

## OPPORTUNITY #41

WHAT IF WATER WAS A FOREVER RESOURCE?

# AN ENDLESS WATER CYCLE

Water is ours to recycle and use as  
and when needed

### WHY IT MATTERS TODAY

Water is fundamental to life on Earth. Around 50%–70% of our body weight is water (H<sub>2</sub>O) and each adult needs an average of 3.2 litres of water per day.<sup>405</sup> ‘Virtual water’,<sup>406</sup> or the global average freshwater used to produce goods and services, also referred to as our water footprint,<sup>407</sup> per person is approximately 3,500 litres per day.<sup>408</sup>

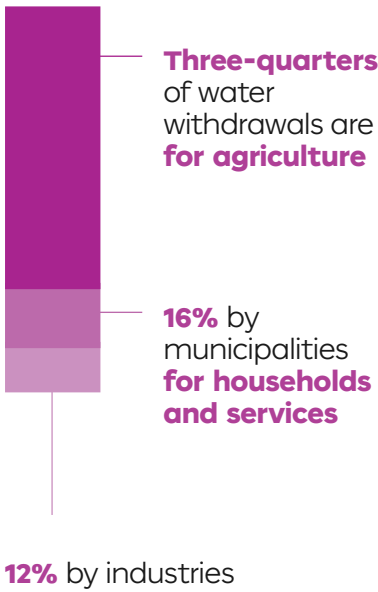
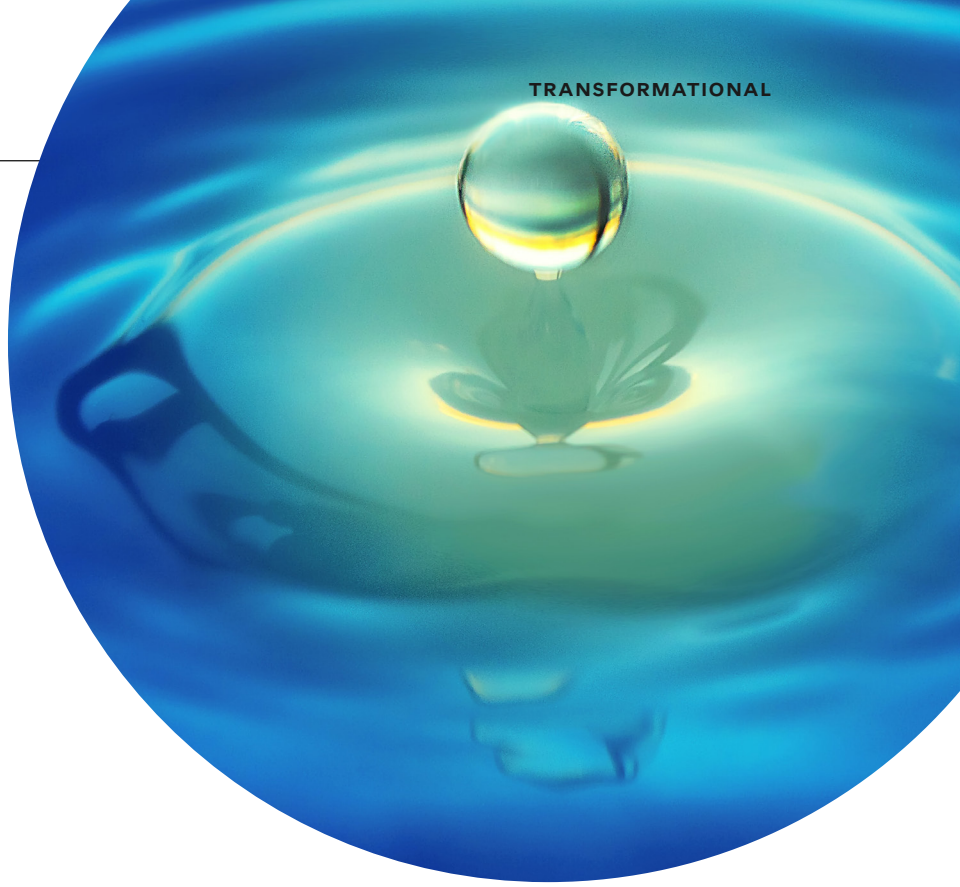
While the UN’s 6th Sustainable Development Goal (SDG6) is to ensure safe drinking water and sanitation for all, 26% of the world’s population lacked safely managed drinking water in 2020 and 44% of household water is not safely treated.<sup>409</sup>

Three-quarters of water withdrawals are for agriculture, 16% by municipalities for households and services and 12% by industries.<sup>410</sup> When a territory withdraws 25% or more of its renewable freshwater resources it is said to be ‘water-stressed’ and 2.3 billion people live in water-stressed countries.<sup>411</sup> While SDG6 has aims related to reusing wastewater, they are mainly focused on wastewater collection and treatment, with data gaps remaining around the world.<sup>412</sup>

One means of creating clean water is desalination of seawater. Having steadily increased in number since the 1960s,<sup>413</sup> there are now nearly 16,000 operational desalination plants around the world and 48% of desalinated water is produced in the Middle East and North Africa (MENA).<sup>414</sup> While desalination helps resolve challenges related to drinking water by removing salts from saltwater to make it drinkable, it also emits brine, a highly concentrated salt solution that contains high levels of chlorine and copper that can damage coastal and marine ecosystems.<sup>415</sup> For every litre of drinkable water produced, about 1.5 litres of brine is created.<sup>416</sup>

### SECTORS

AGRICULTURE & FOOD · ADVANCED MATERIALS & BIOTECHNOLOGY · HEALTH & HEALTHCARE ·  
INFRASTRUCTURE & CONSTRUCTION · REAL ESTATE · UTILITIES



**THE OPPORTUNITY TOMORROW**

Advanced water treatment solutions can enable each home or building to endlessly recycle its own water.

Such technologies can be supported by policies that provide for these solutions to be included in new builds and retrofitted to existing buildings. Utility companies can refocus away from managing centralised water treatment facilities and towards providing waste management services at building level to remove particle and chemical waste. This trend is partly inspired by space stations like the International Space Station, which recycles 93% of its wastewater.<sup>417</sup>

One of the prestigious Earthshot Prize finalists has been working to build a small-scale decentralised water reuse systems and autonomous control system for water treatment.<sup>418</sup>

**BENEFITS**

A self-sufficient water supply per household ensures no shortages or waste, leading to a massive reduction in domestic water demand and lessening the need for power to pump, desalinate or extract water. This improves people’s quality of life in extremely water-stressed areas.

**RISKS**

There are potential risks to health if systems fail. Risks to health and lives can arise from either unintentional errors or malicious damage to water treatment systems.