



Allowed use and security: Community preferences for new water supply sources

Industry Note
Program A: Society
Project A1.1

When considering which new water supply sources to invest in it is helpful to understand what matters to the community. For example, is the public concerned about water sources that depend on the weather or unfamiliar technologies? Is there support for the use of non-potable water and other more environmentally-friendly supplies? To gain insight into the public’s views, the CRC for Water Sensitive Cities conducted a discrete choice experiment and found that allowed use and supply security are key drivers of community preferences.

Droughts, climate change and growing populations are placing increasing pressure on centralised water supply systems, which remain by far the principal source of water provision in Australia. This reliance on centralised supplies foreshadows the need to invest in new supply sources into the future. In this context, developing an understanding of public preferences for new water sources and the drivers of those preferences is critical. Drivers include attitudes towards a range of attributes, such as cost, allowed use and risk.

stormwater or pipeline (inter-basin transfer), given variations in allowed use and unit cost. Allowed uses include outdoor, non-potable indoor and potable. Participants were given 10 questions. The six alternatives stayed the same between questions, while the allowed use and cost changed – see Figure 1 for an example.

How were community preferences and risk attitudes measured?

A discrete choice experiment was conducted as part of a door-to-door survey of 981 homeowners in Melbourne and Sydney in 2013. Participants were asked to select one of six alternative water sources to augment their city’s water supply (desalination, recycled, new dam, groundwater, stormwater, pipeline,

Which new supply sources did the community prefer?

While the results revealed a high degree of diversity in respondents’ selections, new dams and desalination were the most preferred water sources, followed by stormwater and recycled. It is important to bear in mind that these raw results do not take allowed use, price and other relevant attributes into account. Additionally, the study reflects the views of homeowners only; no renters were surveyed. After accounting for price and allowed use, the water source qualities that are most valued by the community can be better understood. In particular, controlling for source and price, respondents were indifferent between “outdoor use only water” and potable water, but disliked “limited indoor use water”. Water for limited indoor use is non-potable water, which can be used for toilets and laundry.

Lesson: There is a need to address public perceptions around the use of non-potable water inside the home.

	Desalination	Recycled	New Dam	Groundwater	Stormwater	Pipeline
Allowed Use						
Price/Kl	\$2.80	\$1.60	\$2.20	\$2.80	\$3.20	\$1.60

Figure 1. An example of a question provided to participants in the discrete choice experiment. Each participant was given 10 such questions, in which allowed uses and prices varied.



Level of risk aversion, age, education and income were found to be important determinants of respondents' choices. Controlling for allowed use and cost, risk averse people were more likely to choose more secure, less weather-dependent supply sources (desalination and recycled), while younger, more educated, higher income people were more likely to choose more environmentally-friendly water sources (recycled and stormwater).

Lesson: Demographics can help predict the preferred water sources in an area, and how new sources will be received.

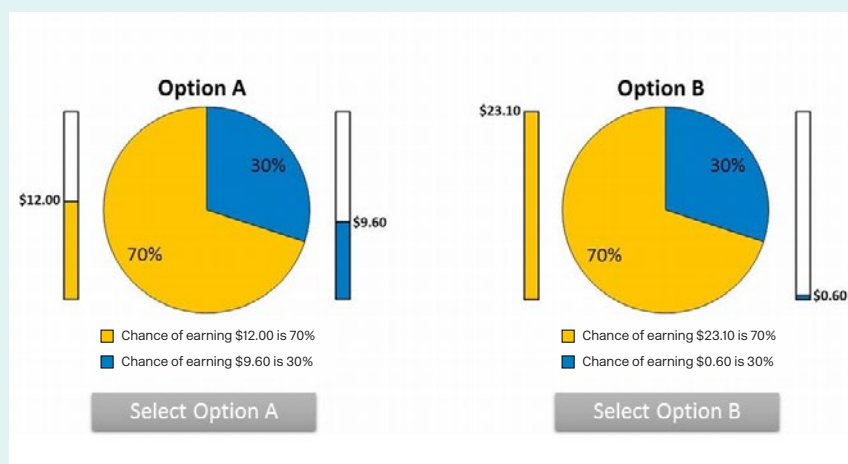
Lastly, the study found that supply risk is an important driver of water source preferences, but technological risk is not. For the purposes of this study, a source is considered to have a supply risk if it is weather dependent (namely new dam, stormwater and inter-basin transfer pipeline). A source is considered to be technologically risky if it is a relatively new technology from the point of view of public familiarity (namely recycled and stormwater). These results therefore suggest that the public is concerned about the security of its water supply, but is not perturbed by the use of new or unfamiliar technologies.

Lesson: When discussing new water supply projects with the public, communicating the security of supply is important.

Explanatory Box: Measuring attitudes to risk

Making decisions about new water sources requires the community to grapple with uncertainty. For example, some people may be reluctant to rely on stormwater harvesting because it's dependent on the weather, while this may not be a concern for those who are more comfortable with risk and prioritise eco-friendliness.

In order to explore the role of risk in driving preferences for new water sources, the study measured respondents' levels of risk aversion. It did so by having respondents participate in a risk elicitation task in which they were asked to choose between two lotteries and were entitled to keep any earnings they made (i.e. the task was fully incentivised to ensure reliable data). A sample choice is shown in the below diagram, where respondents could choose Option A (70% chance of earning \$12.00; 30% chance of earning \$9.60) or Option B (70% chance of earning \$23.10; 30% chance of earning \$0.60).



Based on the respondents' choices, their attitudes to risk could be measured. In the above example, Option B is the riskier lottery, so a risk averse person would select Option A. In the study, it was found that most respondents were risk averse.

Figure 2. An example of a question provided to participants in the risk choice experiment. Each participant was given 10 such questions, in which probabilities varied.

About the research

This research was conducted as part of the CRCWSC project Cities as Water Supply Catchments: Economic Valuation (Project A1.1). The project's main objectives are to identify the willingness to pay for stormwater harvesting, to quantify the contribution of urban water amenities to property values and to determine the optimal portfolio of urban water supply sources.

Further reading

[Dorner, Zack, Brent, Daniel A., and Leroux, Anke, "Preferences for Intrinsically Risky Attributes", 2016, Monash Business School, Department of Economics Discussion Paper 32/16.](#)

Further information

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