Singapore 2010 Report (Sanitation Management)

Outcome Indicators [2010]

IWRM Issue 6 – Sanitation Management (18 indicators)			
Indicator Types	**Indicators**	**Progress**	**Description**
Outcome Indicators	1. Percentage of rural population having access to improved sanitation system	100%	See note 1
	2. Percentage of urban population having access to improved sanitation system and served by sewer network	100%	See note 1
	3. Percentage of treated wastewater reused for non-potable purposes (i.e. further treatment after wastewater treatment process) [e.g. for washing, cleaning, irrigation]	22.3%	See note 2

Outcome Indicators Notes

1. From the first sewerage scheme in 1910 to serve the central area, our sewerage system today serves the whole of Singapore through an extensive sewer network, on-site sewerage treatment facilities and 4 Water Reclamation Plants.

   Used water is collected separately in a network of sewers that lead to treatment plants. Stormwater and surface runoff are collected in open drains and channeled to rivers and reservoirs.

   An intensive sewerage programme began in the 1960's to meet the demands from rapid housing and industrialisation. Today, 100% of our population enjoys modern sanitation.

2. The total volume of used water treated in 2010 was 542.1 Mil m^3 and the volume of NEWater and Industrial Water sold was 96.4 Mil m^3 and 24.5 Mil m^3 respectively.

Source: ASEAN Working Group for Water Resources Management (AWGWRM) – July 2015
[weblink - aseaniwrm.water.gov.my]

ASEAN IWRM PERFORMANCE REPORTS & MONITORING INDICATORS

Enabling Environment Indicators [2010]

EE Indicators	1. Any "Policy" on urban/rural sanitation and sewerage systems	8	See note 1
	2. Any "Legislation/Regulations" on urban/rural sanitation and sewerage systems	8	See note 2
	3. Any "Financial framework and Financing plans" for urban/rural sanitation and sewerage systems	8	See note 3

Enabling Environment Indicators Notes

1. The policy is that all developments are to be connected to the public sewerage facilities. All used water is to be collected and conveyed to used water reclamation plant and treated to required standards for safe disposal or reuse.

2. The legislation requirement for Sewerage systems is prescribed in the Sewerage and Drainage Act.

3. The cost of operating and maintaining the public sewers that collect used water from homes and businesses, and the treatment of this used water before it is discharged into the sea of reclaimed into NEWater is recovered from sanitary appliance fee (SAF) and waterborne fee (WBF).

   The SAF is a fixed component based on the number of sanitary fittings in each premises. The WBF is charged based on the volume of water supplied to premises, regardless of the location and how the water is used or discharged. Both charges are imposed as a tax contribution to Singapore's national used water system.

   The capital expenditure of used water reticulation network is funded by the Government.

Source: ASEAN Working Group for Water Resources Management (AWGWRM) – July 2015
[weblink - aseaniwrm.water.gov.my]

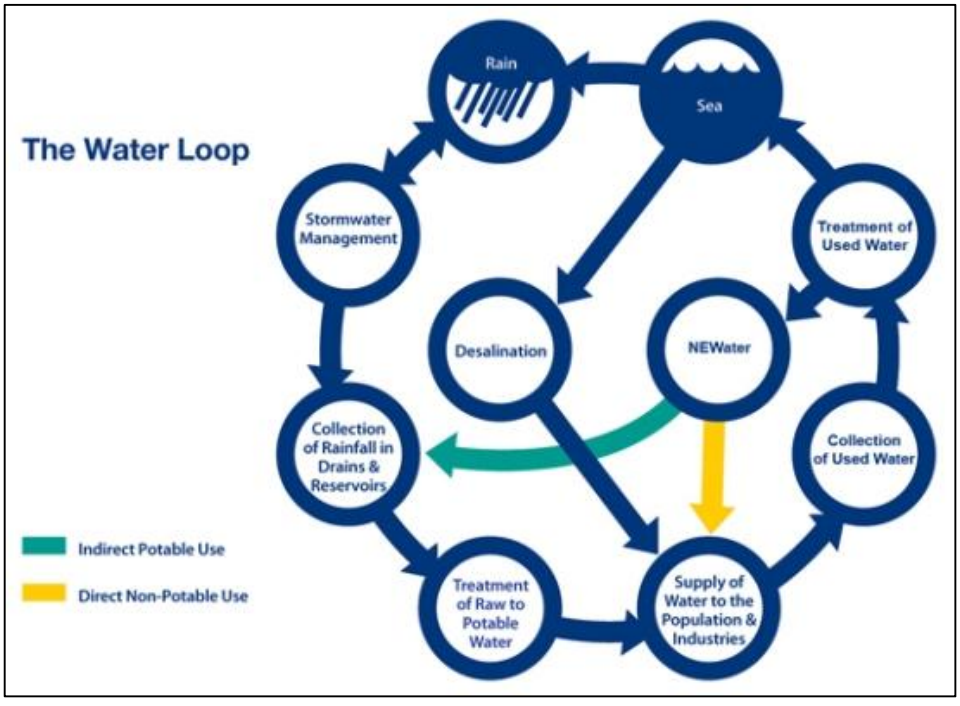
ASEAN IWRM PERFORMANCE REPORTS & MONITORING INDICATORS

Institutional Set-up Indicators [2010]

IS Indicators	1. Any Integrated national and provincial institutions to implement sanitation policies	8	See note 1
	2. Any Policy & Planning Department on sanitation and sewerage	8	See note 2
	3. Any Project management Department for sanitation and sewerage	8	See note 3
	4. Any Development control branch or unit for sanitation and sewerage	8	See note 3
	5. Any private sector participation in providing sanitation services for the people	8	See note 4
	6. Any Sewerage Network Rehabilitation department	8	See note 3
	7. Any Sewerage & Sanitation Maintenance department	8	See note 3

Institutional Setup Indicators Notes

1. PUB is the national water agency that is responsible for the collection, production, distribution and reclamation of water in Singapore. From rainwater collection to used water treatment, the entire water loop is managed by PUB.



2. The Policy and Planning Department ensures long term adequacy, reliability and security of water supply and used water management.

3. The Water Reclamation (Network) Department ensures reliable sewerage network to collect and convey all used water for reclamation. The Department regulates sewerage

Source: ASEAN Working Group for Water Resources Management (AWGWRM) – July 2015
[weblink - aseaniwrm.water.gov.my]

and sanitary works, as well as carries out the construction, maintenance and rehabilitation of the sewerage network.

4. PUB outsources a large component of the operations and maintenance works of our sewerage facilities to the private sector contractors.

Management Tools Indicators [2010]

MT Indicators	1. Any national sanitation/sewerage information systems/database	8	See note 1
	2. Any comprehensive sewerage/sanitation master plan at national, regional and local levels	8	See note 2
	3. Any code of practices for sewerage and sanitation system design	8	See note 3
	4. Any system for treating wastewater for reuse [for non-potable water purposes (i.e. further treatment after waste water treatment process)]	8	See note 4
	5. Any sludge disposal programs and systems	8	See note 5

Management Tools Indicators Notes

1. Sewerage Information Plan (SIP) shows the information of sewer network (i.e. alignment, as-built levels, size, material, date of construction, date of rehabilitation of sewers, etc).

2. A comprehensive sewerage/sanitation master plan is included in PUB's Integrated Water Master Plan (IWMP).

3. The Code of Practice on Sewerage and Sanitary Works is made available via PUB's website to guide Qualified Persons in the proper planning and design of the sanitary and sewerage system.

4. Final treated effluent from the water reclamation plants is further treated to produce industrial water (IW) and NEWater. IW is used for cooling, washing or further treatment to higher grade IW. NEWater has been used mainly for industrial and air-con cooling purposes at wafer fabrication parks, industrial estates and commercial buildings, freeing up large amounts of potable water for other uses.

5. Sludge from used water after the treatment at Water Reclamation Plants (WRP) is digested to produce methane gas for in-plant generation. The digested sludge is dewatered, dried and sent for incineration.