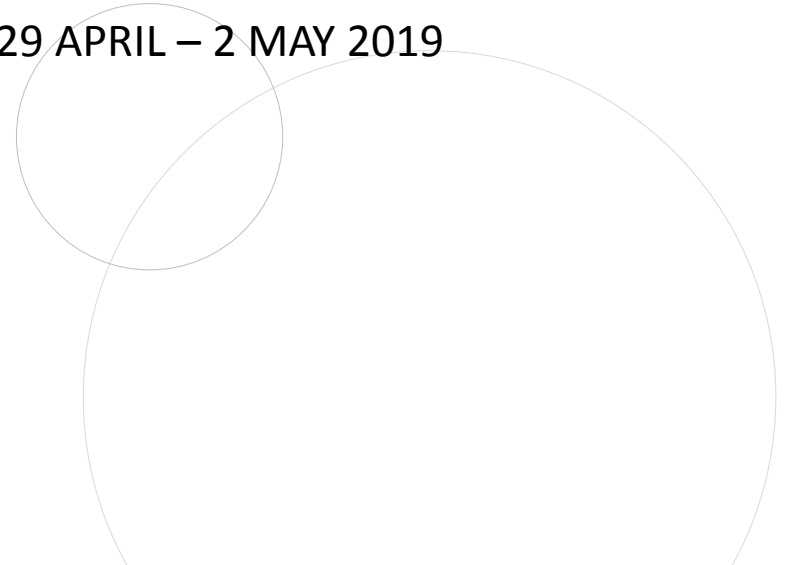


ENVIRONMENT ENGINEERING WORKING GROUP

AFEO MID-TERM MEETING . BRUNEI . 29 APRIL – 2 MAY 2019



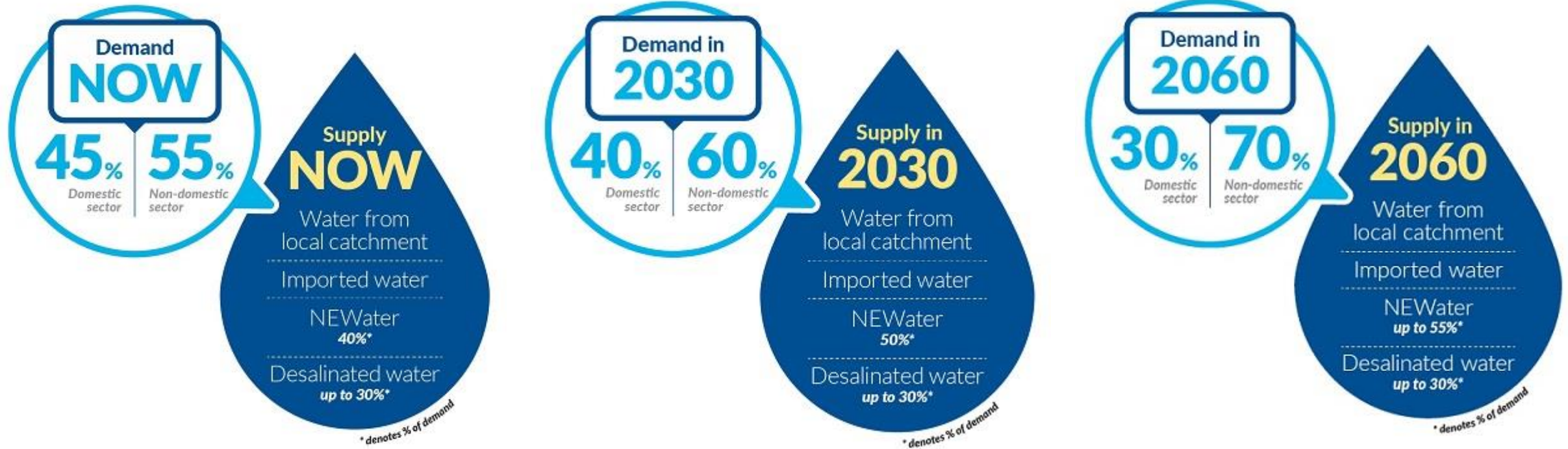


SINGAPORE WATER STORY



Water demand in Singapore is currently about **430 million gallons** a day (mgd) that is enough to fill 782 Olympic-sized swimming pools, with homes consuming 45% and the non-domestic sector taking up the rest. By 2060, Singapore's total water demand could almost double, with the non-domestic sector accounting for about 70%. By then, NEWater and desalination will meet up to 85% of Singapore's future water demand..

INCREASING DEMAND IN WATER



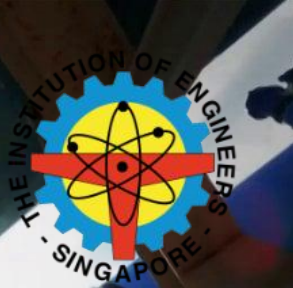
GROWING FROM STRENGTH TO STRENGTH

Through the years, we have embarked on an integrated, effective and cost-efficient way to meet the nation's water needs with investments in research and technology to **treat, recycle** and **supply** water.

Today, Singapore is internationally recognised as a model city for **integrated water management** and an emerging **Global Hydrohub** – a leading centre for business opportunities and expertise in water technologies.

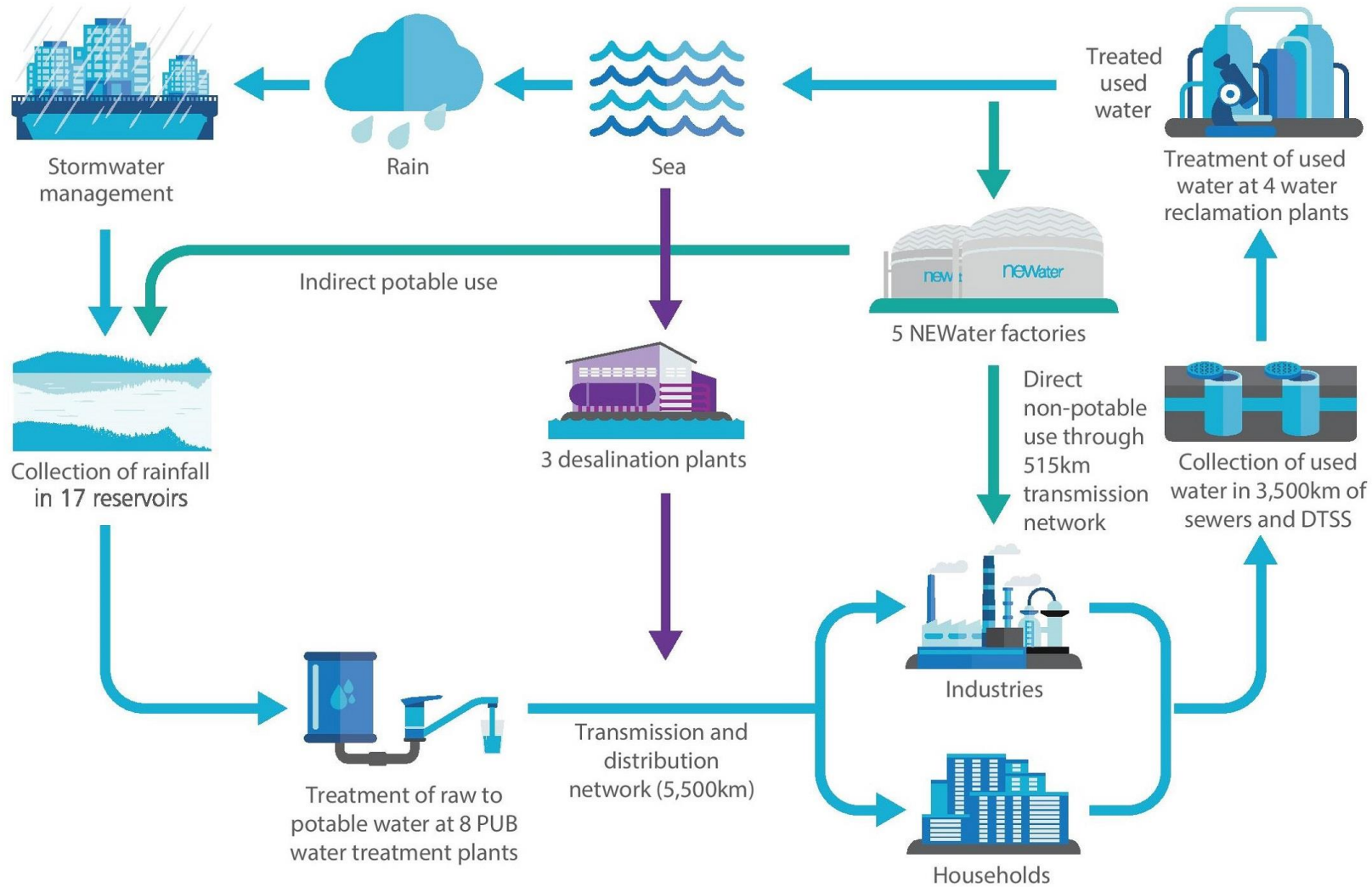


One of the **largest**
seawater reverse osmosis
desalination plants
in the **world**



Marina Barrage –
Singapore largest
water catchment
in the heart of the city.

KEY STRATEGIES



1. Collect every drop of water

2. Reuse water endlessly

3. Desalinate seawater



DIVERSIFYING WATER SUPPLY

Over the last 50 years, we have built a robust and diversified supply of water known as the **“Four National Taps”**. Our tap water is well within the World Health Organisation (WHO) drinking water guidelines and is suitable for drinking without any further filtration.



1
**Water from
Local Catchment**



3 **NEWater**



2
**Imported
Water**

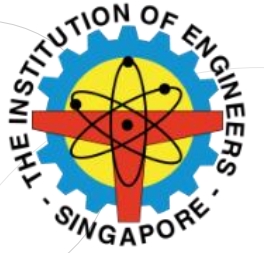


4 **Desalinated
Water**



1. WATER FROM LOCAL CATCHMENT

Pillar of our sustainable water supply



Increase water catchment area

- Currently, we have three desalination plants with a combined capacity of 130 mgd that can meet up to 30% of Singapore's current water demand. Two more desalination plants will be ready by 2020.
- Desalinated water is expected to meet up to 30% of Singapore's future water needs by 2060.



Reservoir in the City

An iconic structure at the mouth of Marina Channel and the vision of the first Prime Minister of Singapore Mr Lee Kuan Yew more than twenty years ago, [Marina Barrage](#) creates Singapore's 15th reservoir, Marina Reservoir.



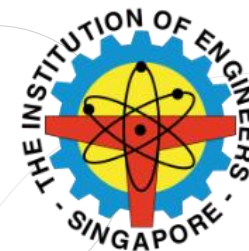
2. IMPORTED WATER

1961 Water Agreement



Draw up to 250mgd from Johor River

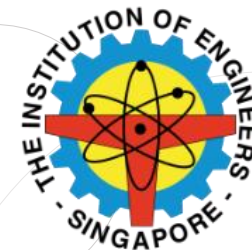
- The 1961 Water Agreement between the Johor State Government and Singapore expired on 31 August 2011.
- Singapore continues to import water from Johor under the 1962 Water Agreement which allows us to draw up to 250 mgd from Johor River until 2061.





2. NEWATER

Singapore's success story in high-grade reclaimed water



Advanced Technologies

- NEWater is produced from treated used water that is further purified using advanced **membrane technologies** and **ultra-violet disinfection**, hence making it ultra-clean and safe to drink.
- Presently, Singapore's five NEWater plants can meet up to 40% of the nation's current water needs. By 2060, NEWater is expected to meet up to 55% of Singapore's future water demand.



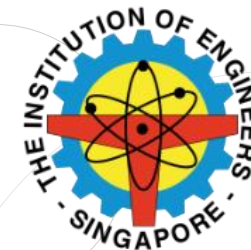
Used Water Superhighway

- The Deep Tunnel Sewerage System (DTSS), a 48 km long used water superhighway, conveys used water to water reclamation plants to be treated and purified into reclaimed water, or discharged into the sea.
- (1) Phase 1 construction of the DTSS is completed.
- (2) Phase 2 which will cover the western part of Singapore is targeted for completion in 2022.



4. DESALINATED WATER

Securing water for Singapore's future water needs



Constantly boosting desalination capacity

- Currently, we have three desalination plants with a combined capacity of 130 mgd that can meet up to 30% of Singapore's current water demand.
- Two more desalination plants will be ready by 2020. Desalinated water is expected to meet up to 30% of Singapore's future water needs by 2060.

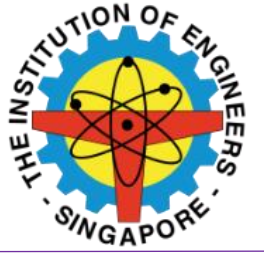


Tuas Desalination Plant won global award

- Barely a year after its opening, the Republic's Tuas Desalination Plant was named Desalination Plant of the Year at Global Water Awards 2019, presented at the Global Water Summit in London.
- The awards recognise the most important achievements in the international water industry, including improved operating performance, innovative technology adoption and sustainable financial models.

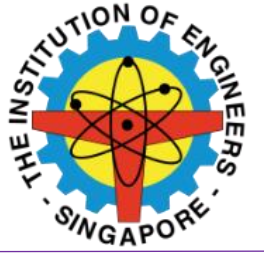


NEWATER: A SINGAPORE SUCCESS STORY





TUAS DESALINATION PLANT: COMPACT BUT HIGH CAPACITY





THANK YOU



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