Water scarcity in some parts of South Africa has led to recycling of municipal wastewater for domestic applications such as drinking, washing and cooking. This policy brief presents findings on public perceptions and emotions of direct potable reuse (DPR) and a proposal to improve user acceptance through institutional engagement with the public.


BACKGROUND TO THE STUDY

Climate change impacts, rapid urbanisation, and increased population growth have resulted in dwindling water resources in many regions. Alternative water resources have been achieved through the recycling of municipal wastewater for potable applications. However, this use is limited because many people are repelled by the thought of toilet water going to taps (Lemonick, 2013). This repulsion of ‘toilet to tap’ is epitomized by the disgust or ‘yuck’ emotion. This study addresses negative public perceptions by proposing an approach of engagement with local government. Three case studies in South Africa were selected because they are in different decision-making stages related to recycled domestic water: Beaufort West, Overstrand and eThekwini municipalities. At the time of this study (2014-2016), reclaimed water has already been implemented in Beaufort West, Overstrand is at planning stage and eThekwini was undertaking advanced planning when public perceptions halted the process. Different reasons led to the decision to choose reclaimed water as an alternative water source for each municipality. Key reasons include: drought in Beaufort West and Overstrand, and population and economic growth in eThekwini.
THEORETICAL FRAME, RESEARCH DESIGN AND METHODS

The study used a Capability Approach to understand social justice and well-being issues related to water reclamation in all three sites, with a focus on perceptions and emotions. An understanding of public emotions as a component of wellbeing, was also emphasised as necessary to analyse social behaviour and how they shape acceptance or rejection of Direct Potable Reuse (DPR) schemes. The study was qualitative and used participatory methods including in-depth interviews and focus group discussions with municipal officials and members of the public. Participatory tools used included Mapping, Venn diagrams, Emoticons, and Story with a Gap and Resistance to change continuum (Srinivasan, 1990). The data collection process was undertaken over a period of two years, from February 2014 to October 2016. There were five phases involved in the data collection process – four phases involving engagement with respondents and the last stage through telephone interviews.

Figure 1: Public Focus Group Workshop in eThekwini Municipality (Picture by author).

KEY FINDINGS ON PUBLIC PERCEPTIONS AND EMOTIONIONAL RESPONSES FOR DIRECT POTABLE REUSE

- The source of reclaimed water causes a feeling of disgust because citizens interviewed link the water to urine and excreta. The area where wastewater originates (either from one’s household or from a public source) is less important as the idea that this water originates from sources viewed as unhygienic and even disgusting.
- Doubt, fear, worry and anger around the safety of reclaimed water are expressed by people because they feel they do not have adequate knowledge about the safety measures in place.
- Respondents reported that they are opposed to the use of reclaimed water for drinking, cooking and bathing. They are more likely to tolerate reclaimed water for car washing, toilet flushing and gardening.
- The public interviewed trusts the municipality with general service delivery but are distrustful of processing reclaimed water. In Beaufort West, the perception that officials do not drink reclaimed water deepens issues of mistrust.
- Regarding choice of reclaimed water, in Overstrand and Beaufort West citizens say they prefer other options such as desalination and water transfer schemes because they perceive them to be safer compared to reclaimed water. In eThekwini, community respondents mentioned that they are not aware of water scarcity, making acceptance of
the choice of reclaimed water difficult.

- Perceptions around equity involve the distribution of water services in general and reclaimed water in particular. In Overstrand and eThekwini, members from ‘black’ communities perceived their drinking water to be different from that of the ‘white’ communities. The Mandlenkosi ‘black’ community in Beaufort West had perceived that they were targeted with the reuse scheme and even post-implementation, there are still perceptions that certain privileged water users within the municipality do not use the water themselves. Equity concerns provoked feelings of unfairness, anger and/or shame.

- Across all sites, the public felt that there was inadequate public engagement in the reuse scheme, which they felt was unfair. Some respondents expressed anger as a result, because, according to them, municipal officials have not created enough opportunities for them to gain knowledge in the reuse scheme.

- Unlike findings in Australia (Po et al., 2003) the South African case studies show that low costs in terms of tariffs in no way encouraged acceptance of reclaimed water. The quality and safety of the water, not the cost, were of prime concern.

- The benefits of reclaimed water are clouded by fears about water quality or health risks. Some public respondents mentioned that they were aware of some benefits of reclaimed water. However, overall, they still felt that they did not know enough about the process to be able to weigh the benefits.

- Public respondents in Beaufort West and eThekwini expressed the benefits of Media as an information sharing tool with regards to raising awareness in the reuse scheme. However, in eThekwini, one of the municipal officials reported that media influenced the public negatively because of the ‘toilet to tap’ language. In Overstrand, some public respondents highlighted that media sensations influence perceptions. Despite the benefits of media, the study found that the role of media should not replace public engagement where the public is likely to get more understanding in the reuse scheme.

SOCIO-DEMOGRAPHIC CONSIDERATIONS

- Socio-demographics in terms of age, gender, level of education, race and religion, were determinate in acceptance or rejection of reclaimed water:
  - **Age:** Both younger and older respondents confirmed that younger people are more willing to accept reclaimed water because as they mentioned, they are more open to change than the older generation.
  - **Gender:** Women expressed more about concerns with water quality issues and potential health impacts than men and were more resistant to reclaimed water.
  - **Education** was not determinate in acceptance or rejection of the reuse scheme; irrespective of the educational level, public respondents wanted to know more about the reuse scheme.
  - **Race:** In Overstrand and Beaufort West, it was perceived that the black population is more likely than other racial groups to reject reclaimed water. This is because they believed that they suffered unequal distribution or quality of water, linked to historic disadvantage associated with racialized inequalities of apartheid. However, in Beaufort West where reclaimed water is operational, the black population is already drinking reclaimed water because they reported that they cannot afford to buy bottled water. Likewise, in eThekwini, respondents
from the black population noted that they will accept reclaimed water because they are the poorer population and do not have a choice as they cannot pay for other alternatives such as bottled water.

➢ **Religion:** Christian leaders interviewed expressed greater willingness to accept reclaimed water than those practicing Islam. From a Christian perspective, religious leaders noted that consumption of reclaimed water does not have a spiritual effect on a person, whereas, from an Islamic perspective, the religious leader interviewed reported that water that has not been channelled through a natural water body (indirect potable reuse) is not fit for spiritual ablution and reported that this water would therefore not be fit for drinking. However, a clear demonstration from the municipality that reclaimed water is safe was expressed as crucial by both Christian and Islamic leaders.

## PROPOSITION FOR ENGAGEMENT

- This study proposes moving beyond an Environmental Impact Assessment (the usual ‘modus operandi’ of public engagement) to a more inclusive method that captures community knowledges and emotional responses.
- Strategies to address negative emotions and perceptions emerge at different phases of the institutional process, and are intended to address knowledge deficits and public engagement challenges.
- **Implementation recommendations:**
  - Ongoing measures to address social concerns during construction of the treatment plant including; location, quality control monitoring, and equity concerns about the distribution of reclaimed water.
  - Using key vectors for public engagement and being cognisant of the way in which communities decisions are taken as this varies from one case to another. Religious leaders for example, have a crucial role in educating congregations on the safety, benefits of DPR. Schools and community leaders are two other key routes.
- **Post-implementation:**
  - This phase starts once the reuse scheme has been launched. People expect to know more about water quality monitoring measures in place.
  - Published water quality results should be updated regularly and presented in a user friendly and accessible format
  - Guided visits to the plant, information campaigns, school visits, roadshows, and information sharing sessions all help to disseminate information and address concerns.

## CONCLUDING REMARKS

- Inadequate public engagement or the lack of public involvement in decision-making limits opportunities and capabilities for respondents to understand the role that reclaimed water might play in dealing with water scarcity.
- The Capability Approach applied in this study makes the links between public
emotions, perceptions and the implementation of reclaimed water for domestic applications. Opportunities for engagement with the public on the benefits of DPR and being able to make informed choices about DPR is central to the Capability Approach.

- Opportunities for addressing negative public perceptions during the institutional process of introducing water augmentation options should be considered as part of water resources planning activities.
- Municipalities can build on existing public social structures and ‘intangible’ goods such as trust. Trust is particularly important to enhance collaboration (Goldin, 2010 & Owen & Goldin, 2015). According to Luhmann (1979, p. 8), “when there is trust, there are increased possibilities for experience and action.” This remains a core concern when planning future and ongoing reuse efforts.

Sources