

Climate Change: Singapore will do our part

According to the Intergovernmental Panel on Climate Change, global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate.

Our world's oceans will get warmer and ice melt will continue, resulting in sea level rise of about 40cm to 63cm by 2100.

As a low-lying island city state, Singapore is particularly vulnerable to the impacts of climate change.

The Centre for Climate Research Singapore has projected that Singapore could experience an increase in daily mean temperature of 1.4°C to 4.6°C, more intense and

frequent heavy rainfall events, and mean sea level rise of up to 1 metre by 2100.

To enable Singapore to tackle climate change and prepare for the future, we must build up 3 types of resilience:

- **Climate resilience** to address the existential threats of climate change, especially rising sea levels.
- **Resource resilience** to ensure a safe and secure supply of critical resources, like food, water and materials.
- **Economic resilience** to ensure the future Singapore economy remains competitive by overcoming carbon and resource constraints.



Singapore's 2030 Climate Pledge Under The Paris Agreement:

To peak emissions at 65 million tonnes of CO₂ equivalent (MtCO₂e) around 2030. Based on current projections, this will allow us to achieve a 36% reduction in Emissions Intensity from 2005 levels by 2030.

We are committed to play our part as a responsible global citizen by taking ambitious action to ensure that we are on track to meet our commitments. We are also committed to implementing the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs), including SDG13 - to take urgent action to combat climate change and its impacts.

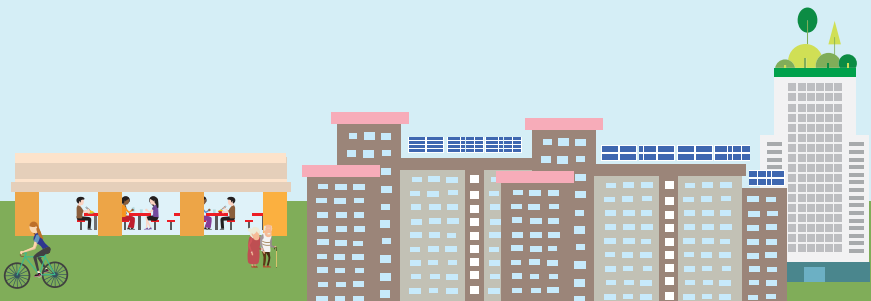
Singapore's Long-Term Low-Emissions Development Strategy

Building on our 2030 climate pledge, our Long-term Low Emissions Development Strategy aspires to:

Halve emissions from its peak, to 33MtCO₂e by 2050, with a view to achieving net-zero emissions as soon as viable in the second half of the century.

Mitigation Efforts

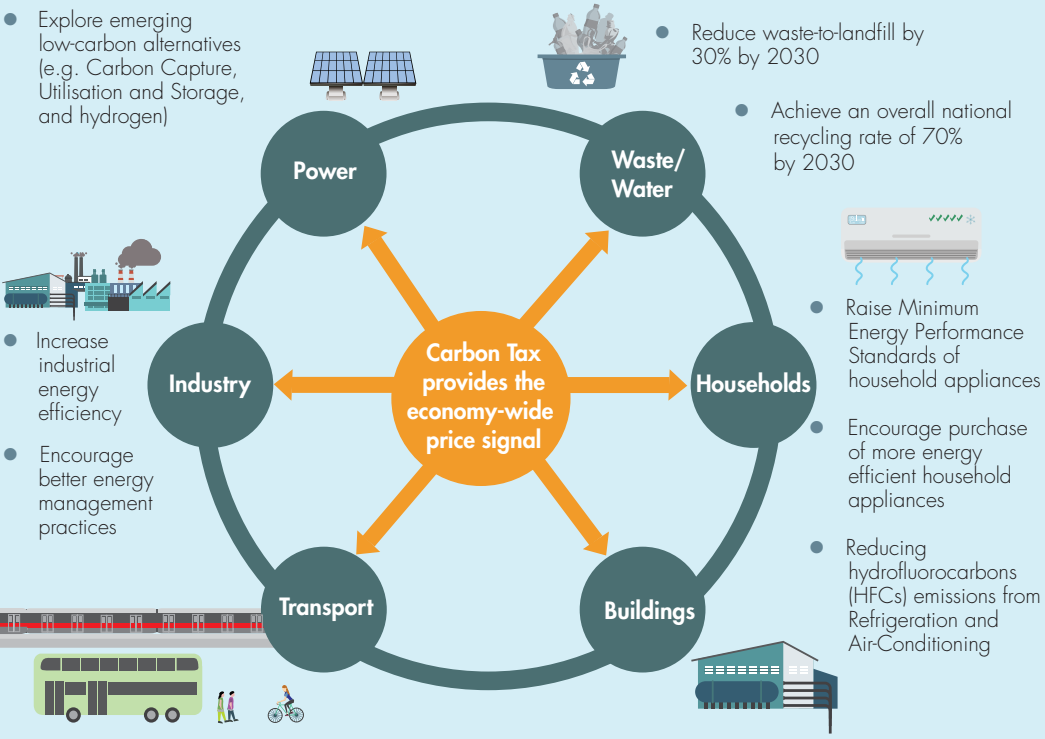
Climate change requires a global response. Singapore is committed to do its part. Singapore's greenhouse gas (GHG) emissions in 2017 was around 52 MtCO₂e. The industry sector is the largest emitter accounting for about 60% of our total emissions, followed by the transport (15%) and buildings sector (15%).



To achieve our vision of a low-carbon and climate-resilient future, and in support of SDG13, we have put in place a comprehensive suite of measures. A summary of our strategies is provided below.

We Need To Reduce Emissions Across All Sectors

- Adopt more efficient technologies
- Increase deployment of solar energy to at least 2GWp by 2030
- Explore tapping on regional power grids
- Explore emerging low-carbon alternatives (e.g. Carbon Capture, Utilisation and Storage, and hydrogen)
- Improve energy efficiency of desalination and NEWater
- Take a circular economy approach to achieve a Zero Waste Nation
- Reduce waste-to-landfill by 30% by 2030



Singapore's mitigation measures are in line with the SDG13.2 and SDG13.3 targets to integrate climate change measures into national strategies and policies, as well as to improve human and institutional capacity to address the effects of climate change.

Improving Our Industrial Energy Efficiency

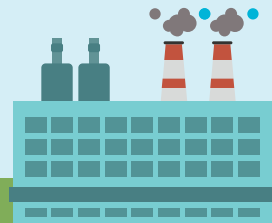
Improving energy efficiency (EE) is one of our key strategies to reduce emissions. We are ranked by the International Energy Agency as amongst the 20 best-performing countries in terms of emissions intensity.



Singapore aims to achieve industrial EE improvement rates of 1% to 2% per year, similar to that achieved by leading developed countries. We enhanced the Energy Conservation Act in 2017 to require large energy users to conduct regular energy monitoring and reporting, and implement energy management systems. This helps them identify energy-saving opportunities.

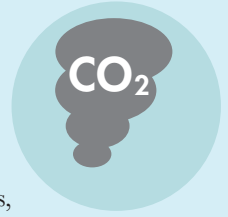
To phase out inefficient common industrial equipment and systems, we introduced the Minimum Energy Performance Standards (MEPS) for motors in 2018, and Minimum Energy Efficiency Standards (MEES) for water-cooled chilled water systems in industrial facilities in 2020.

The Government provides grants to assist companies to implement EE measures. In 2019, these grants were enhanced to provide greater co-funding support for the companies. We are also working to grow the industrial EE ecosystem, and build up the capabilities of EE professionals.



Carbon Tax

Singapore is the first country in Southeast Asia to introduce a carbon tax. From 1 January 2019, industrial facilities emitting 25,000 tCO₂e or more annually have to pay a carbon tax on their GHG emissions. Around 80% of Singapore's GHG emissions are covered.



The initial carbon tax rate is S\$5 per tonne of GHG emissions, and is applied uniformly across all sectors without exemption to maintain a transparent, fair and consistent carbon price across the economy. The Government will review the tax rate by 2023, with plans to increase it to between S\$10 to S\$15 by 2030. This will take into consideration factors such as international climate change developments and the progress of our climate mitigation efforts.

As power generation companies are also subject to the carbon tax, the price signal will flow through the whole economy to incentivise emissions reduction across all sectors. We will use revenue from our carbon tax to provide grants and incentives to help businesses and households reduce their emissions and become more energy and carbon efficient.

Safeguarding Green Spaces

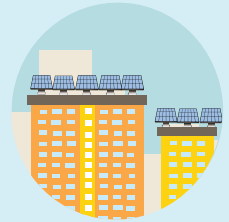
Singapore has safeguarded more than 7,800 hectares of green spaces, consisting of nature reserves, nature areas, over 350 parks, and an extensive network of streetscape greenery. These green spaces store carbon and are also used for recreational and educational purposes.



As the next bound of our urban planning, we will transform Singapore into a City in Nature. We will continue to increase our green spaces, and plan to have an additional 1,000 hectares of green spaces by 2035. A “One Million Trees” movement has also been launched, to plant a million trees across Singapore by 2030.

Increasing Energy Efficiency in Buildings

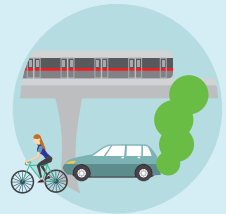
We have greened more than 40% of our buildings (by gross floor area) and are on track to meet our target of 80% by 2030. We have also developed the Super Low Energy (SLE) Building Programme, to encourage the industry to achieve best-in-class building energy performance in a cost effective manner.



To support the push towards more energy efficient buildings, we plan to raise the minimum energy performance standards for all new and existing buildings undergoing major retrofitting works. We will also identify all buildings in the annual publication of buildings' energy performance data, to facilitate benchmarking and spur building owners to improve the energy efficiency of their buildings.

Greening the Transport Sector

We aim for 9 in 10 of all peak period journeys to be made on active mobility and public and shared transport modes by 2040. To do so, we will expand our cycling paths and network to more than 1,000km, from 440km in 2019. The rail network will also be expanded by 2030, with 8 in 10 households within a 10-minute walk from a train station.



We aim to phase out internal combustion engine (ICE) vehicles, and have all vehicles run on cleaner energy by 2040. The public sector will take the lead and progressively procure and use cleaner energy vehicles, including for public bus services.

To make electric vehicles (EVs) more accessible and promote their adoption, we have introduced the EV Early Adoption Incentive and will expand the charging infrastructure for EVs, especially in public carparks island-wide.



Cleaner Forms Of Power Generation

We will harness the “4 Switches” (Natural Gas, Solar, Regional Power Grids and Emerging Low-Carbon Alternatives) to create a sustainable energy future for Singapore.

Today, 95% of our electricity is generated from natural gas, the cleanest fossil fuel source. We are working with companies to encourage the adoption of more efficient power generation technologies.

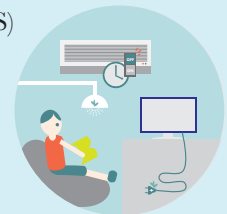


Singapore is recognised as an alternative-energy disadvantaged country. In spite of this, we aim to raise our adoption of solar power to at least 2 gigawatt-peak (GWp) by 2030, which is approximately 10% of our current peak daily electricity needs. We are investing significantly in innovative solar technologies, and have deployed floating solar photovoltaic systems on our reservoirs.

We are also exploring (i) ways to tap on regional power grids to access energy that is clean and cost-competitive, and (ii) emerging low-carbon solutions that have the potential to help reduce Singapore's carbon footprint. These include Carbon Capture, Utilisation and Storage (CCUS) technologies and hydrogen.

Encouraging More Energy Efficient Households

We have introduced Minimum Energy Performance Standards (MEPS) and the Mandatory Energy Labelling Scheme (MELS) to encourage the use of more energy-efficient equipment in households. MELS allow consumers to make more informed purchasing decisions while MEPS removes energy inefficient models from the market. To date, MEPS and MELS together cover air-conditioners, refrigerators, televisions, clothes dryers and lamps.



In 2020, we introduced a S\$24.8 million Climate-friendly Household Package to encourage households to purchase energy-efficient appliances and water-efficient shower fittings.

Reducing HFCs Emissions from Refrigeration and Air-Conditioning

We are implementing measures to reduce the emission of HFCs, greenhouse gases with high global warming potentials (GWPs) that are commonly used as refrigerants in refrigeration and air-conditioning (RAC) applications. This includes introducing a voluntary label to help consumers identify household appliances using climate-friendly refrigerants, and the progressive phase-out of RAC equipment using refrigerants with high GWP – starting with commercial water-cooled chillers, household refrigerators and air-conditioners from 2022.



The Voluntary Labels for air-conditioners (left) and refrigerators (right) using climate-friendly refrigerants

We will also introduce a training and certification scheme for technicians, and mandate the recovery and reclamation or destruction of spent refrigerants in decommissioned RAC equipment.

Towards Zero Waste

Singapore's inaugural Zero Waste Masterplan was launched in 2019, which outlines our strategies in adopting a circular economy approach towards a Zero Waste Nation. This will require the close partnership of stakeholders from across the public, private and people sectors.

Under the Zero Waste Masterplan, we aim to reduce the amount of waste sent to Semakau Landfill by 30% by 2030, to extend the Landfill's lifespan beyond 2035.

This is in addition to our target of achieving an overall recycling rate of 70% by 2030, under the Sustainable Singapore Blueprint 2015.

By adopting a circular economy approach, we aim to reuse resources for as long as possible. It will also require measures such as sustainable production and consumption, and waste and resource management across the entire value chain. This will reduce our environmental footprint, such as carbon emissions from production, and strengthen our resource resilience.



Strengthening our resource resilience can be achieved by viewing our waste as a resource and harnessing value from it. Doing so also mitigates climate change as virgin materials do not need to be extracted to create new products.

The Zero Waste Masterplan identifies three priority waste streams which have potential for waste to be turned into a resource – e-waste, food waste and packaging waste, including plastics. Food and packaging waste are generated in large quantities but have a low recycling rate. E-waste contains toxic substances which could have a detrimental effect on the environment if not properly managed. At the same time, e-waste contains valuable precious metals which can be extracted and used in new products.

The Resource Sustainability Act passed in 2019 provides a regulatory framework that promotes resource sustainability and the closing of these three resource loops.

The Act covers the following measures:

- Extended Producer Responsibility (EPR) framework imposed on producers and retailers of electrical and electronic equipment by 2021.
- Mandatory reporting of packaging data and submission of plans to reduce, reuse or recycle packaging for companies that introduce packaging into the Singapore market from 1 July 2020. This includes manufacturers and importers of packaged products, as well as retailers such as supermarkets. Singapore will also implement a Deposit Refund Scheme (DRS) for beverage containers by 2022 as the first phase of the EPR approach for packaging waste management.
- Mandatory segregation of food waste for treatment for large food waste generators by 2024.

With the aggregation of demand from these regulatory measures, we can also create a viable industry for resource recovery in Singapore. This has the potential to create net economic benefit for Singapore and provide an early mover advantage in the global push towards a circular economy. We hope to promote innovative circular business models and enable our companies to seize opportunities in the region for specialised waste treatment, recycling or remanufacturing.

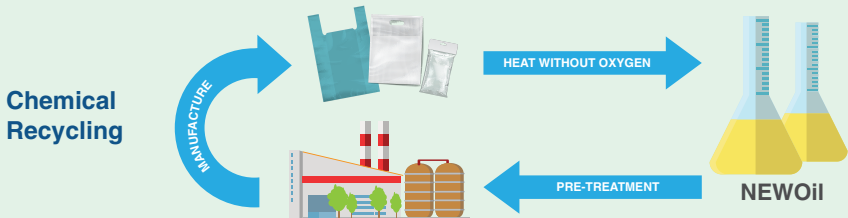
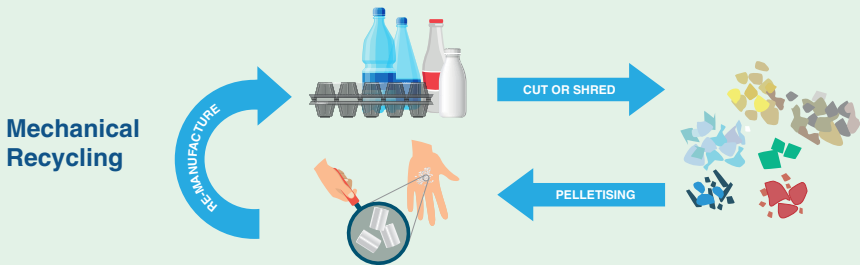
Case Study 1

Closing the resource loops: NEWSand and NEWOil

The circular economy approach to close resource loops is not new to Singapore. We have closed the water loop by turning waste water into ultra-clean water we call NEWater.

Similarly, we are making good progress in our quest to turn incineration ash into construction material we proudly call NEWSand. We hope to launch a commercial-scale NEWSand production facility soon.

We are also pursuing chemical recycling solutions to turn contaminated plastics into higher-value products, like pyrolysis oil, which is a potential feedstock for Singapore's petrochemical sector. We call this NEWOil. The government is working closely with industry partners to look into establishing a pilot plant that will contribute to and help anchor the chemical recycling value chain in Singapore within the next few years.

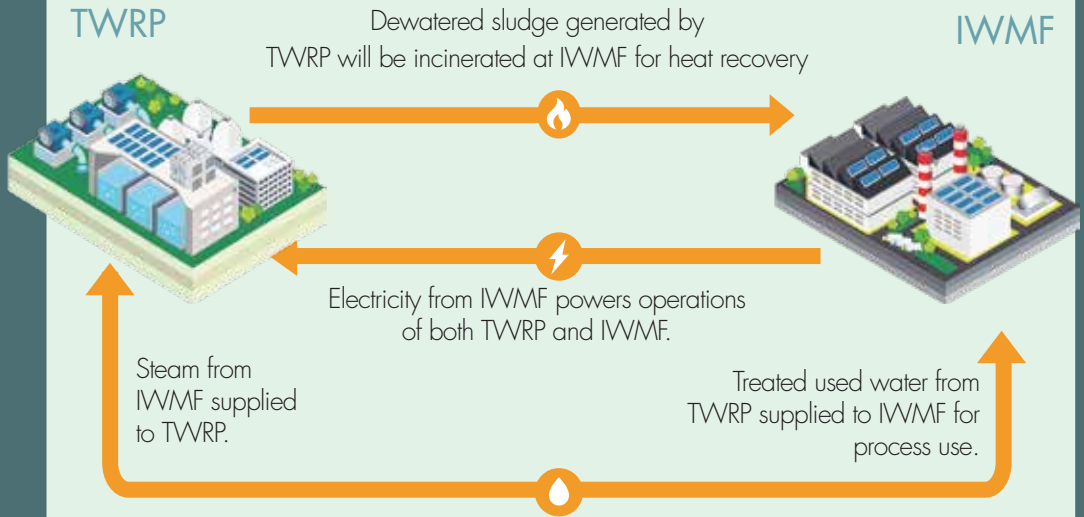


If successful, both NEWSand and NEWOil will further strengthen our resource resilience, and move Singapore closer towards a Zero Waste Nation and circular economy.

Case Study 2

Tuas Nexus: Enhancing waste-to-energy and reducing our carbon footprint innovatively

Singapore is developing the Tuas Nexus integrated facility to co-locate the Tuas Water Reclamation Plant (TWRP) and the Integrated Waste Management Facility (IWMF). Tuas Nexus will showcase the circular economy approach by harnessing synergies between water, waste and energy. The key synergies are:



Taken together, these process synergies will yield a reduction of 200,000 tCO₂e of emissions annually, equivalent to taking 41,000 cars off the road.

Case Study 3

Sustainability Measures in The Public Service Public Sector Sustainability Plan 2017-2020: Government Taking the Lead

The public sector is one of the largest organisations in Singapore, comprising 16 ministries, more than 50 statutory agencies, and employing 146,000 public officers.

The Public Sector Sustainability Plan 2017–2020 was launched in 2017. It outlines the efforts of public agencies to build capability in sustainability and conserve our scarce resources. Key targets that the Government has committed to achieve by 2020 include:



Reduction of electricity consumption
by 15%
from 2013 levels.



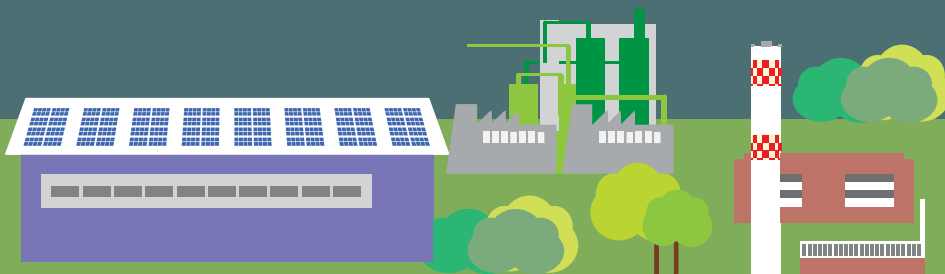
Reduction of water consumption
by 5%
from 2013 levels.



All new public sector buildings to attain **Green Mark Platinum standard**; and all existing large air-conditioned buildings to minimally attain **Green Mark Goldplus standard**

Together, these targets translate to a decrease of 130,000 tCO₂e of emissions annually, equivalent to the emissions of about 28,000 cars.

We are on track to achieving these targets and are preparing our post-2020 targets to be more ambitious.



Some new initiatives undertaken by our public agencies are:

Ministry of Defence (MINDEF)

MINDEF will be introducing the following green measures such as:

- Replacing 400 administrative vehicles with hybrid models by 2023, to eventually be replaced with electric models when Singapore's infrastructure is ready.
- Commissioning net zero energy buildings in Kranji and Seletar Camps in 2019.
- Delivering the Singapore Armed Forces (SAF)'s first net positive energy building, an aircraft hangar, in Mar 2020.
- Equipping buildings in twelve camps with solar panels by Mar 2021.

Combined, MINDEF/SAF's energy efficient buildings will reduce 11,400 tCO₂e by end March 2021, equivalent to taking around 2,300 cars off the road.

Ministry of Education (MOE)

MOE works with relevant government agencies to create awareness of climate change through the national curriculum, at different levels of study and through various subjects.

Beyond the classrooms, schools participate in community partnership programmes to promote environmental causes and translate their knowledge into action.

Monetary Authority of Singapore (MAS)

The financial sector has a key role to play in addressing the impact of environmental risk, mobilising global capital for the green economy and channelling this to investments in green businesses, technology, and infrastructure to reduce carbon emissions, while creating jobs and opportunities.

MAS issued Singapore's Green Finance Action Plan in 2019 which aims to build financial system resilience to environmental risk, develop green finance solutions and markets, and leverage innovation and technology.

Key initiatives under the plan include:

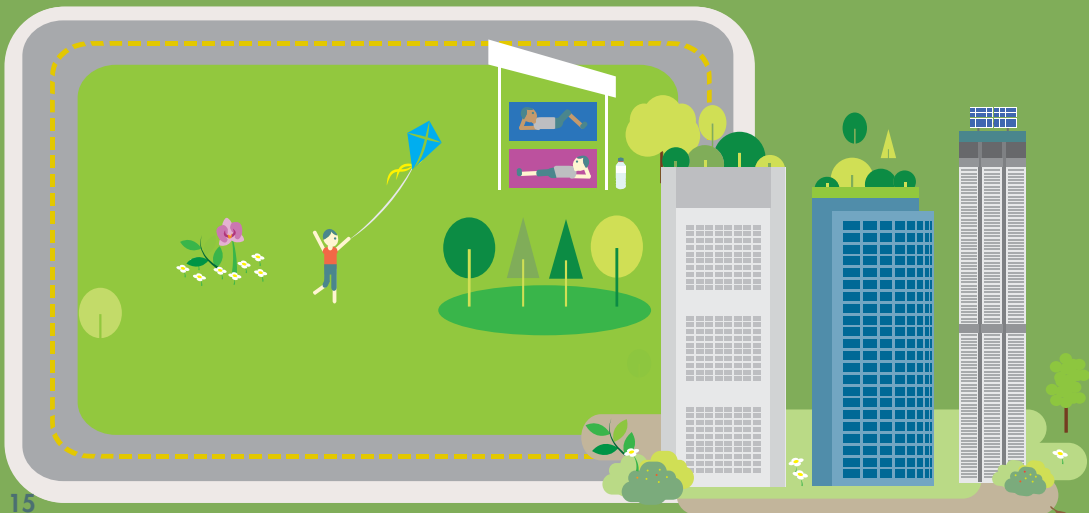
- Developing Environmental Risk Management guidelines for the banking, insurance and asset management sectors.
- Catalysing the growth of financial flows towards low carbon sectors of the economy, such as through the US\$2 billion Green Investments Programme.
- Establishing Green Finance Centres of Excellence in collaboration with local and international universities to drive climate finance research and training programmes, with customisation for Asia's needs.

Case Study 4

Singapore's Living Labs: Investing in R&D to improve our Energy Efficiency

Singapore aspires to be a living laboratory where companies can develop, test and commercialise urban solutions before scaling up for the region and beyond. S\$900 million will be invested from 2016 to 2020 to tackle Singapore's energy, water, land, and liveability challenges.

One example is the S\$8 million Sembcorp Industrial Living Lab. Mitsubishi Electric will be testing an ozone backwashing membrane bioreactor. This technology provides increased membrane permeability, thus requiring fewer membranes to be utilised and enabling more energy-saving wastewater treatment. If these new technologies are proven successful, they could be deployed in Sembcorp's global operations.



A Climate-Resilient Singapore

Forecasting Singapore's future climate

The Centre for Climate Research Singapore (CCRS) was set up in 2013 to advance the scientific understanding of weather and climate in Singapore and the wider Southeast Asian region. Since its establishment, CCRS has undertaken several significant projects:

In 2015

CCRS, in collaboration with the United Kingdom's Met Office Hadley Centre, published Singapore's Second National Climate Change Study (V2). V2 analysed the future climate for Singapore and the Southeast Asian region providing Singapore's climate change projections for 2100. These projections form the scientific basis for our adaptation plans.

In 2017

We welcomed the World Meteorological Organisation's Regional Office for Asia and South-West Pacific to Singapore. Co-located with the CCRS, this office will conduct programmes to

enhance the region's understanding of climate science, and tackle challenges arising from climate change and extreme weather.

In 2019

We launched the National Sea Level Research Programme (NSLP) to develop more robust projections of sea level rise. Findings from the NSLP will be used to develop and refine our national coastal protection plans.

Moving Forward

We are setting up a new Climate Science Research Programme Office to build up national climate science capabilities in Singapore. The Programme Office will lead and drive efforts in formulating and implementing Singapore's National Climate Science Research Masterplan.

We will also embark on the Third National Climate Change Study (V3) to provide an update of the climate change projections for 2100.

Adaptation Efforts

Singapore's adaptation measures are in line with the SDG 13.1 target to strengthen resilience and adaptive capacity to address the effects of climate change on our physical environment, including climate-related hazards.

Protecting Singapore From Sea Level Rise

Sea level rise poses an existential challenge to Singapore. We have installed coastal protection measures on at least 70% of Singapore's coastal areas to manage coastal erosion.

We have also undertaken measures to protect our infrastructure and living environment. Since 2011, we have raised minimum land reclamation levels and required new buildings and developments to be built on higher platforms, at least 4 metres above mean sea level. For new critical infrastructure such as Changi Airport Terminal 5 and Tuas Port, we are raising the platforms even higher, to 5–5.5 metres above the mean sea level.



Moving forward, we will develop a national plan to protect Singapore from rising sea levels. For a start, we have segmented our coastline and will carry out site-specific studies to develop engineering designs for coastal protection measures, starting with City-East Coast and Jurong Island, which has been assessed to be more vulnerable and critical – see figure 1 below.

Figure 1



Credit: Prime Minister's Office Singapore

We are studying innovative solutions to protect our coast, including conventional engineering solutions such as sea walls, tidal gates, pumping stations, and nature-based solutions such as planting mangroves to break wave energy.

Coastal protection is a costly but necessary investment for the long term; it may cost around S\$100 billion over the next 100 years to fund these efforts. To provide for the substantial capital outlay in implementing our coastal and flood protection measures, we have established a S\$5 billion Coastal and Flood Protection Fund with effect from FY2020. The Government will top up the Fund whenever our fiscal situation allows.

We will implement and adjust our coastal protection plans progressively to take into account the latest climate science findings.

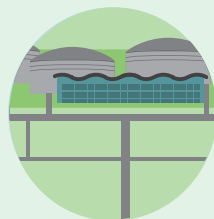
We will start now and sustain efforts into the future to protect our country from rising sea levels.

Managing Our Water, Minimising Floods

We will look at inland and coastal flooding holistically to strengthen Singapore's resilience against climate change.

We have introduced a "Source-Pathway-Receptor" approach to deal with floods, as we experience more frequent and intense rainfall events with climate change.

We have spent almost S\$2 billion on drainage improvement works since 2011 and have committed an additional S\$190 million in 2020 to enhance our flood resilience.



Protecting Our Greenery and Biodiversity

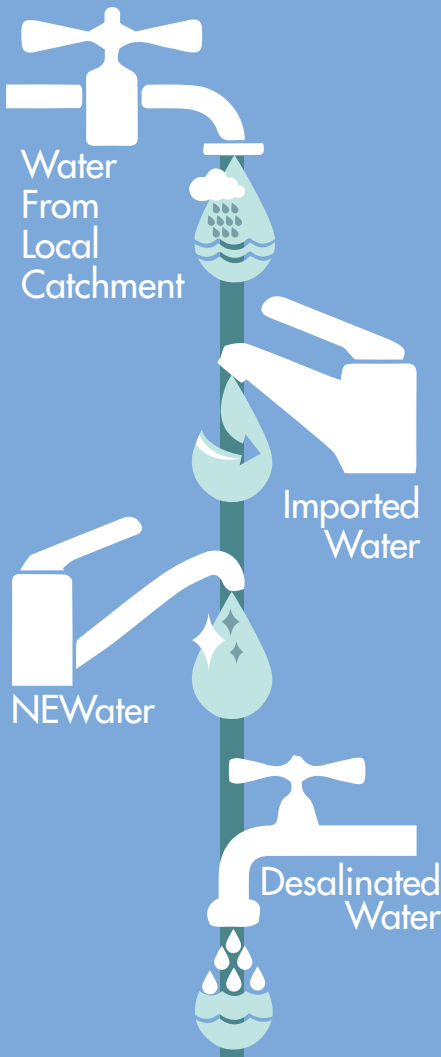
Singapore's greenery and biodiversity may be at risk with long-term changes in temperature and rainfall, and more extreme weather.

We have implemented new tree-management measures in light of changing climatic conditions. We will also conserve more native plants and animals by carrying out recovery plans for over 70 more animals and plant species.



Our Four National Taps

Climate change poses a new challenge to Singapore's water supply, security, and resilience. Our Four National Taps ensure sustainable and reliable water supply for Singapore.

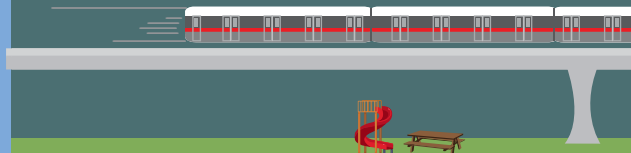


Case Study 5

Towards More Energy Efficient NEWater And Desalination

While NEWater and desalinated water are weather-resilient sources of water, they are energy intensive and require between five and 17 times more energy to produce as compared to the conventional treatment of rainwater. The generation of the energy needed also results in the emission of greenhouse gases.

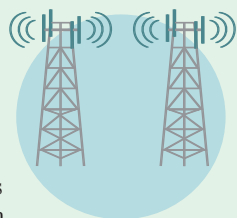
We are investing in R&D to improve the energy and carbon efficiency of our desalination and NEWater plants. Examples of our R&D work include using electro-deionisation and biomimicry to improve the EE of desalination, a membrane flow reversal technology as well as electro-dialysis reversal to improve NEWater recovery.



Keeping Our Essential Services Running Well

Intense rainfall, sea level rise, and temperature changes could affect our air, land and sea connectivity as well as disrupt our energy and telecommunications infrastructure.

We are strengthening the resilience of our critical services. For example, the drainage system at Changi Airport is being significantly upgraded to protect the airport against flood risks. To protect train commuters and network, flood barriers are installed at the entrances of underground train stations in low-lying areas.



Keeping Our Buildings And Infrastructure Safe

To enhance the climate resilience of the buildings we live and work in, studies have been conducted to understand the potential effects of higher temperatures, rainfall and wind speeds on buildings and building attachments, and to develop appropriate adaptation strategies.

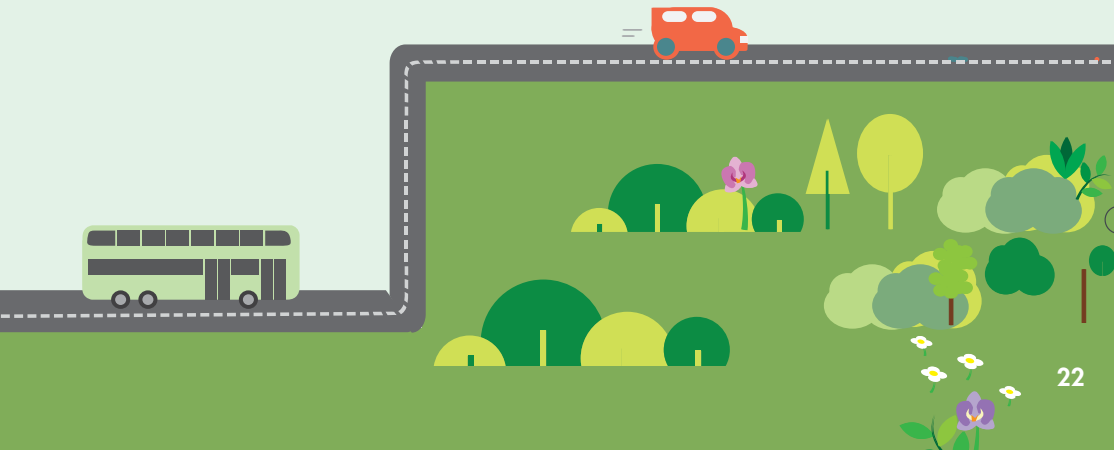
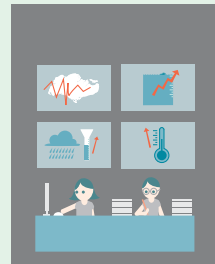
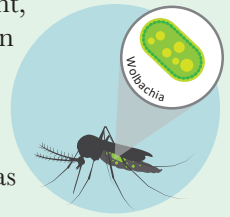
Analyses have indicated that the projected changes in temperature, rainfall, and wind speeds are unlikely to have a significant impact on the buildings and building attachments in Singapore as long as they adhere to building codes and are properly maintained. The assessment will be reviewed periodically to account for changes in future climate projections.



Strengthening Resilience in Public Health

Higher temperatures will result in a warmer environment, and could lead to an increase in the mosquito population in Singapore.

We are developing a heat stress information system for the public, and have implemented novel solutions such as the use of Wolbachia technology to curb the mosquito population. Project Wolbachia trials have thus far achieved up to 90 per cent suppression of the urban *Aedes aegypti* population within the study sites.



Ensuring A Resilient Food Supply

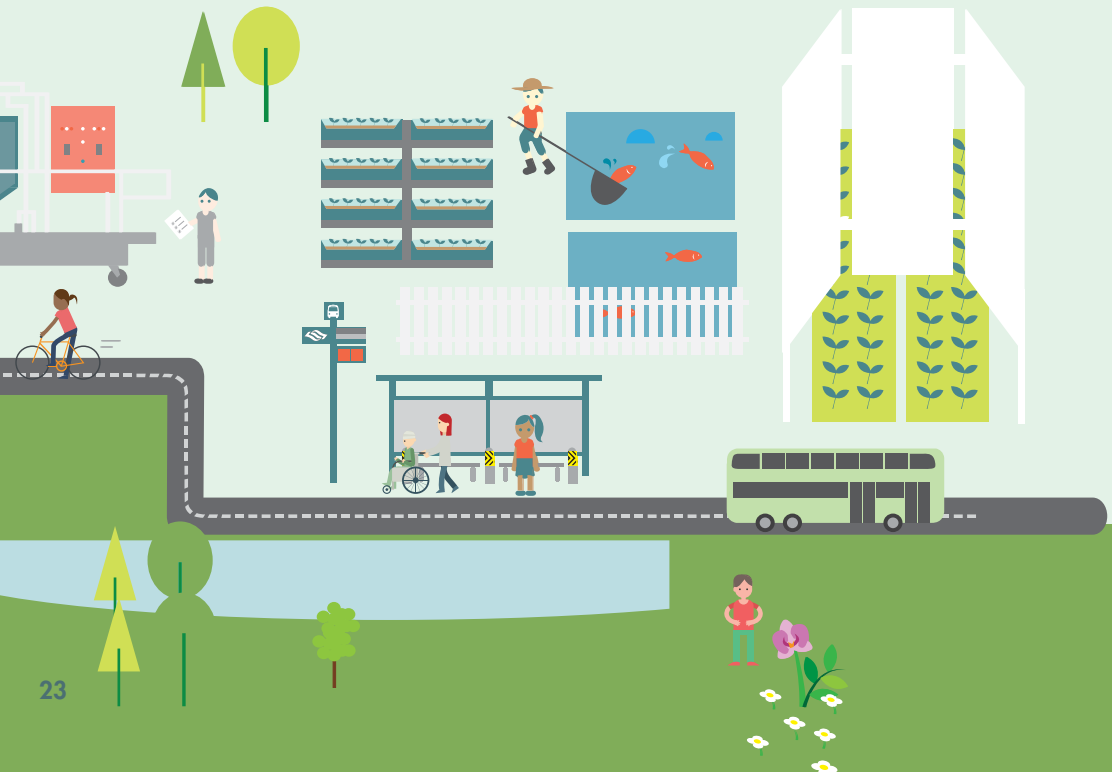
Singapore imports more than 90% of our food supply. Changing climate patterns pose risks to our food supply.

To strengthen our food resilience, we aim to diversify our food imports, produce 30% of Singapore's nutritional needs locally by 2030, and grow overseas. We have set aside S\$144m for the Singapore Food Story R&D programme to support sustainable urban food production, the development of novel protein production, and the promotion of food safety science.



We are also helping our farmers make use of climate-resilient and resource-efficient technologies to increase productivity and prepare for climate change, through the Agriculture Productivity Fund, and \$30 million “30x30 Express” grant.

To complement these efforts, we will also be developing a Clean & Green Standard to recognise urban farms that harness resource-efficient technologies to produce food in cleaner environments. This will help these farms differentiate their produce.



Safeguarding Our Climate Future

A Call To Take Climate Action Together

Singapore is committed to fighting climate change. We will continue to contribute to international and regional climate action, forge partnerships and support fellow developing countries in their efforts to address climate change.

Global Climate Action

Singapore strongly supports a multilateral, rules-based approach to addressing climate change, and participates actively in ongoing efforts under the United Nations Framework Convention on Climate Change (UNFCCC) and other UN entities to push for a strong global response to climate change.

Regional Climate Action

In 2018, as Chair of the Association of Southeast Asian Nations (ASEAN), Singapore convened the first ever Special ASEAN Ministerial Meeting on

Climate Action (SAMCA) and expanded SAMCA (E-SAMCA), where ASEAN Member States (AMS) and our Plus Three Partners reaffirmed their commitment to the Paris Agreement and discussed ways to step up regional climate action.

As Chair of the ASEAN Working Group on Climate Change (AWGCC) from 2017 – 2019, we worked closely with AMS and our international development partners to drive the implementation of projects and activities under the AWGCC Action Plan.

We launched a Climate Action Package (CAP) to support fellow developing countries in the region in their efforts to implement their Paris commitments and develop capacity in key areas such as disaster risk reduction, climate science, flood management and long-term mitigation and adaptation strategies.



Singapore contributes to the region's understanding of the impact of climate change through the ASEAN Specialised Meteorological Centre (ASMC), which is hosted by the Meteorological Service Singapore.

We have committed S\$5 million to ASMC for a five-year capability programme for Southeast Asia, which will strengthen the region's efforts in climate projections and adaptation planning.

To increase ASEAN's financial resilience to climate and disaster risk, the Southeast Asia Disaster Risk Insurance Facility (SEADRIF) was domiciled in Singapore in 2019.

The World Bank provided technical assistance to SEADRIF, which will initially offer a flood risk pool to Laos, Myanmar, Philippines and potentially Cambodia, with a view to expand to more countries and risk pools in the future. In the unfortunate event of a flood disaster, the risk pool will be able to release rapid disaster financing to manage the impact on affected communities.

Take Climate Action Today For a Sustainable Future

Government action alone will not be sufficient. Everyone has a role to play to promote sustainability and mitigate climate change. Everyone can do their part by taking small but important actions e.g. to switch off the lights when they are not in use, and to reduce waste and recycle more.

Let's take action today, for a sustainable future.

www.climategamechanger.sg

