SUSTAINABLE DEVELOPMENT GOALS

TOWARDS A SUSTAINABLE AND RESILIENT SINGAPORE

Singapore's Voluntary National Review Report to the 2018 UN High-Level Political Forum on Sustainable Development

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FOREWORD

Sustainable development has been integral to the Singapore Story. We are still a young nation, but we have made much progress on the 17 Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development, including the six SDGs which the 2018 High-Level Political Forum on Sustainable Development (HLPF) will review in-depth.

Since our founding, we have designed policies with long-term sustainability in mind. We integrated nature into our Garden City and prudently managed scarce resources such as water and energy. We made education, including preschool education, accessible and affordable to give every child a strong start in life. We constantly review healthcare policies and subsidies to support our ageing population. Today, all Singaporeans, rich or poor, young or old, enjoy clean air, water and sanitation, quality healthcare and education, as well as lush greenery and safe common spaces because of these policies.

We also pay close attention to climate change. As a tropical small island developing state, we are vulnerable to extreme weather patterns and rising sea levels. We have designated 2018 as the Year of Climate Action and taken concrete steps to tackle climate change. We will implement an economy-wide carbon tax from 2019, one of the first Asian countries to do so.

No single model of sustainable development works for all countries. Each country must adopt solutions to fit their specific circumstances and priorities. But sustainable development is not a solo mission. It is a collective goal and we have much to learn from each other's experiences. The Singapore Cooperation Programme has trained almost 120,000 officials from more than 170 countries in areas such as disaster management, education, health, water, and human resource management.

Regionally, Singapore is working with our colleagues from the Association of Southeast Asian Nations (ASEAN) and external partners on multiple initiatives. Our 2018 ASEAN Chairmanship themes of "Resilience" and "Innovation" echo this year's HLPF theme. We aim to strengthen ASEAN's collective resilience against common threats such as terrorism, cybercrime, and climate change. We are helping ASEAN economies innovate and use technology to make ASEAN a vibrant and sustainable place to live and work.

Internationally, we are partnering UN agencies such as UNICEF and UN-Habitat to run capacity building courses in water-related issues and sustainable urbanisation. We host many international forums including the World Cities Summit, the Singapore International Water Week and the CleanEnviro Summit Singapore. These promote dialogue and collaboration on sustainability issues among policy-makers and experts from governments, businesses and international organisations.

Singapore is committed to the 2030 Agenda for Sustainable Development. The Voluntary National Review is a chance for us to take stock and share our progress on sustainable development with our partners. The review also lets us reflect on our future challenges, as sustainable development is a continuing journey. As we implement the 2030 Agenda, Singapore looks forward to working with like-minded partners to build a sustainable and resilient future for ourselves and generations to come.

Lee Hsien Loong
Prime Minister of the Republic of Singapore

SINGAPORE'S APPROACH TO THE 2030 AGENDA

Sustainable development has underpinned Singapore's policymaking since our independence. As a small island city-state, Singapore had relied on our maritime trade as an entrepôt port. When independence was thrust upon us on 9 August 1965, Singapore lost its hinterland. We were almost entirely dependent on external sources for basic needs like food, energy, and water. The future was uncertain. Many were sceptical that Singapore could survive on its own, let alone prosper.

Under these grim circumstances, Singapore's pioneer team of leaders set out to transform Singapore into a viable nation-state. Faced with limited land and resources, our pioneer leaders had to quickly address pressing concerns while adopting a long-term perspective in policymaking. They concentrated efforts in developing education, security, infrastructure, healthcare, and housing, while bearing in mind the need to be prudent and strategic so as to maximise resources. To sustain our growth and keep up with the times, successive generations of leaders made a conscious effort to continually re-invest the resources our economy generated into the development of human capital, R&D, and the identification of new areas of growth. They searched for ways to create and add value, and focused on ensuring that our people were well-equipped with the knowledge and skills to take on the jobs of the day.

In pursuing economic development, we have been careful not to disrupt our natural environment. We have created a Garden City abundant with lush greenery and clean surroundings to make life more pleasant for people to live, work, and play in. We chose clean energy solutions. Today, Singapore is widely-recognised as a City in a Garden, with nearly 50% green cover and 72 hectares of rooftop gardens and green walls. Singapore is among the 20 most carbon efficient countries and natural gas generates 95% of our electricity. For our leaders, it was no mean feat to maintain this delicate balance between economic, social, and environmental priorities to achieve long-term, sustainable development.

To effectively develop and implement integrated and sustainable policies, Singapore adopts a Whole-of-Government (WOG) approach. The WOG approach entails the sharing of information among public agencies, which widens agencies' worldviews and uncovers emergent challenges and opportunities early. Agencies assess problems from multiple perspectives, and better consider the spill-over effects of policy actions and implications on each other's plans. As challenges become increasingly complex and cross-cutting, the WOG approach has grown in importance and serves as our national planning framework. To ensure greater congruence with the Sustainable Development Goals (SDGs), we established the Inter-Ministry Committee on SDGs (IMC-SDG) for our Voluntary National Review (VNR) and thereafter, to take stock of our SDG implementation over the longer term.

We have adopted a Whole-of-Nation, bottom-up approach to develop creative, sustainable solutions. We support and collaborate with multiple stakeholders, to realise desired and holistic outcomes. For example, as Singapore works towards building a smart city, we have adopted a people-centric approach and consult extensively with the private sector and civil society, who supply the know-how, and citizens, who provide feedback for continuous improvement. This approach also secures greater buy-in and commitment to action by all segments of society.

This year, Singapore is honoured to hold the Chairmanship of ASEAN. Our Chairmanship theme "Resilient and Innovative" encapsulates our vision for ASEAN to remain resilient in the face of growing uncertainties and complexities. To do so, our focus is on innovation to keep ASEAN forward-looking and adaptable. These themes resonate with the objectives of the 2018 HLPF. This is a prime opportunity for ASEAN to align ourselves to the 2030 Agenda.

Sustainable development is a journey. Maintaining the momentum on this journey requires constant commitment and attention to the landscape of opportunities and challenges ahead, even as we celebrate our progress. The next section of this report will feature the areas in which we have made progress in the implementation of the 17 SDGs. However, they will also highlight the potential challenges and opportunities we face as a country. Finally, the story boxes provide some examples of our experience in implementing the SDGs.

SUSTAINABLE DEVELOPMENT GOAL 1:

End Poverty in All Its Forms Everywhere

SINGAPORE'S APPROACH TO SOCIAL ASSISTANCE

Singapore aspires towards a fair, inclusive, and caring society – one where people of all backgrounds have access to opportunities, where the vulnerable are uplifted, and where everyone can look to the future with optimism. To achieve this, we seek to create the conditions for growth and opportunity, thereby empowering Singaporeans to improve their lives. Complementing this is a plethora of community-led initiatives that aim to give those in need a helping hand. In essence, Singapore's approach is to foster a culture where people work hard to earn their success and improve their circumstances in a dignified and self-sustaining manner.

A variety of mutually-reinforcing economic and social strategies are in place to achieve this. These are focused on broad-based social uplifting through employment, sustained income growth, and access to quality education, housing, and public healthcare. We offer multiple lines of assistance, each supporting specific needs in a targeted manner. Collectively, these lines of assistance offer comprehensive support across various domains. We strive to ensure that opportunities are accessible to all through broad-based subsidies, and seek to level the playing field from young by investing heavily in education and early intervention. There are also social safety nets in place to ensure that no one is left behind.

BRIGHT SPOTS

Retirement Adequacy – The Central Provident Fund (CPF) and Silver Support Scheme

The CPF was created in 1955 to provide financial security in retirement. It has since evolved to form the bedrock of Singapore's social security system, providing for the retirement, healthcare, and housing needs of Singaporeans. Both employers and employees contribute a percentage of employees' monthly gross salaries to their individual CPF accounts. From time to time, CPF top-ups are provided to assist low-income families and individuals in need. In addition, higher interest rates are applied to the first S$60,000 in an individual's CPF account, thereby giving a boost to the savings of those with lower balances.

The Silver Support Scheme caters to the bottom 20% of Singaporeans aged 65 and above who have had low incomes throughout their lives and little family support, by providing quarterly cash pay-outs to supplement their retirement incomes.

Employment Assistance – Workfare and Progressive Wage Model

There are several schemes to support low-wage workers by rewarding work and individual effort, and encouraging skills upgrading through training. For instance, the Workfare Income Supplement (WIS)[1] scheme tops up the CPF savings and wages of older low-wage workers in their working years. The Workfare Training Support (WTS)[2] scheme encourages skills upgrading, and the Progressive Wage Model helps to increase wages of workers in the cleaning, security, and landscaping sectors through skills upgrading and improved productivity.

Subsidised Public Housing

We believe that everyone should have access to good, affordable, and quality housing. We recognise that home ownership is a key pillar of a strong community and gives Singaporeans a tangible stake in the nation. To realise these, public housing is kept affordable through Government subsidies and the accessibility of individuals' CPF savings for the down payment of homes and to service their monthly mortgage loan instalments. In addition, a range of housing grants and schemes have been introduced over the years to further offset the cost of purchasing a flat or financing a loan for individuals or families in need. As a result, Singapore boasts one of the highest home ownership rates in the world today, with more than nine in 10 resident households in Singapore owning their homes. Almost four in five Singapore resident households live in public housing built by the Housing and Development Board (HDB).

Affordable Healthcare

The Government adopts a multi-tiered approach to healthcare coverage to ensure that no Singaporean is denied access to basic healthcare due to financial difficulties. This comprises extensive subsidies in public healthcare institutions, Medisave,[3] and MediShield Life.[4] Patients from lower- and middle-income families will

[1] The Workfare Income Supplement (WIS) Scheme was introduced in 2007 to reward work by providing cash and CPF pay-outs to older lower-wage Singaporean workers and persons with disabilities (PwDs) when they work. Employees may receive up to S$3,600 per year in WIS pay-outs, depending on their age and income. WIS is paid for each month of work; individuals who work for more months will receive more WIS.

[2] The Workfare Training Support (WTS) Scheme complements the WIS Scheme by encouraging older lower-wage workers and PwDs to upgrade their skills through training, so that they can improve their employability and have the opportunity to earn more. WTS provides 95% course fee subsidies and a Training Commitment Award of up to S$400 a year for trainees who have completed the required training modules.

[3] Medisave is a compulsory savings scheme to help Singaporeans meet their future personal or immediate family's hospitalisation, day surgery, and certain outpatient expenses.

[4] To provide Singaporeans with better protection against major illnesses or severe disability, Medishield Life and Eldershield are insurance schemes designed to help Singaporeans financially through such circumstances and offer protection for life.

receive more subsidies based on their means-testing status. To provide our Pioneers with additional help with their healthcare costs, the Government also introduced the Pioneer Generation Package (PGP) in 2014.[5]

Access to Quality Education

Education is a critical part of our efforts to ensure access to opportunities. We have made major investments in our preschools and school system to ensure that every child has access to quality education and a good start in life, regardless of income. Ministry of Education (MOE) Financial Assistance Scheme, bursaries, and subsidies make quality education affordable to all.

Social Safety Nets

Beyond the various government subsidies and social transfers, we have in place social safety nets to provide targeted assistance to individuals in need, such as financial assistance for basic living expenses, and support for housing and healthcare needs.

ComCare

ComCare provides assistance to low-income Singaporeans to meet their basic needs. There are four ComCare schemes: Short-to-Medium-Term Assistance (SMTA), Long-Term Assistance (LTA), ComCare Interim Assistance, and Student Care Fee Assistance. SMTA targets low-income families and individuals who are temporarily unable to work (e.g. due to illness, caregiving responsibilities), and those who are unemployed and need temporary financial support while they seek employment. LTA targets individuals who are unable to work due to old age, long-term illness, disability, have limited or no means of income, and have little or no family support. Assistance such as cash grants, rental, utilities assistance, medical assistance, and employment assistance may be provided based on the assessed needs of the individual. Individuals are also linked up with other services, such as Family Service Centres (FSCs), Medical Social Workers at Public Healthcare Institutions, Senior Activity Centres, or affiliated agencies for further social support as needed.

Medifund

Medifund provides assistance for low-income patients who are unable to pay their medical bills, even after receiving government subsidies and drawing on other means of payments. To provide more targeted assistance for the low-income elderly and the young, Medifund Silver and Medifund Junior were introduced.

Public Rental Scheme

Those who are unable to afford their own homes have the option of applying for public rental flats, as a transitional arrangement to home ownership in the longer term. Rental costs are heavily subsidised and highly affordable (from S$26 for a 1-room flat and S$44 for a 2-room flat). In December 2016, we introduced the Fresh Start Housing Scheme to help families with young children living in public rental flats to afford their own homes.

Delivering Long-Term Results

Increase in support for the low-income

Singapore continuously reviews and broadens our social safety nets to take into account rising costs and the changing needs of the population. Social spending as a percentage of GDP has increased from 5.2% in 2007 to 8.2% in 2017. Scheme coverage and support for the low-income has increased over time. For example, the monthly household income cap for families seeking ComCare SMTA and the quantum of support for ComCare LTA were raised in 2014 and 2016 respectively. The WIS and WTS schemes have been enhanced several times, most recently in 2017. To ensure inclusive development, we have also introduced policies focusing on early childhood education for all, and retirement support for the elderly such as the Silver Support Scheme.

Real incomes have grown for all income groups

In the five decades since our independence, Singapore's GDP per capita has increased from US$500 in 1965 to US$55,000 in 2015. Amid this rapid economic growth, Singaporeans experienced real growth in household income as well. From 2007 to 2017, resident employed households in all income groups saw real growth in average household income from work per household member, ranging from 24.9% to 40.9% cumulatively. Those in the lowest 10% and 11th to 20th percentile group saw their real per capita household income increase 30.2% and 38.7% respectively between 2007 and 2017.

Greater coordination among stakeholders

To strengthen service delivery and make social assistance more accessible, a network of 24 Social Service Offices (SSOs) were rolled out across the island. Today, nine out of 10 SSO clients live or work within two kilometres of an SSO. SSO officers' primary responsibilities include administering social assistance, ground sensing, planning local services, and collaborating with community partners to facilitate the coordinated delivery of social services in the community. For example, SSO officers work with FSCs and grassroots organisations to identify the needs of vulnerable groups, as well as the strengths and resources they can harness.

Today, there are also many ground-up initiatives and community groups who reach out to and support the vulnerable. We will continue to engage and partner these community groups to enhance support for vulnerable groups and ensure that no one is left behind. Through the "SG Cares" movement, we will mobilise volunteers and bring partners with different resources to work with us to care for those in need.

[5] The Package helps Pioneers (i.e. Singapore citizens aged 16 and above in 1965, and who obtained citizenship on or before 31 December 1986) with their healthcare costs for life. Benefits include additional subsidies on outpatient care, lower premiums for MediShield Life, Medisave top-ups, and S$100 cash assistance per month for those who permanently need assistance in three or more day-to-day activities.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

Demographic Changes and Weakening Family Support

Shrinking family sizes, rising divorce rates, and more complex family structures increasingly test the strength and reliability of support based on traditional family structures.

Increasing Demands on Social Spending

Demands on social spending are expected to mount further as Singapore grapples with an ageing population. We are one of the fastest-ageing societies in the world. Today, one in eight Singaporeans are aged 65 and above. This will increase to one in four by 2030. Our resident old-age support ratio is projected to fall by almost half from 5.1 in 2017 to 2.1 in 2030. With a rapidly-ageing population, healthcare expenditure will continue to grow.

Sustaining a Culture of Self-help with the Support and Resources of the Government and Community

Despite the increase in social transfers and strengthened social safety nets, it is important to avoid inadvertently creating a culture of over-dependence, which runs contrary to Singapore's philosophy of self-reliance. A culture of over-dependence may also lead to abuse of our system and policies, thereby diminishing the resources that should be allocated to those who truly need them. We should continue to foster the mindset of taking personal ownership of individual well-being by providing the vulnerable with sufficient resources, skills, and community support to empower and uplift themselves.

OPPORTUNITIES

Continuing to Invest Heavily in Education at All Levels and Life-long Skills Upgrading

We will continue to invest heavily in education, including preschool education. We expect to spend S$1.7 billion a year on early childhood education by 2022, so that every child can have the best start in life. We will strengthen the ecosystem of support for children from low-income and vulnerable families through the KidSTART pilot,[6] and invest in the growth of our people through SkillsFuture.[7]

Ensuring Prudent Social Spending

We introduced several schemes to safeguard individuals against large hospitalisation bills, and subsidies to meet the growing demand for caregiving services. We have stepped up support for low-income and vulnerable seniors. A Community Network for Seniors is also being rolled out to strengthen coordination and collaboration between government agencies and community-based stakeholders to leverage each other's strengths and resources as they reach out, befriend, and support seniors living in the community.

More Coordinated and Effective Social Service Delivery

With the plethora of ideas and initiatives from the community and the many support schemes available today, we will focus on streamlining service coordination and delivery. We will strengthen collaboration and coordination across SSOs, government agencies, and community partners in order to provide better and more targeted assistance.

[6] The KidSTART pilot by the Early Childhood Development Agency (ECDA) started in 2016 to pro-actively identify children from low-income families and provide them with early support for health, learning and development, as well as monitor progress during their early years. KidSTART aims to build an ecosystem of support around the child through home visitations, community-based playgroup sessions, and enhanced support to preschools.

[7] SkillsFuture is a national movement to provide Singaporeans with the opportunities to develop to their fullest potential throughout life, regardless of their starting points. It is premised on the belief that individuals should continually strive towards greater excellence through knowledge application and experience. There are myriad initiatives under SkillsFuture, including a credit-based scheme for every Singaporean to attend courses and training for further development.

SUSTAINABLE DEVELOPMENT GOAL 2:

End Hunger, Achieve Food Security and Improved Nutrition, and Promote Sustainable Agriculture

ENSURING SINGAPORE'S FOOD SECURITY

Global demand for food is increasing, driven by rapid population growth, urbanisation, and rising affluence. Amid an increasingly complex food system, dwindling resources, climate change, and potential geopolitical tensions, global food supply flows are volatile and may not be able to keep up with demand. At about 720 square kilometres, Singapore is a small and highly urbanised city-state. Due to competing land use needs (e.g. industrial and residential uses), less than 1% of our land is used for agriculture and most of our food is imported. This makes us vulnerable to fluctuations in food supply and prices, and overseas food safety incidents. Notwithstanding these challenges, Singapore continues to be rated one of the most food-secure countries in the world.[1] To ensure Singapore's food security, we adopt a holistic approach comprising four core strategies: import source diversification, local production, internationalisation, and stockpiling. This involves a Whole-of-Government effort and collaboration with industry stakeholders. In maintaining food security, our ultimate goal is to ensure that everyone in Singapore has access to an adequate supply of safe and nutritious food at affordable prices in the short and long term.

BRIGHT SPOTS

Import Source Diversification

Diversification of overseas import sources reduces the risk of reliance on a single supply source, and allows us to ramp up supply from other sources when traditional sources are disrupted. We are constantly on the search for new and viable food sources, and work to keep existing sources available, even in the face of disease or food contamination. This is achieved by adopting a science-based risk assessment approach to ensure the safety of our food imports. As the national authority that ensures a resilient supply of safe food, the Agri-Food and Veterinary Authority (AVA) works closely with the industry to conduct sourcing missions to different countries to build networks with potential suppliers and accredit new sources. Today, Singapore imports food from over 170 countries.

Optimising Local Food Production

Locally-produced items (e.g. fish, vegetables, and eggs) complement our food import supplies and provide a critical buffer in the event of disruptions to import sources. Our local agriculture sector therefore plays a role in Singapore's food security.

To raise local production amid competing needs for land, energy, water, and manpower, our farms are encouraged to explore innovations in food production, such as indoor multi-tier farming automation and precision agriculture via sensors and Internet of Things (IOT). In 2017, we launched the "Farm Transformation Map" to spur sector transformation, and worked with local producers to utilise smart technologies and innovations to optimise the use of space and improve productivity. This allows producers to grow more with less by reducing reliance on manpower and better mitigating environmental risks. Already, a number of our high-tech farms use 70% less water and 50% less labour while producing about six times the usual quantity of vegetables and fish. We have also established the S$63 million Agriculture Productivity Fund (APF) to encourage more farmers to invest in productive technologies and transform the agriculture sector. AVA also provides technical assistance and training to farmers, and conducts R&D with farms and in partnership with tertiary and research institutes.

Internationalisation

Internationalisation opens up new markets and helps our farms overcome land constraints in Singapore. We therefore encourage our local farms and food companies to venture overseas to seek opportunities. Some of our more progressive farms have made headway in high-tech vertical farming and fish farming systems overseas. We also encourage these companies to re-export some of the food produced abroad to Singapore for local consumption.

Stockpiling

Rice is a staple food in Singapore and many other Asian countries. In order to ensure Singapore's food security, especially in times of crises, the Rice Stockpile Scheme (RSS) makes it mandatory for rice importers to hold a two-month stockpile in government warehouses. This is to ensure that there is an adequate supply of rice in the market, and to stabilise prices in times of short-term shortages.

Apart from national stockpiles, multilateral food stock arrangements also provide opportunities to enhance Singapore's food resilience. Singapore is part of the ASEAN Plus Three Emergency Rice Reserve (APTERR), which aims to ensure the availability and accessibility of rice during a regional food emergency.

[1] According to the Economic Intelligence Unit, Singapore ranked fourth in the Global Food Security Index in 2017.

Supporting Strategies – Reducing Food Wastage

The amount of food waste in Singapore has increased more than 40% over the past decade, and accounts for a tenth of total waste generated today. With a growing population and increasing economic activity, this figure is expected to grow. We have therefore placed a strong emphasis on reducing food loss and wastage as another means of enhancing our food security. This is done in partnership with stakeholders across the food supply chain through a holistic food waste management strategy. Through a publicity and outreach programme "Love Your Food – Waste Less. Save More." we encourage consumers to make smart and prudent choices in food purchase, preparation, and storage habits. We work with local community organisations, grassroots leaders, and stakeholders on ground-up initiatives to reduce food waste. For students, the "Love Your Food @ Schools" Project is a hands-on way to learn about the closed-loop process in food waste reduction and recycling.

AVA and the National Environment Agency (NEA), together with various industry stakeholders, have also developed food waste minimisation guidebooks for food retail establishments, supermarkets, and food manufacturing establishments. These guidebooks provide case studies and step-by-step guides to help establishments develop food waste minimisation plans tailored to their needs. Establishments are encouraged to adopt food waste minimisation practices, such as reducing food waste generation at source, redistributing unsold or excess food, and recycling food waste. Food waste could also be reduced through improved post-harvest management and storage to prolong shelf-lives.

Assisting the Vulnerable

Singapore's social safety net ensures that the basic needs of the vulnerable are met. We have a ComCare programme to assist low-income households to meet their basic needs. This includes a monthly cash quantum to cover food expenses. For households with urgent needs, immediate assistance can be provided on the spot. This is disbursed at various touchpoints on the ground, such as Social Service Offices, Family Service Centres, Citizens' Consultative Committees, and the Community Justice Centre. There are also various Voluntary Welfare Organisations (VWOs) which deliver meals to low-income families.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

Impact of Climate Change

Rapid urbanisation and industrialisation on a global scale have exacerbated the impact of climate change, thereby threatening the farming and food production sectors. For instance, changes in the frequency and severity of droughts and floods could pose challenges for farmers in sustaining their crop yields. Warmer waters could also disrupt ecosystems, threatening fishery supplies.

Spikes in Food Consumption

Singapore's growing population and middle class will increase demand and food consumption, putting additional stress on our food supplies.

OPPORTUNITIES

Innovation and Technology to Maximise Food Production

Innovation and technology can allow our farmers to grow more with less, be more resource-efficient, and reduce vulnerability to environmental risks. Developing a progressive farm sector will also help to attract a new generation of agri-specialists to further regional food security efforts.

New Sources and Changing Mindsets

As Singapore imports almost all of our food, we must continue to diversify our import sources in order to ensure a stable supply of commonly-consumed food items, while providing buffers from external price shocks.

In addition, we must further entrench the values of sustainable consumption and prevention of food wastage in our populace. This includes tapping VWOs' knowledge on preventing food wastage and educating our young on prudent food consumption practices.

SINO-SINGAPORE JILIN FOOD ZONE

The Sino-Singapore Jilin Food Zone (SSJFZ) in Jilin, China is the first commercially-driven agriculture project between Singapore and China that taps on Singapore's expertise in food safety and animal health management and Jilin's strengths in agriculture and food industries. The SSJFZ is envisioned as a world-class, integrated, and sustainable model food zone. It focuses on developing an integrated value chain from agribusiness R&D, animal and pasture input, production, processing and other supporting industries, logistics, and sale, and aims to provide a steady supply of safe and high-quality food.

In December 2016, the SSJFZ debuted its first product in Singapore supermarkets – 60 tonnes of Japonica rice. The zone is also home to other food products such as vegetables and dairy products. Other projects in the pipeline include an integrated pig farm project. Upon completion of first phase development in 2021, the integrated farm will comprise 33 farms, an abattoir, and a high-end processing plant across 150 hectares. The farm is expected to produce 300,000 pigs annually, with 100,000 meant for Singapore.

VERTICAL FARMING

Sky Greens is the world's first low carbon, hydraulic-driven vertical farm. It uses green urban solutions to produce safe and fresh vegetables using minimal land, water and energy. Through research, Sky Greens developed a patented vertical farming system which comprises multi-layer troughs in a rotating A-shape aluminium vertical frame. The frame can be as high as 9 metres with 38 tiers of growing troughs. Sky Greens began commercial operations in Singapore in 2012. Today, Sky Greens produces a variety of leafy vegetables, including Pak Choy, Lettuce, and Kai Lan.

SUSTAINABLE DEVELOPMENT GOAL 3:

Ensure Healthy Lives and Promote Well-being for All at All Ages

SINGAPORE'S HEALTHCARE SYSTEM

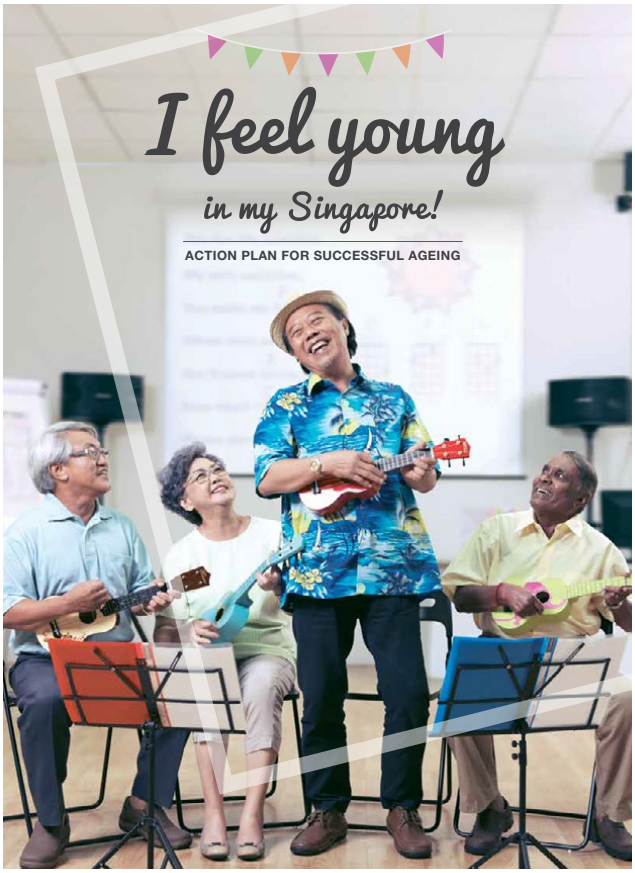
Singapore's greatest resource is our people. In order to ensure the long-term sustainability and well-being of our population, the accessibility to and provision of quality healthcare has been our priority since independence. Singaporeans are living longer in full health than people of other nationalities.[1] Our healthy life expectancy at birth was 73.6 years in 2016, and the highest in the world.[2] This can be attributed to several factors – the accessibility of quality and affordable basic medical services for all, the active promotion of preventive health programmes and medicine, high standards of living, clean water, hygiene, and a culture of healthy living. Singapore's healthcare system has three distinctive features. First, our public hospitals function as corporate entities. Although government-owned, they have operational autonomy for day-to-day activities for greater efficiency and competitiveness. Second, we offer universal healthcare coverage to all Singaporeans in the form of the "3M" system – Medisave, Medishield, and Medifund. Medisave is a national medical savings scheme which helps individuals set aside part of their income to meet future medical fees. Medishield is a basic health insurance plan which helps to fund large hospital bills and selected costly outpatient treatments. Medifund is an endowment fund to help those with financial difficulties pay their medical bills. Beyond the "3M" system, subsidies are available to keep costs down and ensure that basic services remain affordable. Third, there is tight regulatory supervision and control over all healthcare providers to ensure a high quality of healthcare services.

BRIGHT SPOTS

Accessible and Improved Health Care

Singapore has low neonatal, under-five, and maternal mortality rates. In 2016, neonatal mortality rate was 4.8 per 100,000 live-births, and under-five mortality rate was 2.7 per 1,000 live-births. Maternal deaths are extremely rare, with rates ranging from zero to eight per 100,000 live-births over the last decade.

Access to sexual and reproductive health services for women has also improved. Screening for breast and cervical cancers, some of the most common cancers among Singaporean women, at all governmental clinics is heavily subsidised. A Women's Health Advisory Committee was also set up in 2012 to equip women with the knowledge and skills to look after their health.



Singapore recognises that the social and healthcare needs of the elderly are closely related to and have an impact on their well-being. To coordinate the delivery of such services, the Agency for Integrated Care (AIC) helps seniors access eldercare services and works with the eldercare sector to expand and improve services. There are several funds available to support the elderly, such as the Seniors' Mobility and Enabling Fund, which subsidises assistive devices and home care consumables, and the eldercare sector. The AIC also conducts outreach to promote active ageing, and encourages community partners to befriend and care for vulnerable seniors.

Control of Communicable Diseases

Given our high population density and urban environment, it is important that we ensure Singaporeans are protected from the most common infectious diseases. Singapore has in place the National Childhood Immunisation Schedule (NCIS) and the National Adult Immunisation Schedule (NAIS), which recommend vaccinations for children and adults. The roll-out

[1] According to the Global Burden of Disease 2016 Study (GBD 2016).
[2] According to the Bloomberg Global Health Index (2017) in a ranking of 163 countries.

of the NCIS has resulted in high vaccination coverage and immunity among the population. The NAIS was recently introduced to complement the NCIS and in recognition of the importance of lifelong immunisation.

We have also enhanced our surveillance and response capacities for disease outbreak management following our experience dealing with the 2003 Severe Acute Respiratory Syndrome (SARS) crisis and the 2009 H1N1 pandemic. In 2010, a Singapore-Field Epidemiology Training Programme (S-FETP) was set up within the Ministry of Health (MOH) to develop capability in conducting epidemiological surveillance, investigation, and response to outbreaks and other public health emergencies. In 2016, the Healthcare Epidemiology Team was established within MOH to strengthen the national response to outbreaks of hospital-acquired infections, including Multi Drug Resistant Organisms (MDROs). A National Outbreak Response Team was also formed to rapidly mobilise public health experts to facilitate the national outbreak response. In addition, Singapore continuously engages the international community at international and regional platforms such as WHO and ASEAN to fight the global spread of disease.

Control of Non-Communicable Diseases

Non-communicable diseases in Singapore accounted for more than 80% of the local disease burden in 2016, of which a third is attributed to cancer, ischaemic heart disease, and stroke.[3] An extensive suite of measures is in place to combat some of the most common non-communicable diseases in Singapore, such as diabetes and cardiovascular diseases. In addition, several health campaigns have been introduced to encourage positive changes in Singaporeans' lifestyles, such as increased physical activity and healthier eating choices. About six Singaporeans die prematurely from smoking-related diseases every day. To address this concern, we adopt a multi-pronged approach towards tobacco control, comprising strategies such as public education, provision of smoking cessation services, legislation controlling tobacco advertising and sales of cigarettes to minors, and taxation. This has helped reduce the smoking prevalence in Singapore.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGE

Increasing Healthcare Expenditure due to an Ageing Population

While we have thus far managed to maintain our healthcare spending at a modest level, Singapore's rapidly ageing population means that healthcare expenditures will inevitably rise. We continue to explore innovative solutions for high quality healthcare services at affordable cost. We also recognise the importance of preventive care, and have been investing heavily in health promotion, early vaccination, and screening for diseases.

OPPORTUNITY

Innovative Medical and Health Technology and Solutions

There is a growing number of healthcare start-ups in areas such as chronic disease management, digital diagnostics, and consumer health and wellness. These start-ups provide a myriad of products such as mobile apps to connect patients and doctors, and that serve as digital platforms for healthcare services. Singaporeans have also proven to be relatively receptive to healthcare technology, with four in 10 owning a health application or gadget.

SINGAPORE'S WAR ON DIABETES

Diabetes is a major public health concern. Today, over 400,000 Singaporeans are living with the disease. The number is projected to reach one million by 2050 if current trends continue. In 2016, MOH launched the "War on Diabetes", a nationwide effort to reduce the burden of diabetes by helping people lead diabetes-free lives, and assist those with diabetes to manage the condition well. These initiatives encourage healthy living and prevention, early detection and intervention, and better disease management. We also emphasise public education, stakeholder engagement, and data analytics to research and better understand diabetes and its complications. We will organise the Ministerial Conference on Diabetes in Singapore in November 2018, which will be attended by Health Ministers, senior government officials, academics as well as representatives from the World Health Organisation (WHO), World Bank and ASEAN. We hope that the Conference will put diabetes high on the global agenda, and serve as an opportunity to share effective strategies and international best practices to prevent and manage diabetes.

[3] Based on the Disability-Adjusted Life Years (DALYs) for Singapore estimated from GBD 2016.

SUSTAINABLE DEVELOPMENT GOAL 4:

Ensure Inclusive and Equitable Quality Education and Promote Lifelong Learning Opportunities for All

SINGAPORE'S EDUCATION SYSTEM

Singapore's philosophy towards education is grounded in the belief that the wealth of a nation lies in its people. Our future growth and development depends on the continuous renewal and regeneration of our citizenry, building upon the past, learning from the present, and preparing for the challenges of the future. The Singapore education system is aimed at providing each child with a solid foundation upon which they can build their knowledge and skills throughout life. To this end, it emphasises broad-based and holistic education, bilingualism, well-trained teachers, and the integration of information and communication technologies to aid learning. That Singapore students emerged top in all three categories (reading, mathematics, and science) and in the Collaborative Problem Solving portion of the Programme for International Student Assessment (PISA) 2015 is testimony to the strength of our education system. We have also created a variegated education landscape with diverse pathways so that students have access to learning opportunities that cater to different interests, strengths, and learning needs. Our schools also work closely with parents and the community to create richer learning environments and better educational outcomes. We also recognise that learning is a lifelong journey, especially in a global economy that is subject to rapid change and disruption. This is why we encourage and support Singaporeans to upgrade their knowledge and skills at all stages of life.

BRIGHT SPOTS

Quality, Affordable, and Accessible Education for All

The Compulsory Education Act, in place since 2003, ensures that all Singapore Citizen children above six years old must be enrolled in national primary schools up to Primary Six. The six-year primary school education, which is heavily subsidised, aims to give our children a common core of knowledge that serves as a strong foundation for further education and training. It also provides a common educational experience in their formative years, which builds national identity and social cohesion. Singapore's net enrolment and completion rates are high. We have also achieved near-universal secondary education. Secondary school fees are heavily subsidised, and financial and bursary schemes are available to those who require additional support.

Early Childhood Development

To provide a strong start for every child, we have enhanced the quality of preschool education through several schemes. This includes establishing Ministry of Education (MOE) Kindergartens and developing the Nurturing Early Learners (NEL) Curriculum. The NEL Curriculum provides a comprehensive range of resources targeted at four to six year olds. It also acts as a pedagogical guide for preschool educators to understand how children learn and to design learning activities to cater to the children's unique needs, abilities, and learning styles.

Post-Secondary Education

Singapore has a vibrant post-secondary education landscape comprising public and private operators that offer a variety of programmes to harness the diverse interests and strengths of our population. In Singapore, nearly seven in 10 students from each primary school cohort pursue a full-time diploma or degree course. Of the publicly-funded institutions, our six Autonomous Universities (AUs), five polytechnics, and the Institute of Technical Education (ITE) offer programmes that play to individuals' different strengths. Universities offer a broad spectrum of undergraduate and postgraduate degrees, some in partnership with top foreign universities such as the Yale-National University of Singapore (NUS) College, the first liberal arts college in Singapore. ITE provides students with technical knowledge and vocational training. Polytechnics impart industry-relevant skills through diploma courses in fields such as applied sciences, design, business, and engineering. There is also an array of private institutions for students who prefer alternative curricula.

Maximising the Potential of Students with Special Needs

We have adopted a dedicated approach towards education for students with Special Educational Needs (SEN), grounded in our belief that each SEN student should be able to optimise his or her potential and pursue a meaningful and productive life in society. Children with mild SEN will be able to access the regular curriculum supported by trained teachers, specialised manpower, and school-based programmes. Today, about 75% of children with reported SEN attend mainstream schools. To maximise the learning potential of children with moderate-to-severe SEN, specialised curricula have been introduced in the 20 Government-funded Special Education (SPED) schools, which are run by Voluntary Welfare Organisations (VWOs) in close consultation with MOE. The Curriculum Framework for SPED schools, "Living, Learning, Working in the 21st Century", was introduced in 2012 to provide SPED schools with a common direction for designing and delivering a quality holistic education to meet the needs of these students. A Framework for Vocational

Education in SPED schools was launched in 2010. It serves as a guideline for establishing a structured vocational education programme that enhances students' employability and boosts their confidence to lead independent lives. We have also established partnerships between SPED schools and mainstream schools which aim to provide social and academic integration opportunities. MOE continuously works with the VWOs to uplift the quality of education in these schools.

Apart from curricula and resources, schools must also have the necessary physical infrastructure to ensure that students learn in a safe and secure environment. To this end, schools have barrier-free accessibility, with handicapped facilities provided at ground or entry level. More schools are providing full handicapped facilities, with barrier-free accessibility to all areas. All newly-built schools and those undergoing major upgrading have barrier-free enhancements such as lifts, ramps, and handicapped toilets, in compliance with the prevailing Barrier Free Accessibility Code. Hence, the number of schools with full handicapped facilities is expected to increase gradually.

Lifelong Learning

A fundamental feature of the Singapore education system is the emphasis on the upgrading of skills. Launched in 2014, SkillsFuture is a national movement that aims to promote industry support for individuals to acquire the skills necessary to progress in their career as well as foster a culture of lifelong learning. This is essential for individuals to remain competitive in the digital economy, where industries are increasingly disrupted by new technologies and digital applications, and to be prepared for emerging opportunities in growth sectors such as healthcare, urban solutions, advanced manufacturing, hub and professional services. We are strengthening partnerships between education institutions and industries to co-develop more learning options that are industry-relevant and provide exposure to real work environments. In doing so, industry players become co-developers of human capital and talent for their respective industries, while individuals are able to deepen their technological and domain-specific skills. Through the continual acquisition of industry-relevant skills and experiences, Singaporeans will be equipped to remain relevant in the rapidly-evolving economic landscape.

Education for Sustainable Development

It is essential for our students to develop "soft skills" as part of their educational process. To this end, our Character and Citizenship Education (CCE) aims to inculcate values in our children so that they become civic-minded and responsible individuals and citizens. CCE emphasises the interconnectedness of values, social and emotional competencies, civic literacy, global awareness, and cross-cultural skills that are critical for character-building. CCE learning outcomes are also aligned with SDGs. Children are taught to value Singapore's socio-cultural diversity, care for others, contribute to the progress of our community and nation, and become active citizens in a globalised world.

International Outreach

Our schools, universities, and the private sector offer scholarships to international students to create diverse student communities. This fosters better cross-cultural understanding and global awareness among our students, and facilitates mutual understanding and goodwill.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

An Increasingly Uncertain Economic Landscape

The future economy is volatile and uncertain. Millions of people will be joining the global marketplace, and technology is driving rapid change. It will be challenging to remain relevant in an increasingly uncertain landscape.

Widening Social Gap

The widening income gap and growing inequality in society may pose an obstacle to ensuring that our educational system continues to allow for high social mobility.

Over-emphasis on Academic Grades

There is a risk of over-emphasis on academic grades, at the expense of non-academic interests.

OPPORTUNITIES

Equipping Students with 21st Century Competencies and Cultivating a Culture of Lifelong Learning

Our 21st Century Competencies Framework focuses on ensuring that the next generation continues to be highly-skilled, flexible, and adaptable. In addition, the mindset shift among employees and employers to continuously acquire and hone their skills to enhance their work-readiness is central to the SkillsFuture effort. This will drive and sustain Singapore's next phase of development as an advanced economy and inclusive society.

Education as a Social Leveller

Our education system continues to provide opportunities for all regardless of their starting point in life. It is aimed at ensuring that society is inclusive by providing opportunities for children from different backgrounds to grow up together. We remain committed to providing quality, affordable, and accessible education so that no Singaporean student is disadvantaged because of their financial circumstances. For instance, education is highly subsidised and a range of financial assistance schemes are available to students in need.

Broadening Our Definition of Success

We introduced the Programme for Active Learning in primary schools, and increased the emphasis on non-academic subjects such as Physical Education, Arts, and Music. MOE is also broadening the scoring system for the Primary School Leaving Examination. The use of broader scoring bands will reduce the overly fine differentiation of students at a young age based on examination scores, and provide space to educate and develop students more holistically.

SUSTAINABLE DEVELOPMENT GOAL 5:

Achieve Gender Equality and Empower All Women and Girls

SINGAPORE'S APPROACH TO GENDER EQUALITY AND WOMEN'S AND GIRLS' EMPOWERMENT

Singapore is fully committed to the advancement of all women and girls. Equal opportunities are available to all citizens irrespective of their gender and founded on the principle of meritocracy. This is enshrined in Article 12 (1) of our Constitution which specifically provides that, "All persons are equal before the law and entitled to the equal protection of the law."

Singapore takes a coordinated Whole-of-Government approach in advancing the status and well-being of our women, in addition to consulting various stakeholders and community groups. This approach has worked well. The lives of women in Singapore have improved tremendously over the years. The latest UN Gender Inequality Index ranked Singapore 11th out of 159 countries, and second in Asia.[1] Life expectancy at birth for females was 85.1 years in 2016, higher than that for males.[2] Our infant and maternal mortality rates are among the lowest in the world. In 2016, the literacy rate for women was 95.4% and 52% of our university graduates are women.[3] The employment rate for women aged 25 to 64 years has increased from about 63% in 2007, to 72% in 2017.

BRIGHT SPOTS

End Discrimination Against Women and Girls

Singapore is party to the United Nations Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). We are firmly committed to the principles of equality and non-discrimination as espoused by CEDAW. An Inter-Ministry Committee (IMC) on CEDAW was created to implement and monitor policies and initiatives to address women's needs, in accordance with our obligations under CEDAW. The IMC is in turn supported by the Office for Women's Development (OWD) in the Ministry of Social and Family Development (MSF). The Office is also the national focal point for women matters in Singapore. In October 2017, we presented our Fifth Periodic Report to the UN Committee on the Elimination of Discrimination against Women. The Committee noted with appreciation the initiatives taken by Singapore to promote gender equality and protect the rights of women. Singapore is giving serious consideration to the Committee's recommendations and will continue to undertake measures in accordance with our CEDAW obligations.

Eliminate Violence Against Women and Girls

Singapore does not condone nor tolerate any form of violence against women. Violence against women is addressed through: (i) a robust legislative framework; (ii) a multi-stakeholder approach; (iii) training and professional competency; and (iv) public education. Government agencies also work closely with NGOs and the community in order to foster a violence-free environment. In particular, we have worked continuously to raise awareness against family violence. For example, MSF launched a "Break the Silence Against Family Violence" campaign in 2016. In 2017, one in three callers to the ComCare Call Hotline on family violence were concerned by-standers, who were encouraged to speak up. This is an increase from one in five callers prior to the campaign.

Singapore takes a serious view of human trafficking and has put in place legislation to safeguard women against the threat of trafficking. The Inter-Agency Taskforce on Trafficking-in-Persons (TIP) was formed in 2010. It coordinates decisions and aligns TIP policies between agencies. In addition, Singapore's anti-TIP law, the Prevention of Human Trafficking Act (PHTA), came into force in March 2015. The Act criminalises TIP in the form of sex, labour and organ trafficking. Singapore also ratified the UN Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children in September 2015. We continue to actively strengthen our laws to tackle the scourge of TIP.

Promote Shared Responsibility Within The Household and The Family

Singapore encourages both men and women to share caregiving and household responsibilities equally. We emphasise marriage as an equal partnership. To foster greater shared parental responsibility, we have been raising awareness of men's responsibilities and roles as fathers and husbands. For example, we work closely with the Centre for Fathering, in catalysing the "Dads for Life" movement to encourage active fathering. We have also introduced leave provisions for fathers, which have been enhanced over the years. For example, in 2017, we amended legislation to extend paid Paternity Leave to two weeks, and increased Shared Parental Leave to four weeks (from one week previously).[4] In addition, child care and infant care leave provisions are extended equally to working fathers and mothers.[5] There are also measures in place to support young working couples in caring for their

[1] Singapore scored 0.068 on the latest United Nations Gender Inequality Index. This is on a scale of 0 to 1, where 1 is total gender inequality.
[2] This is compared to 80.6 years for men in 2016.
[3] Refers to the six autonomous universities in Singapore; National University of Singapore, Nanyang Technological University, Singapore Management University, Singapore Institute of Technology, Singapore University of Technology and Design and Singapore University of Social Sciences.
[4] Shared Parental Leave is shared from the wife's Maternity Leave, subject to her agreement.
[5] This involves six days of paid Childcare Leave per year per parent (with a child aged below seven years), two days of paid Extended Childcare Leave per year per parent (with a child aged between seven and 12 years), and six days of unpaid Infant care Leave per year per parent (with a child aged below two years).

young children. For instance, we have worked to improve the quality, accessibility and affordability of pre-school services. All parents also receive child care and infant care subsidies.

We have also introduced a new Tripartite Standard[6] in March 2018, to encourage employers to provide additional unpaid leave for employees with dependents who have unexpected care needs (e.g. pre-term births), regardless of their employees' gender. In addition, to help workers balance their career and familial commitments, we encourage companies to offer and support the adoption of flexible work arrangements, such as through the WorkPro Work-Life Grant to defray employers' costs of offering work-life benefits to employees. In 2014, our Tripartite Committee on Work-Life Strategy[7] also launched an Advisory on the implementation of flexible work arrangements. The tripartite partners also launched a Tripartite Standard on Flexible Work Arrangements in 2017 to further improve the adoption of such arrangements.

Women in Leadership

Singapore actively supports women's participation in decision-making positions through several initiatives.

- The Women's Register was established by the Singapore Council of Women's Organisations (SCWO), to assist women who would like to volunteer their services to the community, make new connections in social and professional arenas, and obtain support and guidance from women leaders.
- BoardAgender is another initiative of SCWO launched in 2011 with the support of MSF. It facilitates greater awareness of the benefits of gender-balanced business, and encourages and enables women to contribute their expertise in the boardroom and through committees.
- The Diversity Task Force regarding Women on Boards (DTF), formed in 2012, conducted a study on the state of gender diversity on boards and in senior management in companies listed on the Singapore Stock Exchange. It was prompted by the concern that women continue to be under-represented on company boards and in senior management despite making immense progress in education and employment. The Task Force released its recommendations in April 2014. Their work received wide media coverage and generated considerable public discussion, leading to greater awareness and knowledge on the topic.
- The Diversity Action Committee, comprising illustrious business leaders and professionals from the private, people and public sectors, was formed in August 2014 under the auspices of the Singapore Stock Exchange, to drive improvements to address the issue of under-representation of women on boards.

Singaporean women are also actively involved in grassroots movements. The profile of these female grassroots leaders is varied – from young women, housewives, working professionals, and businesswomen. For instance, as of 2016, women make up 45% of the volunteers in grassroots organisations under the People's Association, which is a network of 1,800 grassroots organisations.

In the Singapore Government, there are currently seven women political office-holders. Three women ministers are in Cabinet, up from two women ministers in April 2018. Out of the five mayors chairing the Community Development Councils that oversee the various districts in Singapore, two are women. In January 2013, Madam Halimah Yacob was appointed the Speaker of Parliament, the first woman appointed to such a position. In September 2017, she became the first woman President of the Republic of Singapore.

Women's Health

Singapore aims to provide medical services that are affordable and of good quality for all. The Ministry of Health (MOH) regulates public and private healthcare providers, and promotes healthy living and preventive health programmes. As a result of this broad, overarching policy, women's and children's health in Singapore has been improving steadily:

- Life expectancy at birth for women increased from 82.6 years in 2006 to 85.1 years in 2016.
- Maternal mortality remains low. There were only two registered maternal deaths in 2016.
- Infant mortality rate remains low at 2.4 per thousand resident live births in 2016.
- Mortality rates for children under five years old dropped from 2.9 per thousand resident live births in 2006 to 2.7 in 2016.

[6] The Tripartite Standards are a set of actionable and verifiable set of practices agreed upon by the tripartite partners, which are voluntary for employers to adopt. The Tripartite Standard on Unpaid Leave for Unexpected Care Needs was launched in March 2018. Employers which adopt this Tripartite Standard commit to providing up to four weeks of unpaid leave for employees with pre-term/ multiple births or babies with congenital conditions, and up to two weeks of unpaid leave for employees with immediate family members who are hospitalised.

[7] The Tripartite Committee on Work-Life Strategy (TriCom), which comprises members from government agencies, tripartite partners and employers, promotes work-life practices as a strategy to optimise business performance and facilitate employees to manage their own work-life fit.

Women in Singapore also have ready access to good quality reproductive health care services, goods and facilities. We have a Women's and Children's hospital dedicated to the advancement of women's health. Since its founding in 1858, the hospital has evolved to become a regional leader in obstetrics, gynaecology, paediatrics and neonatology. Singapore has also introduced more benefits for pregnant women and enhanced subsidies for women undergoing assisted reproduction technology treatments. To empower parents and parents-to-be with the knowledge to establish good health practices, MOH widely disseminates materials on various aspects of healthcare for mothers and children. The State of the World's Mothers Report 2015 ranked Singapore 14th out of 179 countries and the best place in Asia to be a mother.[8]

Women's Access to Economic Resources

Singapore is focused on building a nation of opportunity and an inclusive society where every citizen shares in Singapore's success. We continue to build on past initiatives to transform our economy and strengthen social support. For instance, Muslim women in Singapore can receive better protection on matters of inheritance. Under Muslim inheritance law, men are by default, apportioned a greater share of inheritance than women. Nevertheless, in view of our evolving socio-religious landscape and the specific context of each family, the MUIS Fatwa Committee issues *fatwas* from time to time to protect the financial welfare of Muslim women and their dependents.[9] The Administration of Muslim Law Act (AMLA) was also amended in 2017 to allow the court, if it thinks fit, to permit women beneficiaries to become sole administrators of a deceased man's estate.

Use of Enabling Technology

There are no barriers preventing women's access to technology in Singapore. Singapore's approach is to help Singaporeans, both females and males, discover their strengths and passion, through strengthening of education and career guidance, and opportunities for exposure to different careers in the info-communications technology sector. Based on our Info-Communications and Media Development Authority (IMDA)'s info-communications and media manpower survey, in 2016, 30% of our 199,800-strong info-communications and media workforce is female. Since the launch of the TechSkills Accelerator Programme (TESA)[10] in April 2016, about 33% of participants in IMDA's human capital development programmes with placement outcomes is female. Additionally, about 29% of local university and polytechnic students who took part in IMDA's internship and mentorship programmes are female.

Policies and Legislation for the Promotion Of Gender Equality And The Empowerment Of Women And Girls

In the design, planning, and delivery of policies and programmes in Singapore, we take into account the impact of our policies on women, as well as other stakeholder groups, and target our benefits to those in need. This stakeholder approach enables our ministries to adopt a gender-sensitive perspective on issues that may have differing impacts on women and men. For example, in recognition of the different health requirements of women compared to men, the Women's Health Advisory Committee was set up in 2012 to promote the health and well-being of women. The Committee was revamped in 2016 as the Women's Health Committee and focuses on key health issues among women in Singapore (i.e. increasing cancer screening uptake, promoting bone health, and fighting diabetes, including gestational diabetes).

Specific measures for women are also in place where additional protection and assistance is necessary. In addition to our Constitution, there is specific legislation in place to protect the rights of women. This includes the Women's Charter, Penal Code, Children and Young Persons Act, and the Protection from Harassment Act.

[8] Source: State of the World's Mothers 2015, Save the Children.

[9] This includes the fatwa on joint tenancy (2008), as well as fatwas on Central Provident Fund (CPF) savings (2010), insurance nominations (2012), and exclusion for trusts created in favour of physically or mentally-incapacitated dependents from Islamic inheritance law (2015).

[10] TESA is an initiative by the government and industry, to offer various programmes to accelerate the development of info-communications capabilities in order to assist the ICT workforce to enhance their employability.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

Low Representation on Boards

Women in Singapore have made immense progress in education and employment, but remain under-represented on company boards and in senior management. For example, women only held 10.8% of board seats in companies listed on the Singapore Stock Exchange as of December 2017.

Low Workforce Participation by Women due to Work-Life Imbalances and Challenges

Women today take on multiple responsibilities. Besides having careers, they also adopt the role of caregiver for their children or elderly family members, in addition to undertaking household chores. As such, some women may opt to forego their careers in order to prioritise other obligations at home.

Potential Retirement Inadequacy of Women

With longer life spans and shorter careers as a result of family responsibilities, women are more likely than men to be financially vulnerable when they reach old age. There is a need to help them to build up their retirement adequacy.

OPPORTUNITIES

Building up Women's Representation through the Diversity Action Committee

The Diversity Action Committee (DAC) was formed in 2014 to promote women's representation on the boards of companies in Singapore, and expand the pool of board-ready women. The DAC released its two-year summary report in October 2016 with next-step recommendations. This includes the recommendation to strengthen the Code of Corporate Governance by requiring listed companies to disclose their policy and progress in board diversity, including women's representation.

In April 2017, DAC set a triple-tier target of 20% by 2020, 25% by 2025 and 30% by 2030 for women's representation on boards of Singapore Stock Exchange-listed companies, and called for larger companies to take the lead and create a catalyst for change.

Promoting Work-Life Measures, Shared Parenting, and Equal Partnership in the Family

We promote work-life initiatives, such as flexible work arrangements to enable women to enter and remain in the workforce. We also aim to provide affordable, quality and accessible child care and elder care services. In addition, we promote the value of shared-parenting and equal partnership in the family. This is aimed at changing traditional views of women as primary caregivers.

Support in Old Age

Initiatives such as the Retirement and Re-employment Act, enable seniors who are willing and able to continue working beyond retirement to do so in order to boost their retirement savings. We also have in place schemes such as the Silver Support Scheme and Pioneer Generation Package to further enhance financial assistance for older or retired women.

SUSTAINABLE DEVELOPMENT GOAL 6:

Ensure Availability and Sustainable Management of Water and Sanitation for All

SINGAPORE'S WATER AND SANITATION STORY

Water has always been an existential issue for Singapore. Singapore is classified as being water scarce and as the most water-stressed country in the world, according to the World Resources Institute's 2015 report. We also rank 170th out of 190 countries in terms of freshwater availability, according to the first UN World Water Development Report in 2002. Our limited natural supply of fresh water is exacerbated by our small land area which limits the space to capture and store rainwater.

Despite these constraints, we have come a long way in achieving universal access to affordable and high quality water as well as modern and accessible sanitation for all. Our policies are guided by long-term planning, underpinned by the need to achieve water sustainability to support our population and economic growth needs. We have adopted an integrated closed-loop approach to water management. Singapore's national water authority, PUB, optimises the use of Singapore's water resources by integrating water supply, sewerage and drainage functions to manage the entire water cycle, while harnessing opportunities for water reuse through wastewater reclamation technologies and innovation. Our approach to water management is guided by three key strategies: (i) maximising our yield by collecting every drop of rain that falls on Singapore; (ii) making water an endlessly reusable resource by recycling and reusing wastewater; and (iii) turning sea water into drinking water through desalination. This ensures that not a single drop of water is wasted. In addition, a strong emphasis on technology and innovation underpins our water management efforts through investment in R&D and test-bedding new technologies in our facilities.

BRIGHT SPOTS

Safe and Affordable Drinking Water

While Singapore has achieved universal access to affordable and high quality potable water, this was not always the case. In the 1960s, we were dependent on only two sources of water: local catchments and imported water from Johor, a state in neighbouring Malaysia. To ensure the sustainability of our water supply and to meet the needs of our growing population and economy, we have built up and diversified our water sources over the years. We have developed our "Four National Taps" strategy which outlines our four key sources of water: (i) Water from local catchments; (ii) imported water from Malaysia; (iii) Water reuse – the NEWater Initiative ; and (iv) Seawater desalination.

Over the years, we have expanded our local catchment areas to two-thirds of Singapore's land area by cleaning and damming rivers. This allows us to capture as much rainwater as possible.

NEWater is Singapore's brand of ultra-clean, high-grade reclaimed water. NEWater is produced using advanced membrane technologies and ultraviolet disinfection to further purify treated wastewater. Due to its ultra clean nature, NEWater is highly valued by the industry and primarily supplied to non-domestic sectors such as wafer fabrication parks, industrial estates and commercial buildings for industrial and cooling purposes. During dry periods, NEWater is also added to our local reservoirs to augment the drinking water supply. By enabling the use of every drop of water more than once, NEWater multiplies our potential water supply.

Desalination has also become a viable option for producing fresh water, as improvements in membrane technology have reduced the cost of desalination significantly. Currently, Singapore has three desalination plants with a combined total capacity of 130 million imperial gallons per day (mgd).

NEWater and desalinated water are expected to meet up to 85% of Singapore's water needs by 2060. They are key pillars of our water sustainability as they mitigate the impact of dry weather and increase our water security.

In addition, through the development and application of innovative technologies, Singapore has put in place measures to ensure that our water is safe to drink. PUB monitors and assesses our water, in line with over 300 different water quality parameters, exceeding the requirements stipulated under international drinking water regulations. There is continued investment in technology, geared towards the quick detection of contaminants in water, such as the Fish Activity Monitoring System (FAMS)[1] and other online monitoring systems and lab tests, which enhance the security measure of drinking water by providing constant monitoring of water quality. This is in addition to effective source water pollution control measures and adopting a multi-barrier approach in water treatment.

Sanitation and Hygiene

The move towards a fully sewered system, with 100% of the population served by modern sanitation, was initially

[1] The FAMS uses video analytics technology to monitor if there is fish kill, which could be an indication of possible toxicity in the water, and sends alerts to the operator when this phenomenon occurs. This technology acts as a bio-toxicity detection mechanism and complements the physical and chemical surrogate parameters monitored at the waterworks.

motivated by efforts to clean up Singapore's rivers, ensure clean water in urban water catchments and to protect public health. Since 1997, 100% of wastewater in Singapore is collected and treated. Illegal discharges of toxic contaminants to the sewerage system are strictly prohibited and the sewers are continuously monitored. The wastewater treatment process is tightly controlled and closely supervised to ensure that treated wastewater meets standards for safe discharge to the environment and that the quality of "feedwater" to NEWater is not compromised. In 2025, with the completion of the Deep Tunnel Sewerage System (DTSS), Singapore's long-term needs for wastewater collection, treatment, reclamation and disposal will be met in a cost-effective and sustainable way. The completed DTSS will also streamline and further close the water loop through NEWater by increasing the percentage of recycled water in Singapore's water supply.

Efficient Water Use

We work closely with both industrial and domestic sectors to lower water consumption and promote efficient water use. Changing behaviour patterns and practices in the industrial sector is especially important as non-domestic use is expected to be the main cause behind the increase in our future water demand, constituting 70% by 2060. We have provided funding to companies to implement water efficiency initiatives, such as consultations for solutions, and water stewardship. There is also a focus on industrial water-saving solutions through improving rates of recycling and increasing uptake of water conservation projects. There are also a number of programmes in place to assist the private sector achieve higher water efficiencies (e.g. Mandatory Water Efficiency Management Plan, Water Efficiency Awards and Water Efficiency Fund).

We have encouraged the use of water-efficient appliances and fittings to conserve water. There are mandatory measures in place for households and industries to use water efficiently. These include maximum allowable flow rates for taps and mixers, and maximum allowable flushing capacities for flushing cisterns and urinal flush valves. Under the Water Efficiency Labelling Scheme, water efficiency labels are also required for water fittings and appliances (including taps, mixers, urinals, urinal flush valves, and washing machines) so as to help consumers make more informed choices and encourage suppliers to introduce more water-efficient fittings and appliances into the market.

Engaging Communities on the Value of Water and Sanitation

Ensuring that water remains a treasured resource in Singapore also requires promoting the value of safe and reliable water and sanitation to all Singaporeans. One of Singapore's largest projects in water and sanitation was the 10-year clean-up of the Singapore River, which started shortly after independence, in the 1970s. Given rapid urbanisation and expanding maritime trade, the river was heavily polluted by the disposal of garbage, sewage and other by-products of industries located nearby, including pig and duck farms and wastewater and oil spills from boats plying the river.

The clean-up was a large-scale endeavour by various agencies. It involved the relocation of thousands of street hawkers, squatters and polluting industries, and the removal of over 250 tonnes of rubbish that had accumulated in the river and on its banks through dredging the river bank and bed. When the clean-up was completed in 1987, the water was clean enough for fish and other forms of aquatic life to return and thrive. This also laid the foundation for a reservoir in the heart of the city. The mouth of the Marina Channel in the southern part of Singapore was dammed through the construction of the Marina Barrage in 2008, resulting in the triple benefits of a steady water supply, flood control, and a recreational space for the community.

Driven by our vision to make Singapore a "City of Gardens and Water", we launched the Active, Beautiful, Clean Waters (ABC Waters) Programme in 2006 to transform utilitarian drains and canals into attractive waterways, bring Singaporeans closer to water, and improving runoff quality using green cleansing features. Over 100 potential locations have been identified for implementation by 2030. Thirty-six ABC Waters sites have been completed as of January 2018.

Individuals and organisations also contribute towards water-related activities and outreach under the Friends of Water Programme. This initiative recognises the efforts of the community in spreading water-related messages and keeping Singapore's water supply sustainable. We also implement public education programmes targeted at different segments of the community to raise awareness on water conservation. For example, we have worked with schools through the Ministry of Education, to include water conservation topics in the national curriculum. In addition, we work with partners from the "3P sectors" (People, Public and Private) to commemorate Singapore World Water Day annually through month-long celebrations in March, which coincide with the UN's World Water Day on 22 March. Events are organised by the community for the community, to play their part for the water cause.

International Cooperation

Singapore's water and sanitation success is also the result of having benefitted from technical assistance and cooperation with other countries and international organisations such as the World Bank and UN agencies, during the early years of our nationhood. Today, we aim to pay it forward by sharing Singapore's experience through technical assistance and capacity building for fellow developing countries in areas such as developing sustainable water and sanitation solutions. We established the Singapore Water Academy in July 2016, which is a practitioner-focused learning institute

in urban water management. The Academy aims to develop the capabilities of water professionals both locally and internationally. In 2016, the Singapore Water Academy worked with the Ministry of Foreign Affairs to conduct water-related programmes for ASEAN countries.

We also engage international organisations regularly on water issues, such as UNESCO, the International Water Association, the International Desalination Association, the World Bank, the Asian Development Bank and the Asia Pacific Water Forum, and contribute actively to the discourse on sustainable urban water management. We also organise the biennial Singapore International Water Week (SIWW), a premier global platform to share and co-create innovative water solutions. SIWW 2016 attracted over 21,000 participants from 125 countries and regions. SIWW 2018, held on 8 to 12 July 2018, attracted similar attendance.

The Lee Kuan Yew Water Prize, an international water prize named after our founding Prime Minister, honours outstanding contributions by individuals or organisations in solving the world's water challenges. The laureates' achievements in sustainable water solutions have made a difference to cities and people around the world. Over the last decade, many distinguished laureates have been recognised for their ground-breaking work in membrane technology, wastewater treatment, as well as holistic policies that have benefitted the lives of millions. For instance, the laureate for 2018, Professor Rita Colwell, was conferred the Water Prize for her pioneering insights into microbial water quality surveillance, which has significantly contributed to the understanding and prevention of waterborne diseases, helping to improve water safety, and protecting the health and lives of millions of people worldwide.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

Water Security and Weather Resilience

Conventional water sources from two of our four National Taps – local catchments and imported water – are dependent on rainfall. In addition, given that imported water meets about half of Singapore's water supply, dry weather can threaten the reliability of our water supply from these sources.

OPPORTUNITIES

Cutting-Edge Technology

We have invested in weather-resilient water sources in the form of our two remaining National Taps, i.e. NEWater and desalinated water.

We will continue to build up our NEWater and desalination capacities to strengthen the drought resilience of our water supply given unpredictable weather patterns. NEWater and desalinated water are independent of rainfall and thus help supplement conventional water sources during dry spells. For instance, during dry months, a small amount of NEWater is injected into local reservoirs to maintain healthy stock levels. The water from the reservoirs is treated for potable use through a series of water treatment processes at the water treatment plants. This ensures that adequate drinking water can be provided for all. By 2020, Singapore will have two additional 30 mgd desalination plants. We expect desalinated water and NEWater to meet up to 85% of our water needs by 2060.

To bring down the cost and energy used for desalination, and ensure its long-term viability, we are exploring other forms of technology to extract freshwater from seawater. This involves plans to scale up the

FUTURE CHALLENGES & OPPORTUNITIES

Increased Water Demand

As the proportion of non-domestic water use is expected to increase from 55% of water demand today, to 70% by 2060, we have to work closely with the non-domestic sector to lower water consumption, improve rates of recycling, and increase uptake of water conservation projects to ensure the long-term viability of our water supply without compromising economic growth.

demonstration of electrodeionisation (EDI) technology, which uses an electric field to extract dissolved salts from water. Our target is to halve desalination's energy usage.

These challenges also present us with the opportunity to expand our water industry. Water was identified as a strategic growth sector in Singapore in 2006 with technology development as a key driver. A total of S$670 million in funding was set aside to promote R&D and grow the industry.

Infrastructure Planning & Innovation

Singapore's approach is to plan for our water infrastructure ahead of demand.

We are working to enhance our wastewater sewer network through the construction of the DTSS. We have also worked with industry partners to develop a Smart Water Grid, a network of wireless sensors installed in potable water supply mains across Singapore, which functions as a real-time platform to monitor water pressure, flow and quality. The system provides decision support tools for network management and allows early detection of anomalous network occurrences, enhancing the efficiency of water supply to consumers. This helps minimise losses of water due to leaks and ensures a reliable water supply.

DEEP TUNNEL SEWERAGE SYSTEM (DTSS)

A wastewater superhighway for the future, the DTSS is a cost-efficient and sustainable solution conceived to meet Singapore's long-term needs for wastewater collection, treatment, reclamation and disposal.

Constructed in two phases, the DTSS comprises a network of linked sewers leading to two major tunnels. These deep tunnel sewers convey wastewater by gravity to centralised water reclamation plants located at our coastal areas. The treated wastewater is further purified into NEWater, or discharged into the sea through outfalls.

The DTSS enhances the reliability of our wastewater system by minimising the risk of cross contamination between water catchments and wastewater. By collecting every drop of wastewater, it also allows for large-scale and efficient water recycling. By 2025, Phase 2 of the DTSS will extend the existing system to western Singapore with a 40-kilometre long deep tunnel linked to 60 kilometres of sewers. The DTSS also optimises land use. When it is fully completed, the entire DTSS will shrink the land occupied by wastewater infrastructure in Singapore by 50%.

MARINA BARRAGE

A 350-metre wide dam across the mouth of the Marina Channel in southern Singapore, the Marina Barrage, which was opened on 31 October 2008, keeps out seawater and creates Singapore's 15th reservoir, the Marina Reservoir. It serves a catchment area of 10,000 hectares, or one-sixth the size of Singapore. Following its opening, the desalting of the Marina Reservoir began through a natural replacement process.

Aside from augmenting Singapore's water supply, the Marina Barrage is also part of a comprehensive flood control scheme to alleviate flooding in Singapore's low-lying areas in the south and southeast. During heavy rain, a series of nine crest gates at the dam is activated to release excess stormwater into the sea when the tide is low. In the case of high tide, giant pumps can drain excess stormwater into the sea.

The Marina Barrage has become a recreational attraction for the community to enjoy. As it is unaffected by tides, the water level in the Marina Reservoir is kept constant all year round. This is ideal for all kinds of water-based recreational activity, such as boating, kayaking and dragon-boating. The green roof of the Barrage has also become a popular recreation spot for Singaporeans.

SUSTAINABLE DEVELOPMENT GOAL 7:

Ensure Access to Affordable, Reliable, Sustainable and Modern Energy for All

SINGAPORE'S ENERGY STORY

Access to energy will always be a challenge for a small, densely populated city-state like Singapore with no indigenous energy resources, and limited options for harnessing alternative energy. Nonetheless, over the years, Singapore has risen to the challenge of ensuring that our population has access to reliable, competitively priced, and environmentally sustainable energy. In addition, our long term strategy and efforts have enabled us to build the necessary infrastructure to provide electricity to the population and ensure the reliability of the national grid.

BRIGHT SPOTS

Access to Electricity and Energy Services

One of Singapore's top priorities at independence was ensuring an adequate supply of essential utilities, including electricity. In 1963, the Government started the 10-year Rural Electrification Programme to electrify all housing areas in Singapore. Between 1963 and 1969, 300 electrification schemes were implemented and the Government provided S$1 million monthly to subsidise the electrification of areas furthest away from the existing power grid. To facilitate bill payment in rural areas, a Mobile Collection Unit was set up in 1964. Overall, the rural electrification programme, which cost nearly S$20 million, enabled more than 200,000 people to enjoy the benefits of electrification. These were Singapore's first steps towards providing our residents with reliable and secure electricity. However, challenges remained. For instance, the power grids in rural areas consisted of overhead bare and stranded copper conductors supported on poles. The electricity supply was therefore frequently disrupted, by weather-related events (e.g. storms or tree fall). It was also easy to pilfer electricity or even steal the wiring itself. This issue was resolved when the overhead lines were replaced with insulated wires in the 1980s. Further, the installation of new overhead electricity cables was discontinued in the late 1970s, when they were moved underground to enhance reliability of the grid as well as to make the cityscape neater.

Besides providing electricity to existing houses, Singapore also implemented a compulsory electrification scheme when new public housing units were built by the Housing Development Board (HDB). With the implementation of these measures, Singapore ensured the universal coverage of electricity for all its residents. Singapore has also achieved secure and reliable access to energy services other than electricity. Residential and commercial consumers have access to services providing town gas and liquefied petroleum gas (LPG) for cooking and water heating.

Reliability of The Electrical System

A reliable electricity supply is critical to Singapore's economic development. In addition to securing electricity coverage island-wide, we also concentrated on ensuring a reliable electricity supply. This was done first by ensuring the sustainability of investments in electrical infrastructure. We also sought to increase our manpower in the energy sector, by developing a steady pool of well-trained workers to manage Singapore's electrical system. To do so, Singapore instituted a vocational training programme in schools to build up the technical competency of our local workforce.

In building electrical facilities, we planned to stay ahead of the curve through accurate forecasting of future electrical demand and building power stations ahead of time. For instance, by 1984, there were about 670,000 electricity consumers, with an annual demand of 13,000 million kilowatt-hours. Singapore was able to cope with this demand with the completion of three new power stations. We also computerised our electricity system in the 1980s with the introduction of the Power System Control Centre to monitor and control the operation of Singapore's power stations and transmission network. Condition Monitoring Systems were also introduced progressively to provide early warning of any impending failure of transmission and distribution equipment. In addition, we computerised our maps of electricity cables and gas pipelines to avoid accidental damage to underground cables and disruptions in supply to consumers during construction of high-rise public housing and the public transport railway system.

Today, the Energy Market Authority (EMA) has put in place regulatory measures to further strengthen the reliability of Singapore's electricity supply. EMA also conducts regular reviews with industry players to enhance the emergency preparedness of the power sector. As a result of our efforts, Singapore's electricity grid is one of the most reliable in the world, with an average electricity interruption time of less than one minute per customer per year. We will continue to upgrade our systems regularly to ensure efficiency and reliability.

Security of Our Gas Supply

Gas is a key energy resource for Singapore. About 95% of our electricity is generated using natural gas, which is imported via licensed term and spot gas importers. Traditionally, most of Singapore's natural gas is imported from Indonesia and Malaysia through pipelines. Since May 2013, Singapore has also started importing liquefied natural gas (LNG) to

diversify our energy sources and strengthen energy security. To facilitate this, the Singapore LNG Terminal was built in May 2013 with two storage tanks and an initial throughput capacity of 3.5 million tonnes per annum (Mtpa). As of September 2017, the terminal's throughput has been increased to around 11 Mtpa, with the completion of additional regasification facilities. Further expansion of the terminal is in progress and Singapore will see the addition of a fourth tank in 2018.

Competitive Electricity Market

One of the key tenets of Singapore's sustainable energy strategy is to price energy right. Singapore is the first country in Asia to liberalise our electricity market. This allows the market to set the price of electricity, without any subsidies, thereby reflecting resource scarcity and promoting judicious usage. This also allows us to leverage on competition to promote innovation and exert downward pressure on electricity cost. Since 2001, we have opened up the electricity generation and retail markets to commercial players, established a regulatory framework and introduced a wholesale electricity market with spot bidding every 30 minutes. Currently, consumers with a monthly consumption of at least 2,000 kilowatt hour (kWh) are contestable, and can buy electricity from retailers. Non-contestable consumers, mainly households and small businesses, buy electricity at the regulated tariff. Singapore will be further liberalising our retail electricity market in 2018. Since April 2018, households and small businesses in Jurong (an area in the western part of Singapore) have the option to buy electricity from retailers, and can choose a price plan that best meets their needs. The retail market will be liberalised for the rest of Singapore from the second half of 2018.

Sustainable Energy

Singapore is committed to sustainable energy use with the aim of reducing our greenhouse gas emissions and adhering to our commitments under the Paris Agreement on climate change. To this end, we are constantly exploring innovative ways to reduce our carbon footprint. For instance, competition in the liberalised power generation sector has spurred power generation companies to switch from steam plants powered with fuel oil to more efficient Combined Cycle Gas Turbines (CCGTs) fuelled by natural gas, the cleanest fossil fuel. Singapore has also identified solar as the most viable clean energy source for local deployment in terms of technical feasibility and cost. Despite challenges such as limited land and intermittency in generation due to high cloud cover, solar photovoltaic (PV) deployment in Singapore has grown rapidly, with total installed capacity increasing from 0.4 megawatt peak (MWp) in 2008 to around 143 MWp in 2017. Singapore plans to further raise our solar adoption to 350 MWp by 2020 and further to one gigawatt peak (GWp) beyond 2020. We are also investing in research, development and demonstration (RD&D) of solar PV and related energy technologies, addressing market barriers to deployment, enhancing our regulatory framework for intermittent generation sources, and by having the public sector take the lead in adopting solar energy to encourage growth of the solar industry.

International Cooperation

Singapore works closely with the international community in sharing our technical experience and best practices. In addition, we are committed to being a constructive and active player in discussions on sustainable energy at multilateral fora such as ASEAN, APEC and G20, as well as through our engagement with international organisations such as the International Energy Agency (IEA) and International Renewable Energy Agency (IRENA).

Under our ASEAN Chairmanship in 2018, Singapore will be hosting the 36th ASEAN Ministers on Energy Meeting (AMEM) as chairman of the ASEAN energy track. Singapore also organises the annual Singapore International Energy Week (SIEW), a key platform to facilitate the discussion of global energy issues. Singapore joined the IEA as an Association Country in 2016. Since then, we have partnered the IEA on two initiatives: the Singapore-IEA Regional Training Hub and Singapore-IEA Forum. We worked with the IEA to host the inaugural IEA Energy Efficiency Training Week in Singapore in July 2017 under the first initiative, and the Singapore-IEA Forum at SIEW in October 2017. For 2018, Singapore will be partnering the IEA to host a training programme on energy investments and a workshop on digitalisation for ASEAN, as well as to hold the second Singapore-IEA Forum which will focus on digitalisation.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

Energy Security and Diversification of Energy Sources

In Singapore, we have limited renewable energy options, with most of our electricity generated using natural gas. Singapore does not have hydro resources, our wind speeds and mean tidal range are low, and geothermal energy is not economically viable.

Reducing Singapore's Emission Intensity

Under the Paris Agreement, Singapore has pledged to reduce our emissions intensity by 36% from 2005 levels by 2030, and to stabilise our emissions with the aim of peaking around the same time.

OPPORTUNITIES

LNG and Solar

LNG enhances our energy security as it allows us to source for natural gas globally. To meet Singapore's gas demand, we launched a two-stage Request for Proposal (RFP) in June 2014 to appoint up to two new LNG importers to supply Singapore's next tranche of LNG. The appointment of two new LNG importers and the flexibility for any gas user to source LNG from the spot market contribute to the development of more competitive and dynamic gas and electricity markets in Singapore.

As of end-2017, solar PV deployment in Singapore has risen to around 143 MWp. In order to ensure that our national grid can support the greater deployment of solar energy, we are investing in system-level solutions such as solar forecasting and energy storage technologies to manage intermittency. For example, in October 2017, two consortiums were appointed to implement Singapore's first utility-scale Energy Storage System (ESS). A total of 4.4 megawatt hour of grid-storage solutions will be deployed in two substation locations. This project aims to evaluate the performance of different ESS technologies under Singapore's hot, humid and highly urbanised operating environment. Insights gained from the test-bed would help establish clear technical guidelines for ESS deployment (e.g. grid connection and safety requirements for installation) to catalyse the use of ESS in Singapore. EMA had also launched a consultation paper to seek industry feedback on the policy framework for energy storage systems.

Deploying Mitigation Measures

Our suite of mitigation measures is aimed at improving energy efficiency, increasing the deployment of renewable energy, and fostering technology and innovation.

Promoting more efficient use of energy is a key part of our mitigation strategy. We have adopted a mix of regulations, incentives, and capability building measures to encourage energy efficiency improvements in the industrial, buildings, transport, and household sectors.

For example, we have recently enhanced the Energy Conservation Act to strengthen energy efficiency practices among companies, and there are plans to implement Minimum Energy Performance Standards (MEPS) for common industrial equipment. The Government also provides grants and support to help companies perform energy audits, enhance energy efficiency and reduce emissions.

Singapore will implement a carbon tax across all sectors without exemption from 2019. This will send a transparent, fair and consistent price signal to incentivise the adoption of more energy-efficient practices and reduce emissions across the economy.

FUTURE CHALLENGES & OPPORTUNITIES

Conducive Regulatory Environment for Power Generation Investments

In Singapore's liberalised market environment, power generation investments are commercially driven. In anticipation of an increasing share of renewables, we have to ensure a conducive regulatory environment that facilitates power generation investments for the future.

Infrastructure Planning and Innovation

The Singapore Electricity Market Outlook (SEMO) was launched on 24 October 2016. It is an online publication to provide information and visibility on the longer term outlook of the energy landscape in Singapore, such as the projected electricity system demand and supply conditions. In this inaugural edition, we worked with research institutes to feature the outlook of solar PV generation in Singapore. This will help the industry better understand the characteristics of solar PVs in Singapore and facilitate investment decisions for such technologies. The second edition was launched in October 2017, which featured a special section on the electricity futures market in Singapore.

FLOATING SOLAR TEST-BEDS

Singapore is exploring ways to increase the amount of space available for the deployment of solar PV panels. While most solar PV panels are deployed on land or rooftops, water bodies with significant surface areas present great potential for harnessing solar energy, especially in land-scarce Singapore. A one MWp floating solar PV system test-bed was launched at Tengeh Reservoir, in the western part of Singapore, in October 2016. Comprising rows of floating solar panels atop a hectare of water, the test-bed feeds energy to the national power grid. It has thus far performed better than rooftop solar panels because of cooler temperatures in the surrounding environment. This initiative was a joint collaboration between Economic Development Board, the Solar Energy Institute of Singapore under the National University of Singapore, and PUB, Singapore's National Water Agency. Building on the results of the test-bed, we are exploring the feasibility of deploying more floating solar PV systems in Singapore. One of them is a large-scale floating solar PV system (up to 50 MWp) at Tengeh Reservoir. Potentially, the energy generated could power about 12,500 four-room flats.[1] We are also conducting environmental studies and consulting environmental groups to study the possible impact of large scale solar PV systems on natural habitats.

[1] A typical four-room flat in Singapore is approximately 90 square metres.

SUSTAINABLE DEVELOPMENT GOAL 8:

Promote Sustained, Inclusive and Sustainable Economic Growth, Full and Productive Employment and Decent Work for All

SINGAPORE'S ECONOMIC STORY

Singapore has undergone many economic cycles but has enjoyed sustained economic growth since independence in 1965. Singapore has encountered a wide range of challenges and weathered many economic crises. Our strategy in dealing with these challenges involves working closely and consistently with companies and trade unions, whilst adopting a hard-headed, pragmatic approach to overcome these challenges and drive our economy towards the next stage of its development.

In the 1960s, Singapore had a small but rapidly growing population of 1.6 million, a small manufacturing base, little industrial know-how and domestic capital, and no natural resources. To overcome these limitations, Singapore industrialised through an import substitution strategy to reduce our reliance on entrepôt trade. We also established various economic agencies to spearhead different aspects of our economic development, such as the Economic Development Board (EDB) in 1961 and the Singapore Tourist Promotion Board in 1964. From 1960 to 1964, Singapore's gross domestic product (GDP) growth averaged 5.2% per annum (p.a.), while the manufacturing sector's share of GDP grew from 11% to 13%. This later increased significantly between 1965 to 1978, when Singapore's GDP growth averaged 10% p.a., with the manufacturing sector's share of GDP growing rapidly from 14% to 24% – largely due to our adoption of an export-oriented strategy by attracting foreign investors to Singapore to develop our manufacturing and financial sectors. The labour climate and investment environment also improved through the enactment of the Employment Act to lay down standards of employment for workers.

In every phase of our development, Singapore has progressed by building on our existing strengths, growing new capabilities, and shifting away from activities that were no longer viable. The growth of our manufacturing sector created positive spillovers for the trade, finance, tourism, and professional services sectors, and vice versa. Singapore's links to other global financial centres and trading hubs also multiplied and strengthened. Later, as we developed new manufacturing and services clusters, such as specialty chemicals, pharmaceuticals, headquarter services, and wealth management, and grew our investments overseas, companies and workers in existing sectors also prospered.

Singapore's unemployment rate has remained consistently low over the years, with the resident unemployment rate ranging between 2.8% and 3.1% from 2010 to 2017. However, net growth in total employment has slowed significantly, from more than 200,000 a year before the global financial crisis in 2009 to less than 25,000 in 2015. As Singapore faces an ageing population, low birth rates and a job market with already high labour force participation rates, local workforce growth is expected to stagnate over the next ten years. Hence, we will need to look towards transforming our economy to prepare our workforce for the challenges and opportunities of the future.

BRIGHT SPOTS

Restructuring Singapore's Economy

Even as Singapore faced multiple challenges over the years in the form of resource constraints, fast-rising costs and intense regional competition, the constant restructuring of our economy has helped Singapore adapt to evolving global and domestic circumstances and to maintain our economic growth.

Singapore embarked on a major restructuring of our economy in 2010, with good progress since. It involved improving the skills of our workforce, growing an innovative economy and building a distinctive global city. Although productivity performance had been weak in the domestically-oriented sectors, overall real productivity grew by 2.5% p.a. between 2009 and 2016.[1] Singapore's resident unemployment rate also remained low at around 3% and the real median wage grew by 2.6% p.a. over the same period.[2]

In 2015, we set up the Committee on the Future Economy (CFE). The CFE's objective is to adopt a forward-looking posture in order to develop economic strategies to position Singapore well for the future. In particular, the CFE would address areas crucial to Singapore's future economic development: (i) future growth industries and markets; (ii) corporate capabilities and innovation; (iii) jobs and skills; (iv) urban development and infrastructure; and (v) connectivity. With the strategies put forth by the CFE, Singapore hopes to chart a longer-term growth path towards a vibrant and resilient economy with sustainable growth that creates value and opportunities for all.

[1] This is measured as real value-added per actual hour worked. For 2016, based on advance gross domestic product estimates and preliminary estimates on hours worked.
[2] This is measured as real growth in gross monthly income from work (including employer Central Provident Fund contributions) of full-time employed residents.

Transforming the Local Workforce

With the slowing growth of our local workforce, Singapore can no longer continue to rely on manpower growth to drive the economy, but rather, needs to shift towards productivity-driven growth for long-term sustainability. As companies face an economic slowdown and restructure to become more productive in a manpower-lean labour market, workers could find it more difficult to stay in their current jobs (e.g. due to skills mismatch) or to find new roles.

In 2016, the Ministry of Manpower introduced the "Adapt and Grow" initiative to help Singaporeans affected by economic slowdown and restructuring adapt and stay relevant in the labour market today. The various programmes under "Adapt and Grow" provide wage and training support to both employers and jobseekers. For example, workers including those who leave their jobs mid-career can "re-skill" to enter new job roles and growth industries such as logistics, financial services and pharmaceuticals through the Professional Conversion Programme (PCP). Others can take part in Work-Trials which place them on attachments to companies for on-the-job training.

As a result of these efforts, more than 24,000 individuals were able to find jobs through the "Adapt and Grow" initiative in 2017. Out of these, over 50% were Professionals, Managers, Executives and Technicians (PMETs) and about 30% had experienced long-term unemployment of six months or more.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

Impact of global shifts on Singapore's small and open economy

Structural shifts in external environment and demographic trends

- Global growth has been subdued and is expected to be lower than in the previous decade.
- Global productivity growth has been sluggish.
- Global value chains are changing, with major trading nations including China looking to in-source more.
- Populations are ageing.

Rapid technological change

- Innovation cycles have shortened.
- New technologies can supplant entire industries and displace workers. This includes, for instance, robotics and artificial intelligence programs displacing routine jobs in manufacturing and services.

Shift in mood away from globalisation

- Nativist politics and protectionist economics growing in strength and influence in Europe and the United States.
- Anti-globalisation trend will undermine international trade, hurting small open economies like Singapore, with two-thirds of our GDP generated by external demand.

OPPORTUNITIES

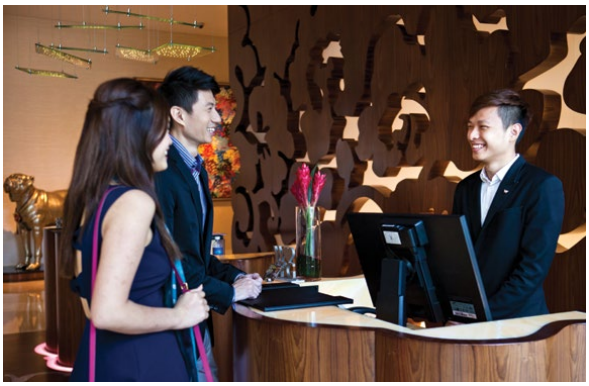
Leverage opportunities to innovate, deepen capabilities, remain connected and stay relevant

In the future economy, the workforce in Singapore should have in-depth skills and be motivated towards life-long learning, businesses should be innovative and nimble, our city connected and vibrant, continually renewing itself, and the Government coordinated, inclusive, and responsive.

To this end, the CFE has identified seven mutually-reinforcing strategies:

- Deepen and diversify our international connections
- Acquire and utilise deep skills
- Strengthen enterprise capabilities to innovate and scale up
- Build strong digital capabilities
- Develop a vibrant and connected city of opportunity
- Develop and implement Industry Transformation Maps
- Partner each other to enable innovation and growth

SUSTAINABLE TOURISM



Alongside efforts to enhance Singapore's destination attractiveness, the Singapore Tourism Board (STB) has been driving sustainable practices in the tourism sector by developing the capacity and capability of our workforce, and through local engagement and partnerships.

Developing workforce capacity and capability

STB works with industry stakeholders to develop skilled workers and leaders, and ensure that the tourism sector continues to offer exciting career opportunities.

To help structure jobs in the Hotel and Accommodation Services sector for progression and greater sustainability, STB developed a Skills Framework (SF) in partnership with employers, training providers, industry associations and unions. The SF provides up-to-date information on employment, career pathways, job roles, existing and emerging skills and competencies, as well as relevant education and training programmes. Individuals can then use this to make informed choices on career development and skills upgrading, while employers can better recognise skills and invest in skills training for their employees.

STB also provides various grants and schemes to support the industry in workforce development. For example, the Training Industry Professional in Tourism (TIP-iT) incentive scheme supports companies in employee upgrading as well as talent and leadership development.

Building local engagement and partnerships

STB also partners industry and community stakeholders to ensure business activities which support tourism thrive alongside the local communities where they are situated. For example, as each tourism precinct has its unique characteristics, STB works closely with the precinct champions (e.g. the Orchard Road Business Association which works with stakeholders on Singapore's main shopping belt), content providers as well as other public agencies and private stakeholders to profile the precincts through differentiated events.

Place-making initiatives are spearheaded, developed and implemented to improve visitor experience and inject vibrancy to the precincts and cultural enclaves (e.g. Chinatown and Little India). In Chinatown, STB works closely with the Chinatown Business Association (CBA) and local community to organise festive celebrations, form business collaborations, and address issues for the betterment of the surrounding citizens and businesses.

Local engagement and public feedback are crucial as well, especially in revitalising the precincts. For example, when revamping Chinatown Food Street (a bustling street which offers Singapore street food), STB and CBA turned to Singaporeans to get their opinions on how the Food Street could be re-imagined. Likewise, in Little India, STB works closely with the Little India Shopkeepers and Heritage Association to organise place-making initiatives such as the Deepavali Light Up and the ARTWALK Little India event, a public art collaboration between LASALLE College of the Arts and STB. STB also offers funding support via its Association Development Fund to tourism-related precinct associations for capability building and to help these associations become self-sustaining in the long term.

SUSTAINABLE DEVELOPMENT GOAL 9:

Build Resilient Infrastructure, Promote Inclusive and Sustainable Industrialisation and Foster Innovation

INFRASTRUCTURE, INDUSTRIALISATION AND INNOVATION IN SINGAPORE

Despite our land scarcity and limited natural resources, Singapore strives to achieve economic growth so as to attain a good quality of life for our citizens. In order to ensure sustained and progressive growth, we have taken a coordinated, strategic approach towards developing our infrastructure, building up our industries and fostering innovation in our nation.

We have made continuous investments in our infrastructure over time while making the best use of our resources. This includes enhancing the efficiency of our transportation and logistics services and building up a strong information and communication infrastructure. We are also cognisant that industrialisation plays a key role in driving economic growth and creating job opportunities, which underpins social stability. Given Singapore's population and demographic profile, we have sought to develop new high-technology manufacturing clusters while shifting away from labour-intensive manufacturing. At the same time, we have encouraged Singaporeans working in our industrial sector to constantly upgrade their skills. This will allow Singaporeans to continue to have access to quality jobs and seize opportunities in the future global economy.

We also see innovation as key to advancing the technological capabilities of Singapore's industries, translating new technology into products and applications which benefit society and spurring the development of new skills in our workforce. This is why we have made significant efforts to build up our research and development capabilities. Public investment in R&D has increased nearly ten-fold from S$2 billion under the 1991 five-year National Technology Plan to S$19 billion under the Research, Innovation and Enterprise 2020 (RIE2020) Plan which spans 2016 to 2020.

BRIGHT SPOTS

Infrastructure Building

Singapore recognises the importance of building good transport infrastructure to facilitate the flow of people, goods, services and ideas. Good transport connectivity raises the quality of life and creates good jobs for Singaporeans.

Singapore is home to one of the world's busiest container ports, which handles more than 33 million Twenty-foot Equivalent Units of containers and is linked to over 600 ports

globally; and one of the world's best airports, which serves more than 62 million passengers per annum and is connected to more than 400 cities. We are making major investments to expand the airport and sea port, to anchor Singapore as a world-class air hub and a premier International Maritime Centre. A next generation mega container port is being constructed at Tuas, which will double our current container handling capacity. We have also started planning for airport expansion at Changi East, which will add a fifth airport terminal and additional infrastructure to serve another 50 million passengers per year by around 2030. Within Singapore, we have built an extensive public transport network, with a well-connected rail network forming the backbone. By 2030, the rail network will expand from 230 kilometres today to 360 kilometres, and eight in 10 households will be within a ten-minute walk of a train station.

As part of the Infocomm Media 2025 Plan, Singapore aims to improve access to info-communications technologies and improve our citizens' quality of life. Singaporeans enjoy a wide variety of choices in terms of telecommunications and internet providers. The Singapore Government recently introduced a fourth telecommunications provider through a New Entrant Spectrum Auction as well as allowing mobile virtual network operators to provide services. These widen options for consumers, ensure a competitive market, and keep telecommunications and internet services affordable and innovative. As of November 2017, Singapore has a mobile phone penetration rate of 149.6%. Access to the internet is also affordable. As of November 2017, the Wireless Broadband Population Penetration Rate is 206.1%.[1] In addition to paid internet access services, the Wireless@SG programme provides nationwide free Wi-Fi hotspot services, which offers

[1] This measures the total number of retail wireless broadband internet access subscriptions (i.e. for connection speeds equal to, or greater than, 256 kilobits per second, in one or both directions) such as 3G, 3.5G/HSDPA, 4G/LTE, WiMAX or its equivalent and Wi-Fi hotspots (including Wireless@SG subscriptions) as a percentage of the total population in Singapore.

internet access to users in thousands of public locations like public libraries, train stations and shopping malls.

Sustainable Industrialisation Supported By Innovation

Research, innovation and enterprise are cornerstones of Singapore's national strategy to develop a knowledge-based innovation-driven economy and society. Public investment in research and innovation has grown over the last 25 years. In 1991, we established the Agency for Science, Technology and Research (A*STAR), which now consists of 23 Research Institutes and Centres, to develop innovative technology to further economic growth and to improve lives. Today, A*STAR continues to bridge the gap between academia and industry through R&D, working with partners towards meaningful and impactful outcomes. Singapore has also sought to attract leading companies and global talent in R&D. In 2001, we developed the one-north district[2] as an R&D hub focused on catalysing research in biomedical sciences and engineering. Today, one-north is equipped with state-of-the-art facilities for Multinational Corporations (MNCs) to undertake innovation-intensive activities in Singapore, facilitate technology transfer to our local enterprises, and has become the cradle to Singapore's vibrant start-up ecosystem. Biopolis and Fusionopolis, the main developments within one-north, are now home to over 250 companies, 600 start-ups and 16,000 scientists, researchers and innovators from both public and private sectors.

Singapore consistently ranks among the top ten countries under the Global Innovative Index, published by Cornell University, INSEAD and the World Intellectual Property Organisation. In 2017, Singapore ranked first in the Innovation Input Sub-Index and second in the Infrastructure sub-pillar. The impact of our continued investment in R&D is also evident in the creation of more than 50,000 jobs in the R&D sector in 2016, at a Compound Annual Growth Rate of 3% over the previous ten years.[3]

Foster An Inclusive Environment For Small- And Medium-Sized Enterprises

Singapore's small and medium-sized enterprises (SMEs) employ 69% of the workforce and contribute 47% of total nominal value added.[4] As key stakeholders within the economy, SMEs will need to continually upgrade to remain competitive. Enterprise Singapore (ESG), an economic agency which supports companies to grow and internationalise, offers a broad range of support, financing schemes and other programmes to SMEs. Centres of Innovation (COIs) have also been set up to assist SMEs with their technology and innovation ambitions. Start-ups are also supported through various schemes such as the Start-up SG Founder and Start-up SG Tech schemes, which all serve to provide support to companies in their nascent stages. The support provided by agencies such as ESG and A*STAR is tailored to the specific needs of SMEs and start-ups. For instance, A*STAR's SME Office and commercialisation arm, offers dedicated platforms to help tech start-ups and SMEs bring innovative ideas to market, and provides support in licensing and other intellectual property-related issues. Technology-intensive companies can engage A*STAR's support to develop customised technology roadmaps aligned to their business strategies, and ramp up their R&D efforts by tapping on A*STAR's research experts, facilities and equipment.

[2] one-north is a 200-hectare development hosting a cluster of research facilities and business park space to support the growth of Biomedical Sciences, Infocomm Technology (ICT), Media, Physical Sciences and Engineering industries.
[3] National R&D Survey of Singapore 2016
[4] Department of Statistics (DOS), 2016 data

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

Rapid Technological Change

New technologies can displace entire industries, making workers redundant, even as they create new opportunities.

Helping SMEs Stay Competitive

Most research-intensive and innovative small economies in the world have large home-grown companies that are MNCs but Singapore's domestic enterprises are not as large or research-intensive.

OPPORTUNITIES

Committee on the Future Economy (CFE) Strategies

The CFE, which was convened in January 2016 to review Singapore's long-term economic strategies, had noted the challenges brought about by disruptive innovation. The CFE had identified the following strategies to allow our population to cope with the resulting uncertainties and grasp new opportunities:

1. Acquire and utilise deep skills
2. Strengthen enterprise capabilities to innovate and scale up
3. Build strong digital capabilities
4. Partner each other to enable innovation and growth

Strengthen Enterprise Capabilities to Innovate and Scale Up

The Government can help our enterprises stay competitive through the following strategies:

1. Strengthen our innovation ecosystem
   - Companies can tap on the RIE2020 Plan to develop innovative and viable commercial products
   - Establish commercially-oriented entities to commercialise research findings and intellectual property
2. Support enterprises to scale up
   - Provide targeted assistance to high-growth enterprises to scale up and internationalise
   - Encourage partnerships between large and small enterprises
3. Catalyse the private sector to provide more growth capital
   - Simplify the venture capital regulatory framework
   - Attract more Private Equity firms to Singapore

FUTURE OF MANUFACTURING (FOM)

Singapore's Future of Manufacturing (FoM) initiative aims to drive the adoption of advanced manufacturing technologies among enterprises through public-private partnerships. One key programme under this is the Model Factories. Model Factories allows the ecosystem of research performers, end users, technology providers and system integrators to jointly innovate, test and demonstrate FoM technologies.

A*STAR launched the Model Factory@SIMTech in October 2017, and will launch the Model Factory@ Advanced Remanufacturing and Technology Centre (ARTC) in 2018. These allow companies, particularly our SMEs, to learn about the latest manufacturing technologies and collaborate with stakeholders to test-bed and jointly develop innovative solutions. The end goal is for SMEs to adopt, in whole or in part, the Model Factory platform technologies on their own factory floors.

SUSTAINABLE DEVELOPMENT GOAL 10:

Reducing Inequality Within and Among Countries

LEAVING NO ONE BEHIND

Mitigating income inequality, ensuring social mobility, and enhancing social integration are key to maintaining Singapore's social harmony and stability. Since independence, we have strived to ensure that every citizen benefits from the fruits of our economic progress and that no one is left behind. We have pursued policies that allow for broad-based improvement in Singaporeans' well-being regardless of their ethnicity, gender, origin, religion, and economic status.

Over the years, we provided basic education, healthcare, and housing for our population. For example, we have achieved a home ownership rate of 90.9% as of 2016. Our high-quality public housing and integrated residential neighbourhoods are critical to our efforts to mitigate inequality. We have no slums or ghettoes as our neighbourhoods are designed with a mix of public and private housing for all income levels. The Ethnic Integration Policy for public housing has also helped us to avoid large ethnic concentrations in particular neighbourhoods. These policies, together with providing public spaces such as parks, eating establishments, and exercise facilities within our neighbourhood to maximise social interactions, are important in achieving social integration.

BRIGHT SPOTS

Reducing Inequalities and Ensuring Social Mobility

We have adopted a more proactive approach over time in order to provide more support to the less well-off. We remain committed to providing quality education, healthcare, and housing as these are essential stepping stones for ensuring social mobility in our society. At the same time, we have introduced more targeted assistance to vulnerable groups such as the lower-income and elderly Singaporeans. For instance, the Workfare Income Supplement (WIS) scheme supplements the wages of older low-wage workers in their working years and tops up their Central Provident Fund (CPF) savings. For workers in sectors that may require more help, the Progressive Wage Model (PWM) helps to increase wages of workers through upgrading skills and improving productivity.[1]

We have made some progress in tackling inequality. Over the last five years from 2012 to 2017, the income growth at the 20th percentile of full-time employed residents was 4.2% per annum in real terms. Income growth at the median was 3.4% per annum in real terms. The picture is similar for household incomes: between 2012 and 2017, income growth per household member ranged between 4.2% and 4.6% for each of the lowest five deciles, while the average income growth per household member was 3.5% for the population as a whole.[2] These results are encouraging and we are committed to continuing our efforts in this area.

Our social and economic policies have also fostered a relatively high degree of social mobility. For example, our education system provides a good education to every child, giving each a chance to move ahead — 14.3% of Singaporean children from households in the lowest 20% income bracket managed to progress to the top 20% income bracket.

We will continue to provide Singaporeans with opportunities to develop to their fullest potential throughout their lives, regardless of their starting point. One way in which we are doing this is by increasing the provision of quality and affordable preschool education, to ensure a good start for all children. We are investing significantly in the early childhood sector, and piloting a new early intervention programme for children in low-income and vulnerable families called KidSTART. To cater to students who need a conducive after-school care environment, we will expand the number of school-based Student Care Centres (SCCs) and places. They will cater to the educational, social, and emotional well-being of our students, especially those from disadvantaged families.

Robust Social Security System

Singapore's social security system comprises the four pillars of home ownership, healthcare assurance, retirement adequacy through the CPF system, and WIS and Silver Support schemes which are tax-financed transfers. In this regard, we have increased our social spending in recent years in order to ensure that more Singaporeans can benefit.

One example is in the area of healthcare, where lower- to middle-income Singaporeans are eligible for higher subsidies for subsidised treatment at public hospital specialist outpatient clinics (SOCs), and higher medication subsidies at subsidised SOCs and polyclinics.[3] They can also apply for the Community Health Assist Scheme (CHAS), and receive subsidies for treatment at participating general practitioner (GP) and dental clinics. To ensure that no one will lose Medishield

[1] Currently applies to the cleaning, security, and landscaping sectors which are commonly outsourced services.
[2] Based on household income from work per household member.
[3] Polyclinics provide primary healthcare, including outpatient medical care, health screening, pharmacy, and dental services.

Life coverage, we have also introduced structural premium subsides for lower- to middle-income Singaporeans, as well as Additional Premium Support for those who are unable to afford their premiums even after subsidies.[4]

Beyond the Government's social policy interventions, on a broader level, we believe in building a society where everyone feels included and reinforcing a supportive social culture that encourages personal and family responsibility. In this regard, our social policies are designed to empower people who are in difficult circumstances to bounce back up, by encouraging them to take personal responsibility supplemented with active support from the community and Government. For example, ComCare provides financial assistance to low-income individuals and families to meet their basic needs, while working hand-in-hand with the families to improve their situation and regain self-reliance.

This is also why we have made the CPF, which is funded by contributions from employers and employees, the key vehicle for the delivery of our various social security policies. Policies such as Workfare are also designed to encourage people to stay in the workforce and to keep building on their skills. This fosters a social ethic that strengthens personal responsibility and is the key to a more sustainable approach for longer-term social mobility in our society.

Empowering and Promoting the Social, Economic, and Political Inclusion of All

As a multi-ethnic and multi-religious society, Singapore has been committed to ensuring that all ethnic groups and religions enjoy the same equality of opportunity. At our independence in 1965, our founding Prime Minister Mr Lee Kuan Yew said that Singapore is "not a Malay nation, not a Chinese nation, not an Indian nation. Everybody will have his place: equal; language, culture, religion."[5] This has been enshrined as a fundamental principle in Singapore's governance and society throughout the years.

To ensure that the minority ethnic groups in Singapore will always have a voice and be represented in Parliament, we established Group Representation Constituencies (GRCs). GRCs are larger electoral divisions represented by between three and six Members of Parliament (MPs), of which at least one MP must belong to a minority ethnic group. We have also introduced the Nominated Member of Parliament (NMP) scheme to promote political inclusion of all Singaporeans, including those who may be potentially disadvantaged and marginalised. NMPs represent the varied interests of different groups of Singaporeans. For example, NMP Ms Chia Yong Yong, who is also the President of the SPD, has spoken in Parliament to champion issues concerning the welfare of persons with disabilities.[6]

We have also introduced various policies to ensure that all Singaporeans are empowered to achieve their fullest potential. This includes our Third Enabling Masterplan (2017 - 2021), which looks at improving the quality of life of persons with disabilities, supporting their caregivers, and building a community that is more caring and inclusive. The Masterplan was endorsed by a Steering Committee which included key stakeholders such as persons with disabilities, caregivers, professionals in the disability field, voluntary welfare organisations, and Government agencies. We also have the WorkPro scheme to help employers implement flexible work arrangements and age-friendly workplaces, to help women and older workers remain in the workforce for as long as they want to.

As a nation founded by immigrants, Singapore has always been an open society. In this regard, migrants are another important group in our community. Singapore grants a stable number of citizenships and permanent residencies each year. Many of our immigrants have family ties with Singaporeans and may also have lived in Singapore for many years. We value the strong social cohesion and harmony between the different community groups in Singapore and we work together as a community to continuously strengthen these bonds and ensure that new Singaporeans feel welcomed.

[4] MediShield Life is a national health insurance scheme that provides lifelong protection for all Singapore Citizens and Permanent Residents.
[5] The Chinese, Malays, and Indians are the three main ethnic groups in Singapore.
[6] The SPD works in partnership with people with disabilities to develop their potential to the fullest so that they can be self-reliant and independent.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

Globalisation and Technological Disruption

Buffering the effects of globalisation and technological disruption will continue to be a challenge for any global city. Maintaining social mobility also becomes harder with each successive generation. This is compounded by changing demographics as Singapore's society ages and family sizes shrink.

OPPORTUNITIES

Lifelong Learning and Risk-pooling

We are investing early and significantly to take advantage of a local population that is healthier, more educated, and living longer. We have also introduced more social risk-pooling through CPF LIFE and MediShield Life for retirement and healthcare needs respectively, and are studying other areas of risk-pooling such as long-term care.[7]

KIDSTART TO GIVE EVERY CHILD THE BEST POSSIBLE START IN LIFE

KidSTART

Led by Early Childhood Development Agency

To foster social mobility, it is important that we help all children, regardless of their family background, to have the best possible start in life. Children who grow up in low-income or vulnerable families often find themselves trapped in a cycle of poverty. Many children in such circumstances lag behind their peers even in their early years.

As part of our efforts to give these children a better start in life, Singapore launched a pilot programme called KidSTART in 2016 to help disadvantaged children. The programme provides upstream support and creates a conducive environment for these children. It consists of the following:

(i) KidSTART Home Visitation Programme

These are weekly or fortnightly home visits by professionals from Singapore's KK Women's and Children's Hospital and our Early Childhood Development Agency (ECDA) to pregnant mothers and parents of children up to three years old who are from low-income or vulnerable groups. During the visit, professionals impart skills and practical knowledge on child growth, development, health, and nutrition to parents or main caregivers.

(ii) KidSTART Groups

These are weekly community-based playgroup sessions for parents or main caregivers and their toddlers. They aim to enhance parental skills in child development and parent-child bonding. Parents are provided with educational resources to reinforce their leaning at home. The curriculum is delivered by EDCA-trained facilitators.

(iii) KidSTART Enhanced Support to Preschools

Selected preschools are provided with additional resources to improve engagement with and support for parents to improve the child's school readiness prior to entering the formal education system.

We have seen positive and encouraging feedback from families enrolled in the KidSTART pilot programme. For instance, children are more talkative and expressive, and interact better. As of end 2017, over 500 children and their families were receiving KidSTART support.

[7] The Ministry of Health has set up the ElderShield Review Committee in October 2016 to study how ElderShield, a national severe disability insurance scheme, ought to be enhanced to improve adequacy, affordability, and sustainability.

SUSTAINABLE DEVELOPMENT GOAL 11:

Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable

SINGAPORE'S URBAN DEVELOPMENT STORY

Singapore is a city-state with limited land and high urban density. These unique circumstances demand the prudent and strategic use of our land to ensure that we develop sustainably in light of our increasing population and economic growth. We have therefore consistently drawn upon two key principles: sound and dynamic urban governance, combined with integrated long-term planning to ensure sufficient land for sustainable growth and a convenient and high-quality living environment for Singaporeans. To implement these plans, we work with various stakeholders on policies such as public housing for the majority of Singaporeans, and an integrated transport network, while incorporating green spaces throughout our urban landscape. Ultimately, our goal is to create a pleasant environment for all Singaporeans to work, live, and play.

BRIGHT SPOTS

Integrated Land Use Planning

Singapore takes a long-term approach to urban planning. This is implemented through our Urban Redevelopment Authority (URA)'s Concept Plan, a long-term strategic land use and transportation plan that outlines broad strategies to guide development for the next 40 to 50 years. These broad long-term strategies are translated into the more detailed Master Plan, which lays out upcoming plans and developments in the next ten to 15 years.

The Concept Plan is reviewed at least once every ten years and the Master Plan once every five years. These reviews are necessary to take into account various factors, such as changing land use needs, socio-economic and technological trends, demographic changes, the economic, social, and environmental needs of current and future generations, as well as regional and global economic developments.

The Concept Plan and Master Plan map out the directions for Singapore's growth and introduce new and innovative approaches to planning and development. For example, in Master Plan 2014, URA identified future growth areas to meet a wider range of economic needs such as business expansion and diversifying employment areas. As part of the plan, the Jurong Lake District in the western part of Singapore was identified as a new mixed-use business district.

New approaches to district-planning include integrating utilities, facilities and services at the district level instead of at a building level, such as district cooling systems and common services tunnels. This will allow us to achieve economies of scale and cost savings, and enjoy the convenience of tapping on shared services. Another example is hawker centres[1] (or cooked food centres) that are co-located with community amenities and offer a variety of high quality and affordable food.

Housing a Nation

Over 80% of Singapore's resident population live in public housing built by the Housing and Development Board (HDB). More than nine in ten of these resident households in public housing own their flats. Public housing is heavily subsidised to ensure that it is highly affordable. We have put in place a progressive system of housing grants, on top of subsidised purchase prices for new HDB flats. As a result, most first-time home buyers today use less than a quarter of their monthly income to pay their housing loans. This is well below the international benchmark of 30% to 35% of monthly income allocated to housing.

Beyond shelter, public housing provides an environment to live, work, play, and learn. HDB towns have a full range of facilities to meet the various needs of residents, such as commercial spaces, schools, transport nodes, and parks. Over the years, HDB's comprehensive planning and execution have evolved. New towns today are centred on the fundamental philosophy of sustainability, so as to provide residents with a high quality of life and reduce commuting times. Most HDB towns are developed based on the "Neighbourhood Principle", where several neighbourhoods are grouped around a town centre that provides essential services within close reach of the residents. Punggol, HDB's youngest town in the northeast of Singapore, is based on a newer planning concept where smaller residential estates share a common green and a variety of well-integrated facilities to enhance accessibility and encourage clean commuting. The pervasive green network of nature reserves, parks, park connectors, tree-lined roads and other natural areas built within and around HDB estates has made living in public housing more pleasant.

Building Safety

The Building and Construction Authority (BCA) champions a strong culture of safety awareness and regulation in the built environment sector. Through regular reviews, BCA upholds high safety standards while ensuring that the regulatory regime remains relevant even as projects grow in size and engineering complexity.

The design and construction of buildings in Singapore are regulated under the Building Control Act and Regulations.

[1] Hawker centres are open-air food centres in Singapore where people from all walks of life can enjoy affordable food in a clean environment.

This includes a rigorous system of checks and controls throughout the entire building lifecycle of design, construction, commissioning the building before occupation, and maintenance after completion.

Under the Periodic Structural Inspection regime, regular inspections must be conducted on completed buildings by professional engineers to inspect and assess the building condition and recommend rectification measures if necessary. BCA's regulatory control also extends to lifts and escalators. Owners must obtain a permit from BCA for each lift and escalator, carry out monthly maintenance, and test them annually. Contractors have to maintain the lifts and escalators in accordance with manufacturers' recommendations and relevant standards.

Transit-oriented Development and Planning

Singapore employs a transit-oriented approach to development and planning in order to ensure that transport capacity is able to support the variety of land uses and our limited land is utilised productively. In this respect, our land transport strategies and measures are guided by the Land Transport Master Plan, which is reviewed every five years. Our long-term goal is to make public transport the choice mode of transport through improved connectivity and better services. We also promote active mobility in terms of walking, cycling, and the use of personal mobility devices. Together with new business models and technologies, such as car-sharing and self-driving vehicles, we aim to advance a mobility paradigm that is not centred on private transport. The following are some examples of Singapore's transit-oriented initiatives:

Promoting Public Transport

We aim for 75% of morning and evening peak journeys to be made using public transport by 2030, and at least 85% by 2050. To achieve this, Singapore's rail network will be expanded from 230 kilometres today to 360 kilometres by 2030, enabling eight in ten households to be within a ten-minute walk of a train station, and 85% of public transport journeys of less than 20 kilometres to be completed within 60 minutes. In addition, we will be extending our bus networks and enhancing their service levels. In 2012, the Bus Service Enhancement Programme was introduced to provide commuters with better connectivity, more comfortable journeys, and shorter waiting times. Between 2012 and 2017, we added 1,000 Government-funded buses and rolled out 80 new bus services to improve connectivity to major transport nodes and key community and commercial facilities.

Walking and Cycling Plan

"Walk Cycle Ride SG" is a vision to make walking, cycling, and riding public transport a way of life for Singaporeans. To help realise this vision we introduced a Walking and Cycling Plan (WCP) for developments with high pedestrian and cyclist traffic. The WCP requires developers to ensure that their designs meet the needs of pedestrians and cyclists, instead of catering mainly to vehicular traffic. It also provides for the building of ramps for barrier-free access. Further, developers are incentivised to provide bicycle lots and supporting facilities through exemption of these spaces from the gross floor area calculation. In addition, more covered walkways are being constructed so that people can walk to train stations, bus interchanges, and neighbourhood amenities comfortably regardless of the weather. To date, 120 kilometres of sheltered walkways have been constructed, with 200 kilometres planned for completion by end-2018.

Launched in 2010, the National Cycling Plan (NCP) envisions cycling as an integral part of Singapore's transport system. Intra-town off-road cycling paths connected to major transport nodes and key amenities were constructed and bicycle parking facilities enhanced in seven HDB towns. The NCP was revised in 2013 with more ambitious targets: provide every HDB town with a cycling path network, and build an island-wide off-road cycling path network of over 700 kilometres by 2030. This will be implemented by giving greater priority to cycling in our transport system, enhancing cycling infrastructure, encouraging clear and consistent cycling rules and etiquette, and increasing community support for cycling.

Inclusive Transport

We continue to put in measures to guarantee the accessibility of public transport to all, including the elderly, disabled, visually-handicapped, and families with young children. Since 2006, all our train stations have been equipped with at least one barrier-free entrance with a lift, a tactile guidance system, and wheelchair-accessible toilets. More than 85% of train stations now have barrier-free access routes from the station entrance to the station platforms. Priority queue zones for passengers in need for boarding of trains, public buses and lifts were introduced in 2015, and have been implemented in 20 train stations and nine bus interchanges to date. Since April 2017, our public buses are also equipped to allow parents to board with children in open strollers. By 2020, all public buses will be wheelchair-accessible.

Safer Streets

To make our streets safer for the elderly and persons with disabilities, 50 "Silver Zones" will be implemented by 2023 in areas with high senior resident populations, amenities which seniors frequent, or higher accident rates involving senior pedestrians. Silver Zones have road safety features, such as lower speed limits, centre dividers, and road humps and chicanes that slow down motorists and remind them to look out for pedestrians. To date, 15 Silver Zones have been completed.

Green Buildings

Singapore is working to ensure that at least 80% of our total

building gross floor area will be green by 2030. To this end, we launched the BCA Green Mark Scheme in January 2005 to promote resource efficiency and reduce any potential environmental impact in the built environment. The BCA Green Mark Scheme paved the way for the formulation of Singapore's first Green Building Masterplan in 2006, which focused on new buildings. Following consultations with industry stakeholders, the Masterplan was revised twice in 2009 and 2014 to cover existing buildings and tenanted space, and drive the built environment sector to meet the 80% green buildings target. To date, Singapore has more than 3,200 green buildings with a total gross floor area of more than 94 million square metres, equivalent to more than 34% of total floor area of all buildings in Singapore.

Green Transport

Aside from promoting public transport and encouraging active mobility, Singapore is also encouraging a shift to cleaner vehicles. To help vehicle purchasers make more informed decisions, we introduced the Fuel Economy Labelling Scheme which provides information on the fuel efficiency of each vehicle model. We also introduced a scheme that provides rebates for low-emission vehicles and levies surcharges for high-emission ones. In December 2017, we rolled out an electric car-sharing programme, BlueSG, which will introduce 1,000 shared electric cars and 2,000 charging kiosks island-wide by 2020. In addition, we intend to deploy 50 hybrid buses by the first quarter of 2019, and 60 electric buses by mid-2020 for trials.

Green Spaces

Despite our land constraints, close to 10% of land in Singapore is set aside for parks and nature conservation. Today, more than 80% of households live within 400 metres or a ten-minute walk to a park. We aim to expand this to more than 90% of households by 2030, by creating more neighbourhood and regional parks. One of our most iconic regional parks is the Singapore Botanic Gardens (SBG). With over 150 years of history, the SBG is a premier tropical botanic garden and is Singapore's first UNESCO World Heritage Site. Located just outside Singapore's shopping district, the SBG is also a prime example of green spaces co-existing within a broader urban landscape in Singapore.

As Singapore continues its transformation into a City in a Garden, the National Parks Board (NParks) has identified six key areas to fulfil this vision:

1. Establish world-class gardens
2. Rejuvenate urban parks and enliven our streetscape
3. Optimise urban spaces for greenery and recreation
4. Enrich biodiversity in our urban environment
5. Enhance competencies of our landscape and horticultural industry
6. Engage and inspire communities to co-create a greener Singapore

International Collaborations

We have established an extensive network of collaboration with international partners and governments over the years to exchange knowledge and best practices on building sustainable cities.

BCA and UN Environment Collaborations

The BCA has collaborated with UN Environment on several initiatives related to sustainable buildings. For instance, the Centre for Sustainable Buildings, established through the signing of the 2nd BCA-UNEP Memorandum of Understanding (MOU) in 2011, provides technical support, tools, and solutions for the building sector in Asia. In 2013, the BCA and UN Environment established a five-year partnership project, the "Nationally Appropriate Mitigation Action (NAMA) Development for the Building Sector in Asia", which supports four participating Asian countries, Indonesia, the Philippines, Thailand, and Vietnam, in developing national plans to reduce greenhouse gas emissions in their building sectors. The project is part of the International Climate Initiative supported by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

Global Alliance for Buildings and Construction (Global ABC) Regional Roundtable for Asia-Pacific

The Global ABC is an initiative launched at the 21st Conference of the Parties to the UN Framework Convention on Climate Change (UNFCCC), as part of the Lima-Paris Action Agenda. It aims to scale up actions within the buildings and construction sector to reduce emissions. Singapore hosted the Global ABC's inaugural Regional Roundtable for Asia Pacific in conjunction with the International Green Building Conference in September 2016. The two-day event involved a series of activities to meet the global sustainable buildings and climate change agenda. This included a presentation of the UN Environment's Finance Initiative publication "Sustainable Real Estate Investment – Implementing the Paris Climate Agreement: An Action Framework", and the Working Session of the Sustainable Energy for All (SE4All) Building Efficiency Accelerator. It was attended by more than 85 participants from national governments, local authorities, NGOs, international financial institutions and research institutions from 14 countries in the region.

Centre for Liveable Cities' International Capacity Development Programmes

Since 2015, our Centre for Liveable Cities (CLC) has organised international capacity development programmes for 1,472 international city leaders, officials, and practitioners from 42 countries. CLC's international programmes are guided by the Singapore Liveability Framework, which identifies the outcomes and systems of a liveable and sustainable city. The Framework is also a means to assess sustainable urban development as outlined in SDG 11 and the New Urban Agenda.

In October 2016, Singapore signed a three-year MOU with the UN Human Settlements Programmes (UN-Habitat) to jointly develop international capacity development programmes. The inaugural SG UN-Habitat International Leaders in Urban Governance Programme was held from 5 to 9 June 2017. More than 40 participants from 14 cities representing 12 African countries attended the programme which shared Singapore's strategies in urban transformation contextualised to African cities' needs.

URA Academy

The URA Academy conducts training sessions to share Singapore's planning experience and expertise with overseas government officials and professionals. Each year, it hosts more than 2,500 delegates from over 45 countries. The URA Academy has also been organising a four-day Integrated Land Use Planning course since 2009 to provide a comprehensive overview of URA's core work.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

Limited Land

As Singapore's population and economy grow, we will need to continually optimise the use of our limited land, whether through redevelopment, planning, or building underground in order to keep up with demand.

Changing Demographics

Our population is expected to age rapidly, with the number of Singaporeans over 65 years of age and above doubling to 900,000 by 2030. The dependency ratio is also expected to decrease, with only two working adults supporting each elderly person by 2030.

OPPORTUNITIES

New Growth Districts

We are optimising space by transforming existing areas into new growth districts. This includes redeveloping our Greater Southern Waterfront region after the relocation of existing maritime ports to the western part of Singapore, and the redevelopment of the Paya Lebar region in the northeast, after the relocation of the existing military air base.

Spatial Strategies

We are applying spatial strategies to avoid overcrowding. This includes setting up economic centres outside the traditional business and financial district in the central region, such as Changi Business Park in the East and one-north[1] in the West. In tandem, we are planning for more residential spaces in central Singapore to enable more people to work nearer their homes.

Underground Infrastructure

We are exploring options to shift more of our transport and utilities infrastructure and storage facilities underground. Some examples under study include an underground goods mover system to reduce freight transport on roads, underground electrical substations and rock caverns for storm water drainage and storage to increase our water resilience.

An Enabling City

We aim to capitalise on this by transforming our city into an enabling place for seniors to live independently and comfortably while remaining integrated in the community. For example, we have introduced barrier-free accessibility, more seating and community spaces in housing estates, and a programme to equip flats with senior-friendly fittings such as grab bars and slip-resistant floor tiles.

To better engage our seniors, we have integrated spaces with senior facilities such as day care, and health and community programmes in our estates. We are enhancing our parks with senior-friendly amenities. We will be piloting a network of ten therapeutic pocket gardens based on horticulture therapy to support seniors with dementia and post-stroke patients through the provision of contemplative spaces and activity zones.

[1] one-north is a 200-hectare development hosting a cluster of research facilities and business park space to support the growth of Biomedical Sciences, Infocomm Technology (ICT), Media, Physical Sciences and Engineering industries.

FUTURE CHALLENGES & OPPORTUNITIES

Increasingly Diverse Population

Our open economy and immigration policies have resulted in a more cosmopolitan society. A "one-size-fits-all" approach to urban planning will no longer be able to cater to a more diverse resident mix.

We help seniors live close to their family and community with priority schemes for new HDB flats, a Proximity Housing Grant[2] for resale flats, and purpose-built housing options such as three-generation "3-Gen" flats and short lease two-room "Flexi" flats. We are also exploring integrating senior-friendly housing and senior care services, such as assisted living developments.

Varied Housing Options

Singapore's public housing environment offers a range of options to meet varying needs and demands, such as different budgets, designs, and locations. This caters to home buyers with different aspirations and income levels, as well as changing family structures.

Ageing Infrastructure

As Singapore develops and our population density increases, we will have to ensure that our buildings are safe and well-maintained so as to sustain our economic and population growth.

Design for Maintainability

Instead of approaching maintenance as a downstream issue, we are encouraging consultants and developers to consider maintainability outcomes further upstream, i.e. to design buildings that are easier to maintain. We have worked with industry stakeholders to develop the Design for Maintainability Checklist in 2016 and a Façade Access Design Guide in 2017 to motivate designers and developers to integrate suitable solutions at the design stage for safer, more labour-efficient and cost-effective maintenance regimes.

Maintenance of Exterior Features

Building owners are required to ensure that any exterior features (e.g. windows, claddings, plaster) of their buildings are maintained and securely fixed.

We will be introducing a Periodic Façade Inspection regime, which focuses on buildings older than 20 years. Inspections will be required once every seven years to allow for the early detection of façade deterioration to facilitate timely repair.

[2] The Proximity Housing Grant applies to families purchasing public flats to live with or close to each other, i.e. within 4 kilometres. For example, this would apply to married or engaged couples who are buying a HDB flat to live with or near their parents.

SINO-SINGAPORE TIANJIN ECO-CITY

In November 2007, Singapore and China embarked on a flagship bilateral project to jointly develop the Sino-Singapore Tianjin Eco-city (SSTEC). The 30 square kilometre SSTEC provides a platform for both countries to collaborate on environmental protection, resources and energy conservation, and build a harmonious society. Prior to the development of the SSTEC, the site comprised mainly uninhabitable saltpans, barren saline land and polluted water bodies. As of May 2018, the eight square kilometre Start-Up Area is largely completed. The SSTEC is now home to about 80,000 residents and about 5,000 registered companies.

SSTEC's development is guided by a Key Performance Indicator (KPI) Framework. The Framework comprises 26 KPIs spanning environmental, economic and social aspects, including 100% green buildings, 100% water potability at tap, more than 20% renewable energy usage, 100% services network coverage, and 100% provision of free recreational and sports facilities within 500 metres of residential areas.

SSTEC has been actively pursuing eco-developments. These include rehabilitating its 2.6 square kilometre wastewater pond, conducting research in green development, developing green building standards and constructing green buildings, tapping renewable energy sources (e.g. wind, solar, and geothermal energies), encouraging residents to lead environmentally-conscious lifestyles, and promoting green transport.

In line with SSTEC's vision to serve as a model of sustainable development for other cities, Singapore and China are working together to document lessons and experiences gained in the last ten years to share with other cities in China and beyond. The documentation will be launched at SSTEC's tenth year milestone in 2018.

WORLD CITIES SUMMIT

The World Cities Summit (WCS) is an exclusive platform for government leaders and industry experts to address liveable and sustainable city challenges, share integrated urban solutions, and forge new partnerships. Held biennially, the WCS is jointly organised by the CLC and URA. The key highlights of the Summit include the Lee Kuan Yew World City Prize Lecture, the World Cities Summit Mayors Forum, and the Young Leaders Symposium. The WCS is traditionally organised during the Urban Sustainability Week in Singapore, during which the Singapore International Water Week (SIWW) and the CleanEnviro Summit (CESS) are also held. Previous participants included ministers, mayors, governors and city and provincial officials, academics, NGOs and private sector representatives including architects, urban planners, engineers, property developers and transport solution providers.

The 6th WCS in 2018, under the theme of "Liveable & Sustainable Cities: Embracing the Future through Innovation and Collaboration" explored how cities can be made more liveable and resilient through better governance and planning, technology and social innovations, as well as collaborations with stakeholders and other cities. In line with Singapore's 2018 ASEAN Chairmanship, a number of ASEAN-focused events were also organised, including the 6th Meeting of Governors and Mayors of ASEAN Capitals on 7 July 2018.

SUSTAINABLE DEVELOPMENT GOAL 12:

Ensure Sustainable Consumption and Production Patterns

A ZERO WASTE NATION

As a small island nation, Singapore is constrained by limited resources and land scarcity. In order to maintain a safe living environment with a high quality of life for current and future generations, Singapore's approach to sustainable consumption and production is to become a Zero Waste Nation. Energy and raw materials are used to produce and get goods to consumers. Energy is also needed to collect and transport the waste that is generated. We aim to conserve resources by extracting greater value from waste as a resource. Just as Singapore has been successful in closing the water loop by recycling water endlessly, we also strive to close the waste loop through a circular economy. We can achieve these aims by practising the 3Rs: Reducing, Reusing and Recycling. By reducing waste and our consumption of materials and goods, we also avoid depleting the earth's resources through wasteful habits. This will keep Singapore clean, conserve precious resources, and reduce the need for space-consuming landfills. The Zero Waste Nation philosophy is integrated into our national plans and policies, such as the Sustainable Singapore Blueprint. We also work with industry stakeholders to incorporate the 3Rs into business practices, and with the community to spread the message on responsible consumer behaviour. We also seek to ensure that these efforts are in-line with international norms and standards on the management of hazardous chemicals and wastes.

BRIGHT SPOTS

Waste Reduction

IIn 2017, Singapore generated about 7.7 million tonnes of waste. As Singapore's population and economy grow, this will increase. As a land-scarce country with only one offshore landfill, reducing waste generation is an important issue. We are working to increase our national recycling rate from the current 61% to 70% by 2030. We have implemented several initiatives towards this goal, with focus on e-waste, plastic and packaging waste, and food waste. These three waste streams have been prioritised as they have significant potential for recycling.

Encouraging the 3Rs (Reduce, Reuse, Recycle)

Singapore generates approximately 60,000 tonnes of **e-waste** each year. With shorter product replacement periods and rapid technological advancements, this amount is set to increase. Currently, e-waste recycling is conducted through a public-private partnership that forms a network of collection centres across Singapore where consumers can voluntarily and conveniently deposit their e-waste for recycling. The collected e-waste is then channelled to licensed recyclers for treatment. The initial results have been encouraging. Singapore announced in March this year that we will be introducing a mandatory e-waste management framework based on the principle of Extended Producer Responsibility (EPR). We aim to implement this by 2021 and are currently conducting consultations and finalising the operational details.

Packaging waste constitutes about one-third of Singapore's domestic waste by weight. To conserve the precious resources used to produce **plastics and packaging**, as well as divert these from our limited landfill space, it is imperative that Singapore takes steps to reduce plastics and packaging waste. To holistically tackle the issue upstream and at source, Singapore will mandate that businesses report on the type and amount of packaging they put on the market and their plans for reduction by 2021. The Government will also step up engagement with stakeholders and businesses to cut down the excessive use of plastic bags and disposables like single-use food containers.

We also recognise the detrimental effects that plastic waste can have on our environment. To prevent such effects, Singapore has in place an integrated waste management system. We have an efficient collection system to collect all municipal waste to prevent litter. They are then sent directly for incineration at waste-to-energy plants, which are equipped with air pollution control equipment to meet stringent emissions limits for pollutants such as sulphur dioxide, dioxins and furans. This incineration process thus solves the issue of plastics needing long periods before breaking down.

As a small country with little resources of our own, Singapore is dependent on imports to meet our needs, including food. It is important that we reduce **food waste**. In Singapore, households and the industry each generate about half the amount of food that is wasted. Therefore, we have different initiatives to address the food waste issue. For example, we encourage food manufacturers, retail food establishments and supermarkets to re-price or re-distribute unsold or excess food to consumers or donate them to charities. Consumers are also encouraged to reduce food waste through publicity and outreach initiatives that encourage smart and prudent food purchases, preparation and storage habits. Where food waste is still generated, Singapore has also put in place efforts to convert this waste into a resource. By supporting on-site food waste treatment at commercial premises and hawker centres,[1] as well as piloting district-level food waste treatment, we have increased our food waste recycling rate from 12% in 2012, to 16% in 2017.

[1] Hawker centres are open-air food centres in Singapore where people from all walks of life can enjoy affordable food in a clean environment.

To improve our **recycling** rate, Singapore strives to make recycling convenient. A recycling bin is provided for every public housing block and landed housing unit. Private residential developments are also required to provide recycling receptacles within the estate. Since 2014, all new public housing projects are fitted with a dual-chute system on every floor for the separate collection of recyclables and general waste. This is also mandatory for new private non-landed residential developments taller than four storeys since April 2018, and private residential developments will be required to have a recycling bin for every block from 1 August 2018.

Community Involvement

Singapore's sustainable waste management vision cannot be achieved without active community participation. Changing mindsets is key to changing behaviour. We raise environmental awareness through educating our young and reaching out to community groups. For example, the National Environment Agency (NEA) collaborates with schools to set up recycling corners. A Preschool 3R Awareness Kit, consisting of a set of picture cards and a Teacher's Guide, assists kindergarten teachers in planning activities to interest preschoolers in practising the 3Rs and educating them on what and how to recycle.

The Community 3R Outreach Programme (CROP) seeks to raise awareness of the 3Rs through public outreach initiatives. Under CROP, all 3R community events and initiatives carry a common tagline: "Reduce, Reuse, Recycle. Care for Our Environment." We launched a video for households available on the Clean Green Singapore YouTube channel. We included a 3R module in the myENV mobile app, for members of the public to learn more about the 3Rs and locate the nearest recycling collection points, including e-waste collection points and Cash-for-Trash locations. The app also features pop-up messages on the positive impact of recycling which serve as regular reminders to everyday consumers.

Corporate Engagement

We work with the industrial and commercial sectors on waste minimisation and recycling initiatives. We have developed various online 3R guidebooks for businesses to encourage implementation of 3R practices. The 3R Awards for Hotels and Shopping Malls recognise outstanding 3R efforts to minimise and recycle waste. In 2014, Singapore mandated the reporting of waste data and waste reduction plans by large commercial premises.

The Singapore Packaging Agreement (SPA) was launched in 2007 as a joint initiative by the Government, industry and NGOs. SPA signatories are encouraged to redesign their products and processes to enjoy cost savings. This helps to reduce packaging waste from consumer products and in the supply chain. The SPA also offers a platform where companies share experiences, exchange practical ideas and collaborate on cost-effective solutions to reduce waste, including through a packaging benchmarking database. Over the past decade, SPA signatories have cumulatively reduced about 39,000 tonnes of packaging waste, and saved more than S$93 million in material costs. Under the SPA, an eco-label, the Logo for Products with Reduced Packaging (LPRP), has also been introduced to enable consumers to identify products with reduced packaging.

Industry Development

Our push for increased recycling will promote the growth of our recycling industry and creation of higher value-added jobs. We are also investing in R&D to develop solutions to extract value and resources from key waste and residue waste streams. Singapore has also launched the Environmental Services Industry Transformation Map to improve productivity, promote growth and create better jobs for the cleaning and waste management sectors in Singapore.

Sound Management of Hazardous Chemicals and Toxic Industrial Waste

Singapore has implemented stringent regulatory frameworks to ensure the environmentally sound management of hazardous chemicals and toxic industrial wastes throughout their life cycle, in accordance with international multilateral environmental agreements (MEAs). Singapore is a party to several MEAs that provide guidelines on regulatory and implementation guidance, including in areas with transboundary implications: the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Stockholm Convention on Persistent Organic Pollutants, Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer, and most recently, the Minamata Convention on Mercury.

Control of Hazardous Substances and Products Containing Controlled Hazardous Substances

Singapore controls the import, export, transport, sale,

storage and use of hazardous substances, under the Environmental Protection and Management Act (EPMA) and the Environmental Protection and Management (Hazardous Substances) Regulations (EPM (HS) Regulations). Any individual planning to import, export, transport, sell, store or use hazardous substances locally must first obtain a HS licence or permit. Approval is also required to transport hazardous substances in quantities exceeding the limits in the EPM(HS) Regulations. We have also put in place requirements such as periodic inspections for bulk packaging, maximum allowable transportation quantities, approved transportation route and timing, as well as the submission of transportation emergency response plans to ensure the safe transportation of hazardous substances. Singapore conducts inspections to audit the records of hazardous substances maintained by entities with HS licences and permits. We also electronically process inward and outward declarations for the import and export of hazardous substances through the Whole-of-Government (WOG) TradeNet computerised network system.

Singapore regulates the import, export and local use of products containing hazardous substances controlled under the EPMA, through the same regulatory framework and systems described above. This includes, for instance, non-electronic measuring devices such as barometers and thermometers, as well as high pressure mercury vapour lamps for general lighting purposes which are to be phased out by 2020 under the Minamata Convention.

Going beyond the scope of our obligations under the various MEAs, we have also implemented the Restriction of Hazardous Substances ("SG-RoHS") framework which came into effect on 1 June 2017. This initiative restricts the amount of hazardous substances such as lead, chromium and cadmium entering the environment from Electrical and Electronic Equipment (EEE).

Control of Toxic Industrial Waste

Further downstream, Singapore controls the handling, transport, treatment and disposal of toxic industrial wastes generated to ensure their safe management. The Environmental Public Health (Toxic Industrial Waste) Regulations require all toxic industrial waste collectors to be licensed to carry out treatment, reprocessing and disposal of toxic industrial wastes. Approval is also required to transport toxic industrial wastes exceeding the quantities stipulated in the Regulations. NEA also implements the Hazardous Waste (Control of Export, Import and Transit) Act to ensure that Singapore meets its obligations as a Party to the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal. This includes the implementation of the Prior-Informed Consent (PIC) Procedure under the framework of the Convention.

Encouraging Energy-Efficient and Water-Efficient Behaviour and Practices

Mandatory Energy Labelling Scheme (MELS)

In January 2008, Singapore introduced the Mandatory Energy Labelling Scheme (MELS) for household air-conditioners and refrigerators to help consumers compare their energy efficiency and make more informed purchasing decisions. The scheme was extended to clothes dryers in 2009. In 2014, the design of the energy label and energy rating system were revised to better differentiate the more energy-efficient models in the market. MELS was further extended to televisions in 2014, as well as incandescent lamps and their direct replacements in 2015.

Minimum Energy Performance Standards (MEPS)

Minimum Energy Performance Standards (MEPS) were introduced in 2011 to raise the average energy efficiency of products in the market. Currently, only household refrigerators, air-conditioners, clothes dryers and lamps that meet the minimum energy efficiency standards can be sold in Singapore. MEPS will be extended to cover motors from October 2018. These performance standards are constantly reviewed to raise the bar on efficiency. Since the introduction of MELS and MEPS, the average energy efficiency of air-conditioners and refrigerators have improved by about 23% and 39% respectively.

Water Efficiency Labelling Scheme (WELS) and Minimum Water Efficiency Standards

In 2009, Singapore introduced the mandatory Water Efficiency Labelling Scheme (WELS), where suppliers were required to label the water efficiency of their water fittings and appliances. Currently, mandatory WELS covers taps and mixers, dual-flush low capacity flushing cisterns, urinal flush valves and waterless urinals, and washing machines. To complement the mandatory WELS, minimum water efficiency standards were introduced to phase out the least water -efficient products. For example, all taps and mixers sold or supplied in Singapore are required to meet at least "1-tick" water efficiency standard. These mandatory requirements are periodically reviewed and updated. From October 2018 onwards, the mandatory WELS will be extended to dishwashers. Water fittings under mandatory WELS to be sold or supplied in Singapore have to meet at least "2-tick" water efficiency standard with effect from April 2019.

Water Efficiency Management Plan

The Water Efficiency Management Plan (WEMP) was introduced in 2010 as a voluntary initiative for commercial and industrial users to improve the efficiency of their water use. Since January 2015, all large water users who meet the water use threshold of 60,000 cubic metres must submit their WEMPs on an annual basis. These users are also required to install water meters to measure and monitor water consumption. The WEMP includes an analysis of current water usage and proposed water conservation measures.

Water-Efficient Building

The Water Efficient Buildings (Basic) certification programme, first introduced in 2004, encourages building owners to implement water efficiency measures. The WEB (Basic) certification can be obtained by installing water-efficient fittings and adopting water efficient flow rates/flush volumes. Certified buildings can typically save 5% of their monthly water consumption. WEB (Basic) requirements are also recognised under the Green Mark Certification Scheme for buildings, which is an initiative to drive Singapore's construction industry towards more environment-friendly buildings.

Water Efficiency Fund

The Water Efficiency Fund was introduced in 2007 to co-fund the implementation of water efficiency projects. Projects include feasibility studies, water audits, recycling efforts, use of alternate sources of water and community wide water conservation programmes.

Public Sector Taking the Lead

Introduced in 2006, the Public Sector Taking the Lead in Environmental Sustainability (PSTLES) initiative requires public agencies to implement measures for energy efficiency, water efficiency and recycling. In 2014, the PSTLES initiative was enhanced. This included requiring each Ministry to appoint a Sustainability Manager, set sustainability targets, and develop a resource management plan. These environmental sustainability efforts were outlined in the Public Sector Sustainability Plan 2017–2020, launched on 5 June 2017.

In addition, public agencies retrofitting major energy consuming equipment are encouraged to adopt the Guaranteed Energy Savings Performance (GESP) contracting model. Under the model, an accredited energy services company conducts an energy audit of the facility, implements proposed energy efficiency improvement measures, and guarantees the system performance and annual energy savings of the retrofitted equipment. As of February 2018, 32 large building owners have called GESP contracts for building retrofit works. These building owners saved an average of 16% in electricity use, which is equivalent to annual savings of S$11.3 million.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

Future Waste Management

In 2017, Singapore generated about 7.7 million tonnes of waste. The amount of waste generated is expected to increase in tandem with population and economic growth. The household recycling rate was 21% in 2017. At the same time, our manpower constraints limit the resources available for our waste management industry.

OPPORTUNITIES

Finding Innovative Solutions

Apart from continual public education on waste minimisation and recycling, there is a need for innovative solutions to make recycling convenient for households. We are also studying the benefits of smart waste collection systems to optimise waste collection operations, manpower and resources. This includes leveraging technologies such as bin fill sensors, a smart card access system for waste disposal chutes, and the use of side-loader bins that require only one operator to carry out recyclables collection.

In addition, we will be reaping synergies from the water-energy-waste nexus at our upcoming signature Integrated Waste Management Facility (IWMF), which will be integrated with the Tuas Water Reclamation Plant (TWRP). This will allow for synergies such as effluent water from wastewater treatment being used for cooling waste incineration equipment; while food waste can be co-digested with used water sludge to enhance biogas production to increase the overall plant thermal efficiency. Integrating the facilities will also reduce carbon emissions by more than 200,000 tonnes annually.

FUTURE CHALLENGES & OPPORTUNITIES

Dealing with E-Waste

Improper disposal of e-waste could lead to environmental pollution and be detrimental towards human health. It is also a waste of precious natural resources. Currently, e-waste in Singapore is recycled on a voluntary basis by businesses and consumers. Typically, only e-waste of high residual value is traded in or sold, while e-waste of lower residual value is disposed of along with general waste for incineration.

E-Waste Management System

Going forward, a mandatory e-waste management system will be implemented in 2021 to ensure the proper recycling of e-waste, where safety and environmental standards are adhered to. The system would be based on the EPR concept, and entail the assignment of responsibilities to key stakeholders in the e-waste value chain. With the system in place, the public would have access to convenient avenues to recycle e-waste.

"LOVE YOUR FOOD @ SCHOOLS" – ENGAGING YOUTH IN REDUCING FOOD WASTE

The "Love Your Food @ Schools" Project is a two-year project launched in April 2017 to encourage youth to cherish food and reduce food wastage. A closed-loop food waste management system was introduced in 10 participating schools to encourage students and staff to reduce generation of food waste, and to segregate and treat food waste using on-site food waste digesters to produce compost. Students also host neighbouring schools and community partners on learning journeys to spread awareness about the importance of food waste minimisation and recycling. The compost generated is distributed during these learning journeys and to community gardens.

This project complements Singapore's holistic food waste management strategy as we work towards becoming a Zero Waste Nation.

SEMAKAU LANDFILL

We have one landfill, located about eight kilometres south of mainland Singapore on the man-made island of Pulau Semakau. The perimeter bund of the landfill is lined with an impermeable membrane and a layer of marine clay. The thriving flora and fauna on and around Semakau Landfill is indicative that the ecosystem has been well protected. During the Phase II development of Semakau Landfill, over 700 colonies of corals were transplanted to Sisters Island Marine Park and more than 450 fishes were caught and transferred to open sea. To foster a stronger sense of shared environmental ownership and to cultivate an eco-conscious community, Semakau Landfill is also open for educational visits.

Despite our success, Singapore is keenly aware that we cannot continually build landfills. At the current rate at which we are depositing waste to Semakau Landfill, it will run out of space by 2035. We therefore need to look for more sustainable solutions to handle our growing amount of waste. This has provided added impetus for Singapore to strive towards becoming a Zero Waste Nation, including through the 3Rs of Reduce, Reuse and Recycle. All stakeholders including the Government, the community, and businesses will be critical to these efforts.

SUSTAINABLE DEVELOPMENT GOAL 13:

Taking Urgent Action to Combat Climate Change and Its Impacts

SINGAPORE'S CLIMATE CHANGE STRATEGY

Climate change is a global problem that poses a real challenge to Singapore as a small, low-lying island city-state. Although we contribute around 0.12% of global greenhouse gas emissions, we are taking ambitious steps to reducing our carbon emissions in the coming decades. We strongly support global efforts to address climate action. In particular, Singapore was one of the first 55 countries to ratify the Paris Agreement on climate change, thereby contributing to its early entry into force on 4 November 2016.

We are working actively to ensure that we are on track to meet our pledge under the Paris Agreement. We aim to reduce our Emissions Intensity by 36% from 2005 levels by 2030, and stabilise emissions with the aim of peaking around 2030. This pledge builds on our commitment announced in 2009 to reduce, by 2020, greenhouse gas emissions by 16% from the business-as-usual level, which Singapore is on track to meet.[1] Overall, Singapore is amongst the 15 best-performing countries in terms of emissions intensity.[2] From 2000 to 2012, our greenhouse gas emissions grew by 2% per year, compared to a GDP growth of 5.7% per year over the same period.

Singapore has adopted a Whole-of-Nation approach in addressing climate change. Within the Government, we set up the Inter-Ministerial Committee on Climate Change (IMCCC) in 2007 to enhance our Whole-of-Government coordination on climate change policies. The IMCCC is headed by our Deputy Prime Minister and Coordinating Minister for National Security, Mr Teo Chee Hean, and comprises Ministers from seven key agencies. Through this platform, we synergise efforts to identify measures to reduce our carbon emissions and develop adaptation measures to prepare Singapore for the impacts of climate change. The National Climate Change Secretariat (NCCS) was set up in July 2010 under the Prime Minister's Office to support the IMCCC. We have publicised our national strategy on climate change through several publications that have been released and revised iteratively, including our National Climate Change Strategy (2012), Singapore Sustainable Blueprint (last updated in 2015), and our two-pronged Climate Action Plan (2016): *Take Action Today, for a Carbon-Efficient Singapore*, and *A Climate-Resilient Singapore, for a Sustainable Future*.

Most recently, we have designated 2018 the Year of Climate Action in Singapore (YOCA). YOCA is aimed at raising the level of national consciousness on the need to take collective and individual action against climate change. Our vision is to be a climate-resilient global city positioned for green growth. Singapore's success and prosperity depends on being able to overcome the challenges of climate change and to grasp the opportunities it presents. We are also aware that climate change is a cross-cutting global issue, and many of our key mitigation and adaptation measures are also relevant to other SDGs, namely SDGs 6, 7, 11 and 15. We will continue to drive efforts across all sectors to contribute towards SDG 13 and global efforts to reduce emissions.

BRIGHT SPOTS

Pursuing Green Growth by Reducing Carbon Intensity

Even before the Paris Agreement, Singapore took early measures to reduce our carbon emissions. Our key mitigation strategies are outlined in our Climate Action Plan: (i) improving energy efficiency; (ii) reducing carbon emissions from power generation; (iii) developing and deploying cutting-edge low-carbon technologies; and (iv) encouraging collective action among government agencies, individuals, businesses, and the community. The public sector has adopted sustainability measures under the Public Sector Taking the Lead in Environmental Sustainability (PSTLES) programme. Under the Public Sector Sustainability Plan 2017-2020, the public sector will achieve an electricity savings of 15%, water savings of 5% and 100% green building adoption by FY2020.

Transport

In the land transport sector, Singapore's goal is for 75% of morning and evening peak journeys by 2030, and 85% by 2050, to be on public transport, up from 67% in 2017. Our Vehicle Emissions Scheme (VES) provides incentives for the

[1] Singapore's business-as-usual level is 77.2 million tonnes.

[2] Emissions intensity refers to greenhouse gas emissions per dollar of GDP, measured in carbon dioxide-equivalent per dollar. Singapore is currently ranked 129th out of 143, or in the top 15 best-performing countries in terms of emissions intensity. Source: IEA, 2016.

purchase of less pollutive vehicles, and imposes surcharges on pollutive ones. Singapore's first electric car-sharing programme, BlueSG, was launched in December 2017, with an aim to provide 1,000 shared electric vehicles and 2,000 charging points island-wide by 2020.

Buildings

Singapore aims to green 80% of all buildings by 2030, up from 31% in 2016. This is in line with our vision of 'Positive-energy Low-rise, Zero-energy Medium-rise, Super Low-energy High-rise buildings in the tropics.' Measures to achieve this include enhancing the Building and Construction Authority of Singapore (BCA) Green Mark Scheme[3] and encouraging retrofitting of tenanted spaces. One innovative financing scheme in this sector is the Building Retrofit Energy Efficiency Financing, where the BCA provides loan-loss guarantees on loans made by financial institutions for energy efficiency retrofits.

Energy

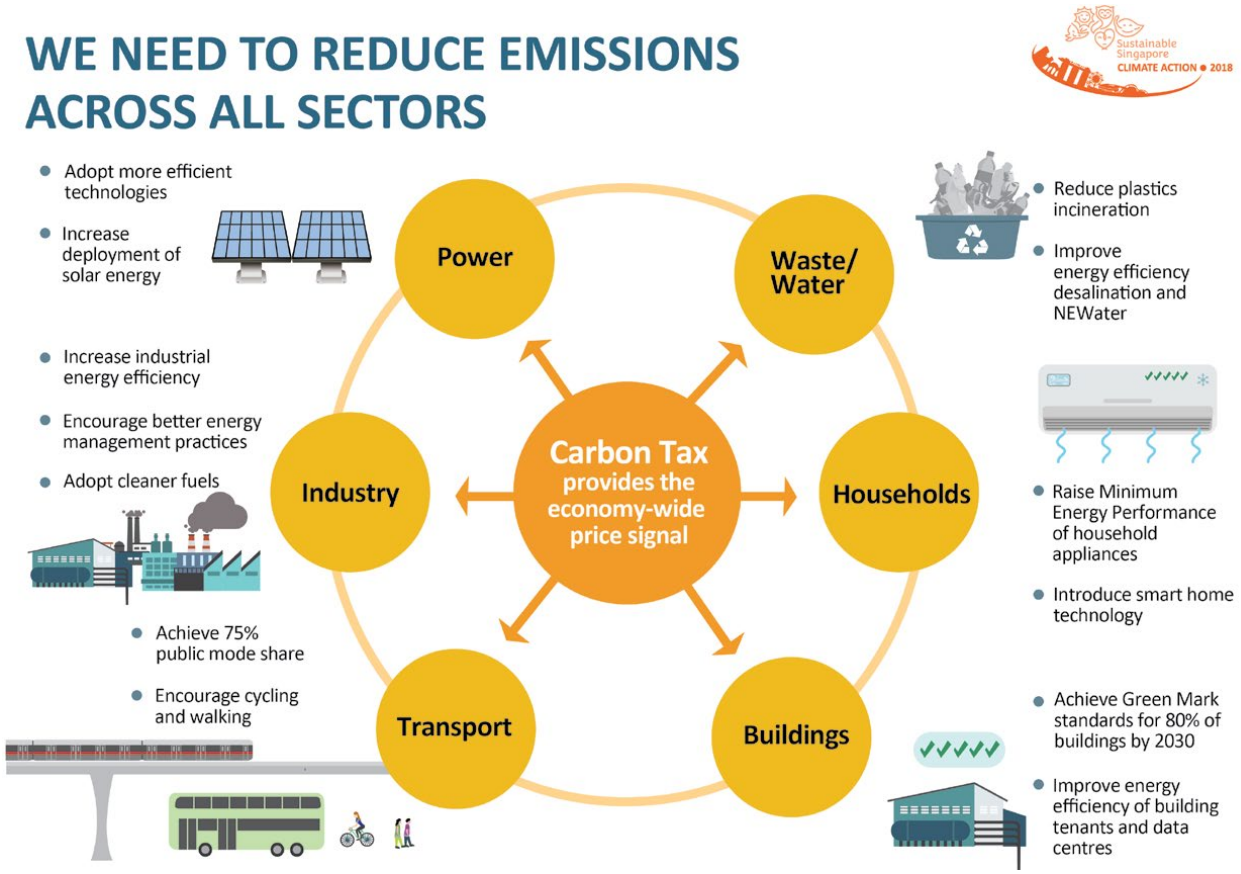
We had made early policy choices to switch from fuel oil to natural gas, the cleanest form of fossil fuel, for electricity generation. About 95% of our electricity is generated today from natural gas. In addition, despite our limited access to alternative energy options owing to our limited land capacity, Singapore is pushing to increase our solar photovoltaic deployment to 350 megawatt-peak (MWp) by 2020, and to 1 gigawatt-peak (GWp) beyond 2020.

Carbon Tax

This year, we became the first in Southeast Asia to introduce a price on carbon. Our carbon tax of S$5 (approximately US$3.80[4]) per tonne of carbon dioxide-equivalent emissions, in the first instance from 2019 to 2023, sends the appropriate economy-wide price signal to industry to reduce energy consumption and carbon emissions. This applies to all sectors without exemption, covering about 80% of emissions. We will review the carbon tax rate by 2023 and intend to increase it to a rate of between S$10 and S$15 (approximately US$7.60-11.40[5]) per tonne of emissions by 2030. In doing so, we will take into account international climate change developments, the progress of our emissions mitigation efforts and our economic competitiveness.

Strengthen Resilience, Adaptive and Institutional Capacity

Our understanding of climate change and its complex implications on society is constantly evolving. Singapore has developed a Resilience Framework to take into consideration the latest science and our changing needs to guide our adaptation planning in a flexible and dynamic



Reducing Emissions Across All Sectors in the Economy

[3] The BCA Green Mark Scheme is a benchmarking scheme that incorporates internationally recognised best practices in environmental design and performance. Buildings, office interiors and even parks can be certified under this scheme.

[4, 5] Based on exchange rate of S$1 to US$ 0.76 (as of 19 February 2018).

manner. Using this Resilience Framework, we have identified risks in six key areas for Singapore: coastal protection, water resources and drainage, biodiversity and greenery, public health and food security, network infrastructure, and our building structures and infrastructure.

We are strengthening local capability in climate science and modelling, and conducting studies to enhance our understanding of our risks and to inform our adaptation plans over the longer term. In 2013, we established the Centre for Climate Research Singapore (CCRS) to develop in-house research expertise in the weather and climate of Singapore and the wider Southeast Asia region. In 2015, CCRS published the Second National Climate Change Study, which outlines long-term climate change projections for Singapore up to 2100.

In addition, to understand the impact of sea level rise on our coastal areas, BCA has commissioned a Coastal Adaptation Study to be completed by 2018. This study will be used to develop a national framework for Singapore's long term coastal protection needs. We are also studying how the built environment and urban greenery could affect micro-climatic conditions, and identifying recommendations for the planning and design of public spaces and buildings.

Research institutes based in Singapore are also conducting further research on climate change-related areas such as corals, algae blooms and tropical diseases,[6] working with government agencies and collaborating with overseas counterparts.

We are also committed to sharing our expertise and learning from international partners on weather- and climate-related issues. In 2017, we welcomed the re-location of the World Meteorological Organization (WMO)'s Regional Office for Asia and South-West Pacific to Singapore. The Regional Office, which is co-located with the Centre for Climate Research Singapore (CCRS), will conduct programmes to enhance the region's understanding of climate science, and tackle challenges arising from climate change and extreme weather.

Promoting Climate Change Public Awareness and Action

Climate change is integrated into school curricula across subjects such as economics, geography and the sciences. To complement classroom lessons, schools conduct excursions to sites such as power stations, incineration plants, meteorological stations and green buildings. These learning journeys highlight the implications of climate change and demonstrate emissions reduction methods to our younger generation.

As part of YOCA, an online website ClimateAction.sg was launched for individuals, corporates, NGOs and institutions to pledge their commitments and actions. There have been positive responses from the 3P (people, public, private) partners, some of whom have already rolled out programmes and initiatives related to climate action.

In support of their efforts, we created a special Climate Action SG Grant to provide funds for local constituencies, NGOs and interest groups to organise ground-up events and activities that increase awareness on climate action. A new Climate Action SG Alliance, led by 3P partners, has also been set up to advocate climate action in Singapore through harnessing the power of public communications to raise awareness on climate issues and to translate this awareness into action.

To further promote the climate action message, Singapore leverages on various established national events, mainstream and social media to engage with all segments of the public.[7] In June, we launched the revamped Sustainable Singapore Gallery at the Marina Barrage to raise awareness of Singapore's sustainability journey, and to remind ourselves of the challenges ahead for a sustainable Singapore.[8]

International Partnerships

Mitigating climate change is a shared global responsibility. Singapore shares experiences and best practices on climate change under the Singapore Cooperative Programme (SCP), in key areas such as sustainable development, urban planning, water and transport management. Under the SCP, we established the Sustainable Development and Climate Change (SDCC) programme in 2012. The SDCC is tailored to meet the needs of our developing country partners, including Small Island Developing States (SIDS) and the Least Developed Countries (LDCs). We have trained around 3,600 officials from developing countries, including 1,600 from SIDS and LDCs.

In the area of disaster risk management capacity, Singapore collaborated with the United Nations Office for Disaster Risk Reduction (UNISDR) to conduct two joint specialised training courses for 17 countries. The training courses provided practical support and knowledge for the implementation of the Sendai Framework for Disaster Risk Reduction. We also collaborated with the Japan International Cooperation Agency (JICA) to enhance the disaster management capabilities of other countries through the Disaster Risk Reduction and Response Course. Since its inception in 2015, more than 50 Governmental officials from 13 countries have been trained.

[6] To facilitate applied research work, the National University of Singapore and Nanyang Technological University have set up several research institutes and centres, including The Singapore-Delft Water Alliance, Tropical Marine Science Institute, Earth Observatory of Singapore, Institute of Catastrophe Risk Management, Maritime Research Centre and NTU-JTC Industrial Infrastructure Innovation Centre.

[7] These events include the Singapore World Water Day, Singapore International Water Week, CleanEnviro Summit Singapore, Partners for the Environment forum, Clean & Green Carnival and Climate Action Carnival taking place throughout 2018 in Singapore.

[8] The exhibits of the gallery cover various environmental and sustainability topics such as climate, water, energy and waste.

Singapore actively supports and participates in the efforts led by the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) to address global emissions from international aviation and maritime transport. At the ICAO, Singapore contributes to the development of a holistic strategy and basket of measures to mitigate international aviation emissions, including the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). We have implemented both mandatory and voluntary measures under the ICAO, and committed to participate under CORSIA. At the IMO, we are contributing to the work of establishing energy efficiency measures for international shipping and to formulating a comprehensive strategy to reduce international maritime transport emissions.

FUTURE CHALLENGES & OPPORTUNITIES

Our effort to reduce emissions and strengthen resilience is an ongoing process. We will continue to monitor domestic and global developments, and refine our climate change strategies and measures. Guided by our Resilience Framework, our adaptation plans are constantly evolving as we enhance our understanding of climate science and adaption options through further research.

CHALLENGES

Limited Scope for Deploying Renewable Energy

With limited land and geography, available resources, technology options, and other domestic considerations, we are faced with constraints on our ability to deploy alternative energy. Singapore's small size and high urban density limits the extent to which large amounts of alternative energy can be commercially deployed. While solar energy is the most promising renewable energy option, competing land uses and high cloud cover mean that we are not able to generate sufficient baseload electricity from solar based on current technologies.

Climate Science Expertise

We will undertake efforts to enhance our climate science capability and better understand the diverse impacts of climate change on Singapore and the wider region.

OPPORTUNITIES

Develop Options to Further Deploy Renewable Energy

To increase solar photovoltaic (PV) deployment in Singapore to 350 MWp by 2020, and to 1 GWp beyond 2020, we are investing in R&D as well as test-bedding to improve the performance of solar PV systems and develop innovative ways of integrating solar and other alternative energy systems into our urban environment. Some of our projects include:

- Housing and Development Board (HDB) has launched an initiative to install solar panels on rooftops of high-rise public housing developments.
- The Economic Development Board's (EDB) and PUB's floating photovoltaic PV project currently pilots ten systems of 1 MWp total floating solar panel installations on water surfaces at Tengeh Reservoir.
- As part of the Renewable Energy Integration Demonstrator, Singapore's first long-span wind turbine was installed at an offshore landfill in October 2017. It is sensitive enough to generate power with wind speeds as low as 3 metres per second. We hope to develop "hybrid micro-grids" in the next few years.
- To support the solar ecosystem in Singapore, the SolarNova programme led by EDB and HDB aggregates solar demand across government agencies. This move is crucial to building up local expertise in solar manufacturing, project development, system integration, financing, and to encourage greater adoption of solar energy.

Further Enhance Resilience

As we enhance our understanding on climate science and climate change impacts on Singapore, we will ensure that our adaptation plans are flexible enough to accommodate future adaptation needs and the latest science.

FUTURE CHALLENGES & OPPORTUNITIES

We will continue to collaborate and share information on climate science and challenges arising from climate change impacts with international partners through various channels, including the WMO Regional Office for Asia and the South-West Pacific located in Singapore. We are also exploring opportunities with the WMO Regional Office to enhance cooperation among the national meteorological and hydrological services in the 58 states and territories under its charge, and with the wider scientific community. For instance, the Southeastern Asia-Oceania Flash Flood Guidance (SAOFFG) aims to provide real-time information on small-scale flash floods to disaster management agencies in Brunei Darussalam, Indonesia, Malaysia, Papua New Guinea, the Philippines, Singapore and Timor-Leste.

COASTAL ADAPTATION AND RESILIENCE

Based on our 2nd National Climate Change Study completed in 2015, Singapore's daily mean temperature is projected to rise by up to 4.6 degrees Celsius towards the end of the century, with more than 300 warm days a year compared to an average of 30 today. We will experience more rainfall during the wet season and greater dryness during the dry months.

As a low lying island, sea level rise poses an immediate threat to Singapore. Much of Singapore lies within 15m above the mean sea level, and 30% of Singapore's ground level is less than five metres above mean sea level. Our mean sea level is estimated to rise by up to 0.76 metres in the long term.

In 2011, the minimum reclamation level for new projects was raised from three metres to four metres above mean sea level, to ensure that the new reclaimed land is safeguarded against sea level rise. We also need to ensure that key infrastructure is protected, such as our public transport networks. For instance, we raised the minimum crest levels for entrances to underground facilities such as our Mass Rapid Transit (MRT) stations. At Changi Airport, the future Terminal 5 will be built 5.5 metres above the mean sea level as a precaution, higher than the minimum height of four metres. In addition, significant upgrades to the drainage system are in progress, with the installation of detention tanks and pumps.

COOLING SINGAPORE MICROCLIMATE RESEARCH PROJECT

Last year, Singapore experienced the warmest year on record that was not influenced by an El Nino event. In 2016 and 2015, annual average temperatures were at record highs of 28.4 and 28.3 degrees Celsius. Thermal comfort in Singapore is particularly poor given our high humidity, which inhibits cooling by evaporation of perspiration. As a highly dense and urbanised country, Singapore suffers from the Urban Heat Island (UHI) effect which leads to higher temperatures, as urban materials and surfaces trap and radiate more heat. Cooling Singapore is a cross-institutional initiative spanning Government and academic institutions dedicated to improving the thermal comfort of Singaporeans. A multi-disciplinary research team led by the Singapore-ETH Centre, in collaboration with the National Research Foundation. Singapore MIT Alliance for Research and Technology (SMART), Technical University of Munich (TUM CREATE), and the National University of Singapore, is now exploring the means to mitigate the UHI effect in Singapore.

The team understands the complexity of understanding and implementing insights into the science of urban microclimates. Besides conducting primary research on science and facts, exploring design and identifying gaps in current strategies, Cooling Singapore is convening a taskforce of public and private sector stakeholders to document findings. Ultimately, they aim to develop roadmaps to coordinate long-term UHI mitigation and R&D efforts.

SUSTAINABLE DEVELOPMENT GOAL 14:

Conserve and Sustainably Use the Oceans, Seas and Marine Resources for Sustainable Development

SINGAPORE'S MARINE CONSERVATION STORY

Singapore is a highly urbanised island city-state with no hinterland. The sea is at the doorstep of our city; our coastline is inextricable from our urban surroundings. Within this context, Singapore's coastal and marine activities, including biodiversity conservation, take place within a limited sea space.

Since our independence, Singapore's coastal and marine areas have become densely populated and heavily utilised by various industries, particularly port operations, ship building and petrochemical industries, as well as non-industrial uses like residential development and recreation. At any time, over 1,000 vessels may be plying our waters. Our waters are also home to the country's only offshore landfill and several marine aquaculture farms. In fact, nearly all coastal or marine areas in Singapore are no more than half a kilometre from any human-related activity.

To satisfy these competing demands, we have to take a pragmatic approach in balancing different users' requirements. As such, Singapore approaches marine biodiversity conservation through our unique Integrated Urban Coastal Management approach.

Despite growing urbanisation, Singapore's coastal and marine environment continues to support a diverse range of habitats and biodiversity. Although the country's inter-tidal and sub-tidal reef areas are just over 12 square kilometres in size, they are home to over 250 hard coral species, 12 seagrass species, 100 marine fish species, and countless others. We consider this biodiversity to be part of our natural heritage that we strive to conserve and protect.

Singapore also currently has four legally gazetted Nature Reserves[1] and 20 other administratively protected Nature Areas that cover the majority of our natural habitats, including rocky shores, mangroves, mudflats, seagrass beds and coral reefs.

BRIGHT SPOTS

Integrated Urban Coastal Management

Our fragile marine environment needs to be carefully managed and preserved in a holistic and integrated manner for the benefit of future generations. This is why we have ensured that our marine and coastal environment is not compromised by urban development, and that our marine environment conservation strategies are in line with broader sustainable development efforts. In 2009, Singapore adapted the Partnership in Environment Management for the Seas

[1] The four gazetted nature reserves are Sungei Buloh Wetland Reserve, Central Catchment Nature Reserve, Bukit Timah Nature Reserve and Labrador Nature Reserve.

of East Asia (PEMSEA) Integrated Coastal Management principles to our unique context by incorporating an urban perspective into the framework. Our Integrated Urban Coastal Management strategy has four guiding principles:

1. Proactive planning and management to safeguard our coastal and marine environment by optimising the use of coastal resources, including coastal spaces in a sustainable manner;
2. A Whole-of-Government approach to ensure consultative planning and coordination of policies between all stakeholders in coastal and marine land use and planning;
3. Active partnerships through community engagement & public awareness programmes; and
4. Science-based management through research, monitoring, restoration and enhancement programmes to conserve sensitive coastal habitats and their biodiversity and natural resources amidst coastal development.

A Marine Park for All

The Sisters' Island Marine Park (SIMP) was established in 2015 as Singapore's first marine park. Located to the south of mainland Singapore on Sisters' Island, the SIMP spans 40 hectares, and its surrounding areas and houses a wide range of marine habitats, including coral reefs, sandy shores and seagrass areas. The SIMP showcases our sub-tidal coral reef and shallow sea-floor areas, in addition to the unique biodiversity within the inter-tidal areas and coastal forests. The SIMP provides Singaporeans and visitors with a unique recreational experience while educating them about our marine natural heritage. At the same time, the SIMP allows us to protect and safeguard our rich marine biodiversity, facilitates cutting-edge research, and provides opportunities to test-bed habitat rehabilitation, restoration and enhancement technologies.

Marine Conservation Programmes

Singapore's marine conservation and management strategies are captured under the Marine Conservation Action Plan (MCAP), which guides our efforts at conserving Singapore's marine habitats and biodiversity. The MCAP is an evolving plan grounded in science to meet the current and future conservation needs of Singapore's coastal and marine environment.

Species recovery is important to safeguard the survival and sustainability of species native to or of particular significance to Singapore. It is a key activity under the MCAP. Working with key research partners, we have initiated the following marine species recovery programmes:

- Marine turtles (*Eretmochelys imbricata* and *Chelonia mydas*);
- Giant clams (*Tridacna squamosa*, *T. maxima* and *T. gigas*);
- Neptune's Cup Sponge (*Cliona patera*); and
- Several locally rare hard and soft coral species.

The SIMP is the focal point for the species recovery programme, where strategies and methods are tested and monitored before applying them to other coastal and marine areas in Singapore. We also have plans to induct more species into the programme.

We have also installed biodiversity enhancement units around Singapore to help existing biodiversity within Singapore's coastal and marine habitats flourish. These include the creation of inter-tidal pools and surface complexity enhancements along coastal seawalls, and the use of enhanced floating structures that increase visibility and bring marine biodiversity closer to the people.

Involving the Community as Stakeholders

Successful nature conservation initiatives are intrinsically linked to cultivating mindsets and behaviours that value nature appreciation. Thus, community outreach and stewardship programmes are vital in encouraging nature conservation efforts with members of the public and other stakeholders. Building on the pool of volunteers nurtured through community engagement projects like the Comprehensive Marine Biodiversity Survey, the MCAP keeps these volunteers engaged in nature appreciation and conservation through talks and workshops, SCUBA diving, citizen science activities and nature ambassador opportunities.

The SIMP and other initiatives like the Ubin Living Lab are focal points for complementary community stewardship programmes under the MCAP. Activities such as guided inter-tidal walks have begun at the SIMP, as well as other outreach activities and events organised in conjunction with a number of NGO stakeholders such as the Marine Conservation Group of the Nature Society of Singapore, Our Singapore Reefs, Hantu Bloggers and various academic partners.

The Maritime and Port Authority of Singapore (MPA) also organises outreach programmes to raise awareness and inspire youths, schools, and members of the public to play a part in protecting the marine environment.

Research and Test-Bedding of New Technologies

Science-based decision-making ensures successful and sustainable implementation of nature conservation initiatives. Singapore has invested in key areas of applied research that will help fill knowledge gaps in the development and implementation of our nature conservation policies. At the same time, the scope and scale of research have expanded to include developing new tools and techniques to better understand and manage our coastal and marine environment. For instance, research at the SIMP addresses marine genetic connectivity, climate change and its impacts on marine biodiversity, and the application of clean and renewable sources of energy.

MPA and the National University of Singapore's Centre for International Law (CIL) established the CIL-MPA Oceans Governance Research Programme in April 2016 to contribute to the greater understanding of maritime law and ocean governance. The Programme has generated research publications in academic journals and presentations at international platforms, as well as convened conferences and roundtable workshops to share and discuss research findings with experts from governments, intergovernmental organisations, industry and academia.

Sustainable Maritime Transport

Singapore is committed to developing a maritime transport industry that is not only competitive and efficient, but also responsible and sustainable.

As part of our efforts to promote clean and green shipping in Singapore, the Maritime Singapore Green Initiative (MSGI) was launched in 2011 to reduce the environmental impact of shipping and shipping-related activities on the coastal and marine environment. The MPA pledged to invest up to S$100 million over five years under the MSGI's three programmes: the Green Ship Programme, Green Port Programme and Green Technology Programme. In July 2016, the MSGI was extended to 31 December 2019 and further enhanced. Two new programmes were introduced: the Green Awareness Programme and the Green Energy Programme. Among the various initiatives, ship owners are encouraged to adopt environmentally-friendly practices and reduce the environmental impact of their operations through voluntary programmes. The MSGI also supports local maritime technology companies in developing and deploying green technologies through co-funding grants of up to 50% of the qualifying costs.

We have also put in place strategies to address oil and chemical spills in our marine environment. MPA has in place the Marine Emergency Action Procedure to effectively manage oil and chemical spills, as well as other marine incidents. Regular emergency exercises are conducted to ensure our operational readiness in responding to such incidents. For example, the multi-agency ChemSpill exercise simulates a chemical spill and tests agencies' capabilities and co-operation to combat chemical pollution. The exercise is conducted every alternate year in conjunction with the biennial International Chemical and Oil Pollution Conference and Exhibition (ICOPCE).

Singapore also actively supports international cooperation efforts on sustainable maritime transport. In 2015 and 2017, we worked with the International Maritime Organization (IMO) to co-organise two editions of the Future-Ready Shipping (FRS) Conference in Singapore. The FRS Conference gathered maritime leaders and professionals worldwide to exchange views and foster collaboration on energy-efficient maritime transport technologies. It also served as a platform for capacity building for developing countries and Small Island Developing States.

MPA also works with the IMO to provide capacity building courses for countries under the MPA-IMO Third Country Training Programme (TCTP). The MPA-IMO TCTP offers courses on the implementation of relevant IMO instruments, including those that protect the marine environment through the prevention of pollution from ships.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

Habitat Fragmentation

Although Singapore continues to support habitats around our main coastline and within our offshore islands, habitats are fragmented and occur in isolated patches.

OPPORTUNITIES

Maintaining Ecological Stepping Stones

Unlike fragmented terrestrial habitats that can become ecologically isolated, fragmented but hydro-dynamically connected coastal and marine areas can generally maintain ecological connectivity through a network of "stepping stones" – smaller habitat patches or fragments that facilitate movement of populations between larger ones.

A study of the ecological connectivity of Singapore's mangrove, inter-tidal and sub-tidal habitats indicated that despite the spatial fragmentation, ecological connectivity continues to be maintained across all habitats due to the continued presence of these "stepping stones".

Thus, a key strategy in Singapore's coastal and marine conservation efforts is to map out these "stepping stones" to ensure they are adequately maintained for continued ecological connectivity.

FUTURE CHALLENGES & OPPORTUNITIES

Habitat and Biodiversity Loss

Given the rapid pace of Singapore's growth and limited land, shallow coastal and marine areas can be lost with urbanisation.

Habitat Enhancement, Restoration and Species Recovery

To ensure the long term sustainability of Singapore's coastal and marine habitats, concerted efforts are required to restore and enhance lost or degraded areas. In many circumstances, habitat enhancement, restoration and creation offer opportunities for species recovery initiatives for endemic, critically endangered, rare and re-discovered species.

An important element of the MCAP are the coastal and marine habitat enhancement and restoration efforts, which have been carried out since 2008.

For instance, an innovative coastal protection and mangrove restoration biodiversity project was implemented along a severely degraded mangrove area which incorporated both hard and soft engineering solutions to arrest coastal erosion and restore the mangroves.

More recently, purpose-built and nature inspired inter-tidal units were fabricated and installed along one of Singapore's armoured coastal revetment to increase surface complexity and provide micro-niches to enhance inter-tidal biodiversity.

Separately, a habitat enhancement and restoration framework was developed for the SIMP, with the implementation of reef enhancement units to enhance degraded reef areas coupled with a donor-supported Plant-a-Coral, Seed-a-Reef species recovery programme to propagate and out-plant locally rare coral species.

A giant clam propagation and reintroduction programme was also initiated to reintroduce the locally extinct *Tridacna gigas* species and increase the numbers of two other locally rare *T. squamosa* and *T. maxima species*.

A MARINE MARVEL – THE RETURN OF THE NEPTUNE'S CUP SPONGE

The Neptune's Cup sponge was first seen in Singapore waters in 1822. Mature adult specimens can grow to over one metre in height and half a meter in diameter. While it used to be commonly found in Singapore waters, the population of the Neptune's Cup sponge declined rapidly and it was last sighted in the 1870s. This decline appeared to have taken place elsewhere as well, with a live specimen last collected off Bantam in West Java, Indonesia in 1908. This led many scientists to believe that the Neptune's Cup sponge had become globally extinct.

However, in March 2011, marine biologists from a Singapore-based company discovered a unique-looking sponge, which turned out to be a young Neptune's Cup sponge. Another specimen was soon found within a 50 metre radius of the first. To date, five Neptune's Cup sponges have been found in Singapore waters.

As part of our species recovery efforts, we have relocated the five sponges to the Sisters' Island Marine Park where scientists are currently studying the specimens, including how they reproduce. Our end goal is to rebuild the population of the Neptune's Cup sponge in our waters again so that it never goes extinct.

SUSTAINABLE DEVELOPMENT GOAL 15:

Protect, Restore and Promote Sustainable Use of Terrestrial Ecosystems, Sustainably Manage Forests, Combat Desertification, and Halt and Reverse Land Degradation and Halt Biodiversity Loss

SINGAPORE'S URBAN BIODIVERSITY CONSERVATION STORY

Since independence, Singapore's vision was to transform our island nation into a Garden City with abundant, lush greenery. This was the vision of our early leaders, enacted through policies such as the Tree Planting Campaign.[1] Beginning from the time our first Prime Minister, Mr Lee Kuan Yew planted the first tree in this initiative in 1963, green cover in Singapore has increased to more than 40%.

Today, Singapore's vision is to become a biophilic[2] City in a Garden where the environment contributes to Singaporeans' overall well-being. In this regard, urban biodiversity conservation is a key aspect of our sustainable development strategy. Due to our location within the Sundaland biodiversity hotspot, Singapore is rich in native biodiversity. At the same time, we are one of the most densely populated city-states in the world.[3] This presents considerable challenges for biodiversity conservation, as we need to constantly balance competing needs for land use. Despite this, Singapore currently has four legally gazetted nature reserves and 20 other administratively protected nature areas that span natural habitats such as primary dryland forest, tall secondary forest, freshwater swamps, rocky shores, mangroves, mudflats, seagrass beds and coral reefs. Our conservation efforts take into account our urban setting, and include measures such as maintaining a patch of primary rainforest just a five-minute drive from busy shopping areas, roadside plantings, as well as creating incentives for developers to incorporate skyrise and rooftop greenery.

In 2009, we launched Singapore's National Biodiversity Strategy and Action Plan, which outlines a holistic approach across various government agencies on the sustainable use, management and conservation of our biodiversity. We are also guided by the Nature Conservation Master Plan (NCMP) that consolidates, coordinates, strengthens and intensifies Singapore's biodiversity conservation efforts. These efforts build ecological resilience to conserve native biodiversity and adapt to the effects of climate change. The NCMP consists of four key thrusts: (i) conserving key habitats and habitat enhancement, (ii) restoration and species recovery, (iii) applied research in conservation biology and planning, and (iv) community stewardship and outreach.

BRIGHT SPOTS

Saving Species

Our coordinated conservation efforts have ensured that our rich biodiversity heritage is protected despite rapid urbanisation. Year after year, new species are discovered while others that were thought to be lost have been rediscovered. Between 2012 and 2017, over 500 species were discovered or rediscovered locally by the National Parks Board (NParks), research partners and members of the public.

In 2015, we initiated a species recovery programme to conserve native flora and fauna. We identified 60 endemic, rare or threatened native species of plants and animals as conservation priorities, and are seeking to increase their populations in Singapore though reintroduction, habitat enhancement and protection. These target species were identified based on their conservation status and distribution under Singapore's Red Data Book.[4]

The globally critically endangered Singapore freshwater crab *Johora singaporensis* is a species identified under this programme. Endemic to Singapore, it is only found in a few local hill streams. Extensive habitat studies were conducted before 60 individuals were translocated to a new habitat in a suitable site in 2015 to expand its distribution. This translocation was successful, as the species is still present at the new site and juvenile crabs have been sighted, indicating breeding.

The *Marsdenia maingayi*, a plant first collected in Singapore in 1885, is another species in the programme. No wild specimens were sighted after the 1920s and it was presumed to be extinct. In July 2012 however, a specimen was found in Singapore's Central Catchment Nature Reserve. The discovery was made by chance after a tree fall in the area brought parts of this vigorous woody climber closer to the ground. Seedlings were found in the vicinity, and some were collected for propagation and planting.

[1] The Tree Planting Campaign aims to plant a minimum of 10,000 saplings each year. Since 1971, we have launched an annual Tree Planting Day on the first Sunday of November to plant trees and shrubs in public places like housing estates, parks and schools.

[2] The term "biophilic" stems from E.O. Wilson's hypothesis of "biophilia" (1984). A biophilic city is designed to incorporate nature and experiences of the natural world into the modern built environment.

[3] Singapore is one of the most densely populated countries in the world, with a population density of 7,796 persons per square kilometre. Source: Singapore Department of Statistics, 2018.

[4] The Singapore Red Data Book is a publication by the Nature Society (Singapore) on endangered plants and animals in Singapore.

Bringing Back Habitats

Singapore has implemented habitat enhancement and restoration efforts in nature parks since 1993, and this continues to be an important element of the NCMP 2015. A Habitat Enhancement and Restoration Framework was adopted to standardise the approach in line with accepted science-based methods. Site assessments are first carried out to document and understand the health of habitats, and suitable restoration techniques are subsequently determined. Steps may then be taken to enhance site conditions through soil remediation or improving water quality. Besides habitat restoration, the peripheries of existing habitats affected by surrounding urban areas are also enhanced. To mitigate the impact of edge effects that arise from fragmentation and safeguard the integrity of our nature reserves, buffers in the form of nature parks widen recreational areas for a larger segment of users without severely impacting the core of our nature reserves.

A Network of Pervasive Greenery

One challenge in conserving biodiversity within a densely populated urban setting is finding space for habitats for plants and animals. Nonetheless, with public support, we have been able to conserve a variety of natural habitats, which are filled with plant and animal life. These green spaces – four nature reserves, more than 350 parks and gardens, and over 300 kilometres of linear parks known as park connectors – are distributed across the island. Complementing this is extensive roadside greenery which connects habitats, including strategic green corridors, also known as Nature Ways, along roadsides that connect areas of high biodiversity. Trees, shrubs and ground cover are planted to mimic the emergent, mid-canopy, understorey and undergrowth layers of a natural forest in these Nature Ways to link fragmented natural habitats and enhances biodiversity in our urban environment.

Beyond the traditional boundaries of parklands and streetscapes, bringing greenery skywards provides another dimension of potential habitats in the built environment. Skyrise greenery, in the form of roof gardens and vertical green walls, augment ground level greenery and provide refuge to birds, bats and insects within the urban landscape.

Another example of Singapore's efforts to link up habitats is the construction of Eco-Link@BKE, an hourglass-shaped ecological bridge across the Bukit Timah Expressway. The Eco-Link@BKE connects the once-contiguous Singapore's Bukit Timah and Central Catchment Nature Reserves in a bid to mitigate fragmentation effects due to the construction of the expressway in 2011. Eco-Link@BKE was completed in 2013 at a total cost of S$17 million. Native plants were planted on the bridge to encourage its use by the fauna on either side and monitoring programmes are in place to ascertain the effectiveness of the bridge.

Involving the Community as Stakeholders

We have worked with civil society, including NGOs like the Nature Society (Singapore), academic experts and nature enthusiasts, to advance biodiversity conservation in Singapore, including the protection of biodiversity-rich environments at Sungei Buloh[5] and Chek Jawa.[6]

As part of our efforts to involve the wider community, we launched the Community in Nature (CIN) initiative in 2011 to engage the community to conserve Singapore's natural heritage. CIN includes outreach events, citizen science programmes such as biodiversity surveys, public talks and guided walks for members of the public. Where possible, these are tied to international initiatives such as the UN International Day for Biological Diversity on 22 May. We also collaborate with local NGOs through the Biodiversity Roundtable to organise the annual Festival of Biodiversity, a flagship outreach event to celebrate the community's efforts to conserve Singapore's natural heritage. Another initiative under CIN is the Citizen Science programme. Volunteers conduct surveys of various animal groups, such as butterflies, birds and dragonflies. There are also more intensive citizen science surveys known as BioBlitzes, which target a specific natural area and are more comprehensive in the taxa surveyed.

Addressing Trade in Endangered Species

A key cause of global biodiversity loss is the trade in endangered species, which threatens their survival in the wild. As a Party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Singapore does not condone illegal wildlife trade activities and is committed to implementing and enforcing CITES and wildlife policies to protect endangered species of animals and plants. In addition to our Whole-of-Government approach and robust domestic framework to combat illegal trade in wild fauna and flora, Singapore also adopts a comprehensive multi-pronged approach aimed at reducing supply and demand by working closely with our bilateral, regional and international partners, as well as with civil society and individuals. For instance, we conduct public outreach

[5] The Sungei Buloh Wetland Reserve comprises 202 hectares of wetlands with an extensive mangrove forest in the northwestern part of Singapore.
[6] Chek Jawa is a unique natural wetland area where six major habitats meet and mix; it is located on Pulau Ubin, an island off the northeastern coast of Singapore.

programmes to increase public awareness on the illegal trade of endangered species. Singapore does not condone illegal wildlife trade activities and will not hesitate to take stern enforcement actions against any wildlife offenders and punish them to the full extent of the law.

Measuring Our Efforts

Singapore initiated the development of an index in 2008 designed to benchmark conservation efforts at the city-level, the Singapore Index on Cities' Biodiversity (SI).[7] We worked with the Convention on Biological Diversity (CBD) Secretariat and the Global Partnership on Sub-National Governments and Cities for Biodiversity to develop the SI, together with an international Technical Task Force. The SI is intended to be used as a self-assessment tool to monitor cities' progress in biodiversity conservation efforts over time. It comprises 23 indicators that measure native biodiversity, ecosystem services provided by biodiversity, and governance and management of biodiversity. Singapore currently uses the SI to monitor our biodiversity conservation efforts. Several cities worldwide have also adopted the SI, such as Auckland, Helsinki, Nagoya, Hyderabad and Bangkok, with most finding that the process has facilitated capacity building in biodiversity conservation by providing biodiversity conservation guidelines and in setting priorities for conservation actions and budget allocation.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

Habitat Fragmentation

Habitat connectivity is crucial in biodiversity conservation. Flora and fauna require a minimum area to sustain their populations. Urbanisation results in the fragmentation of habitats, where natural areas are bisected by roads and other developments. The edges of habitats are more susceptible to fragmentation, i.e. edge effects, which are largely attributed to air, noise and light pollution from developed areas.

Habitat Loss

To ensure the long-term sustainability of the habitats in the midst of rapid development, we need to restore habitats that have been lost and enhance existing habitats.

OPPORTUNITIES

Establishing Connectivity Between Natural Areas

The limited land available in Singapore means we need to maximise the ecological connectivity of existing green spaces. Singapore leverages on linear parks, roadside greenery, rooftop greenery and vertical greenery. Singapore has an extensive park connector network with a total length of 306 kilometres in 2017. This series of linear parks connects areas of greenery, and allows movement of small animals and birds between them. Roadside greenery encourages connectivity in the form of nature ways, which emulate the structural complexity of a natural forest through the use of mixed species planting. Other small patches of greenery on rooftops and incorporated into developments act as stepping stones between natural areas. Singapore aims to have 400 kilometres of park connectors, 180 kilometres of Nature Ways and 200 hectares of skyrise greenery by 2030.

Habitat Enhancement and Restoration

Singapore has over 20 years of habitat enhancement experience, and strives to continually improve these habitats through habitat enhancement and restoration initiatives. Fifteen parks have been identified for habitat enhancement and restoration efforts over the next two years, with implementation already completed in three parks. These parks were selected based on their proximity to nature areas, the type of ecosystems they contain, and the state of the habitats within the park.

[7] The Singapore Index on Cities' Biodiversity was previously known as the City Biodiversity Index (CBI).

BISHAN-ANG MO KIO PARK HABITAT RESTORATION

In 2009, we reopened Bishan-Ang Mo Kio Park, located in central Singapore, after a successful habitat restoration and enhancement and design upgrade. The park originally contained a concrete canal that ran its entire length. It was redeveloped under the Active, Beautiful, Clean (ABC) Waters Programme into a meandering naturalised river known as Kallang River. Through this joint collaboration between PUB (Singapore's national water agency) and NParks, the Kallang River was integrated into the park's surroundings through the use of natural materials to shore up its river bank.

These efforts have begun to attract wildlife. A wide variety of native birds have been spotted visiting the river, and occasional otters have travelled upstream towards the park, which is located deep inland within a residential neighbourhood. The park is a popular community space with residents and Singaporeans, who have the opportunity to get closer to nature.

The ABC Waters design comprises plants and planting media which have also been incorporated into the park to maintain the water quality in the ponds and the river naturally, without the use of chemicals. For instance, cleansing biotopes that filter and absorb pollutants are located upstream. Water is also recycled for use in the water playground after undergoing UV treatment. The landscape surrounding the river is also designed to accommodate increases in water levels during heavy rainfall.

SKYRISE GREENERY IN SINGAPORE

Due to our limited land, Singapore has to be innovative in becoming a City in a Garden. Our dense urban environment means that it is important for us to optimise urban spaces and infrastructure in our greening efforts. Skyrise greenery has thus emerged as a viable and effective strategy to create seamless and pervasive greenery in Singapore.

To promote skyrise greenery, the Urban Redevelopment Authority and NParks introduced the Landscaping for Urban Spaces and High-rises (LUSH) programme and Skyrise Greenery Incentive Scheme. These complementary initiatives offer building owners and developers incentives such as additional gross floor area for rooftop greenery installation and co-funding for skyrise greenery installation. We also recognise creative skyrise greenery designs through the Skyrise Greenery Awards. In 2017, we received a record 177 entries for the Awards. Past award winners include Kampung Admiralty (2017), an integrated development combining residential, commercial and community facilities, PARKROYAL on Pickering (2013) and the Khoo Teck Puat Hospital (2010), where the incorporation of greenery creates a healing environment to boost patient recovery.

As of 2017, there were 100 hectares of skyrise greenery in Singapore. This has helped to increase the green coverage in our city, as evidenced by Singapore's second place out of 21 cities ranked in the Green View Index.[8] We intend to double the amount of skyrise greenery in Singapore to 200 hectares by 2030 under the Sustainable Singapore Blueprint.

[8] The Green View Index, or Treepedia, by the Massachusetts Institute of Technology's Senseable City Lab, measures the canopy cover in cities. The Index is calculated using Google Street View panoramas to proxy human perception of the environment from the street level. Singapore topped the Green View Index in 2017, which is a testament to the success of our skyrise greening efforts.

SUSTAINABLE DEVELOPMENT GOAL 16:

Promote Peaceful and Inclusive Societies, Provide Justice for All and Build Effective, Accountable and Inclusive Institutions at All Levels

BUILDING A SAFE, PEACEFUL AND INCLUSIVE SINGAPORE

Singapore's journey as a nation is founded on a commitment to the rule of law. It has been the cornerstone of our development since independence, and remains a vital tenet of our governance today. Our commitment to the rule of law has contributed to a sense of justice and security for our people. It has engendered confidence among businesses, which value an environment where contracts and property rights are respected and protected. We have also established, maintained, and strengthened public institutions that are effective, fair, inclusive, and accountable to the people. We have built a clean, efficient, and independent judiciary and public service. Underlying this is our zero-tolerance approach to corruption which applies to all three branches of Government. Our commitment to the rule of law is widely acknowledged, with Singapore ranked first in Gallup's Law and Order Report from 2014 to 2017.

BRIGHT SPOTS

Equal Protection Accorded to Men, Women and Children

Singapore's laws do not discriminate on the basis of gender or age. But even as the law applies to all, we have taken additional measures to protect the most vulnerable segments of society, in particular, women and children.

As a Party to the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), we are committed to implementing measures that address the needs of women, and promote gender equality and women's rights. For instance, Singapore adopts a zero-tolerance policy towards sexual offences. The Singapore Police Force works closely with the National Crime Prevention Council, an NGO, to raise awareness on sexual offences. Our strategy is two-fold – to encourage victims of outrage of modesty to alert the authorities immediately, as well as to warn would-be offenders of the legal repercussions of committing such offences. This has been implemented through several outreach programmes. We also work with public entertainment outlets to introduce deterrence measures such as the installation of surveillance cameras and ensuring sufficient lighting.

We also seek to continually refine our policies to better meet the needs of our children. The Children's and Young Persons Act (CYPA) safeguards the care, protection and rehabilitation of children and young persons below 16 years of age. The CYPA was amended in 2011 to improve

the protection for children and young persons, such as exempting a child from attending court proceedings in cases where the child could be adversely affected and safeguarding a child's privacy by prohibiting the publication of personal information. In addition, the Protection from Harassment Act, which came into force in November 2014, criminalises different forms of harassment such as sexual harassment and school or cyberspace bullying. It enhances protections against harassment and provides a range of self-help and civil remedies to victims.

Eradication of Corruption

When Singapore attained self-governance in 1959, our leaders were determined to establish a system of incorruptibility and clean governance. They believed that eradicating corruption was key to establishing honest and competent public institutions which the people could trust, and for businesses to have the confidence to invest in the country. They took comprehensive action to stamp out corruption from all levels of society while introducing a meritocratic system of governance.

Today, Singapore enjoys an international reputation for a high level of incorruptibility. We were ranked the 6th least corrupt country by Transparency International's Corruption Perceptions Index 2017, and the least corrupt country in the Political and Economic Risk Consultancy's 2017 Report on Corruption in Asia – a position we have held since 1995.

The low levels of corruption in Singapore today are the result of an effective corruption control framework comprising four key pillars. First, we established effective laws to fight corruption via two key legislations: the Prevention of Corruption Act (PCA) and the Corruption, Drug Trafficking and Other Serious Crimes Act (CDSA). The PCA applies to those who give or receive bribes in both the public and private sector. The CDSA, when invoked, confiscates ill-gotten gains from corrupt offenders. Second, we established an independent judiciary free from political interference. Our judiciary has zero-tolerance for corruption and metes out harsh penalties for corrupt offenders. Third, our public service is guided by a strict Code of Conduct which sets out the high standards of behaviour expected of public officers based on integrity, incorruptibility, and transparency. Fourth, anti-corruption is rigorously enforced by the Corrupt Practices Investigation Bureau (CPIB), which is an independent national anti-corruption agency responsible for investigating and preventing corruption in Singapore.

Effective, Accountable and Transparent Institutions

The Singapore Constitution lays down the fundamental principles and basic framework for the separation of powers between the Executive, the Legislature, and the Judiciary. This separation of powers guarantees a system of checks and balances. The Constitution also guarantees fundamental liberties such as the equal protection of all persons before the law.

The Judiciary is the guardian of the Constitution. Singapore's Supreme Court is empowered to review laws and Executive actions to ensure that they are constitutional. Trust in the Judiciary is high. In recent national surveys, 92% of respondents expressed confidence in our legal system. Over 90% believed that the administration of justice by our State Courts (i.e. the lower Courts) was carried out with integrity and in a fair and independent manner. Singapore's Judiciary enjoys a good reputation internationally. It was ranked 19th by the World Economic Forum for judicial independence, and 2nd by the Heritage Foundation's 2017 Index of Economic Freedom for judicial effectiveness.

Access to our justice system is important to ensure inclusivity and effectiveness. *Pro bono* legal services are provided through a partnership between the Government, the Law Society of Singapore, various volunteers and volunteer welfare organisations. For low-income individuals facing legal issues, the Legal Aid Bureau provides civil legal aid for most civil proceedings, including judicial reviews, while the Law Society Pro Bono Services runs the Criminal Legal

Aid Scheme (CLAS). In a significant shift of policy, the Government started direct funding of criminal legal aid since 2015. This was supported by a significant increase in resources from volunteer lawyers and law firms. The number of CLAS applicants who received full representation or unbundled legal services increased fourfold between 2014 and 2017. We also ensure that vulnerable individuals are aware of these avenues for legal aid, through referral arrangements with partner agencies.

The strength of Singapore's public institutions was ranked 2nd by the World Economic Forum's Global Competitiveness Report (2017-2018). The Singapore Public Service employs 145,000 officers in 16 Ministries and more than 50 Statutory Boards. The work of these agencies is broadly characterised into five sectors: economic, security, social, infrastructure and environment, and central administration. A key ethos of our public service is the Whole-of-Government (WOG) approach, which calls for the rigorous coordination between and within agencies on the planning, creation, and execution of public policies for maximum effectiveness. The public service believes in recruiting the right people from various disciplines and based on key attributes such as integrity, a desire to serve, and a mindset for excellence. Recruitment and progression is based on merit. We also believe in life-long learning and career development. To this end, the Civil Service College (CSC) was established as the main training arm of the Singapore Public Service. The CSC offers 468 training programmes on a broad range of topics such as Data Analytics, International Relations, and Public Finance for public servants of different ranks.

The Parliament of Singapore is central to the transparency and accountability of our Government. Members of Parliament actively raise the people's concerns, debate policies, and pose questions to the Executive to seek explanations for the public's understanding and benefit. The Government has also made significant effort to strengthen citizen engagement through public feedback channels. The Government's main Feedback Unit, REACH (Reaching Everyone for Active Citizenry @ Home), is the lead agency facilitating WOG efforts to engage and connect with citizens on national and social issues. REACH's key roles are to gather and gauge public ground sentiments on issues of concern, reach out and engage Singaporeans through various media platforms, and promote active citizenry by encouraging citizen participation in shaping Singapore's policies.

Specialised Councils under the Presidency have also been established to ensure that the voices of minority groups are taken into consideration in policymaking. For example, the Presidential Council for Minority Rights is tasked with examining legislation to ensure that they are not disadvantageous to any racial or religious community in Singapore.

Low Crime in Singapore

Singapore enjoys one of the lowest crime rates in the world. In a 2017 national Public Perception Survey,[1] 92% of respondents rated general safety and security in Singapore favourably and 93% of respondents felt safe walking in their neighbourhood at night. This was attributed to a low crime rate and a highly effective police force which responds quickly to crime. As such, crime in Singapore has remained consistently low, with our crime rate decreasing over the years. Singapore has also consistently ranked among the top countries in the world for order and security, and regulatory enforcement.

Stemming the Flow of Illicit Funds and Arms

Singapore is a major global financial centre and an international trade and transportation hub. As such, the bulk of our exposure to money-laundering risks arises from offences committed overseas. Between 2008 and 2014, 66% of Singapore's money-laundering investigations and 27% of money-laundering convictions relate to criminal offences committed overseas. Singapore adopts a WOG approach to combatting money laundering and terrorism financing. Financial institutions operating in Singapore are required to put in place robust controls to detect and deter the flow of illicit funds through our financial system. In 2016, the Financial Action Task Force (FATF) and Asia/Pacific Group on Money Laundering (APG) Mutual Evaluation on Singapore assessed that Singapore possessed a strong legal and institutional framework for combatting money-laundering, terrorism financing, and proliferation financing.

In Singapore, the illegal manufacture and unauthorised trading of Small Arms and Light Weapons (SALW) are offences under our Arms and Explosives Act. Strict processes must be observed for the legal manufacture of all SALW and exports to countries under the relevant sanctions imposed by the United Nations Security Council are not authorised.

Trafficking in Persons

Singapore considers Trafficking in Persons (TIP) a serious crime, and we take necessary steps to detect and deter traffickers. An Inter-Agency Taskforce was established in 2010 to ensure WOG coordination on TIP issues. In March 2012, the Taskforce launched the National Plan of Action (NPA) 2012-2015, which centres on a "4Ps strategy" of Prevention, Prosecution, Protection and Partnership. Thereafter, the Taskforce worked with the relevant stakeholders to develop a new National Approach against TIP, which was launched on 10 March 2016. The approach sets out the key strategies and desired end outcomes to guide agencies and stakeholders in developing their work plans to combat TIP.

We enact stiff penalties to deter TIP offenders and to meet our international obligations to counter TIP globally. In 2015, Singapore enacted the Prevention of Human

[1] The Singapore Police Force surveyed 4,800 Singaporeans and Permanent Residents in 2017.

Trafficking Act. The Act has led to successful convictions over the years, in which accused persons were sentenced to imprisonment and fines. Singapore also acceded to the United Nations Protocol to Prevent, Suppress and Punish Trafficking in Persons, especially Women and Children (UN TIP Protocol) in September 2015. In January 2016, we ratified the ASEAN Convention against Trafficking in Persons, Especially Women and Children (ACTIP). Singapore is committed to implementing our obligations under the UN TIP Protocol and ACTIP, and to working closely with our regional and international partners to tackle this transnational crime.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

Complex Future Operating Landscapes

The future operating landscape will be increasingly complex, with more people-to-people flows across borders, new threats, and disruptive technologies. We will need to explore new and innovative methods to better secure and protect Singapore.

Relevance of Legislation

Our existing legislation and policies will need to be updated and enhanced to deal with new challenges in a changing operating environment.

OPPORTUNITIES

Disruption with Technology

While new technologies disrupt the landscape, they also present opportunities.

Our law enforcement agencies will ramp up the adoption of new technologies to further integrate operations and strengthen community partnerships. One example is the use of Unmanned Aerial Vehicles (UAVs). In crisis situations, UAVs can be deployed to provide a bird's-eye view of the ground situation and allow officers to make better informed decisions.

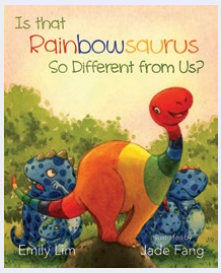
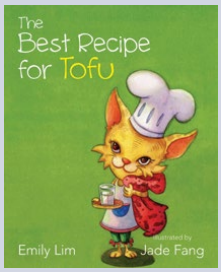
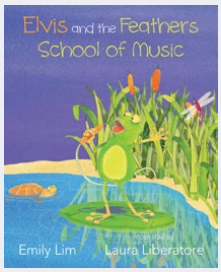
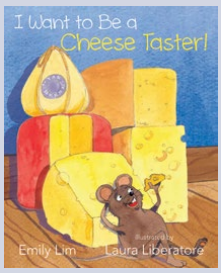
Another example is the introduction of automated self-clearance lanes for motorbikes at our land borders. With the introduction of self-service booths, we no longer have to deploy personnel to man immigration counters. Instead, more manpower can be redeployed to security functions, such as monitoring suspicious travellers and managing incidents on the ground.

Review and Update of Legislation

The changing operating environment offers us opportunities to review and update existing legislation to take into account evolving circumstances. For instance, we are currently reviewing the provisions of our Prevention of Corruption Act (PCA), Singapore's primary anti-corruption law, with the objective of enhancing the anti-corruption regime in Singapore to address future challenges and pitfalls.

PROTECTING THE YOUNG UNDER THE UN CONVENTION ON THE RIGHTS OF THE CHILD

Singapore acceded to the UN Convention on the Rights of the Child (UNCRC) in 1995. The Ministry of Social and Family Development, in conjunction with the UNCRC, commissioned a series of children's storybooks to bring to life four of the UNCRC's principles: non-discrimination, devotion to the best interests of the child, the right to life, survival and development, and respect for the views of the child. The books, which are available online,[2] are used to educate children and their caregivers on children's rights in a light-hearted and reader-friendly manner.

BOOK TITLE	SYNOPSIS	PRINCIPLE
"Is Rainbowsaurus So Different From Us?" 	Libby the Rainbowsaurus moves into a new neighbourhood. The Blusauruses avoid Libby as they have never seen anyone like her before. Is Libby really so different from them?	"Children must not suffer discrimination irrespective of the child's or his or her parent's or legal guardian's race, colour, sex, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status." – Article 2 of the UNCRC
"The Best Recipe for Tofu" 	Young Tofu lives with her Uncle Ayu and helps him sell fish. Often, she works long hours on an empty stomach. What can Uncle Ayu do to provide Tofu the care that she needs to grow well?	"The best interests of the child must be a primary consideration in all decisions and actions affecting the child, or children as a group. This holds true whether decisions are made by government, administrative or judicial authorities or by families themselves." – Article 3 of the UNCRC
"Elvis and the Feathers School of Music" 	A music school for "birds only" is having a concert where its performers will be able to develop their potential further. Elvis the frog dreams of singing at this important event. But can he ever be accepted?	"Children have a right to survival and development in all aspects of their lives, including the physical, emotional, psycho-social, cognitive, social and cultural." – Article 6 of the UNCRC
"I Want to Be a Cheese Taster" 	A class of mice are discussing what they want to do when they grow up. Feta surprises everyone with his dream job – which is very different from what mice typically do. Will the other mice be able to accept Feta's viewpoint?	"Children should be allowed to express their opinions, especially in matters concerning themselves. They have the right to have their views heard and taken seriously." – Article 12 of the UNCRC

[2] The books, along with booklets on the UNCRC, are available at: https://www.msf.gov.sg/publications/Pages/United-Nations-Convention-on-the-Rights-of-the-Child-UNCRC.aspx.

SUSTAINABLE DEVELOPMENT GOAL 17:

Strengthen the Means of Implementation and Revitalise the Global Partnership for Sustainable Development

SINGAPORE'S GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT

The successful implementation of the 2030 Agenda for Sustainable Development requires global partnership. Each member of the community at the local, regional, national and global level needs to have a voice and a stake in the implementation of the SDGs.

Singapore adopts a multi-stakeholder approach to the global partnership. Our Whole-of-Government (WOG) approach towards sustainable development, which has been integral to our policymaking since independence, is the core. However, we are aware that governments alone cannot implement the SDGs. To this end, our sustainable development journey, while Government-led, has been enhanced by the efforts of stakeholders from different sectors of society.

In the early years of our independence, Singapore turned to others for help in our nation-building efforts. Several countries and international organisations responded readily and shared valuable lessons on development. We want to pay it forward and share our own experiences, knowledge and best practices in sustainable development with fellow developing countries. Our own experience informs us that there is no single model of development for all. We believe that countries should be free to pursue the SDGs in the manner of their choosing, taking into account their national priorities and circumstances.

BRIGHT SPOTS

The Singapore Cooperation Programme

With no natural resources, Singapore's most valuable resource is our people. This is why our efforts towards the global partnership for sustainable development centre on capacity building and human resource development. We believe that the multiplier effect of investing in human capital will be the key driver behind the achievement of the 2030 Agenda.

The Singapore Cooperation Programme (SCP) is our flagship technical assistance programme. Since its inception in 1992, we have worked with like-minded countries to jointly offer training and capacity building programmes. Over 119,000

officials from more than 170 countries have joined SCP programmes in areas such as education, transport, economic development and trade promotion, healthcare, judiciary and public administration.

Supporting the 2030 Agenda: the Sustainable Development Programme

In support of the 2030 Agenda, Singapore launched the Sustainable Development Programme (SDP) under the SCP in 2015. The SDP aims to support our fellow developing countries' achievement of the SDGs by building capacity at three levels – leadership, city, and community – through partnerships with UN agencies and local NGOs. The SDP is specifically tailored for developing countries, in particular, the Small Island Developing States (SIDS) and the Least Developed Countries (LDCs), with a variety of courses on SDG-specific areas, such as water and sanitation, sustainable cities and climate change.

At the leadership level, we partnered the UN Development Programme (UNDP) Global Centre for Public Service Excellence (GCPSE) to conduct the "Transformational Leadership for the 2030 Agenda (TL2030)" programme. TL2030 is an invitation-only leadership course focusing on key challenges faced by Public Service leaders in fulfilling their national development aspirations in achieving the SDGs. Both sides also jointly organised the "Public Service: 2030 And Beyond (PS2030)" programme, targeted at senior-level officials involved in strategic policymaking and driving public sector reform towards implementing the SDGs. During the course, Singapore government officials shared insights and experiences on SDG implementation, while emphasising the need to apply these ideas to each country's specific context, and to find home-grown solutions.

At the city level, Singapore has partnered UN-Habitat on a capacity building programme in support of the UN's New Urban Agenda and the achievement of SDG 11 on sustainable cities. Participants comprise mayors, city councillors, chief engineers and other city leaders. The emphasis of this programme is to demonstrate how local development challenges can be overcome through applying sustainable urban system principles and long-term integrated master planning and development.

At the community level, Singapore is partnering NGOs to help build capacity on water, sanitation and hygiene issues in rural areas across Southeast Asia. Thus far, we have supported Lien Aid and Mercy Relief to provide sustainable water solutions for around 21,000 people. Singapore also partnered the UN International Children's Emergency Fund (UNICEF) to provide capacity building on strategies and tools on water, sanitation and hygiene services for Southeast Asian officials.

Third Country Training Programmes

In the spirit of partnership, the Third Country Training Programme (TCTP) framework of the SCP provides technical assistance in collaboration with other countries and international organisations. We have partnered more than 40 countries and international organisations, such as the United Nations Framework Convention on Climate Change (UNFCCC), UNDP and UN Environment. For instance, we have worked with Australia and the UNDP/UN Environment Global Support Programme to host annual regional capacity building workshops on transparency under the UNFCCC to assist countries with their national climate plans and strengthening their institutional arrangements, in order to implement their obligations under the UNFCCC. The workshop involves trainers and experts from the UNFCCC as well as countries from the ASEAN Plus Three, i.e. China, Japan and Republic of Korea.

In order to facilitate North-South cooperation, we have formed partnerships with other countries, such as the Singapore-US TCTP, the Japan-Singapore Partnership Programme for the 21st Century and the Australia-Singapore Partnership Arrangement for International Development. Under these TCTPs, we offer a range of capacity building programmes including workshops on sustainable development. We also facilitate South-South cooperation with fellow developing countries, through collaborations with our neighbours from ASEAN as well as countries from outside the region to share unique and different experiences, such as the Singapore-Argentina TCTP, Singapore-Chile TCTP, and the Singapore-Mexico TCTP.

Singapore's ASEAN Chairmanship

Singapore assumed the ASEAN Chairmanship in 2018 under the theme of "Resilience and Innovation". This vision is in line with the theme of the 2018 HLPF, "Transformation towards sustainable and resilient societies". Singapore's vision for our ASEAN Chairmanship is to ensure that ASEAN remains united and resilient in the face of increasing geopolitical complexities, whilst keeping our economies forward-looking and innovative, in order to seize the opportunities of the digital revolution. ASEAN will also need to remain committed to its people, including through enhancing human capital development and bringing together our youth.

Under Singapore's Chairmanship, the ASEAN Leaders' Vision Statement endorsed by the 32nd ASEAN Summit in April 2018 calls for ASEAN to become a sustainable community which promotes economic and social development alongside environmental protection, while leaving no one behind. The Leaders also reaffirmed their commitment to the implementation of the 2030 Agenda, including through working with ASEAN's Dialogue Partners and external parties to promote complementarities between the ASEAN Community Vision 2025 and the 2030 Agenda through feasible and concrete projects.

ASEAN Smart Cities Network

One of the key initiatives under Singapore's ASEAN Chairmanship is the establishment of an ASEAN Smart Cities Network (ASCN). As ASEAN undergoes rapid transformation and urbanisation, the ASCN aims to synergise each member state's ongoing efforts to develop smart cities. The ASCN will be a collaborative platform for key cities and capitals within ASEAN to work towards the common goal of smart and sustainable urban development. The ASCN aims to facilitate cooperation on smart cities development, catalyse bankable projects within the private sector, and secure funding and support from external partners. Core elements of the ASCN include city-specific Action Plans for Smart City Development, an ASEAN Smart Cities Framework, an Annual Meeting of the ASCN, and a Twinning Programme with cities from ASEAN's external partners. The first ASCN annual meeting was convened alongside the World Cities Summit in Singapore in July 2018. The ASCN will officially be launched by the ASEAN Leaders at the 33rd ASEAN Summit in Singapore in November 2018.

Special ASEAN Meeting on Climate Action

Another important initiative during Singapore's ASEAN Chairmanship is the Special ASEAN Meeting on Climate Action (SAMCA) held on 10 July 2018 during the biennial Urban Sustainability Week in Singapore. The SAMCA is intended to highlight ASEAN countries' commitment to collectively address climate change, including through the achievement of SDG 13 on climate action, and through fulfilling our commitments under the Paris Agreement. To this end, discussions at SAMCA are intended to feed into the Talanoa Dialogue 2018 at the 24th Conference of the Parties (COP) to the UNFCCC. The SAMCA will also be held back-to-back with an Expanded SAMCA involving the Presidents of the 23rd and 24th COPs to the UNFCCC, Fiji and Poland respectively, as well as ASEAN's external partners under the ASEAN Plus Three.

Multi-stakeholder Approach: Society Partners

Singapore supports a multi-faceted, multi-stakeholder approach to implementing the SDGs. For instance, our agencies engage in wide-ranging consultations as part of our policymaking process. This includes listening to views and suggestions from key stakeholders such as our citizens, industry, civil society and academia. We also engage these stakeholders throughout the policymaking cycle, in order to ensure that their feedback is taken on-board during policy implementation and review. In addition, our stakeholders also help to plug gaps in areas of policy implementation, where government agencies may lack the expertise or reach.

Engaging the Youth

Engaging Singaporean youth is key to the long-term effectiveness of SDG implementation. We believe that it is important to inculcate a a sustainable development-oriented mindset amongst our younger generation so that they have

sustainability in mind when they become future leaders in industry and government. To this end, we are working with educational institutes in Singapore to raise awareness of the SDGs and 2030 Agenda, and to seek innovative ideas from our youth on how to achieve the SDGs. As part of our VNR efforts, we launched a youth video competition, "The Sustainable Development Goals – What YOUth Can Do".[1] We asked our youth to describe an idea or specific solution to help achieve, in Singapore or around the world, one of the five SDGs that will be reviewed at the 2018 HLPF, or to depict the theme of the 2018 HLPF. The competition attracted numerous entries from students with some very novel and bright ideas on topics such as sustainable urban farming and the implementation of block-chain solutions to establish electrical infrastructure.

Industry Efforts

We have established public-private partnerships on the implementation of several SDGs, and supported the work of several international organisations and businesses in spreading the message of sustainable development. For example, Singapore's Temasek Foundation, a Singapore-based non-profit philanthropic organisation, has been hosting annual "Ecosperity" Conferences in partnership with the Business and Sustainable Development Commission since 2014. These conferences bring private and public sector leaders together to explore sustainable growth ideas. This year, Temasek has also teamed up with UNLEASH, a global non-profit innovation lab for solutions to the SDGs. Singapore hosted the second iteration of the UNLEASH annual event in May-June 2018, which brought together young, creative and innovative minds to harness the power of human ingenuity and create imaginative solutions that achieve the SDGs.

We are also witnessing a growing trend of ground-up initiatives and events from the private sector in support of the SDGs. Businesses such as property developer City Developments Limited have launched sustainability blueprints that specifically consider the SDGs in their work. Others, such as the Development Bank of Singapore, have also released green bonds as a form of sustainable financing, incentivised by the Monetary Authority of Singapore's green bond grant scheme.

[1] The top three winning videos can be viewed on the website: https://www1.mfa.gov.sg/Newsroom/Events-and-Programmes/2018/06/Singapore-Youth-Video-Competition

Further, we also work closely with organisations like the Global Compact Network Singapore (GCNS), the local chapter of the UN Global Compact, to promote corporate sustainability efforts among companies in Singapore. The GCNS encourages and facilitates efforts of companies which are committed to aligning their operations and strategies with sustainable development. The GCNS' key activities include raising awareness of corporate social responsibility (CSR) initiatives among businesses through events and training programmes on topics such as "Sustainability Reporting" and "Climate Change and Business", and nurturing the next generation of CSR leaders through youth initiatives.

Civil Society, Academia and Co-operative Organisations

Several of our civil society organisations have also been active in promoting projects related to the implementation of specific SDGs. For instance, the Singapore National Co-operative Foundation (SNCF) has enacted measures in line with the SDGs in order to enhance their offerings. This includes ensuring price stabilisation of food supplies during crises, contributing to the provision of healthcare through its network of doctors, increasing women's access to economic opportunities, and facilitating access to education through providing awards, study grants and bursaries.

Some of these organisations also contribute to sustainable development through their research and analysis to identify potential gaps and opportunities which can be tapped on to deliver SDG-oriented results. The Singapore Institute of International Affairs (SIIA), a non-profit, independent research organisation published the Collaborative Initiative for Green Finance in Singapore in November 2017. The report, which was produced in partnership with UN Environment explores how Singapore as a financial hub can offer green financing through a range of financial services and products, to promote the efficient flow of capital towards activities that are more sustainable and responsive to climate concerns. This dovetails with our support of the implementation of the Paris Agreement and SDG 13. The report was also intended to generate growing interest, knowledge and momentum across relevant government ministries and agencies, and engage corporations and financial institutions.

We also work closely with some of our civil society organisations on several SDG-specific projects outside Singapore. For example, SDG 6 on ensuring the availability and sustainable management of water and sanitation for all is in line with Singapore's championing of the water, sanitation and hygiene agenda. We partnered Singaporean NGO, Lien AID, to establish two Community Water Enterprises in Cambodia to provide affordable treated drinking water to the local communities on a sustainable basis. We also actively engage the World Toilet Organisation (WTO), a Singapore-based international non-profit organisation in its efforts to bring about better sanitation and toilet hygiene to fellow developing countries, such as India and China, also in support of SDG 6.

FUTURE CHALLENGES & OPPORTUNITIES

CHALLENGES

Encouraging SDG-oriented Mindsets

Raising the level of national consciousness for behavioural change, especially the need to take individual and collective action to achieve the SDGs is a challenge. We are finding innovative ways to sensitise the public towards these issues through the power of individual champions and word-of-mouth, especially for issues that are not immediately visible to Singaporeans.

OPPORTUNITIES

Working with Youth

Schools have always been passionate champions for responsible and sustainable development. Youths and children are excellent ambassadors for the intergenerational issue of SDG implementation, often spreading the word within their families. For instance, Anchor Green Primary School has partnered with IKEA to campaign for a sustainable living environment. Their projects include converting recycled fabric into bookmarks which are sold to help needy pupils.

The Singapore Government is also adopting new ways of marketing and outreach in our strategic communications. This includes for instance, working with influential social media personalities to promote the adoption of eco-friendly habits.

For example, we launched the Year of Climate Action in 2018 to encourage Singaporeans to take action to reduce our carbon footprint for a more sustainable future. Singaporeans are encouraged to make a Climate Action Pledge to verbalise actions they intend to take to reduce their individual carbon footprints. These pledges can be announced publicly on social media platforms such as Twitter, Instagram and Facebook.

LOOKING **AHEAD**

Singapore is widely recognised as one of the most sustainable and liveable cities in the world. The Voluntary National Review (VNR) has allowed us to reflect on the progress we have made, and what more needs to be done. In many ways, our pioneer generation's vision to build a clean, green and sustainable Singapore in which all Singaporeans can enjoy a high quality of life, was far ahead of its time. Nevertheless, the VNR reminds us that sustainable development is not a destination but a journey. Even as we celebrate our progress, we must keep looking ahead. Each generation faces its own unique set of challenges, and must negotiate its own path towards sustainable development.

FUTURE CHALLENGES

Looking ahead, we anticipate many challenges to Singapore's continual growth and development. We must be resilient and innovative to overcome these challenges.

Our ageing population is a growing concern especially for an economy that relies on its people as its only resource. Our long-term plan is to build a Nation for All Ages. By leveraging technology, we can re-design workplaces and jobs to allow our seniors to remain active, and even gainfully employed, for as long as they are able and willing to. This will go some way towards mitigating the impact of an ageing society on our economy.

Disruptive technologies could potentially render our people's knowledge and skills irrelevant, with real impact on their livelihoods. Singaporeans need to be prepared to constantly upgrade themselves and learn new skillsets. This is why we have put in place the SkillsFuture programme which aims to change mindsets to embrace lifelong learning. To succeed in this endeavour, we need a Whole-of-Society commitment: the Government, employers, the community and the individual have to play their part. Through our Smart Nation initiative, we also seek to build a Singapore where technology empowers people to lead meaningful and fulfilled lives.

Our limited land means there will be competing priorities between the needs of different groups, sectors and industries as we grow. We are looking to better optimise our land use through creative solutions. In this regard, we will launch the Underground Master Plan in 2019 to map out underground spaces and their potential uses, paving the way for a future underground metropolis.

SINGAPORE'S APPROACH

When it comes to our development, Singapore has always taken a long-term, forward-looking approach. For example, we are undertaking several major infrastructure projects in the next decade to accommodate our growth. This includes the construction of Terminal 5 of Singapore's Changi International Airport which is expected to be completed by 2030.

We also do not shy away from making tough but necessary decisions. This was why we decided to introduce a carbon tax in 2019. We recognise that climate change is a real threat to our survival, and we have taken difficult but necessary steps to ensure that our industries and households are playing their part in order to reduce our carbon emissions.

These principles have guided Singapore and will continue to do so as we seek to build on our progress in sustainable development towards the achievement of the 2030 Agenda and beyond.

METHODOLOGY

Singapore's policies are always designed with sustainability in mind. This is an ethos that has guided our Whole-of-Government policymaking framework. We assessed that our approach of integrating sustainability directly in our policy process has worked well for us overall. Therefore, preparations for our first VNR were focused on taking stock of policies we had enacted since independence, and assessing whether and how they have contributed to Singapore's sustainable development in line with the 2030 Agenda. Using the 2030 Agenda as a framework, we also examined areas in which our policies may be lacking and how we could overcome them to better achieve the SDGs. The report writing process also played a pedagogical role. It encouraged us to learn from other countries' experiences and best practices, to reach out to as many stakeholders as possible, and to understand sustainable development from different points of view.

WRITING THE REPORT – AN INTER-AGENCY EFFORT

Singapore's preparations began more than a year in advance. Our aim was to ensure that our VNR report was both in-depth and wide-ranging. To this end, the policies, measures, and views of all relevant government agencies had to be taken into account. The Inter-Ministry Committee on SDGs (IMC-SDGs) was established to oversee the inter-agency process for the report, and over the longer-term, to monitor our progress on SDG implementation. The IMC-SDGs is co-chaired by the Ministry of Foreign Affairs and the Ministry of the Environment and Water Resources. The IMC-SDGs ensured the buy-in of our agencies and engendered a sense of ownership of the VNR process.

The IMC-SDGs convened three inter-agency meetings in line with our three-step approach to drafting the VNR report; in January 2017, August 2017, and January 2018. The first meeting introduced the 2030 Agenda and the SDGs to our domestic agencies to seek their support to undertake our first VNR in 2018. During the second meeting, we conducted an internal stocktake with our agencies on the performance of our policies against the SDGs and their related targets and indicators. This allowed for an initial cross-sectoral examination of the data and information to give us a better understanding of where we stood and where more progress was required. The information gathered was further distilled into a preliminary outline of the report to elicit more detailed responses from our agencies. At the final inter-agency meeting, we tasked our agencies to provide more substantive and specific input on each of the different SDGs. We sought their frank assessment in order to truly reflect how we fared in SDG implementation. We also urged our agencies to be objective and realistic with regard to identifying future challenges and constraints, alongside potential opportunities which we could harness to overcome these challenges.

To ensure that our report was comprehensive, we assigned groups of agencies to work on each of the 17 SDG write-ups, in accordance with the areas under their purview. In mapping out agencies' responsibilities for the report, we also learnt that implementation of each SDG could not be single-handedly accomplished by any one agency; instead, it required the effort and expertise of several parties to achieve the targets and indicators for each SDG. Moreover, in coordinating the various drafts of the report, we were better able to glean the inter-linkages between SDGs as we observed many real-life examples in which the different goals worked together to achieve the implementation of the SDGs more effectively.

LEARNING FROM OTHERS

The IMC-SDGs attended several workshops and seminars at the sub-regional, regional and global levels in order to learn from the experiences of other countries which had already undertaken their VNRs and to share best practices on how to better achieve the SDGs. This included the Southeast Asia Forum on Implementation of the Sustainable Development Goals, organised by the UN Economic and Social Commission for Asia and the Pacific in October 2017, the Workshop for the 2018 Voluntary National Reviews at the High-Level Political Forum organised by the UN Department of Economic and Social Affairs in December 2018, and the 5th Asia-Pacific Forum on Sustainable Development in March 2018. These events also allowed us to interact directly with agencies within the UN system, to seek further guidance on undertaking the review process.

STAKEHOLDERS OUTSIDE GOVERNMENT

We recognise that sustainable development issues cannot be addressed in silos or in a vacuum. Therefore, beyond our agencies, it was also important that we reflected in our report the diversity of views and ideas from key stakeholders. The IMC-SDGs made a concerted effort to publicise Singapore's VNR undertaking at the 2018 HLPF to as many stakeholders as possible, including businesses, youth organisations, and civil society. Our stakeholders responded readily, offering to contribute their views and ideas to the report, with some even sharing their research on the 2030 Agenda in areas specific to their interests (e.g. climate action, water and sanitation, or food security). We engaged these stakeholders through regular meetings and participation in their events on sustainable development in order to understand their views better. These engagements revealed areas where the Government's work aligned with theirs, and sparked off ideas on how we could potentially support and collaborate with these stakeholders. We are grateful for the enthusiastic responses of our stakeholders, which were critical in ensuring that our report painted an accurate and holistic picture of Singapore's progress on sustainable development.

ANNEX:
PROGRESS TRACKER

	TARGET	
NA	SDG 1.1	By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day.
NA	SDG 1.2	By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.
◌	SDG 1.3	Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable.
◌	SDG 1.4	By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.
◌	SDG 1.5	By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.
◌	SDG 1.A	Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions.
◌	SDG 1.B	Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions.
✔	SDG 2.1	By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.
◌	SDG 2.2	By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant, and lactating women and older persons.
◌	SDG 2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.
◌	SDG 2.4	By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.
◌	SDG 2.5	By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilisation of genetic resources and associated traditional knowledge, as internationally agreed.
✔	SDG 3.1	By 2030, reduce the global maternal mortality ratio to less than 70 per 100 000 live births.
✔	SDG 3.2	By 2030, end preventable deaths of newborns and children under five years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1000 live births and under-5 mortality to at least as low as 25 per 1000 live births.
◌	SDG 3.3	By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.
◌	SDG 3.4	By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.
◌	SDG 3.5	Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol.
◌	SDG 3.6	By 2020, halve the number of global deaths and injuries from road traffic accidents.

	TARGET	
✔	SDG 3.7	By 2030, ensure universal access to sexual and reproductive healthcare services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes.
◌	SDG 3.8	Achieve universal health coverage, including financial risk protection, access to quality essential healthcare services and access to safe, effective, quality and affordable essential medicines and vaccines for all.
✔	SDG 3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.
◌	SDG 3.A	Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate.
✔	SDG 3.B	Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all.
◌	SDG 3.C	Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States.
◌	SDG 3.D	Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.
✔	SDG 4.1	By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.
✔	SDG 4.2	By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education.
✔	SDG 4.3	By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.
◌	SDG 4.4	By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.
✔	SDG 4.5	By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations.
✔	SDG 4.6	By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy.
✔	SDG 4.7	By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.
✔	SDG 4.A	Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.
NA	SDG 4.B	By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries.
✔	SDG 4.C	By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States.
◌	SDG 5.1	End all forms of discrimination against all women and girls everywhere.
◌	SDG 5.2	Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation.
◌	SDG 5.3	Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation.

	TARGET	
◌	**SDG 5.4**	Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.
◌	**SDG 5.5**	Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.
◌	**SDG 5.6**	Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences.
◌	**SDG 5.A**	Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws.
◌	**SDG 5.B**	Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women.
◌	**SDG 5.C**	Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels.
✔	**SDG 6.1**	By 2030, achieving universal and equitable access to safe and affordable drinking water for all.
✔	**SDG 6.2**	By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.
✔	**SDG 6.3**	By 2030, improve water quality by reducing pollution, eliminating dumping and minimising release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.
✔	**SDG 6.4**	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.
✔	**SDG 6.5**	By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.
✔	**SDG 6.6**	By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.
✔	**SDG 6.A**	By 2030, expand international cooperation and capacity building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies.
✔	**SDG 6.B**	Support and strengthen the participation of local communities in improving water and sanitation management.
✔	**SDG 7.1**	By 2030, ensure universal access to affordable, reliable and modern energy services.
✔	**SDG 7.2**	By 2030, increase substantially the share of renewable energy in the global energy mix.
✔	**SDG 7.3**	By 2030, double the global rate of improvement in energy efficiency.
✔	**SDG 7.A**	By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.
✔	**SDG 7.B**	By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support.
✔	**SDG 8.1**	Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7% gross domestic product growth per annum in the least developed countries.
✔	**SDG 8.2**	Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors.
✔	**SDG 8.3**	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services.

	TARGET	
◌	SDG 8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead.
◌	SDG 8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.
✔	SDG 8.6	By 2020, substantially reduce the proportion of youth not in employment, education or training.
✔	SDG 8.7	Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms.
◌	SDG 8.8	Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.
◌	SDG 8.9	By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.
✔	SDG 8.10	Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all.
NA	SDG 8.A	Increase Aid for Trade support for developing countries, in particular least developed countries, including through the Enhanced Integrated Framework for Trade-related Technical Assistance to Least Developed Countries.
◌	SDG 8.B	By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization.
✔	SDG 9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.
◌	SDG 9.2	Promote inclusive and sustainable industrialisation and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries.
✔	SDG 9.3	Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets.
◌	SDG 9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.
◌	SDG 9.5	Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.
◌	SDG 9.A	Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States.
◌	SDG 9.B	Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities.
✔	SDG 9.C	Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020.
◌	SDG 10.1	By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average.
◌	SDG 10.2	By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.
◌	SDG 10.3	Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard.
◌	SDG 10.4	Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality.

	TARGET	
NA	SDG 10.5	Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations.
NA	SDG 10.6	Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions.
◌	SDG 10.7	Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies.
NA	SDG 10.A	Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements.
NA	SDG 10.B	Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes.
NA	SDG 10.C	By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent.
✔	SDG 11.1	By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.
◌	SDG 11.2	By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.
◌	SDG 11.3	By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.
✔	SDG 11.4	Strengthen efforts to protect and safeguard the world's cultural and natural heritage.
✔	SDG 11.5	By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.
◌	SDG 11.6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.
◌	SDG 11.7	By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.
NA	SDG 11.A	Support positive economic, social and environmental links between urban, per-urban and rural areas by strengthening national and regional development planning.
NA	SDG 11.B	By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.
NA	SDG 11.C	Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials.
◌	SDG 12.1	Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries.
◌	SDG 12.2	By 2030, achieve the sustainable management and efficient use of natural resources.
◌	SDG 12.3	By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.
◌	SDG 12.4	By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.
✔	SDG 12.5	By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.
◌	SDG 12.6	Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.
✔	SDG 12.7	Promote public procurement practices that are sustainable, in accordance with national policies and priorities.

	TARGET	
◌	SDG 12.8	By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.
◌	SDG 12.A	Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production.
◌	SDG 12.B	Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products.
NA	SDG 12.C	Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities.
◌	SDG 13.1	Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.
◌	SDG 13.2	Integrate climate change measures into national policies, strategies and planning.
◌	SDG 13.3	Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.
NA	SDG 13.3A	Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible.
✔	SDG 13.3B	Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.
◌	SDG 14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.
◌	SDG 14.2	By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.
◌	SDG 14.3	Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.
◌	SDG 14.4	By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.
NA	SDG 14.5	By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.
NA	SDG 14.6	By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.
NA	SDG 14.7	By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.
◌	SDG 14.A	Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries.
✔	SDG 14.B	Provide access for small-scale artisanal fishers to marine resources and markets.

	TARGET	
✔	SDG 14.C	Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want.
✔	SDG 15.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.
✔	SDG 15.2	By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.
NA	SDG 15.3	By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.
NA	SDG 15.4	By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.
✔	SDG 15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.
✔	SDG 15.6	Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed.
✔	SDG 15.7	Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products.
◌	SDG 15.8	By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species.
✔	SDG 15.9	By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.
✔	SDG 15.A	Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.
NA	SDG 15.B	Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.
◌	SDG 15.C	Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities.
✔	SDG 16.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.
◌	SDG 16.2	By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.
✔	SDG 16.3	By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.
✔	SDG 16.4	By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.
NA	SDG 16.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.
✔	SDG 16.9	Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed.
✔	SDG 17.1	Strengthen resource mobilisation, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection.
NA	SDG 17.2	Developed countries to implement fully their official development assistance commitments.
NA	SDG 17.3	Mobilise additional financial resources for developing countries from multiple resources.
NA	SDG 17.4	Assist developing countries in attaining long-term debt sustainability through coordinated policies.
✔	SDG 17.5	Adopt and implement investment promotion regimes for least developed countries.

	TARGET	
✔	**SDG 17.6**	Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge-sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the UN level, and through a global technology facilitation mechanism.
◌	**SDG 17.7**	Promote the development, transfer, dissemination and diffusion of environmentally-sound technologies to developing countries on favourable terms as mutually agreed.
◌	**SDG 17.8**	Fully operationalise the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology.
◌	**SDG 17.9**	Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the SDGs, including through North-South, South-South and triangular cooperation.
✔	**SDG 17.10**	Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the WTO, including through the conclusion of negotiations under its Doha Development Agenda.
NA	**SDG 17.11**	Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020.

Legend:
✔ Target Achieved
◌ Target In Progress
NA Target Indicator Not Applicable/Proxy Data Used

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