

EXECUTIVE SUMMARY

BACKGROUND AND OBJECTIVES

This report provides an analysis of the existing literature about direct potable reuse of water in developed countries: mainly the United States, Australia and Canada. Rudimentary indirect potable reuse of wastewater has been used for thousands of years, but only as direct potable reuse in the last half decade. A lack of public understanding integrated with expensive technology, led to a lack of implementation in North America during the 1970s and into the 1990s. An insufficiency of research or additional literature has furthered municipalities reluctance to invest in direct potable reuse. In order to better evaluate direct potable reuse projects, this report outlined the existing social, environmental and economic research that has been conducted about direct potable reuse. A mixed methods research approach was used to address the report's three research objectives. The first method was a systematic review of the existing literature, particularly focusing on the areas of social, environmental and economic indicators for direct potable reuse projects. This lengthy review provided insight into what various fields in the world focus on when reviewing and studying direct potable reuse. After the information was gathered and analyzed using the second method, document analysis, the report then developed a TBL framework based on a similar framework used by the City of Calgary, and by asking specific questions, evaluated some of the general ideas and concepts gathered from the systematic review.

The report addresses the following research objectives:

- 1 What evidence exists about the use of decentralized direct potable reuse as a replacement for traditional Wastewater Treatment Plants, and how have these studies framed the transition and use of these systems in developed countries?*
- 2 Propose a policy analysis for use in Canada that use a broad-based triple bottom line framework to measure the potential for direct potable reuse in communities (Slaper, 2011).*
- 3 Discuss some of the policy and jurisdictional issues around implementing direct potable reuse in Canada.*

KEY FINDINGS

The key findings of this report are:

- More collaborative research and careful public engagement should be carried out to ensure the public is supportive and understands the potential needs for DPR systems in Canada.
- Education and training should be adjusted to reflect more innovative technologies and models that may not be currently taught in planning, engineering, health or policy related curriculum.
- TBL frameworks and life cycle analysis will provide important models for municipalities to ensure decision making processes for wastewater are fair, rigorous and take into account the three pillars of sustainability.
- There needs to be much more research on life cycle analysis on water reuse and wastewater systems to understand the non-financial costs should be evaluated on projects.
- There needs to be more scientific research carried out of the existing DPR projects and more investment needed to bring more research projects on-line in municipalities.
- There needs to be more research to understand the policy implications of either allowing municipalities, the provinces and territories, or the federal government to take the lead on DPR policies and implementation.