Australian Water Recycling Centre of Excellence

Project Report

Water Reuse and Communities ToolKit

Module 3: Considering Water Reuse with Culturally Diverse Communities

A report of a study funded by the Australian Water Recycling Centre of Excellence

Victoria University, November 2014

Water Reuse and Communities Toolkit
Module 3: Considering water reuse with culturally diverse communities

This report has been prepared as part of the National Demonstration, Education and Engagement Program (NDEEP). This Program has developed a suite of high quality, evidence-based information, tools and engagement strategies that can be used by the water industry when considering water recycling for drinking purposes. The products are fully integrated and can be used at different phases of project development commencing at 'just thinking about water recycling for drinking water purposes as an option' to 'nearly implemented'.

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About the Australian Water Recycling Centre of Excellence

The mission of the Australian Water Recycling Centre of Excellence is to enhance management and use of water recycling through industry partnerships, build capacity and capability within the recycled water industry, and promote water recycling as a socially, environmentally and economically sustainable option for future water security.

The Australian Government has provided $20 million to the Centre through its National Urban Water and Desalination Plan to support applied research and development projects which meet water recycling challenges for Australia's irrigation, urban development, food processing, heavy industry and water utility sectors. This funding has levered an additional $40 million investment from more than 80 private and public organisations, in Australia and overseas.

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Executive Summary

There are a number of important considerations in formulating a public engagement strategy directed at Culturally and Linguistically Diverse (CALD) populations. These include:

- The ways in which religious and cultural beliefs can impact on the perceived value of water, as well as notions of cleanliness with regard to water.
- The ways in which factors underlying attitude to reuse are affected by cultural background. For example, amongst CALD population understandings of risk, environmental motivation, and willingness-to-pay for water delivery may be different.
- How language and cultural issues can mean a lower level of engagement with and/or trust in water authorities, government institutions, and consultative processes.

Key actions to undertake when raising the issue of water reuse with CALD communities:

- The need for early engagement with national, state, and local religious authorities to gain institutional approval. In particular, any introduction of reuse will require certification for halal and kosher status by Islamic and Jewish authorities respectively. In theory this should be no barrier, as water reuse is common in countries dominated by these religions, however there are formal ritual and technical requirements that need to be met.
- Carefully frame messages about risk with the notion that different community backgrounds approach the issue of risk differently.
- Build trust with key community leaders (ethno-cultural, peak bodies), with the view to finding prominent champions in order to promote reuse behaviour as the norm.
- Communicating clearly with non-English speaking background communities. Are there communities in your area large enough to justify publishing material in other languages?

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Water and culture

A number of important considerations in public understanding of reuse need to be considered when working with Culturally and Linguistically Diverse (CALD) communities. Culture is key to shaping the ways in which not only the value and meaning of water is understood, but also the way important associated variables involved that underlie behaviour in relation to water are viewed. These include perceptions of risk, the environment and sustainability, and trust in authority.

Religious beliefs and water reuse

Religious belief and cultural understandings of cleanliness are strong influences on the development of attitudes towards water reuse. In order to convince end users to adopt reclaimed water, they must convince them that it is both scientifically safe, and cultural appropriate. The consideration of religion is important for two reasons. The first reason is that religious proscriptions may prevent the adoption of water reuse. The second reason is that religion informs normative behaviours, civic values, and environmental values, all of which inform attitude formation. While all religions have notions of what is clean and what is unclean, most organised religions have important formalised structures of authority that will be critical to negotiate in order to achieve community approval for recycled water. Two key examples, Islam and Judaism, are particularly important to iterate at this point in the project.

Islamic Perspectives of Water reuse

Many Muslim countries face acute water shortages, and the societal necessity of water reuse is a key factor as to whether local Islamic law classifies this water as suitable for drinking, and whether it is considered pure for ritual use.
Under Islamic law, water is classified into three categories of purity:

(a) *Tahur* - the purest degree of water cleanliness. May be used in ablution to clean oneself ritually before prayers, or for everyday use. Once used for ablution, it becomes unsuitable to be reused and becomes *tahir* (relatively clean water that is sufficiently unclean for reuse in ablution)

(b) *Tahir* - the second purest degree of water cleanliness. This water is considered generally clean, and may be used for everyday use such as drinking, washing clothes, and bathing. It is regarded as clean enough for bodily use, but not for ritual cleansing. However, it is not considered the highest degree of cleanliness as *tahur* water is, and cannot be used for ritual ablution.

(c) *Mutanajjis*: unclean water, which has been defiled through pollution. Any change in colour, odour, or taste will result in *mutanajiis* water.

According to an article by Farooq and Ansari (1983), purified water that has been previously used, that is to say *mutanajiis* (unclean), will be classified as either *tahir* (clean to everyday use standards) or *tahur* (clean to the level of ritual use) if the technology allows the water to be returned to its original physical and chemical state. However, whether the water is merely *tahur*, or the more pure category of *tahir,* depends upon what quantity of water it is diluted with. The Islamic distinction between *ma'kathir* (water in large quantity) and *ma'qualil* (water in small quantity) is an important one. Farooq and Ansari (1983: 122) highlight that, if diluted in *ma'kathir* (water in large quantity), *tahir* water can be purified to *tahur* water, if it is 'directed to a large reservoir of pure water'. If it is diluted in a small quantity of water (*ma'qualil)*, it may not be considered as *tahur*. This may be a consideration in introducing direct potable reuse, as the process of dilution in a large quantity of water (at least from an Islamic cultural perspective) has not occurred. This means that indirect potable reuse might in some cases be a more appropriate option. It is important to note, however, that the consideration of purity is determined by religious authorities taking into account the environmental context, namely the necessity to address water shortages, and the other options available.

Abderrahman (2000) examines the case of Islamic Water Management principles in Saudi Arabia. He traces the implementation of water reuse and the shows that with the appropriate fatwas (religious decrees from a mufti), reuse can be seen and approved as consistent with Islamic principles He notes that:

> The Islamic laws of 'Shari'a' place great importance on water resources, which are considered to be God's gift to mankind, and guaranteed access to water remains free to all in the Muslim community (Abderrahman, 2000: 466).

This is to say that there exist guiding religious principles about the availability of water in Islamic law, and these principles govern the sufficient and necessary conditions required for approval. He explains how in Saudi Arabia discussion with between water planners and religious authorities led to the cultural approval of water reuse:

> After lengthy and deep investigations and discussions with scientists and specialists, a special Fatwa (the consensus of opinion of the Council of Ulamah, 'Council of Leading Islamic Scholars [CLIS]' on a given solution to a specific problem at a given time) was issued in 1978 with regard to the conversion of impure wastewater to pure water. The Fatwa postulated that "impure wastewater can be considered as pure water and similar to the original pure water, if its treatment using advanced technical procedures is capable of removing its impurities with regard to taste, colour and smell, as witnessed by honest specialized and knowledgeable experts. (Abderrahman, 2000: 470-71)

This literature makes clear the necessity of the NDEEP to engage with, and involve, religious authorities, not only in decreeing water reuse to be a safe practice, but in utilising the principles of correct conservation of water supplies that stem from their religious cosmology.

Jewish Perspectives of Water reuse

As with the case of the Islamic World, reclaimed water is already in widespread use in many places where large Jewish populations reside, notably in Israel. According to a report published by the Euro-Mediterranean Water Information System (2005), reclaimed water production in Israel in 2000 amounted to 290 million cubic metres, primarily used in agriculture.

As in the case of Islamic law, Jewish food laws (*kashrut*) dictate what is kosher (suitable to eat) and what is not. While observance of differing interpretations of *kashrut* is highly variable, this is important for the NDEEP to recognise. Periodic disputes over interpretations of Talmudic law have emerged, for example in New York City in 2004, when the microscopic organisms known as copepods were found in the water supply (Brick, 2004). Scientists consider copepods acceptable to drink and completely safe, but reading particular Talmudic clauses prohibiting the consumption of insects, several Rabbis objected. In the case of water reuse in Australia, it will be important for any implementation of reuse to communicate with Jewish religious authorities to ensure they are supportive.

While in the preceding examples from the Middle-East, recycled water has been declared pure for human consumption, the context in Australia is different. In the examples listed above, the societies as a whole are halal and kosher, meaning that effluent does not contain pork residue or fat, and lipsticks and cosmetics containing these are not significantly present in wastewater. In Australia, this is not the case, and some degree of discussion and liaison with the appropriate religious authorities will be necessary to clarify what wastewater streams are acceptable to their community. One important reference example in this case will be Singapore, which does have a multi-ethnic population, and in which recycled water does have religious certification.

Multi-cultural communities and environmental attitudes.

Environmental attitudes in CALD communities may vary, depending on cultural background and length of time in country.

Table 1 below, based on an analysis of data obtained from the Global Values Survey (GVS) database, shows a high level of concern in Australia with pollution within the water cycle, significantly more than in the United States, Germany, China or India. Statistics are taken from the fifth wave of the GVS. Sample size of the population surveyed is displayed in the bottom row, alongside total percentage.

Table 1: Global Values Survey: Pollution of Waterways by Country

		Total	*United States*	*Canada*	*Australia*	*India*	*China*	*Germany*
Environmental problems in the world: Pollution of rivers, lakes and oceans.	*Very serious*	60.9%	65.4%	80.0%	79.0%	50.5%	45.5%	43.6%
	Somewhat serious	29.2%	28.4%	18.2%	19.3%	32.2%	36.0%	41.2%
	Not very serious	8.2%	5.1%	1.3%	1.5%	12.3%	14.6%	14.4%
	Not serious at all	1.8%	1.0%	0.6%	0.1%	5.0%	3.9%	0.8%
	Total	9754 (100%)	1210 (100%)	2152 (100%)	1410 (100%)	1621 (100%)	1335 (100%)	2026 (100%)

Selected countries/samples: Australia [2005], Canada [2006], China [2007], France [2006], Germany [2006], Great Britain [2006], India [2006], New Zealand [2004], United States [2006]

Unfortunately, Singapore, a significant country of interest, was not included in that wave of the GVS. However Kilbourne & Polonsky (2005), in a comparative survey examining environmental concerns of consumers *in general*, cite data from Levine (2002) that “31% of people in the US thought environmental issues were exaggerated compared with 24% in New Zealand, 23% in Australia and 22% in the UK. In the same poll it was suggested that 83% of Australians participate in recycling, followed by 71% in NZ, 65% in the US, and only 61% in the UK”.

National differences in thinking about the environment are reflected in CALD communities, depending on length of residence in the country, level of acculturation, and normative behaviour of peer networks. Leung & Rice (2002) compared the environmental attitudes of two hundred and three Anglo-Australians with those of ninety-eight Chinese-Australians. They concluded that "among the Chinese-Australians, length of residence in Australia was positively related to environmental behaviour but negatively related to environmental concern."

Trust in authority and media in CALD may vary, depending upon language skills, and level of institutional functionality in country of origin.

Trust in water authorities is a key criterion to remove barriers to the acceptance of recycled water schemes. This can be developed by ensuring a high level of functioning in the existing (non-recycled) water supply to develop a longer term perception of quality. Comparative information about trust in experts to make decisions is available from the fifth wave of the GVS. Table 2 below shows, for key countries, the level of trust placed in experts to make decisions. As in Table 1, it is expected that some of these national differences are reflected in migrant communities from those respective areas.

Table 2: Global Values Survey: Trust in experts to make decisions

		Total	*Great Britain*	*United States*	*Canada*	*Australia*	*India*	*China*	*New Zealand*	*Germany*
Political system: Having experts make decisions	*Very good*	11.6%	11.9%	6.5%	9.2%	9.5%	25.4%	6.5%	8.9%	13.0%
	Fairly good	39.3%	36.9%	39.0%	32.4%	36.0%	45.1%	43.8%	31.2%	46.4%
	Fairly bad	30.4%	27.0%	36.2%	29.5%	30.4%	21.9%	43.7%	30.0%	27.2%
	Very bad	18.7%	24.1%	18.3%	28.9%	24.1%	7.5%	6.0%	29.9%	13.4%
	Total	11778 (100%)	960 (100%)	1196 (100%)	2047 (100%)	1374 (100%)	1419 (100%)	1161 (100%)	827 (100%)	1845 (100%)

Selected countries/samples: Australia [2005], Canada [2006], China [2007], France [2006], Germany [2006], Great Britain [2006], India [2006], New Zealand [2004], United States [2006]

Not only do migrants from overseas reflect their countries of origin, but additionally the challenges of being a new country, or having language difficulties, can result in a lower level of trust and engagement with water authorities and government institutions.

Comparative level of trust in the press from the same GVS is reproduced below in Table 3. This confidence is not specifically for environmental or scientific information, which may vary from general confidence.

Table 3: Global Values Survey: Confidence in the Press

		Total	*Great Britain*	*United States*	*Canada*	*Australia*	*India*	*China*	*New Zealand*	*Germany*
Confidence: The Press	*A great deal*	8.6%	1.4%	2.4%	4.4%	0.6%	36.2%	17.7%	0.8%	2.2%
	Quite a lot	29.8%	12.4%	21.5%	29.4%	10.9%	39.6%	54.5%	26.3%	27.2%
	Not very much	46.4%	54.5%	61.3%	50.1%	66.1%	18.8%	23.5%	56.3%	54.9%
	None at all	15.2%	31.8%	14.8%	16.1%	22.4%	5.4%	4.3%	16.6%	15.8%
	Total	12942 (100%)	1015 (100%)	1208 (100%)	2114 (100%)	1401 (100%)	1664 (100%)	1641 (100%)	882 (100%)	2019 (100%)

Selected countries/samples: Australia [2005], Canada [2006], China [2007], France [2006], Germany [2006], Great Britain [2006], India [2006], New Zealand [2004], United States [2006]

While confidence in the press is rated in lower in Australia than in the selected countries of interest chosen in this analysis, it is notable that in terms of frequency of use, most sources are *more frequently* read in Australia than in other countries (GVS, 2005). This is quite distinct from confidence.

Cultural perceptions of environmental risk is reflected in CALD communities

Frewer (1999) has summarised that public trust in scientific institutions has declined since the 1950s, with public preference for 'risk averse' technologies. She states that problems associated with 'DDT, organophosphate pesticides, Thalidomide, the Chernobyl accident, and more recently BSE, provide the public with signals that technology is "out of control"' (p. 569). As outlined in Module 2, the perception of risk is formed through an heuristic calculus weighing up perceived benefits and perceived risks, and these benefits and risks are often culturally and peer-defined, rather than objectively estimated.

The value of cultural norms is important in these calculations. For example Siegrist et al, 2000, demonstrated that amongst a cohort of University of Zürich students, participants trusted the risk/benefit analyses of those whom they perceived to have saliently shared values. From this finding they proposed a 'similarity theory of social trust', showing that trust is not only depended on perceived authoritativeness, but perception of similarity.. Similarly, Mankad & Tapsuwan (2011), in a CSIRO review, examined the socio-economic factors underlying community acceptance of decentralised water systems, and found that cultural factors related to water, as well as risk perception, and threat perception were key factors shaping acceptance. While we should not necessarily assume that these also apply to the case of decentralised water systems, these factors do highlight some of the typical responses used in evaluation of new water technologies.

In Figure 4, the responses to the statement "Science and technology are making our lives healthier, easier, and more comfortable" are given on a nine-point scale as percentage for a number of key countries.

Table 4: Global Values Survey: Science and Technology perception

		Total	*United States*	*Canada*	*Australia*	*India*	*China*	*Germany*
Science and technology are making our lives healthier, easier, and more comfortable	*Completely disagree*	1.5%	1.8%	0.8%	2.5%	2.1%	1.1%	0.7%
	2	1.0%	2.0%	1.0%	1.1%	-	1.3%	0.8%
	3	2.0%	2.1%	2.8%	3.7%	-	1.0%	2.6%
	4	5.1%	5.4%	5.2%	5.0%	9.3%	1.4%	4.4%
	5	10.3%	18.3%	12.0%	17.8%	-	5.4%	11.6%
	6	8.7%	10.0%	12.4%	11.0%	-	7.5%	12.3%
	7	21.5%	20.6%	18.6%	17.5%	45.5%	8.4%	18.4%
	8	18.0%	18.1%	25.4%	18.6%	-	22.3%	22.3%
	9	10.3%	10.5%	10.3%	9.0%	-	20.5%	10.4%
	Completely agree	21.7%	11.3%	11.5%	13.8%	43.1%	31.0%	16.6%
	Total	9136 (100%)	1220 (100%)	2149 (100%)	1402 (100%)	1609 (100%)	1746 (100%)	1009 (100%)

Selected countries/samples: Australia [2005], Canada [2006], China [2007], France [2006], Germany [2006], Great Britain [2006], India [2006], New Zealand [2004], United States [2006]

From the data displayed in Table 4, the distribution seems to be relatively similar in the United States, Canada, and Australia, yet markedly more optimistic about technology in China and India.

Engagement Strategy for dealing with Culturally and Linguistically Diverse (CALD) communities

There are a number of important considerations in formulating a public engagement strategy directed at Culturally and Linguistically Diverse (CALD) populations. These include:

- The ways in which religious and cultural beliefs can impact on the perceived value of water, as well as notions of cleanliness with regard to water.
- The ways in which factors underlying attitude to reuse are affected by cultural background. For example, amongst CALD population understandings of risk, environmental motivation, and willingness-to-pay for water delivery may be different.
- How language and cultural issues can mean a lower level of engagement with and/or trust in water authorities, government institutions, and consultative processes.

Steps to undertaking in dealing with areas with high levels of diversity:

1) Assess major community groups (ethno-cultural and religious). Do these communities have special issues with regard to education and engagement around the possible introduction of water reuse that need to be considered?
2) Engage with community and religious leaders early, to foreshadow any potential problems around certification of water, for both drinking and ritual purposes (for example, whether reuse water is allowed for ablution).
3) Consult multi-cultural peak bodies, and consider engagement strategy with particular community if necessary. This may include translation of material, profile building in ethnic language newspapers, and/or consultation with community in forums or workshops.
4) Be conscious of different perceptions of safety, environmental sustainability, and trust in authorities that members of diverse communities may hold.

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