DESALINATED WATER – FACT SHEET

Snapshot

Desalination is a water supply option that is used widely around the world and simply involves taking the salt out of water to make it drinkable. There are two main methods that are used to produce desalinated water:

- *Distillation* — This occurs naturally through evaporation or through very simple methods such as boiling salty water and condensing the steam. Commercial desalination plants using this process have been in operation for decades.

- *Membrane processes* — A more recent and now more widely used method relies on a semi-permeable membrane with pores so tiny that they separate the salt from water. Another innovative process, called reverse osmosis, relies on natural processes and membranes to provide high-quality water.

Issues to consider

- Desalination requires a lot of energy, whichever method is used. This makes it expensive and contributes to greenhouse gas emissions.
- The disposal of the concentrated waste salt also needs to be considered. Even in coastal communities where the brine can be returned to the sea, environmental impacts have to be carefully and responsibly managed.
- Because the energy needed for reverse osmosis depends on how salty the water is, it is cheaper to desalinate brackish (slightly salty) water or wastewater rather than seawater.
- Energy costs can be offset — for example by the use of wind energy to power desalination plants.
- Desalination is also relatively costly because the process requires sophisticated plants that have high capital costs, significant maintenance requirements, and a shorter operating life than traditional water treatment plants.
- To produce desalinated water from seawater costs between $1 and $4 per kilolitre depending on the size of the plant and favorability of local conditions. Rapid technological advances are steadily reducing the associated energy costs.
- Because desalination plants are complex to operate, this may limit their application in small, remote communities.
- Desalination provides a reliable water source that is not dependant on rainfall, but needs to be close to the ocean or source water to minimise transportation costs.

The Australian scenario

In 2006, Perth became the first Australian city to operate a reverse osmosis seawater desalination plant, which now supplies 17% of Perth's drinking water supply. A second plant planned for the state's south west and due to be completed in 2011 will alleviate the need to extract large quantities of groundwater from the local aquifer. Desalination is also being seriously considered as a water supply option in other parts of Australia, including Sydney, Melbourne, Adelaide and the Gold Coast.