

# WATER IN SINGAPORE

# Cheat Sheet



Due to its small land mass and lack of natural resources, Singapore had always struggled with obtaining clean water. What were some problems which Singapore had faced? How did we solve these problems?

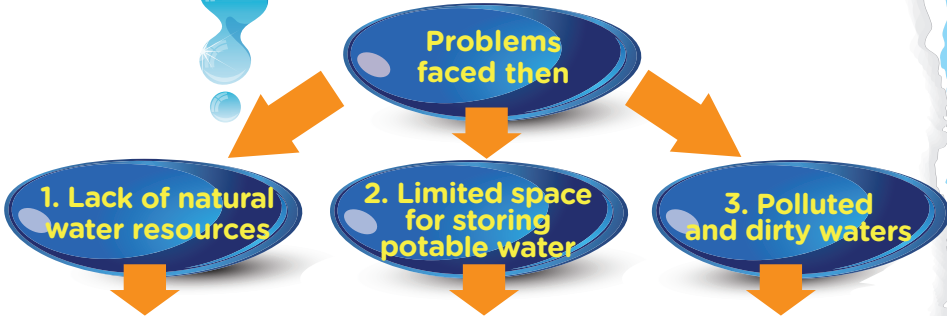


## Definition

Potable water: Water which is safe to drink<sup>1</sup>.

The water situation in the past

Singapore had faced three major problems in obtaining clean water:



As Singapore has no natural water resource and space to store water, we had to import water from Malaysia.

Singapore made 4 water agreements with Malaysia in 1927, 1961, 1962 and 1990<sup>2</sup>. Malaysia will provide us with water till 2061.

However, the agreements also led to much disagreement and tension<sup>3-4</sup> between the two countries.

The Singapore River and Kallang River used to be polluted with waste from the hawkers, farms and boats.

In 1977<sup>5</sup>, the Singapore Government started to clean the rivers.

In 1987<sup>5</sup>, the clean-up process was completed.

As a result, it became necessary for Singapore to find secure and sustainable ways to obtain potable water for the population.

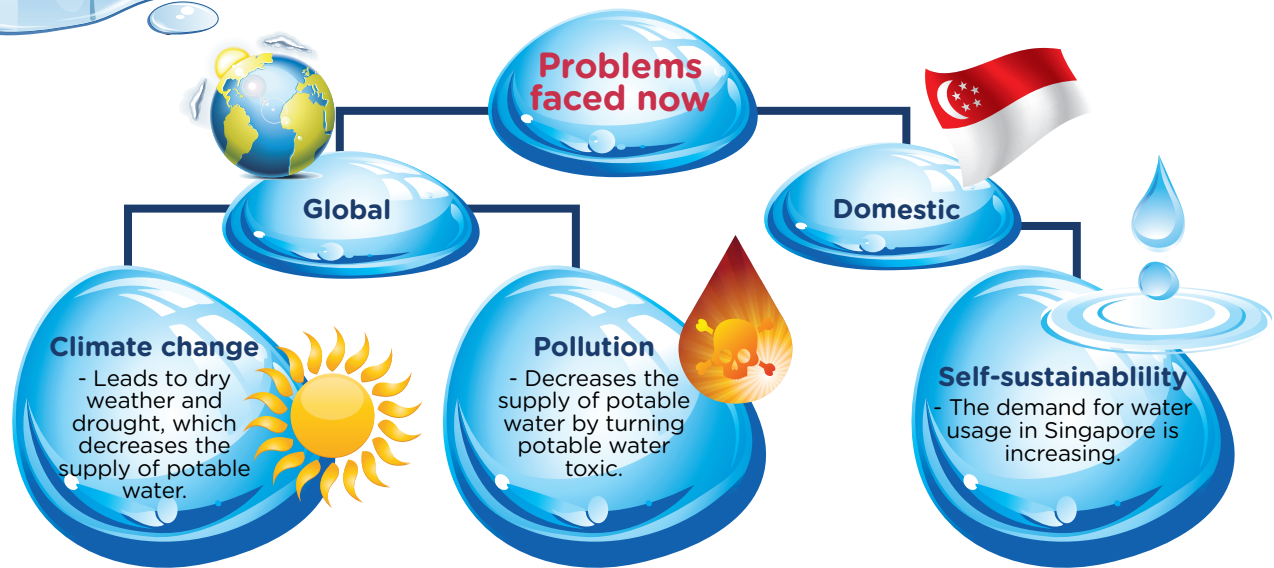
<sup>1</sup> Merriam-Webster Dictionary. (2015). Retrieved from <http://www.merriam-webster.com/dictionary/potable>

<sup>2</sup> Valerie Chew. (2009). 'Singapore-Malaysia Water Agreements'. Retrieved from [http://eresources.nlb.gov.sg/infopedia/articles/SIP\\_1533\\_2009-06-23.html](http://eresources.nlb.gov.sg/infopedia/articles/SIP_1533_2009-06-23.html)

<sup>3</sup> (2001, 9 October). 'Use water as weapon in S'pore ties: KL article'. *The Straits Times*. Retrieved from <http://eresources.nlb.gov.sg/newspapers/Digitised/Page/straitstimes20011009-11.27.aspx>

<sup>4</sup> (1998, 24 November). 'Loans and water'. *The New Paper*. Retrieved from <http://eresources.nlb.gov.sg/newspapers/Digitised/Page/newspaper19981124-11.5.aspx>

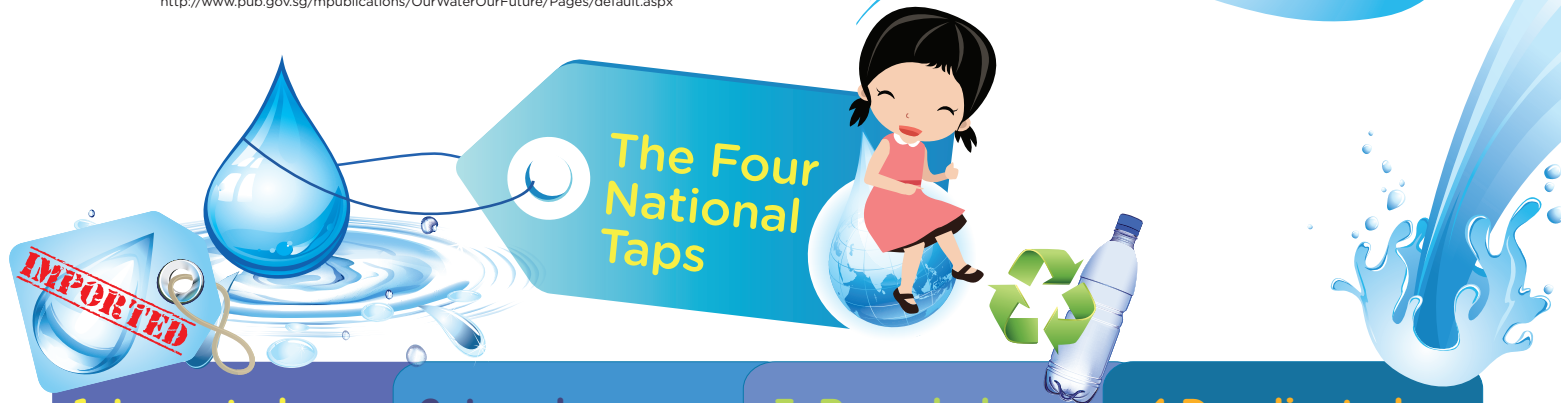
<sup>5</sup> Thulaja, N. R. (2008). 'Clean Rivers Education Programme and Clean River Commemoration'. Retrieved from [http://eresources.nlb.gov.sg/infopedia/articles/SIP\\_398\\_\\_2008-12-02.html](http://eresources.nlb.gov.sg/infopedia/articles/SIP_398__2008-12-02.html)



At present, the water usage demand in Singapore is 400 million gallons (about 1514 million litres) per day<sup>6</sup>. It is estimated to double<sup>6</sup> by the year 2060, reaching about 800 million gallons (about 3028 million litres) per day.

To ease these problems, Singapore developed 4 different sources of water termed the Four National Taps.

<sup>6</sup> Public Utilities Board (PUB). (2013, March). 'Water for All'. *Our Water. Our Future*. Retrieved from <http://www.pub.gov.sg/mpublications/OurWaterOurFuture/Pages/default.aspx>



### 1. Imported

The 1961 water agreement with Malaysia expired in 2011. Now, two water agreements provide water for Singapore:

- 1962 agreement (expires in 2061)<sup>2</sup>
- 1990 agreement (expires in 2061)<sup>2</sup>

Once they expire, Singapore will no longer import water from Malaysia.

### 2. Local Catchments

Local catchments are a system of drains, canals and rivers that collect rainwater, which is then stored in 17 reservoirs for future usage.

Currently, up to two-thirds<sup>6</sup> of our land area is used for water catchment.



### 3. Recycled

Singapore developed a method to recycle used water. Known as NEWater, it currently meets 30%<sup>7</sup> of our water demands.

Used water is filtered via Reverse Osmosis to remove impurities. Ultra-violet (UV) is also used to kill all bacteria. NEWater exceeds the requirements of potable water set by the World Health Organisation (WHO).

### 4. Desalinated

Since Singapore is surrounded by sea water, in 2005<sup>8</sup>, we started to treat sea water into potable water.

During desalination, impurities are removed from sea water via Reverse Osmosis. The water is chemically treated before it can be used. Desalinated water currently meets 10%<sup>7</sup> of Singapore's water demands.

<sup>7</sup> Public Utilities Board (PUB). (2015). 'NEWater'. Retrieved from <http://www.pub.gov.sg/water/newater/Pages/default.aspx>

<sup>8</sup> Public Utilities Board (PUB). (2013). 'Desalinated Water'. Retrieved from <http://www.pub.gov.sg/water/Pages/DesalinatedWater.aspx>



## Tips for quick searching



Tip	Function	Example command
File Types	Search for information from a specific type of file, e.g. pdf, ppt, doc etc.	four national taps filetype:pdf
Specific webpages	Search for information within specific webpages.	water agreement site: gov.sg

Where can you find reliable information on water and its usage in Singapore? Begin your search for information with the list of credible resources below!

## Resources

Source	URL/Title	Details
Public Utilities Board (PUB)	<a href="http://www.pub.gov.sg/">http://www.pub.gov.sg/</a>	The PUB website contains information on water supply in Singapore, such as how potable water is obtained. It also contains resources such as annual reports and educational videos.
Ministry of the Environment and Water Resources	<a href="http://app.mewr.gov.sg/web/Contents/Contents.aspx?Id=195">http://app.mewr.gov.sg/web/Contents/Contents.aspx?Id=195</a>	It contains information on Singapore's environment and water resources, such as annual statistical reports.
Infopedia	<a href="http://eresources.nlb.gov.sg/infopedia/">http://eresources.nlb.gov.sg/infopedia/</a>	This local online encyclopaedia contains information relating to water, reservoirs, the water agreements and NEWater.
NewspaperSG	<a href="http://eresources.nlb.gov.sg/newspapers/">http://eresources.nlb.gov.sg/newspapers/</a>	Old newspaper reports relating to water in Singapore can be found here, such as those on desalination and water agreement negotiations.