

IMPROVING ARRANGEMENTS FOR URBAN WATER RESEARCH AND DEVELOPMENT IN AUSTRALIA: THE WORK OF THE PARTNERSHIP WORKING GROUP.

Background

On 26 September 2012, a national forum was conducted in Canberra to discuss opportunities to improve the way Australia goes about its urban water research and development (R&D) effort. The forum included voluntary representation from the 'four pillars' of urban water research and development in Australia: the water utilities; private sector firms; governments; and research providers.

There was a strong consensus at the forum that there was considerable scope to improve Australia's urban water R&D effort, particularly the processes by which R&D is planned, prioritised, funded, and shared among parties. It was agreed to establish a Partnership Working Group, including representatives of each of the four pillars, to carry forward work from the forum and to report back to a further forum in 12 months.

This report summarises the work of the Partnership Working Group (PWG), together with observations about the process and outcomes.

Urban water R&D: some perceived needs

Discussion at the first national Forum identified the following problems in urban water R&D in Australia:

- a lack of clarity in national R&D needs and goals
- non-systematic processes for identifying R&D needs and setting priorities among alternative research opportunities
- serious fragmentation of the national R&D effort
- a lack of transparency and dialogue among relevant parties
- lost opportunities for collaboration among parties with common interests
- failure to capitalise on Australia's R&D effort in support of Australian industry export and import-competing efforts
- difficulties in convincing stakeholders (e.g. regulators, ministers, consumers) of the value of expenditure on urban water R&D.

The Forum requested the PWG to seek to clarify national urban water R&D goals, and to develop options to advance collaboration among relevant parties, together with other practical suggestions to improve the national R&D 'system'.

Clarification of National R&D Needs and Goals

In responding to its mandate from the Forum to seek to clarify national R&D needs, the PWG developed a framework (at Attachment 1) to describe its assessment of Australia's future needs and goals in urban water R&D. The framework was initially drafted from the stated R&D needs defined

in the respective urban water R&D plans and programs of a wide range of bodies associated with urban water R&D in Australia. Until the PWG, these plans and programs had been developed largely independently of each other.

As a result, for the first time an overarching National Urban Water Management Goal was defined: ***"secure, safe, efficient and sustainable urban water services to Australian communities"***.

Nine strategic challenges were identified as contributing to the overarching goal:

1. More liveable urban areas
2. Improved water system security and resilience
3. Enhanced preparedness for climate change and extreme events
4. Assured water quality
5. Improved community and customer value
6. Improved institutional, governance and economic effectiveness
7. More effective utilisation of future technologies
8. Improved waterway health
9. Better integration of urban water systems.

When the PWG reported back to the second Forum (July 2013), Forum participants saw considerable value in the PWG's framework and requested that the PWG continue to develop and promote the framework for wider voluntary adoption.

Improving Opportunities for Collaboration in R&D.

A second mandate to the PWG from the Forum was to look for opportunities to enhance collaboration among the various parties involved in urban water R&D in Australia.

In its response, the PWG proposed five principles for adoption throughout the urban water R&D sector:

1. that participants routinely share their urban water R&D needs and priorities in an open and transparent way (*reduces overlap and duplication and encourages joint projects*)
2. that participants actively share their urban water data, information and knowledge generated by research (*reduces duplication and repetition of research; maximises the value of existing research data*)
3. that participants routinely evaluate the effectiveness of their R&D and report evaluation outcomes publicly (*enables sharing of lessons learned and builds an objective case for investment in research*)
4. that participants share information on opportunities for collaboration and facilitate collaboration (*discourages silos; encourages coalitions*)
5. that participants actively support industry development (economic) opportunities associated with Australian urban water R&D effort (*encourages more effective engagement of industry and exploitation of market incentives and opportunities*).

Other Practical Measures to Improve the National R&D 'System'

The third broad mandate from the Forum to the PWG was an invitation to develop other practical measures to improve the functioning of the national R&D system.

In response, the PWG supported a range of projects including:

- Initiation of an Urban Water Research Innovation Forum at the 2014 Ozwater Conference (now planned to be followed up by a second event in early 2015). This Forum brought together a large number of users and providers of urban water research and has already resulted in a number of fruitful collaborations.
- Initiation of an Urban Water Research Data Initiative in conjunction with the Australian National Data Service (ANDS). This initiative creates, for the first time, a permanent national collection of a wide range of urban water research data resources in a properly curated, more accessible format.
- Creation of an Urban Water Research Portal – a publicly accessible home for water management knowledge and learnings gained from previous urban water research projects.
- a project to develop a National Validation Framework for Water Treatment Technologies (NATVAL). This project will assist both regulators and industry proponents to achieve faster and less costly approvals for new water treatment technologies. It will avoid the need for the same approvals to be provided, from first principles, in different jurisdictions separately.

Proposals for Institutional Reform

Until the PWG, the 'four pillars' of the urban water R&D sector had not routinely worked together. By collaborating in projects such as those outlined above, levels of mutual trust and confidence among the utilities, industry, governments and research providers involved in the PWG increased and as a consequence, the work became steadily more ambitious over time.

Perhaps the most significant initiative by the PWG was its recommendation towards the end of its life for institutional reform in the urban water R&D sector. Institutional reform is never easy and indeed, the PWG's recommendation has not to date been accepted (see below). However, the recommendation and its rationale are developed in some detail below for future consideration by decision-makers.

The Case for Change

In its analytical work the PWG diagnosed a number of shortcomings of current urban water research and development arrangements in Australia:

- R&D effort is fragmented, non-systematic and tactical in scale.
- It lacks strategy and leadership and the choices made about priorities are non-transparent.
- Industry, including the utilities, want more influence over R&D planning and priority setting.
- R&D needs and R&D capabilities are not well matched.
- There is poor visibility of R&D projects and outcomes across state borders.

- There is a common lament that Australia's water industry export success has consistently underperformed that of other countries such as Israel, the Netherlands and Singapore who have been more successful in leveraging their R&D and innovation.
- Evaluation and accountability of R&D expenditure is weak, making it difficult to justify to ministers, stakeholders, and regulators that expenditure on urban water R&D is money well spent.

In addition, the PWG expected that the future will be different from the past in a number of important respects:

- The Commonwealth-funded centres of excellence on recycling and desalination will soon be coming to the end of their life.
- So too are a number of state government R&D initiatives funded during the millennium drought.
- Sources of government funding are drying up, partly because of the end of the millennium drought and partly because of broader fiscal challenges at all levels of government.
- The nature of the urban water strategic challenge is changing: a central issue in the past had been 'water security'; in the future, issues are more likely to revolve around efficiency, productivity, cost containment, customer focus and urban planning.
- The public sector reform agenda is increasingly likely to impact the water utilities, in the way it has already impacted the other utilities. Governments are showing increasing interest in 'capital recycling', privatisation and improved accountability and responsiveness of water utilities. However even if these policy settings do not change, technology is increasingly enabling greater decentralisation of urban water systems in whole or in part.
- There is an increasing expectation that R&D and innovation will in the future be strategically directed from the board/CEO level rather than managed somewhat autonomously at the middle executive level as is common currently in Australia.

Against this background, the PWG began to develop an institutional model to ameliorate the shortcomings of current institutional arrangements and better suited to Australia's urban water future. The model was based on four simple propositions:

1. We need to know where we are going.
2. We need to know where we have been.
3. We need to collaborate, where this makes sense.
4. We need to capture the ingenuity and commercial drive of the private sector.

We need to know where we are going

The urban water sector needs to have a better understanding of priority national water challenges and knowledge needs. This can help guide government and utility research investments, assist research institutions to harness their work to agreed national challenges and provide clear and specific targets for the private sector to deliver innovative solutions.

We need to know where we have been

Australia has invested substantial funds in urban water research. The results of that research, including the datasets used to undertake that research, need to be discoverable so we do not waste future investment and we can reuse and re-purpose an already vast collection of research data. We also need to be more effective in measuring and evaluating how well we have performed in our past research effort. Can we demonstrate objectively that our past research has delivered better services, safer water, a more efficient industry, and economic and commercial outcomes?

We need to collaborate where this makes sense

Many of the research needs of the urban water sector are shared. We need to strengthen mechanisms to identify those shared interests and ensure that our investments in those areas are undertaken as efficiently as possible. This includes brokering shared research investments, enabling collaboration among research institutions, facilitating multidisciplinary research, and working together to translate new knowledge into better-designed health and environmental regulation.

The urban water sector also shares knowledge needs with other parts of our economy – such as the mining sector and agricultural water users. Cost savings, and cross-fertilisation of ideas can be gained if the urban water sector is active in seeking to collaborate outside its traditional partners.

When new knowledge has been created we need to be able to share that knowledge efficiently, appropriately and practically.

We need to capture the ingenuity and commercial drive of the private sector

The private sector's engagement in urban water is increasing rapidly. The urban water sector needs to be better at identifying and exploiting innovation opportunities in conjunction with the private sector, particularly innovations emerging from small to medium-sized and start-up businesses.

We also need to better engage the private sector in research investment – to look for commercial opportunities that may be the start of a value chain and be more strategic in the mechanisms we use to 'hand off' new knowledge for commercialisation. International interest in Australia's water skills and knowledge is strong and the commercial opportunities abroad can deliver substantial economic benefits and help support continued innovation at home.

The Expert Panel on Institutional Reform

To explore these ideas, an expert panel was established in January 2014 under the joint sponsorship of the Chief Executives of AWA and WSAA to provide independent advice on improved institutional arrangements. The eventual report of the expert panel was warmly received by the Partnership Working Group as an excellent contribution to the reform debate.

The panel made many innovative suggestions but focussed particularly on improved processes for priority setting and improved institutional arrangements.

The expert panel's recommendation for a better priority setting process involves AWA and WSAA jointly issuing a 'Biennial Statement of Urban Water Industry R&D Priorities'. This would provide a clear statement of the specific R&D requirements of industry (as the principal research user).

However, before finalisation, it would be subject to a series of national roundtable discussions at which other stakeholders including research providers and governments could test the industry research priorities and if necessary seek to influence the research agenda to take account of their own priorities and perspectives.

In this way, Australia's future urban water research effort would, for the first time, be guided by an agreed, user – led, set of strategic water management challenges and associated research needs.

The expert panel's recommendation for improved institutional arrangements proposes the formation of an urban water R&D agent. AWA and WSAA (representing industry and utility research users) would be shareholders. The broker would have four roles:

1. to design specific R&D projects to advance the industry research priorities contained in the biennial statement of research needs (above)
2. to contract manage the R&D projects
3. to ensure trans-Australian visibility of all R&D work and the outputs of all R&D projects
4. to lead a rigorous and vigorous process of evaluation/accountability to ensure that value for money could be demonstrated for the research dollars invested.

The expert panel proposed that the new broker would be built on the foundations provided by the centres of excellence (in water recycling and desalination which had been funded by the Commonwealth in the millennium drought) as well as Water Research Australia. The expert panel had reported to the PWG that, by themselves, none of the current brokers had the right combination of governance, business model and capacity to meet the future needs of the sector.

The new entity would be governed by an eminent industry-led board with a broad strategic perspectives and good personal connections to the highest levels of the urban water sector. The objective would be to build the intimate connections currently lacking between the urban water research program and the highest levels of management in the utilities and industry. Such a top level board would also build the profile and respect of urban water research throughout the sector. A senior industry-led board would be well-placed also to advance urban water industry development objectives based on more effective leveraging of Australia's urban water research investments.

The new research broking entity would also be different from current arrangements in other important respects. It would have an explicit responsibility to strengthen performance in the evaluation of R&D efforts. In so doing, it should strengthen the urban water sector's capacity to make the case to stakeholders (including regulators ministers and consumers) that the money being spent on research was justified and well targeted.

So too, would it have an explicit responsibility to promote and encourage dissemination of the results of research projects across state borders and throughout the water sector. This would be of benefit to all parties, but particularly to smaller parties with an interest in urban water research such as smaller state governments, local government, smaller utilities and small and medium-sized enterprises, including start-up enterprises.

The broker would, of course, be accountable to its board. But the board would in turn be required to be responsible and responsive to a wider range of interested parties than under current fragmented and siloed arrangements. Such arrangements are made possible by the unusual characteristics of the structure of the urban water industry where the great majority of research expenditure is funded from public sector organisations, albeit sometimes commercialised.

The Outcome

As a result of national consultations (by the PWG Chair), the PWG's recommendations for institutional reform were applauded by most state and Commonwealth government representatives consulted. Some of the most senior people consulted in government said that they saw the reform proposals as a model for other sectors of the Australian economy. Specifically, there was strong support for the improved research priority setting process and for the institutional reform proposals. Government representatives were complimentary about the self-help and broadly based nature of the PWG process itself which had been launched and resourced over two years without seeking special financial or other support from governments.

Australia's urban water sector will only become increasingly dependent on its capacity to innovate as it faces ongoing reform and unrelenting challenges from population growth and our nation's variable climate. The PWG initiative has delivered both a more mature mechanism for engagement about innovation across the sector's 'four pillars', and a coherent and far-sighted prescription for how the sector can do better.

The valuable product of the PWG's work provides an enduring model that continues to be available for the sector to build on.

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