

Wafer Fabrication and Semiconductor Plants Benchmarks



The wafer fabrication & semiconductor sector is one of the largest water consuming industrial users in Singapore. It consumes about 25.7 mgd of potable water and NEWater from PUB, equivalent to about 11% of Singapore’s total non-domestic water demand.

Figure 1 below shows a breakdown of the overall water usage statistics in the wafer fabrication and semiconductor sector.

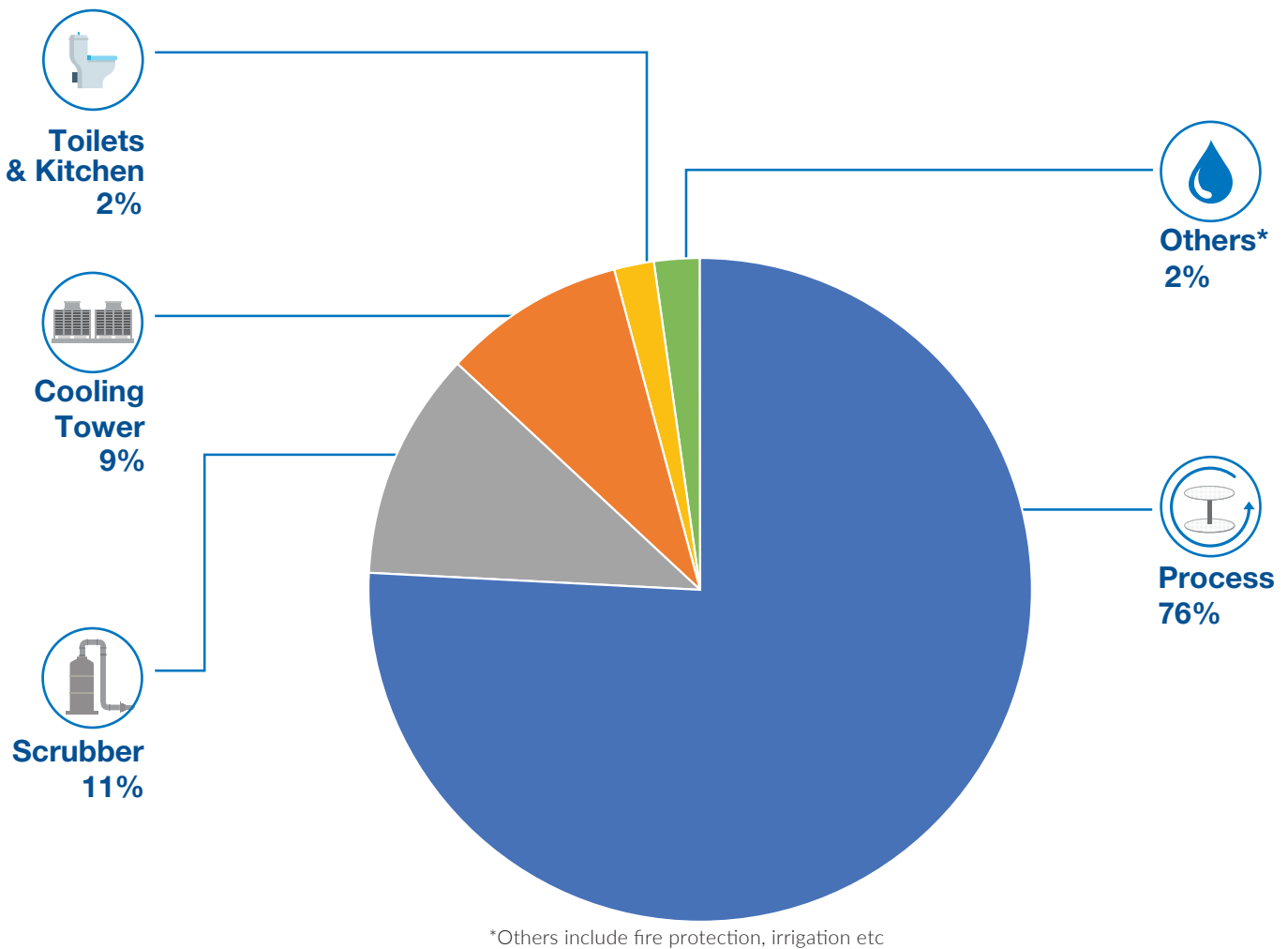


Figure 1: Breakdown of Water Usage for Wafer Fabrication and Semiconductor Sector

As the water consumption for this sector is high, it is important for all plants to reuse and recycle as much water as possible to ensure water sustainability. Recycling rate is computed using the total recycled water of a plant divided by summation of the total supplied water and recycled water.

$$\text{Recycling Rate (\%)} = \frac{\text{Total Amount of Water Recycled}}{\text{Total Amount of Water Recycled} + \text{Total Supplied Water}}$$

All wafer fabrication plants in Singapore practise some form of water recycling. The plants' recycling rates range from 23% to 65%, with an industry average of 45% as shown in Figure 2 below.

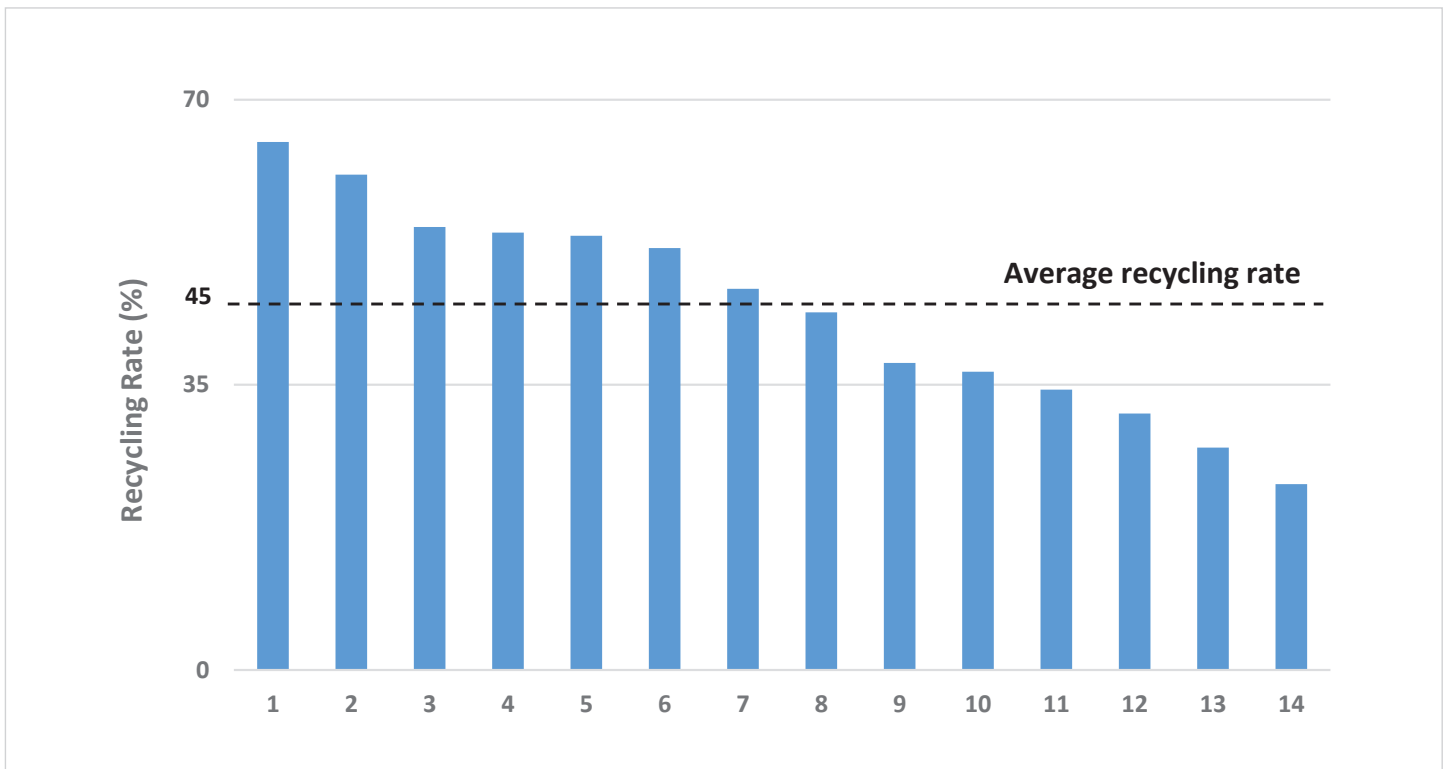


Figure 2: Recycling Rates of Wafer Fabrication Plants

For semiconductor plants, the recycling rates range from 0% to 80%, with an industry average of 23% as shown in Figure 3 below.

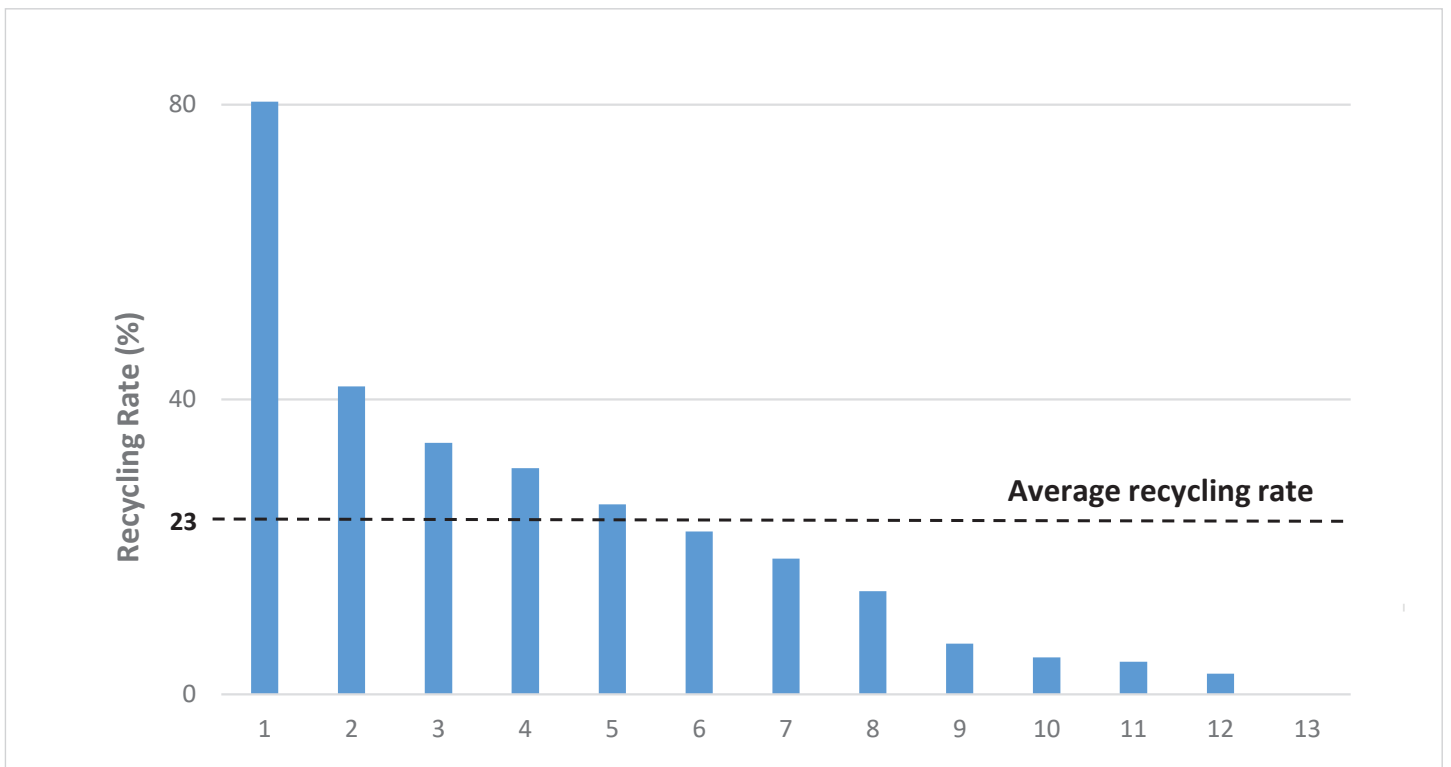


Figure 3: Recycling Rates of Semiconductor Plants (Excluding Wafer Fabrication Plants)