

Singapore taps into various sources of water

SINGAPORE: Fifty years ago, Singapore had to ration water, and its smelly rivers were devoid of fish and choked with waste from ship-building, pig farms and toilets that emptied directly into streams.

But it's a very different story today. The world's most densely populated country now collects rainwater from two-thirds of its land, recycles wastewater and is even developing technology that mimics human kidneys to desalinate seawater.

"In about a lifetime, we have transformed Singapore," said George Madhavan, an engineer who has worked for the national PUB water agency for 30 years and is now communications director.

"It's not rocket science – it is more political will ... The key success factor is really government – the leadership to pull different agencies together to come up with a plan."

As governments around the world wrestle with water crises from droughts to floods, many are looking to the tiny Asian city-state of Singapore for solutions.

In many countries, a flood prevention agency focuses on quickly draining away stormwater, while another manages drinking water.

In Singapore, PUB "manages the entire water loop", Madhavan told the Thomson Reuters Foundation.

Its aim is to capture every drop of



Innovative appeal: Tourists watching a demonstration of how the Marina Barrage dam works at a gallery in the Marina Barrage facility in Singapore. — Reuters

rain it can and recycle as much used water as possible.

"That means that ideally, we don't sell you water. We rent you water. We take it back, we clean it. We're like a laundry service. Then you can multiply your supply of water many, many times," Madhavan said.

"The water that you drink today is the same water that dinosaurs drank. We don't create or destroy water. It just goes around. So we are using engineering to shorten the loop."

Following independence on Aug

9, 1965, the new 700 sq km country relied on three reservoirs and water imported from neighbouring Malaysia.

Today, it collects rainwater through an 8,000km drain network that empties into 17 reservoirs, and reclaims used water from a deep tunnel sewerage system up to 60m below ground.

As climate change makes nature's sources less reliable, Singapore is focusing on its reclaimed and desalinated water taps.

NEWater, introduced in 2003, is the name for used water from the

sewerage system, treated and further purified through microfiltration, reverse osmosis and ultraviolet disinfection.

The island's first desalination plant opened in 2005, and desalinated water meets a quarter of demand.

Desalinated water and NEWater are fairly independent of the weather but on the downside, require more energy to produce, Madhavan said.

University researchers are also developing "the holy grail of desalination" – technology that imitates the kidneys, he said. — Reuters