

CHAMPIONING A CIRCULAR ECONOMY APPROACH TO RESOURCE MANAGEMENT

Singapore a world leader in water governance

CECILIA TORTAJADA
AND SUNIL NAMBIAR

Today, 2.1 billion people lack access to drinking water. By 2050, 3.9 billion people — more than two in five people — will live under severe water stress. Many reservoirs around the world are drying up, and countries around the world are struggling to produce water to keep pace with demand.

The truth is that while water is not an infinite resource, it can be used over and over again. There is more than enough water for every one of us around the world.

However, the issue at hand is that policy-makers around the world are repeating the same mistakes when it comes to managing water supply.

Wastage and pollution are rampant, and conserving water sources to keep up with rising demand is still an afterthought.

While the natural water cycle is circular, policy-makers around the world too often opt for a linear approach. This fails to take into account water's inherent recyclability.

Singapore, which marked 52 years

of independence this month, is one of the very few exceptions. And the city-state's approach to water governance holds lessons for other countries.

The trigger to develop a “circular water approach” was the realisation shortly after independence in 1965 that a sustainable water policy was essential for the nation's survival.

After some years of planning, the 1972 Water Master Plan proposed innovations in terms of policies, management and technology. It considered production of drinking water through desalination and recycling.

This meant linking water management with a circular economy — where used resources are not wasted, but used again.

Water, being fully recyclable, is the archetypal circular economy resource. In managing its water supply, the Republic was quick to recognise the possibility of reusing and recycling water from hitherto unimaginable sources — its drains and sewers.

Ultrapure recycled water in Singapore, branded NEWater, is the exemplar of Singapore's experience with the circular economy. Introduced in 2002, it is one of the four water sources



Pulau Seraya Power Station desalination plant on Jurong Island. Recycled water accounts for up to 40 per cent of Singapore's water supply.

TODAY FILE PHOTO

es in the water-scarce nation — the others being water from local catchment, imported water and desalinated water.

Recycled water accounts for up to two-fifths of Singapore's water supply. Because of its cost efficiency, businesses benefit significantly.

Today, a bulk of the NEWater supply is channelled to support the operations of commercial buildings and industries via a piped network. Singapore is the first country to use recycled water to meet higher purity water demands for wafer fabrication. The venture has been highly successful; the world's top three hard-disk drive manufacturers are based in the city-state.

With monitoring and strict control by Singapore's national water agency at every stage of the production and supply process, NEWater has been a reliable part of the city-state's drinking water supply for 15 years.

In 2014, NEWater was a winner at the United Nations' (UN) “Water for Life” Best Practices Awards for sustainable management of water resources.

The novel approach to water resource management has not resulted in diminished quality. NEWater well surpasses the World Health Organisation and United States Environmental Protection Agency standards, and is cleaner than the water flowing from taps in other major cities. Former UN secretary-general Ban Ki-moon once called it the “elixir of life”.

More effectiveness and efficiency are always possible. Policy-makers in the nation-state have been investing on research to produce more efficient technologies to reuse and recycle more water with processes that are less energy intensive. This means that not only is used water not wasted and is used again, this is done using less energy.

While zero wastage of both clean

and used water may be impossible, clearly the less water that is wasted, the better.

The most efficient alternative to reach nearly “zero waste” is water conservation by the population and by the commercial and industrial sectors. This would effectively mean that millions of litres of water would not have to be produced.

Use of recycled water for potable use is increasing in the world although it has not become a trend yet. Schemes in Windhoek in Namibia, and Orange County and Northern Virginia in the United States have produced it for a longer time than Singapore; while Texas and San Diego in the US, Perth in Australia and Emalaheni in South Africa have developed such capabilities more recently.

MAKING THE CASE FOR RECYCLED WATER

In Singapore, because of NEWater's unpalatable origins, policymakers are careful not to take public confidence for granted.

Even before it was introduced, PUB, the national water agency, took pains to conduct awareness-raising programmes at community centres and workplaces.

Information on the water recycling process is included in local science textbooks, and every school organises guided tours to the NEWater Visitor Centre for students to witness the process first-hand.

Education alone, however, is not enough to foster public acceptance. Establishing trust in the national water agency's capability to continuously produce clean water has been crucial.

Drinking NEWater in public, Singapore's senior politicians have become de facto ambassadors of recycled water.

Residents have, by and large, understood the importance of NEWater as a pillar of the national water supply. An independent Forbes Research poll, conducted at the end of 2002, indicated that NEWater had a 98 per cent public acceptance rate, with 82 per cent of respondents indicating that they would drink NEWater directly and another 16 per cent responding that they would drink it after blending with reservoir water.

Singapore shows that the potential for a circular economy approach to water management exists. Perhaps it is only a matter of time before policy-makers around the world follow suit.

● Cecilia Tortajada is a senior research fellow at the Institute of Water Policy, Lee Kuan Yew School of Public Policy, National University of Singapore. Sunil Nambiar is a researcher at the same institute.



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Cross-sector tie-ups key to meeting green buildings goal

FROM VEERA SEKARAN

In Parliament last month, Finance Minister Heng Swee Keat, who heads the Future Economy Council, pointed to the need for close collaboration to support Singapore's future economy.

He quoted the Building and Construction Authority (BCA) as an example. The agency brought together 400 industry stakeholders and identified 35 technologies across seven clusters in the built environment that can help to unlock productivity gains.

Much has been reported on elevating the building industry through the use of technology. And yet technology seems to be discussed mostly in the context of productivity gains, especially as manpower remains a chal-

lenge for an economy like Singapore's.

In today's digital economy, technology has the potential to bring the industry benefits beyond manpower gains.

The Internet of Things, for instance, is making its presence felt in the future of buildings, helping to monitor energy and water usage for conservation purposes, among others.

Sensors are now widely used to improve buildings users' experience through autonomous operations, reinforcing Singapore's aspiration to be a Smart Nation.

Mr Heng called for an important element to realise the future of buildings: Collaboration. As building users, we sometimes fail to appreciate the intricacies that make a building run smoothly and provide us with the comfort to perform our activities.

Buildings are institutions that require cross-sector and multidisciplinary collaboration between architects, builders, engineers, facility managers and suppliers of fittings such as heating, ventilation, lights, water and cooling.

Today, this team should expand to include technology providers with expertise in energy operations that will improve building efficiency.

As a player in the urban greening industry, I am heartened to note that greening a building is becoming an

important agenda as awareness of the importance of environmental conservation is heightened among consumers and developers.

One change I have seen is the greater appreciation of the industry, beyond the notion of planting trees.

A green wall facade, for example, requires technology partners to provide remote monitoring of water, light and soil conditions, and to automate processes such as irrigation systems to eliminate elaborate maintenance.

Many engineering specifications go into building such green systems, which would not be possible without collaboration across disciplines.

The upcoming Build Eco Xpo and Mostra Convegno Expocomfort are showcases of the interplay of building innovations that work together to transform the experience that future buildings can provide.

Singapore signed the Paris Agreement last year, pledging to reduce its emissions intensity by 36 per cent from 2005 levels by 2030. Buildings, which contribute almost a quarter of total emissions here, can contribute to this goal.

The BCA has set a target of greening 80 per cent of Singapore's buildings by 2030. Close collaboration between members within and outside the built environment will be pivotal to realising this.

● The writer owns an urban greening solutions company.

Hold employers, dormitory operators to greater account

FROM KWAN JIN YAO

I refer to the report "Two foreign workers' dorms flagged for hygiene, safety lapses" (Aug 14).

This is not the first time transgressions in foreign workers' dormitories have been observed and reported, yet

the extent to which the submission of documentation and observations to the Government influences the penalties meted out is unclear.

In fact, the visits conducted by the Migrant Workers' Centre (MWC) bring to mind broader questions: The prevalence of poor living conditions

among foreign workers, the avenues of redress, and whether other non-governmental groups can flag more instances of abuse.

In the context of punishments and ramifications, in addition to the individual news stories, the Ministry of Manpower could detail the actions taken against employers, corresponding with the rules they have flouted. The availability of these trends would bring to attention repeat offenders, and an analysis of the types or patterns of transgressions would help with the identification of regulatory loopholes.

Furthermore, given that the MWC has uncovered these lapses and is assisting with salary claims, it is in its interest to follow up with the ministry, to ascertain the appropriateness of punitive measures and ensure that corrective policies are adopted.

It should be in the Government's interest to hold employers and their dormitory operators to greater account, and to research foreign workers' perceptions on a regular basis.

Policy problems on the ground can then be addressed quickly, and perhaps definitions of what is deemed liveable in dormitories could be improved.

If this is already done, then sharing these findings would allow the MWC and other non-governmental groups to police more actively.

Employers may decry such scrutiny, even though the need for them to provide their workers with a decent living environment is obvious.

Govt must help mitigate adverse impact of technology on society

FROM TEO KUEH LIANG

I read with interest the commentary "As Smart Nation drive speeds up, anxieties arise" (Aug 15).

When we place emphasis on technology in national and social development, a segment of society is bound to be at risk of lagging behind because of an inability to adapt to the change.

If the change is unavoidable and is a way for Singapore to continue progressing and prospering, then the authorities face the task of helping those people pick up basic technological skills and motivating them to cope with the challenges.

The rapidity of technology can move the country forward, generate business opportunities and change our

way of life and thinking, but also result in psychological pressure and fears.

The Government has a responsibility to explore measures to keep the adverse impact to a minimum. The SkillsFuture movement and lifelong learning schemes are two manifestations of the Government's efforts to upgrade citizens' technological and cyber knowledge to meet the dynamic challenges.

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