

# Desalination no Holy Grail Says Nature Group

**Swiss-based environmental organisation WWF has warned against the indiscriminate application of ocean desalination to solve the world's water shortages in a new report. Lani van Vuuren reports.**

According to the report, *Making Water: Desalination – Option or Distraction for a Thirsty World*, seawater desalination is rapidly emerging as one of the major new sources of freshwater for the developed and some areas of the developing world. However, this dramatic upscaling of the industry is occurring against a backdrop of unresolved questions on the potential environmental impacts of large-scale processing of seawater habitat and the discharge of increasing volumes of concentrated brine wastes.

“Seawater desalination may have a place in the world’s future freshwater supplies, but regions still have cheaper, better and complementary ways to supply water that are less

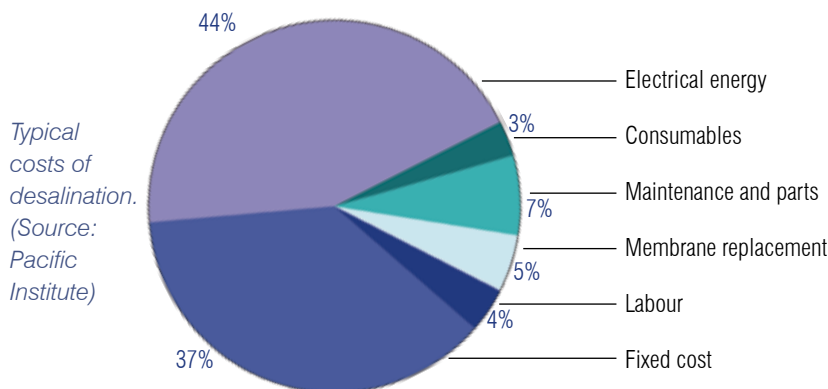
risky to the environment,” reported Jamie Pittock, Director of WWF’s Global Freshwater Programme. Potential impacts of desalination include brine build-up, greenhouse gas emissions, destruction of prized coastal areas and reduced emphasis on conservation of rivers and wetlands.

## SURGING DEMAND

At present, there are large plants in operation, in planning or under construction in Europe, North Africa, North America, Australia, China and India among others. In 2004, it was estimated that seawater desalination capacity would increase 100% by 2015, an addition of an additional 31 million m<sup>3</sup>/day.

According to WWF, these forecasts, regarded as bold at the time, seem certain to be exceeded by wide margins. In one example, the forecast was for China and India to be desalinating 650 000 m<sup>3</sup>/day by 2015. But China alone announced plans earlier this year to be desalinating 1 million m<sup>3</sup> of seawater a day by 2010, increasing to 3 million m<sup>3</sup>/day by 2020.

Many of the areas of most intensive desalination activity also have a history of damaging natural water resources, particularly groundwater, said WWF. “Managing water demand and assessing impacts of any large-scale engineering solution are needed early in order to avert



irreversible damage to nature and the cost overruns, often paid by citizens over the long haul."

### RIISING CRITIQUE

The organisation is not the first to cast a shadow of a doubt over seawater desalination technology as the answer to all water scarcity problems. Last year, US-based organisation, the Pacific Institute, published a report criticising the indiscriminate construction of large desalination plants without proper investigations into potential economic and environmental costs.

"While seawater desalination plants are already vital for economic development in many arid and water-short areas of the world, many plants are

overly expensive, inaccurately promoted, poorly designed, inappropriately sited, and ultimately useless," noted the authors of *Desalination, With a Grain of Salt – a California Perspective*. "To avoid new, expensive errors, policymakers and the public need to take a careful look at the advantages and disadvantages of desalination and develop clear guidance on how to evaluate and judge proposals for new facilities."

The potential benefits of ocean desalination are great, but the economic, cultural and environmental costs of wide commercialisation remains high. In many parts of the world, alternatives can provide the same freshwater benefits of ocean desalination at far lower economic and environmental costs. These alternatives

### EXPLOSIVE GROWTH IN CHINA

In 2005, China's desalination capacity was just 120 000 m<sup>3</sup>/day, with plants ranging from 30 m<sup>3</sup>/day to 5 000 m<sup>3</sup>/day. Over the last year, the country has announced plans to desalinate 1 million m<sup>3</sup> of seawater a day by 2010, increasing to 3 million m<sup>3</sup>/day by 2020, in an effort to meet its growing water demands. There is also heavy investment, both Chinese and foreign, in China's desalination equipment manufacturing capacity. It seems likely that the nation will be a future major player in desalination, particularly in the developing world.



Source: WWF

### SEAWATER DESALINATION IN SOUTH AFRICA



At present, desalination is practised only in isolated locations in South Africa where small-scale desalination costs less than transporting potable water over long distances. For example, Kenton-on-Sea has been producing desalted drinking water for up to 30 000 people since 1997.

The size of these plants is still nowhere near the scale of seawater desalination plants being constructed or planned in other parts of the world. Indications are, however, that government is considering desalination as a future option. During a speech in November 2006, Minister of Water Affairs & Forestry Lindiwe Hendricks, said: "The desalination of seawater represents a virtually unlimited water resource and, with rapid advances in desalination technology, as well as the depletion of conventional land-based resources, it is an option that we need to explore further, especially for coastal cities."

Cape Town authorities have been investigating desalination of seawater as a possible water supply option for quite some time, and as the technology becomes more economical and energy-efficient there is little doubt that it will be considered more seriously in future.





### DESALINATION TO QUENCH CITY'S THIRST

Australian authorities announced plans to build one of the world's largest desalination plants as part of a US\$4-billion programme to provide drinking water to the country's second-largest city Melbourne in June. The plant is expected to provide an additional 150 billion litres of water each year to Melbourne by the end of 2011.

The multibillion Dollar reverse osmosis plant will be constructed in the Wonthaggi region. An 85-km pipeline will connect the plant to Melbourne's drinking water supplies. Brine from the treatment process will be piped back into Bass Strait through an underground and undersea tunnel about one kilometre offshore.

The plant will be the largest in Australia and will provide around a third of Melbourne's yearly water needs. Interestingly, it has been reported that greenhouse emissions from the plant will be offset by the purchase of renewable energy, making the plant carbon neutral.

include treating low-quality water sources, improving conservation and efficiency, accelerating wastewater recycling and reuse, and implementing smart land-use planning.



An aerial view of a desalination plant located in Perth, Australia.

### DESALINATION SHOULD NOT BE LIKE DAMS

WWF expressed concern that large desalination plants could become "the new dams". "As with any relatively new engineering such as large dams that grew up in the 1950s, the negatives become known when it is too late or too expensive to fix," said Pittock. What we need most is a new attitude to water not unchecked expansion of water engineering."

WWF is of the view that seawater desalination has a limited place in water supply, which needs to be

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considered on a case-by-case basis in line with integrated approaches to the management of water supply and demand. The organisation proposes an approach similar to that recommended for large dams by the World Commission on Dams that says proponents should first assess the need and then consider all options to select the best solution.

"Desalination plants, accordingly, should only be constructed where they are found to meet a genuine need to increase water supply and are the best and least damaging method of augmenting water supply, after a process of open, exhaustive and fully transparent and in which all alternatives, especially demand side and pollution control measures, are properly considered and fairly costed in their environmental, economic and social impacts. While the sea is clearly the greatest available volume of potential feedstock for water manufacturing, proceeding straight to a desalination plant excludes viable options for sustainable water use in the same way that proceeding straight to a new dam often did in the past."

- To download the WWF Report, *Making Water: Desalination – Option or Distraction for a Thirsty World?*, go to <http://assets.panda.org/downloads/desalination-reportjune2007.pdf>
- The Pacific Institute report, *Desalination, With a Grain of Salt – A California Perspective*, is available from [www.pacinst.org/reports/desalination/desalination\\_report.pdf](http://www.pacinst.org/reports/desalination/desalination_report.pdf)