

RESEARCH STUDY INTO ACCESS TO RECYCLED WATER: IMPEDIMENTS TO RECYCLED WATER INVESTMENT

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Abstract

A report by the Australian Academy of Technical Sciences and Energy (AATSE), *Water Recycling in Australia* (2003-04) and research by CSIRO *Exploring the Institutional Impediments to Conservation and Water Reuse* (2004) indicated that a lack of a clear access/entitlement system for recycled water could be impeding investment in recycled water schemes. To test this theory and to identify and gauge the importance of other potential impediments, ACIL Tasman were commissioned by all Australian governments to undertake a literature review and a two-stage survey of key stakeholders in the water supply and sewerage service industry in Australia.

The focus of the study was primarily to provide information to governments to assist in their development of policies to encourage the greater use of recycled water. The research paper should also assist stakeholders from the water industry to identify the importance of particular impediments when evaluating the viability of new schemes and develop approaches to overcoming them

In summary, the results of this research indicate that the key perceived impediments to investment in recycled water schemes are: the absolute and relative cost of recycled water, the lack of financial incentives for developing recycled water schemes and complexity in project implementation. Other significant impediments include: unclear liability (and stakeholder responsibility) and public perceptions of health risks in the use of recycled water. It is interesting to note that only a minority across all stakeholder groups saw the issue of access/entitlement to water as a major impediment, however, this minority was adamant about the importance of this issue.

Introduction

The 1994 Council of Australian Governments (COAG) Water Reform Framework stipulated major efficiency gains in water use in the urban water sector, including the initial lowering of water use in most major cities. For example, in Sydney the population has increased by around 700,000 in the last ten years with little or no actual increase in water usage. Further, average water consumption per capita in Melbourne has declined by 19% in the five years since 2000 (WSAA 2005).

These efficiency gains are largely linked to the introduction of two-part tariffs, transparent pricing systems, the institutional separation of standard setting, regulatory enforcement and service provision, and public education and conservation campaigns.

On 25 June 2004, COAG announced the continuing imperative of increasing the productivity and efficiency of Australia's water use to ensure healthy river and groundwater systems. COAG agreed to implement the National Water Initiative (NWI), instituting reforms which aim to improve the compatibility and adoption of best-practice approaches to water management nationally. Some of these reforms revolve around:

- providing greater confidence for those investing in the water industry through more secure water access entitlements,
- providing more efficient management of water, for example through the increased use of recycled water and stormwater; and
- actions to better manage the demand for water.

All jurisdictions are examining future options for new policies, programs and investment to secure and improve urban water provision. One area of focus is the potential for increasing water recycling.

To gauge the importance of the issue of access/entitlement and other potential impediments to recycled water investment, ACIL Tasman was commissioned to undertake research to provide information that would eventually promote growth in the development and use of this valuable resource. The research paper was completed in June 2005 and is available at <http://www.daff.gov.au/recycledwater>

Methodology

The research entailed a review of national and international literature on recycled water schemes followed by a two-stage stakeholder survey. The first stage of the survey gathered responses of over 100 stakeholders from government, suppliers, end users and researchers to questions focused on two main areas of interest: They were:

- the significance of various impediments to recycled water investment; and
- specific questions about access to recycled water and the degree to which certain elements act as impediments.

The second stage of the survey comprised interviews of a cross section of key stakeholders to gather in-depth information on their views on the research questions and on issues identified by survey respondents in the initial survey.

For the purposes of analysis, a distinction was made between impediments associated with the demand for recycled water use and impediments associated with the supply of recycled water. Examples of demand-side impediments are the existence of cheaper alternatives and community concerns over potential health impacts from using recycled water. Examples of supply-side impediments are insecure access/entitlement arrangements and the cost of infrastructure for treatment and supply of recycled water.

The surveys also categorised stakeholders into groups to allow the researchers to examine whether these groups differed in their assessment of the importance of each particular impediment. Stakeholder groups so categorised were end users, suppliers, regulators, researchers, marketing, policy and other. Survey respondents were also asked to indicate the importance of each impediment, using three levels of measurement: very significant, significant or not significant.

Results

The literature research indicated that potential impediments to recycled water use and investment could be broadly categorised as:

- Economic and financial impediments;
- Policy and regulatory impediments;
- Social and community perception impediments;
- Legal impediments;
- Access/entitlement to recycled water impediments;
- Physical and technical impediments; and
- Environmental impediments.

The survey and stakeholder interviews revealed that while these represented the main impediments to greater uptake of recycled water, stakeholders’ perceptions of the significance of these impediments varied.

Economic and Financial Impediments

The survey results indicate that economic and financial impediments are the most important in deterring investment in recycled water schemes. For example, the most significant of all impediments identified by 77% of surveyed respondents was the cost of infrastructure that is required to supply recycled water (see Figure 1).

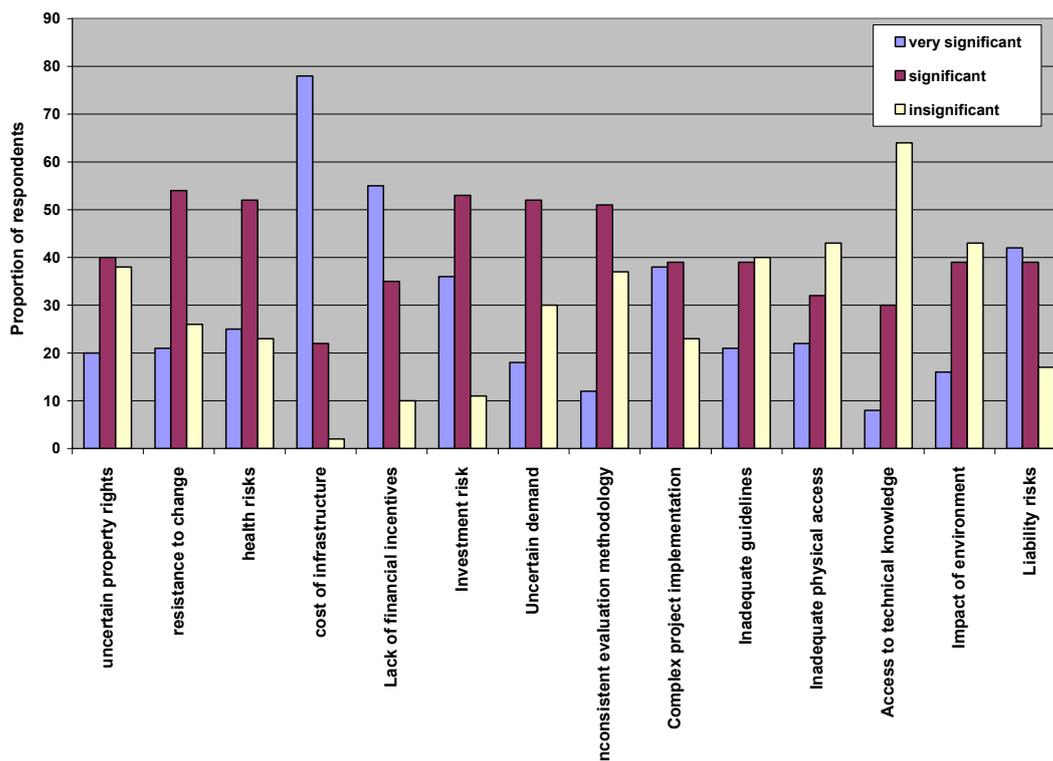


Figure 1 Impediments to recycled water – all respondents

This includes the costs associated with the upgrading and operation of treatment plants, and the pumping and piping of recycled water to customers who may be located some distance from its source. In addition, the research paper indicates that risk management measures, regulatory approvals and compliance and monitoring, also add to the cost of establishing recycled water schemes. All stakeholder groups saw the cost of infrastructure as a significant impediment (see Figure 2).

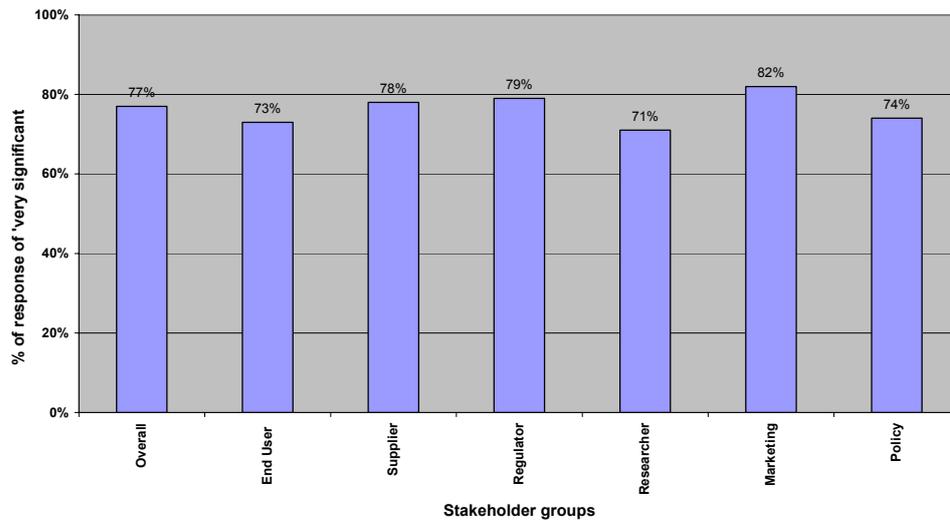


Figure 2 Impediments to supply – Cost of infrastructure

On the demand side, the single most important issue identified by 58% of surveyed respondents was the cost of recycled water to users relative to cost of alternative sources of water from surface and groundwater systems (see Figure 3). As recycled water requires a higher level of treatment and often more testing and monitoring of water quality than surface and groundwater, it is usually more expensive to supply.

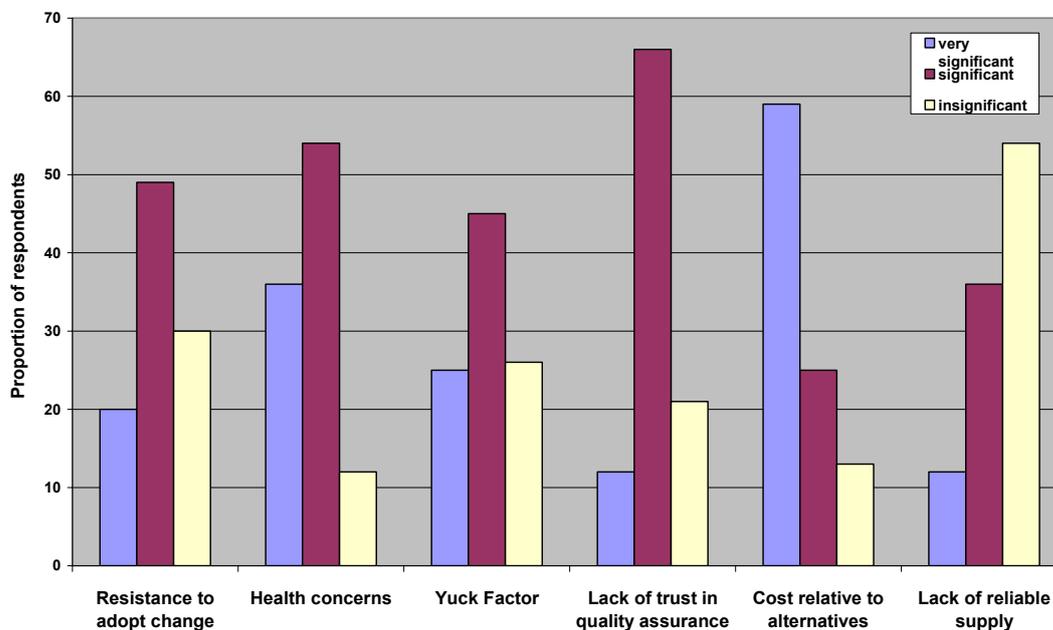


Figure 3 Impediments to use of recycled water – all respondents

The lack of a financial incentive by water industries to supply recycled water was another impediment identified in the surveys as ‘very significant’, particularly by suppliers and researcher groups (see Figure 1). A number of respondents suggested that this impediment is related to the cost of treatment and supply relative to the willingness to pay of users. Respondents also alluded to recycled schemes being financially unappealing to water authorities. These respondents speculated that the costs of treatment and supply may actually work against the water businesses’ traditional revenue base of supplying cheap first use water.

A small number of respondents disagreed with this viewpoint contending that the lack of financial incentives for investment simply reflects economic reality. For instance one participant from a water authority suggested that in the long term the demand for water coupled with water scarcity is one of the major challenges for water authorities and they may well find recycled water is in their financial interest.

Policy and regulatory impediments

Another major impediment, identified by survey respondents, was the complexity involved in recycled water project implementation and regulation (see Figure 1). This was identified as a particular concern for users, suppliers, policy makers and those involved in marketing recycled water.

A large number of surveyed respondents, particularly from the end user, supply and policy stakeholder groups, view the current legislative and regulatory frameworks as a very significant impediment. One regulator surveyed suggested that the complex and fragmented nature of legislation and regulation is the single most important issue facing the recycled water industry. The Prime Minister’s Science Engineering and Innovation Council (2003) also reported the lack of coordination between the authorities as a key reason for the failure of some recycling projects.

A number of respondents lamented the lack of a one-stop-shop that investors in recycled water schemes could use to break through the confusing nature and multiple layers of legislation and regulation. Significantly, survey respondents also mentioned that regulations controlling the treatment and use of recycled water are constantly changing. These changing requirements could affect investor confidence and add significantly to the cost of new schemes for investors and potentially make some schemes economically unviable.

Social and community perception impediments

The public perception that the use of recycled water poses a health risk was another significant impediment identified by stakeholder groups (see Figure 3). This is a common theme through the literature and in the surveys, which points to the perceived risks of the community being much higher than the actual risks. Nevertheless, even though community resistance to recycled water based on health issues may not be well founded it can significantly increase the difficulty in developing recycled water schemes.

Legal impediments

The most important legal impediment in the supply and use of recycled water, identified as very significant by 43% of all survey respondents, was liability risks (see Figure 1). This was of particular importance for regulators and suppliers.

The research paper cites two cases where recycled water was not supplied or used because of concerns about liability. In the first instance, a local government would not accept liability for recycled water once it entered a school property as it could not ensure how the water was to be used. In the second instance, a local council was unable to provide recycled water for recreational purposes because the user was not willing to be responsible for the potential risk of an individual cutting themselves when falling on the ground and the wound becoming infected.

The research paper suggests that liabilities can be managed and minimised through appropriate contractual arrangements or legislation, which vests ownership and limits liabilities to minimise risks to investors. Liability can also be a problem if there are unclear guidelines or standards to follow to address environmental issues, health, best practice and risk management issues. The development of national guidelines that cover the management of environment and human health issues and provide a risk management framework for recycled water should assist in addressing this issue. The final version of these guidelines are due for public release towards the end of 2006.

Access entitlements to recycled water

A relatively surprising result from the research is that access/entitlement to recycled water is viewed by the majority of surveyed respondents as only a moderately important impediment (overall only 20% of respondents believed it to be a very significant impediment see Figure 1). It has been suggested in previous research that the provision of security through an improved entitlement regime to recycled water was very important to provide confidence to investors and guarantee investment.

Some of the specific areas of concern by this 20% relate to: uncertainty over who owns treated wastewater and water injected into aquifers; uncertainty over who owns stormwater; reluctance by authorities to hand over rights to recycled water for extended periods; and uncertainty over supply, price and quality of recycled water.

Other impediments

Some of the other impediments identified and reviewed in the research paper are:

- Uncertainty over demand;
- A lack of a consistent evaluation methodology;
- Inadequate, conservative and/or too prescriptive guidelines;
- Public sector protection of the status quo;
- Inadequate physical access/availability of supply;
- Treatment and monitoring requirements;
- Lack of technical knowledge and practical experience; and
- Impact on the environment.

Conclusion

Collectively, the research identifies that there is a large number of potential impediments to the supply and use of recycled water. Some of these impediments are difficult to remedy because they are both complex and linked to more general water reforms, such as the cost of recycled water relative to alternative sources.

While the major impediments identified are largely the responsibility of governments, the water industry needs to play its part. For example, actions by industry to improve community perceptions of recycled water will be crucial to ensuring the success of new schemes.

Australian governments recognise the need to improve the efficiency of water resource management across the water cycle and this is reflected in their commitment to the NWI (as of January 2006 WA was yet to sign the NWI). There are a number of provisions under the NWI that demonstrate governments' desire to improve urban water management through national guidelines for recycled water and water sensitive urban design, efficiency labelling scheme for water appliances inside and outside the home, and encourage greater utilisation of recycled water and stormwater.

The scarcity of water brought about by events such as the current drought, population growth and changing water use patterns within more affluent societies are the drivers for governments and industry to find improved ways to meet Australia's urban and peri-urban water needs. Other factors, such as technological advancements in water treatment, which improve the reliability and cost-effectiveness of producing recycled water, should also encourage investment in new recycled water schemes. The role of government is to ensure that reforms under the NWI enhance the environment for industry and communities to increase water use efficiency, including greater recycled water use, and meet the future challenges of water security in Australia.

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