Source: *The Straits Times,* pA19
Date: 18 May 2022

Singapore needs to front-load its climate spending

While Singapore has a $100 billion long-term plan to safeguard the island from rising seas and other effects of climate change, it should also consider pumping in more funds sooner, not least because forecasts of climate-related damage are changing

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For The Straits Times

As the signs and scientific evidence of the dangers of climate change grow by the day, one question that arises is whether Singapore is doing enough by way of building its defences against rising sea levels and other countermeasures.

The Singapore Government has undertaken several measures in anticipation of the impact of climate change. These include some $2.2 billion worth of investment in the decade since 2011 to strengthen our drainage system and the establishment of a coastal and flood protection fund in 2020 with an initial outlay of $5 billion.

Considering the stakes, it could also do more to lean into its climate adaptation strategy by "front-loading" the outlays on defensive structures and coping mechanisms.

For instance, shoring up coastal defence is of utmost priority, given the inexorable rise in sea levels as a result of global warming and the low-lying nature of the island. A third of Singapore, including its central business district, is less than 5m above sea level.

Another priority area is our drainage systems, which need reinforcing to withstand more intense and frequent flash floods.

Urgent attention too needs to be given to the resilience of our food supplies. Singapore is land scarce and highly dependent on imported food. This makes it vulnerable to shocks arising from crop losses in countries devastated by floods and droughts, not to mention war. Rising global temperatures are a threat to agriculture. For instance, India, currently in the grip of a killer heatwave with temperatures crossing 49 deg C in New Delhi and other places, has slapped restrictions on the export of wheat for fear of shortages ahead.

Last month, Singapore was hit with the highest temperature recorded since 1983. For densely-built up Singapore, prolonged spells of high temperatures can present health and other problems.

The government alone cannot do it all in trying to meet the many challenges arising from climate change. Greater collaboration with other stakeholders – business and civil society – is needed. Crucially, coordinated steps with neighbours are also vital for climate solutions.

WHY SOONER IS BETTER

Adaptation measures, such as investing in seawalls, protective land reclamation and dykes, are capital intensive and expensive. But these expenditures need to be seen alongside their rewards in the form of damage avoided.

One example is comparing the cost of constructing a seawall with the even higher losses averted from inundation, not to mention the extra value of enhanced biodiversity if the seawall was designed with that in mind.

Much of these gains from adaptation are social and environmental, for example in lives and livelihoods saved and biodiversity protected. Protecting beaches and mangrove estuaries can carry a high valuation.

It is this calculus that implicitly underlies the Government's announcement in 2019 to spend $100 billion over this century to safeguard the island from the impact of climate change. Much of the funds for climate adaptation measures goes to tackling the fallout from rising sea levels. A sum of $400 million spread over two years was set aside to upgrade drainage.

But are these measures enough? Crucial questions concern Singapore's climate adaptation plan's timing and phasing, composition, and efficiency as well as complementary steps.

Scientific reports are continuously raising the projected climate damage, one reason being the lacklustre and disappointing progress in climate mitigation globally. So, the authorities need to push the envelope further, in advancing the timing of the investments, sharpening its composition, and taking complementary measures to ensure ecological and financial sustainability.

Clearly, there are trade-offs between investing in climate resilience and reviving the economy from Covid-19. There is merit in being flexible and looking for new technologies to lower adaptation costs. But a reason for front-loading the investments is that it is better to build resistance before the problem gets progressively worse. Furthermore, putting a greater weight on the earlier period can also enable gains to be realised earlier and longer.

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The cost of sea level defences is known to increase exponentially; in one assessment for Singapore, it went from US$0.3 million-US$5.7 million (S$416,000 to S$7.9 million) by 2050 to US$0.9 million-US$6.8 million by 2100. In this spirit, immediate outlays, including building the docks of the container terminal at Tuas more than 5m above sea level, are justified. The same could be said for installing additional pumping stations at Marina Barrage that seals off the Singapore River.

The choice of priorities for climate adaptation matters greatly. As mentioned earlier, coastal defences are vital given Singapore's geography. A project to build a barrier along 21 per cent of South Korea's coastline has shown that the benefits that accrue from building such safeguards in terms of flooding and other damage averted exceed the sizeable investment costs.

A complementary approach should be to scale up the variety of nature-based solutions that are becoming available. One example is designing seawalls that work together with natural elements such as mangroves to dissipate waves and prevent coastal erosion. It helps that Singapore has experience in nurturing mangroves in Pulau Semakau and Pulau Tekong.

Interventions are also needed to enable Singapore to withstand more intense rainfall and extreme storms. PUB, the national water agency, has made a solid start by introducing flexibility and adaptability to the drainage system. Beyond deepening and widening drains and canals, its approach incorporates solutions that slow down the flow of stormwater into the drainage system. Adopting this approach is paying off in other countries, including the Netherlands. More such innovative measures should be encouraged.

It will also be essential to co-opt the private sector and civil society as partners in the Government's efforts. Capital intensive projects, like coastal defences, with long pay-off periods will indeed require the Government's lead, but they, too, should have private sector participation. In smaller scale initiatives, local answers are best derived from societal involvement, be it ways to flood-proof subway stations or the development of green "sponge" areas to absorb floodwaters.

Strong collaboration with business and civil society is also crucial in finding ways to boost food security in land-constrained Singapore. For example, modern farms, such as Sky Greens, are increasingly using new technology to increase food production.

Finally, Singapore cannot go it alone in climate adaptation. Complementary actions are needed with neighbours to confront rising sea levels, sharing water and trading in clean energy. Tsinghua University projects a one-third drop in gross domestic product in Asean in the event temperatures are allowed to rise to 3.2 deg C by 2048, including from heavy agricultural losses. Singapore cannot avoid economic stress if its neighbours are battered by drought, floods and other effects of climate change. Food supply and tourism are two areas that are likely to be hit.

The Asean Agreement on Disaster Management and Emergency Response is a modest example of regional cooperation in adaptation. Its plan for 2021-2025 sets out specific ways in which disaster agencies in member countries can better share know-how and resources in the event of floods and typhoons.

As with Covid-19, the impact of climate change does not respect national boundaries. As such, all members of Asean must step up efforts to come up with measures on shared climate adaptation.

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