice. The problem-solving capacities of the overall system will be undermined by (a) poor flows of information; (b) poor linkages between governmental and non-government stakeholder sectors; (c) poor alignment between science, policy and practice; and (d) lack of an integrated strategic framework under which water sustainable water resource management may be developed.

Some important aspects of integration have already occurred at a policy level through national strategies, standards and guidelines. For example, risk assessment and contingency planning is built into the standard operating procedures of water organisations. Water quality standards are specified and monitored. System features such as process design and optimisation, asset management and compliance monitoring are adopted within a broader context of business and environmental risk management (Pollard 2008). Given the unacceptable consequences of error and disruption to water services, system managers are moving from a risk-response framework towards a risk-preparedness and prevention framework. The implications of these new approaches for government policy and for water users remain to be explored.

European writers have speculated on the future feature of an integrated and adaptive water system, as outlined in Table 2 below.

Table 2: Expected features of integrated and adaptive regimes

Dimension:	***Integrated and adaptive regime features*:**
Management paradigm	Management as learning in complex adaptive systems
Governance style	Polycentric, horizontal, broad stakeholder participation
Sectoral integration	Cross-sectoral analysis identifies emergent problems and integrates policy implementation responses
Scale of analysis & operation	Trans-boundary issues addressed by multiple scales of analysis and management
Information management	Comprehensive understanding achieved by open, shared information sources that fill gaps and facilitate integration
Infrastructure	Appropriate scale, decentralized, diverse sources of design, adapted to regional context
Finances and risk	Financial resources diversified using a broad set of private and public financial instruments, and future risk strategies to be informed by public discussion

Source: based on Pahl-Wostl (2008): 9-11.

CONCLUSIONS

- That the Productivity Commission consider the value of convening, with appropriate experts for the NWC and stakeholder associations, a panel workshop on **Innovation** in the urban water sector, taking into account the ongoing need for overarching sustainability goals, for regulatory standards, and public accountability.
- That the Productivity Commission consider the value of convening, in conjunction with the NWC and relevant professional associations, an expert panel workshop on **long-term sustainability planning** issues across the urban water sector, including the need for collaborative processes for information-sharing.

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