

Can Singapore make better use of existing space?



Land reclaimed off Pulau Tekong in 2025. Singapore's long-term planning looks 50 years ahead and beyond. While the country cannot know how the people living in 2076 will work, travel and want to live, it needs to ensure they still have room to decide, says the writer. PHOTO: ST FILE

Maximising every hectare is crucial. But we also need to leave room for the unknown.

Ben Chester Cheong

Prime Minister Lawrence Wong's National Day Rally speech offered a striking glimpse of how Singapore's map may change again.

Several islands off western Singapore could eventually be joined to form a new western island. More land could be reclaimed around Pulau Tekong. And because bridges to Tekong would cut across busy shipping channels, the Government is studying an altogether more ambitious possibility: going underneath them, through undersea road tunnels.

The immediate response is to marvel at the engineering. But there's a bigger story here.

For much of Singapore's history, our approach to land was simple: We had too little territory, so we reclaimed more of it. But there are limits.

The sea around us is already intensively used for ports and other infrastructure. We cannot extend our coastline indefinitely.

Traditional land reclamation also involves an enormous amount of sand, which we need to import. Regional restrictions on sand exports have previously forced Singapore to diversify its sources, while exploring other methods of land reclamation that use less sand.

Environmental constraints are also growing, as reclamation alters coastlines, marine habitats and water conditions – factors future projects must address.

Climate change and rising sea levels add a final complication. As we contemplate creating new land in the sea, we also need to prepare to defend existing land from that same sea.

The new projects show that reclamation will remain important. But can we get more out of the land we already have?

UNDERGROUND, AND BELOW THE SEA

In an increasingly crowded city, we should default to a simple rule. Functions that do not need the surface should have to make a

stronger case for occupying it.

We can do more with our underground space.

Jurong Rock Caverns, for example, lies about 150m beneath Jurong Island. Its caverns can store 1.47 million cubic m of liquid hydrocarbons. Putting that infrastructure underground saves about 60ha of surface land for higher-value activities.

Storage tanks, utilities, pipes and transport links do not need sunlight. People generally do.

No doubt going underground is expensive and technically difficult. Underground space is also finite. A tunnel built in the wrong place today could obstruct infrastructure needed decades later. Careful planning is therefore needed. But there is potential to do more.

We can also look below the sea. This is where we need more sophisticated and creative engineering solutions to our land scarcity issue.

In 2025, Singapore reclaimed a plot of land of about 800ha off Pulau Tekong, roughly the size of two Toa Payoh towns. It was the first time Singapore reclaimed land below the average sea level – and also shows how radically the idea of land reclamation has changed.

Rather than traditional reclamation, a new method called empoldering was used, which reduced sand use by close to half.

There is something counter-intuitive about creating land below the sea just as the sea is rising. But the Tekong project shows that while we have not eliminated the physical constraint of land scarcity, we can change our engineering response to it.

Ultimately, the Singapore of the future should be planned not only across the map, but above and below it.

GIVING OLD LAND NEW LIVES

There is another source of “new” land that requires no reclamation at all. Old land.

Cities accumulate uses in places that once made sense. Ports needed waterfronts. Airports were built near what were then the edges of cities. Industrial areas were kept apart from homes. Roads reflected the transport assumptions of their time.

Then the city grows around them, and yesterday's sensible land use becomes tomorrow's

constraint.

As Singapore's needs grow, we face an increasingly important question: Does everything already on our map still need to be where it is?

Paya Lebar Air Base will be relocated from the 2030s, freeing up about 800ha for a new town. But the real land gain is larger. Removing the airbase will also lift some building height restrictions around it, allowing surrounding areas to be reconsidered.

Singapore does not become one square metre larger. Yet, its effective supply of usable land increases.

We can push this further. Can the next use of our land do several jobs at once?

In a land-abundant country, an industrial estate, power facility and defence installation might occupy three separate areas. Singapore cannot afford that luxury.

Where safety and operational requirements permit, the objective should be to co-locate compatible uses so that one piece of land performs several functions.

The proposed western island offers a glimpse of this approach. PM Wong said it could accommodate a new generation of industries, including advanced manufacturing, while also providing space for future power-generation infrastructure and defence needs.

The Urban Redevelopment Authority (URA) already points to co-location as an explicit land strategy, from stacking facilities to combining uses at sea.

Even climate infrastructure is increasingly expected to do more than one job: Marina Barrage, for example, contributes to water supply and flood control while also providing recreational space.

A hectare doesn't need one

The future has to be about exploring new ways of using existing land, giving it more than one life and preserving enough flexibility for needs we cannot yet see.

permanent identity. Nor, increasingly, should it necessarily have only one purpose at a time.

RETAINING FLEXIBILITY

The scarcer the land becomes, the greater the pressure to plan every square metre carefully. But perhaps the wisest use of the land is to not use it yet.

Imagine planners in 1976 trying to specify Singapore's precise land requirements in 2026. They could not have foreseen data centres, today's digital economy or the exact infrastructure demands created by climate change.

Of course, some decisions cannot wait – like coastal protection or major transport infrastructure that takes decades to deliver.

But where future needs are genuinely uncertain, committing land too early can also close options.

Singapore's long-term planning looks 50 years ahead and beyond. URA deliberately identifies future development areas, reserve sites and white sites partly to retain room to adjust plans when needs and opportunities change.

We cannot know how the people living in the Singapore of 2076 will work, travel and want to live. We need to ensure they still have room to decide.

Previous generations changed our coastline so that we can inhabit the Singapore we have today. Our challenge is more complicated. The easiest reclamation has been done, the city is denser, environmental constraints are greater, and the demands placed on every hectare have multiplied.

The future, therefore, has to be about exploring new ways of using existing land, giving it more than one life and preserving enough flexibility for needs we cannot yet see.

Singapore's map has never really been finished. The achievement of long-term planning is not to finish it for our children, but to leave them enough blank space to keep drawing.

• Ben Chester Cheong is a law lecturer at the Singapore University of Social Sciences. He is also a counsel at Rajah & Tann and an associate academic fellow at the NUS Asia-Pacific Centre for Environmental Law.