

TEMASEK  
FOUNDATION



# SYNERGY

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TEMASEK FOUNDATION REPORT 2022

# CONTENTS

Key Highlights	03
<b>Our Leadership</b>	
Temasek Foundation Ltd Board, Executive Boards & Management	04
Chairman's Message	06
CEO's Message	10
In Memoriam: A Tribute to Mr Richard Magnus	14
<b>COVID-19 Initiatives</b>	
A Race Against Time to Fight a Deadly Virus	16
<b>United Nations (UN) Sustainable Development Goals (SDGs)</b>	
Our Contribution to the UN SDGs	20
<b>Synergies in Communities</b>	
Eradicating a "Silent Killer" in Singapore with Vaccination	22
Empowering Societies	25
<b>Synergies in Partnerships</b>	
Collaborating for Better Food Security	26
Exchanging Perspectives, Fostering Collaborations	29
<b>Synergies in Innovations</b>	
Engineering a SeaChange in Carbon Management	30
Advancing Science for a Sustainable World	33
<b>Youth Programmes</b>	
Nurturing a New Generation of Resilient Leaders	34
<b>About Temasek Foundation</b>	
	38

# KEY HIGHLIGHTS

Supporting programmes that build social resilience, promote international dialogue and partnerships, and catalyse research and innovation

## PROGRAMMES

**1,357**

Cumulative till FY21/22

**182**

FY21/22



## OUTREACH

**2M**  
lives touched across  
Singapore and Asia

Cumulative till FY21/22

Additional outreach to

**1.5M**  
households

In Singapore through our  
community initiatives



## FUNDING COMMITTED

**S\$923M**

Cumulative till FY21/22

**S\$70M**

FY21/22



## FOLLOW-ON FUNDING

**55** sustainability  
innovations  
since 2016

**S\$424M**

in follow-on funding  
funded from S\$44M in grants



Watch 2022  
Highlights video



# Our Leadership

## TEMASEK FOUNDATION LTD. BOARD OF DIRECTORS

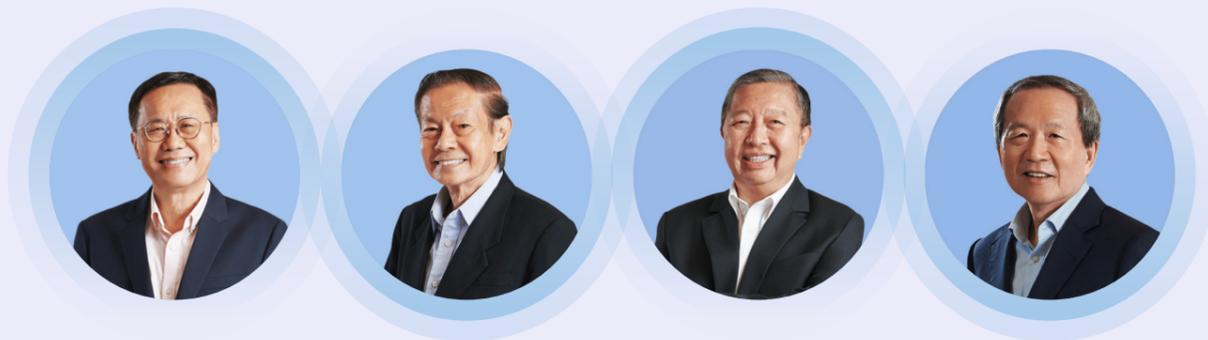


**Mr Benny Lim**  
Chairman

**Ms Jennie Chua**  
Board Director

**Mr Goh Geok Khim**  
Board Director

**Mr Koo Tsai Kee**  
Board Director



**Mr Quek See Tiat**  
Board Director

**Professor Leo Tan**  
Board Director

**Mr Tan Soo Nan**  
Board Director

**Mr Teo Ming Kian**  
Board Director

*The late Mr Richard Magnus served on the Temasek Foundation Ltd. Board from 1 April 2020 till March 2022. He was concurrently Chairman, Temasek Foundation Cares since its inception in 2009.*

## OUR EXECUTIVE BOARDS

### Cares Executive Board

**Mr Koo Tsai Kee**  
Interim Chairman

**Prof Chong Yap Seng**  
Board Director

**Ms Vemala Rajamanickam**  
Board Director

**Mr Zainul Abidin Rasheed**  
Board Director

**Dr Aline Wong**  
Board Director

### International Executive Board

**Ms Jennie Chua**  
Chairman

**Mr Goh Geok Khim**  
Chairman Emeritus

**Mr Goh Yong Siang**  
Board Director

**Tan Sri Faizah Mohd Tahir**  
Board Director

**Mr Tony Tan Caktiong**  
Board Director

**Mr Arif Rachmat**  
Board Director

### Liveability Executive Board

**Mr Teo Ming Kian**  
Chairman

**Dr Howard Califano**  
Board Director

**Prof Cheah Horn Mun**  
Board Director

**A/Prof Lim Tit Meng**  
Board Director

**Ms Janet Neo**  
Board Director

**Prof Quek Tong Boon**  
Board Director

**Mr Rajiv Wahi**  
Board Director

**Mrs Trina Loh**  
Board Director

## OUR MANAGEMENT TEAM



**Mr Ng Boon Heong**  
Chief Executive Officer

**Mr Benedict Cheong**  
Deputy  
Chief Executive Officer

**Ms Woon Sae Nyoong**  
Head,  
Community Networks  
and Partnerships

**Mr Lim Hock Chuan**  
Head,  
Programmes

## In conversation with Our Chairman, Benny Lim

“ ———

We observed that many ground-up efforts sprang up during the pandemic. They form a landscape of loose polycentric networks which grew organically, driven simply by compassion and a common desire to help others. We should sustain and nurture these networks so that they may continue and grow beyond the pandemic. They were seeded in adversity and can grow strongly to foster resilience and a culture of care within our society.

————— ”



### Temasek Foundation strives to be a trusted partner for the common good. What does this role entail and why is collaboration a key driver of the Foundation's work?

Being a trusted partner is a fundamental value in our operating ethos. We cannot do all things on our own. No one can. The world we live in is just too complex for that. So, we must rely on like-minded partners to share knowledge and pool resources, to learn and do good together more effectively than each of us can on our own. Certainly for Temasek Foundation, we know that without our partners, old and new, big and small, working alongside us, we could not have achieved the fullness of outcomes and potential of our programmes.

If collaboration is to be sustained and grown over time, mutual trust and respect are key. If this happens

well enough, what we hope to develop eventually is a diverse network of trusted partners, connected in synergistic collaboration and plugged to a common mission of doing good but in different ways and in different domains.

Temasek Foundation is well-placed to help grow such a network, facilitate collaboration within it and cultivate synergies through the process. It can also be a bridge to reach out and connect with other such networks locally and beyond.

### Could you tell us more about the Foundation's collaborative work in 2022?

We were able to support our many partners in 182 new programmes in FY2021/2022 with close to S\$70m in committed funding.

For instance, to enhance the well-being of women in Singapore, we partnered the Singapore Cancer Society to raise cervical cancer awareness and protection among females from low-income families by offering HPV vaccination against cervical cancer at no cost.

Temasek Foundation works with many regional partners to foster international exchange and to enhance local capabilities. One of them is the provincial government of Riau Islands. Together, we are developing capabilities in agri-tech and aquaculture to strengthen the region's ecosystem and food supply chain.

Our programmes also seek to contribute to a future-ready world. We champion innovation and ideas to advance science for a healthier planet. One such example is the 2021 winner of The Liveability Challenge – SeaChange. Its game-changing technology allows the ocean to absorb carbon dioxide sustainably from the atmosphere and reduce carbon emissions.

These are just some of the examples that come to mind. I hope you will peruse this annual report to find out more of the many, many valuable partner programmes we have been happy and excited to support this year.

### What can you share about the Foundation's experience of collaborating, especially in recent years?

We have all been through a difficult two years of the global pandemic. But we found in this adversity, a constant source of inspiration in our partners – individuals, groups and organisations. Their dedication and readiness to pitch in and help, for instance, enabled us to quickly provide medical-grade surgical masks to low-income families and individuals at the height of the contagious Omicron variant.

We also observed that many ground-up efforts sprang up during the pandemic. They form a landscape of loose polycentric networks which grew organically, driven

simply by compassion and a common desire to help others. We should sustain and nurture these networks so that they may continue and grow beyond the pandemic. They were seeded in adversity and can grow strongly to foster resilience and a culture of care within our society.

I am glad that Temasek Foundation is now managing the Oscar fund, which was set up specifically by Temasek Trust to support such spontaneous ground-up initiatives by many “ordinary” people to help people in need during the pandemic. The Oscar fund will ensure that such initiatives can continue to be supported beyond the pandemic.

## How will Temasek Foundation tap the potential of these various networks to meet more needs?

We have established two new units – **Community Networks & Partnerships** and **Institutional Relations & Partnerships**. They are set up to be a resource to oversee, grow and coordinate the management and development of partnerships in our existing networks, including domestic and international institutional entities. These units will hopefully allow us to acquire an overall and comprehensive awareness of our various domains and the partnership networks residing within them.

We have also brought our programming capabilities in the various domains to come under one unit. Again, this allows overall central awareness of the landscape of what we do and the partners we work with. This structure will allow us to discover new areas of needs and opportunities for synergies. It will also enable the ease of cross-deployment and development of staff talent within the whole Temasek Foundation community.

## In 2022, Temasek Foundation lost our Deputy Chairman, Mr Richard Magnus. What legacy did he leave behind?

Speaking personally, Richard was a joy to work with. I am sure many others in the Temasek Foundation family felt the same.

Richard was always passionate and devoted to improving the well-being of the community, in particular children and seniors. He introduced many new models of care to improve the quality of life of these individuals

and their families. He did all this in a manner that was quintessentially him – measured, balanced and always kind – never putting anyone down but giving everyone a place at the table to participate.

For me, his legacy is showing us, by the way he lived his life, just what “good” looks like. Richard will be sadly missed for a long time to come.



## In conversation with Our CEO, Ng Boon Heong

“ ———

The journey of learning and growing as one Temasek Foundation continues, and we will rise to opportunities and challenges together with passion and dedication.

——— ”



### 2022 has been a year of gradual reopening for most countries after the pandemic. How would you describe the year for Temasek Foundation?

As societies reopened, we were able to do more as we path find solutions for the betterment of people and planet in partnership with our stakeholders and communities.

2022 has so far been an exciting and positive year for us.

Firstly, we were able to support more innovative and catalytic programmes. This means that the programmes are not only impact-focused, but we also endeavour to encourage the community to take active action so that the change can be sustainable.

We launched the inaugural Philanthropy Asia Summit to convene philanthropists in Asia and beyond to share different models of giving and be connected through collective calls-to-action. We also hosted four Temasek Shophouse Conversations that saw the public, private and community sectors coming together to forge new multi-sector partnerships.

This year, we made working with the community and our partners a key priority so that together, we can collectively multiply our impact.

### Our Programmes As Community Catalysts

#### Social Resilience Programmes

Up to 50% of these programmes have been mainstreamed for the wider community in Singapore, thus benefitting more people.

#### Building Bridges and International Collaboration Programmes

40% of the total programmes' cost was co-funded by community stakeholders, showing mutual commitment and ownership.

#### Liveability and Innovation Programmes

Every \$1 we funded attracted nearly \$10 in follow-on funding by community stakeholders.

### What are some of the post-pandemic challenges that Temasek Foundation aims to address?

We identified these areas of need, which will guide present and future developments of our programmes going forward:

#### Emerging Trends

These are issues that are gaining attention in society and must be addressed early. Some examples are digital inclusion, food and resource scarcity, and mental health.

#### Enduring Issues

These are challenges that persist despite global attempts to address them. Some examples include dengue and chronic diseases like diabetes.

#### Existential Challenges

These are problems relating to human existence. Some examples are climate change, pandemics, and declining social cohesion.

To find solutions, we will strengthen synergies with the wider Temasek Non-Profit Ecosystem as well as other philanthropic partners. Together, we can develop holistic programmes that better serve the needs of the community in Singapore and beyond.

We are humbled by the trust and collaboration with our partners to carry out these programmes and grateful for their acknowledgement in the past year.

## Recognition Awards



### 2022 Order of Altan Gadas (Mongolia)

In recognition of Temasek Foundation's support of programmes in Mongolia in areas such as Technical and Vocational Education and Training, public healthcare, and housing development.



### 2021 Presidential Kaanib ng Bayan Award (Philippines)

In recognition of Temasek Foundation's contributions to support efforts in managing the COVID-19 pandemic in the Philippines.



### Appreciation Award by Her Majesty Seri Paduka Baginda The Raja Permaisuri Agong Tunku Hajah Azizah Aminah Maimunah Iskandariah (Malaysia)

In appreciation of Temasek Foundation's contribution to the Girl Guides Association Malaysia to prepare the community for natural disasters.

## How has Temasek Foundation evolved since its organisational restructuring in 2020?

The world now knows that life can change very quickly and unpredictably. The pandemic, which happened alongside our restructuring, taught us a lot and we emerged stronger from it.

During the pandemic, we were able to rally volunteers and corporate partners in COVID-19 projects such as face masks and sanitiser distributions in the community. This revealed the spirit of our networks and showed us the importance of preparing ahead. The newly formed **Community Networks & Partnerships** and **Institutional Relations & Partnerships** functions will focus on building and expanding these networks and relationships.

We will keep sharpening programme evaluation through our Impact & Outcome Measurement Framework, which also helps the community to better understand our impact and inspires confidence in the work being done. The framework will improve decision-making, accountability, and the communication of results.

These efforts will shape Temasek Foundation in the immediate years ahead. The journey of learning and growing as one Temasek Foundation continues, and we will rise to opportunities and challenges together with passion and dedication.



## In Memoriam: A Tribute to Mr Richard Magnus

(1944-2022)

Former Deputy Chairman,  
Temasek Foundation and  
Chairman, Temasek Foundation Cares



Richard made a lasting difference in improving the lives of the vulnerable and the well-being of the Singapore community. In Temasek Foundation, he introduced and championed new social models of care which brought real and impactful changes to the quality of life of both individuals in need, and their caregivers. He personally lobbied and tirelessly galvanised many public agencies to work together to test-bed new care models which address emerging and latent needs.

Richard had a personal interest in helping vulnerable children. Among the many children intervention programmes which he spearheaded, a particular one that stood out was to build the capability of Singapore therapists in handling child trauma, so that vulnerable children could be provided with timely and appropriate interventions.

He secured support from the Temasek Emergency Preparedness Fund from Temasek to develop the concept of Emergency Preparedness, under the Stay Prepared initiative. Under this initiative, several key programmes were launched to help prepare and build the resilience of Singapore residents during emergencies; this proved timely and invaluable in the face of the COVID-19 pandemic.

Richard spent a lifetime in the service of others. He had a heart for people, and he constantly sought to create a positive change in society which he always did with integrity, honour, fair-mindedness and compassion. His more than 50 years of public service invariably touched, in one manner or other, the lives of countless Singaporeans.

We are honoured to have been able to work alongside him, witnessed his passion for social causes, and benefitted from his leadership in the pursuit of the common cause to do good for all. He will be fondly remembered as a kind mentor, an inspiring leader and a friend we dearly missed.

## COVID-19 Initiatives

# A Race Against Time to Fight a Deadly Virus

“This has been a tough fight. With each new wave, we had to move quickly and adapt. Every time we thought we had the pandemic under control, the virus surprised us.”

Singapore’s Prime Minister Mr Lee Hsien Loong

In the face of a pandemic of epic proportions, communities came together and stayed resilient to tide through the greatest crisis of our generation.

The distribution of essential items such as reusable masks, surgical masks, oximeters and hand sanitiser

became synonymous with Temasek Foundation’s Stay Prepared programme, designed to keep the Singapore community safe and protected through the pandemic. Beyond Singapore, we continued to reach out to our neighbours through the provision of essential and medical supplies.

### Enhancing Emergency Preparedness in Singapore and the Region

#### #StayMasked



Staying masked is a critical step in keeping communities protected against the COVID-19 virus. Since the start of the pandemic, Temasek Foundation has distributed disposable and reusable masks to residents in Singapore.

In 2022, over 3 million reusable masks were redeemed through vending machines located across Singapore. Some 730,000 boxes of medical-grade surgical masks were collected by Singapore residents on health assistance or public assistance schemes.

### Care Packs for Healthcare Workers



In appreciation of healthcare workers who selflessly dedicated their time at the frontlines, Temasek Foundation distributed more than 88,000 care packs to public healthcare workers from SingHealth, National Healthcare Group and the National University Health System.

The care packs consisted of items such as throat sprays and medical-grade surgical masks, as well as special discounts to local attractions.

Annual corporate cards to visit Singapore Zoo, Night Safari and Gardens by the Bay (Flower Dome, Cloud Forest and the OCBC Skyway) were also gifted to the three public healthcare clusters.

### Keeping Young Children Engaged During Quarantine



When the COVID-19 virus started infecting more children, many of them had to be quarantined in isolation facilities. To reduce the anxiety of isolation for these young children, Temasek Foundation partnered with KK Women’s and Children’s Hospital (KKH) to provide care packs for children of various age groups. These packs comprised activity kits, books, toys and games specially curated by the Child Life Therapy team that helps to support children and families during their stay in the hospital.

The items in the kits helped the children to be meaningfully engaged while serving out the quarantine period. Between December 2021 and May 2022, some 940 children have benefitted from these care packs.

Supporting International Efforts



Beyond helping the Singapore community cope with the pandemic, Temasek Foundation also supported the international community by providing medical equipment and essential supplies.

Together with the Embassy of the Republic of Indonesia in Singapore, Temasek Foundation provided masks, personal protective equipment, Polymerase Chain

Reaction (PCR) test kits, and medical equipment to support Indonesia's efforts in providing care for its citizens.

In 2021, more than 12,500 oxygen concentrators were distributed to hospitals in Indonesia through the support of co-sponsors from Indonesia and Singapore's business communities.



Temasek Foundation also supported the Philippines through the delivery of medical and essential equipment, including the supply of food packs and financial aid to various communities. More than 700 oxygen concentrators and 2 million reusable masks

were provided to medical frontline staff and the Filipino public. Temasek Foundation was awarded the 2021 Presidential "Kaanib ng Bayan Award" by the Office of the President of the Philippines, in recognition of our contributions.



Working with the Girl Guides Association Malaysia (GGAM), Temasek Foundation provided 5,000 cube tents to all the GGAM branches in Malaysia and its network of partners and relief centres. The cube tents will help GGAM serve the community when natural disasters occur. In appreciation of our contribution, Temasek Foundation was presented an award by

Her Majesty Seri Paduka Baginda The Raja Permaisuri Agong Tunku Hajah Azizah Aminah Maimunah Iskandariah Binti Almarhum Al-Mutawakkil Alallah Sultan Iskandar Al-Haj, the Royal Patron of GGAM.



In India, the federal and state governments across the country distributed medical equipment provided by Temasek Foundation to residents.

These included more than 8,300 oxygen concentrators, as well as ventilators, oximeters, and surgical masks.

# Our Contribution to the United Nations Sustainable Development Goals



The United Nations (UN) Sustainable Development Goals (SDGs) are a collection of 17 global goals designed to achieve a better and more sustainable future for all. They serve as a blueprint to guide our roadmap in building a more peaceful and prosperous future for our communities, and protecting our planet for the future.

Temasek Foundation aims to do good through programmes that strengthen social resilience and uplift lives, foster international exchange, enhance capabilities, and advance science for a sustainable world. Guided by the 17 UN SDGs, our programmes strive towards achieving positive outcomes for individuals and communities now, and for generations to come.

## Human Papillomavirus (HPV) Immunisation Programme

**Programme Theme**  
Healthcare & Well-being

**About the Programme**  
Encouraging women to get vaccinated against HPV

**Partner**  
Singapore Cancer Society



## Parkinson's Disease Community Care Programme

**Programme Theme**  
Healthcare & Social Support

**About the Programme**  
Supporting patients with Parkinson's Disease and their caregivers

**Partners**  
National Neuroscience Institute  
Singapore General Hospital



## Enhanced AED-on-Wheels Programme

**Programme Theme**  
Emergency Preparedness

**About the Programme**  
Equipping more Community First Responders with AEDs in their vehicles

**Partner**  
Singapore Civil Defence Force



## ParentWise

**Programme Theme**  
Maternal Health & Child Development

**About the Programme**  
Nurturing a generation of confident parents and caregivers through evidence-based parenting tips

**Partner**  
Families For Life



## Food Industry 4.0 and Supply Chain Programme

**Programme Theme**  
Food Security

**About the Programme**  
Improving food productivity and supply chain capabilities with Industry 4.0 principles in KEPRI, Indonesia

**Partners**  
Riau Islands Provincial Government, Indonesia  
Republic Polytechnic



## Field Hospital Design and Management for Pandemic Response Programme

**Programme Theme**  
Disaster Management & Response

**About the Programme**  
Training healthcare professionals in South Asia to better prepare for future pandemics

**Partner**  
Singapore Health Services



## Science, Technology, Engineering and Mathematics (STEM) Programme

**Programme Theme**  
Education

**About the Programme**  
Enhancing STEM curriculum development for educators in Malaysia

**Partners**  
Ministry of Education, Malaysia  
National STEM Association, Malaysia  
Singapore Science Centre



## Carbon Dioxide Removal from Seawater

**Programme Theme**  
Decarbonisation

**About the Programme**  
Using electrochemical process to convert carbon dioxide in oceans into useful materials

**Partner**  
SeaChange



## Producing Clean and Sustainable Lithium

**Programme Theme**  
Circular Economy

**About the Programme**  
Recycling lithium batteries to produce battery-grade raw materials sustainably

**Partner**  
NEU Battery Materials



## Plant-Based Egg Substitute

**Programme Theme**  
Sustainable Food Production

**About the Programme**  
Scaling up the development of Asia's first plant-based whole egg substitute

**Partner**  
Float Foods



## Mangrove Conservation and Restoration Through Climate Smart Aquaculture

**Programme Theme**  
Nature-based Solution

**About the Programme**  
Piloting a conservation model for the protection and sustainable restoration of mangroves

**Partners**  
Yayasan Konservasi Alam Nusantara (YKAN)  
Sinar Mas Group  
UBS Optimus Foundation



## Synergies in Communities

# Eradicating a “Silent Killer” in Singapore with Vaccination

“The thought of getting cervical cancer has never crossed my mind,” said Farhana Juhar emphatically. But she was spurred on to take the human papillomavirus (HPV) vaccine to protect herself against cervical cancer even though she had some concerns about the vaccination.

“I read about a cervical cancer advocate who encouraged men and women to get their HPV vaccination. She shared how her experience with cervical cancer affected her fertility significantly and because of that, I felt compelled to act and not be complacent,” explained the 22-year-old computer science undergraduate, whose mother also supported her decision to receive the vaccination.

Farhana is one of the beneficiaries of the Temasek Foundation HPV Immunisation Programme, developed in partnership with the Singapore Cancer Society (SCS), that provides the HPV vaccine at no cost to eligible women from low-income families.

As a blue Community Health Assist Scheme (CHAS) card holder, Farhana did not have to pay for her HPV vaccination.



## Overcoming Cervical Cancer



Like Farhana, 39-year-old Lilian Tan did not know much about cervical cancer. So, it came as a shock when she was diagnosed with cervical cancer at the age of 36 in 2019.

“I had no pain, no symptoms at all. I even had regular menstruation,” shared the bubbly mother of two. She also felt the fittest she had ever been in her life – exercising regularly because of her job as a part-time wellness coach.

At that time, Lilian had spontaneously signed up for a full health screening package as a birthday gift to herself, but her Pap smear results showed that there were abnormal changes in the cervical cells, and further tests later indicated the possible presence of HPV.

Unfortunately, Lilian was subsequently diagnosed with early-stage cervical cancer.

To prevent the cancer from spreading, Lilian went for a radical hysterectomy – a surgery to remove her uterus, fallopian tubes, and some tissues around her cervix. While the surgery was a life-saving procedure, Lilian is no longer able to have more children.

With hindsight, she now encourages individuals to be vaccinated against cervical cancer and go for regular check-ups.

Reflecting on her health scare, she shared, “I felt angry. Why did I neglect my own body? Why didn’t I go for a check-up earlier so that I would not have to go through surgery and recovery?”

“Who knows, if I had the HPV vaccination, I would still have my womb and maybe have a few more kids,” she said regretfully.

## A Cause for Concern

According to Dr Timothy Lim, Chairman of the SCS Women's Gynaecological Cancer Awareness Committee, cervical cancer is cause for concern in Singapore. As one of the top 10 cancers affecting women in Singapore, cervical cancer is also the fourth leading cause of death in women between the ages of 15 and 44.

Research has shown that HPV vaccination is effective in reducing the incidence of pre-cancer and cervical cancer. Yet, despite the vaccine's effectiveness, many women are still not vaccinated.

A survey commissioned by Temasek Foundation found that the HPV vaccination rate was low at 19.2%. This figure was even lower among the low-income groups, with cost and vaccination location accessibility as key deterrents to getting vaccinated.

"For the HPV vaccine to be effective, it is important to be vaccinated when you are young. In fact, as early as nine years old," added Dr Lim.

"The earlier you take the vaccine, the better it is."

Watch highlights of  
Eradicating a "Silent Killer" in Singapore  
with Vaccination



## Temasek Foundation Human Papillomavirus (HPV) Immunisation Programme



The Singapore Cancer Society and Temasek Foundation launched the Temasek Foundation HPV Immunisation Programme to encourage women to be vaccinated.

Unvaccinated Singaporean women between 18-26 years old with Blue or Orange Community Health Assist Scheme (CHAS) cards, and female CHAS card holders between 27-45 years old who have received their first dose, are eligible for this programme. The vaccination is available at 300 General Practitioner clinics islandwide. Close to 31,000 women are expected to benefit from it.

Recognising the importance of HPV infection prevention, the Ministry of Health started to provide HPV vaccination to all 13-year-old females in mainstream and special education schools in 2019. The Temasek Foundation HPV Immunisation Programme complements this national initiative by providing the vaccination to females within the recommended age range but who were not able to benefit from the school-based HPV vaccination programme.

## Synergies in Communities

# Empowering Societies

### Enabling More Community First Responders



Every minute counts when it comes to saving individuals who suffer from cardiac arrest. According to the Singapore Heart Foundation, the survival rate of a person with cardiac arrest increases by as much as 50 per cent when promptly treated with Automated External Defibrillators (AEDs) or cardiopulmonary resuscitation (CPR).

To treat cardiac arrest patients more quickly, Temasek Foundation partnered with the Singapore Civil Defence Force on the Enhanced AED-on-Wheels programme to equip more Community First Responders (CFRs) with AEDs. Chin Kai (pictured left) has been a CFR for five years. He encourages everyone to get trained in CPR to save lives.

175 CFRs, comprising civilian drivers with private vehicles, will be provided with AEDs over a three-year period from 2022. With AEDs in their vehicles, these CFRs can respond quickly to cardiac arrest cases near them, thereby improving the person's chances of survival.

### A Helping Hand for People with Parkinson's Disease and Their Caregivers



Parkinson's disease is an incurable condition that robs individuals of their ability to eat, walk and talk properly. People with Parkinson's (PwP) often experience symptoms such as slow movements, slurred speech, stiffness and shaking limbs. As the disease progresses, these individuals become increasingly reliant on their caregivers to keep track of their complex medication regimens, which can include as many as

15 pills a day. This in turn increases the burden and stress the caregivers face.

Supported by Temasek Foundation and in partnership with the National Neuroscience Institute and Singapore General Hospital, the Parkinson's Disease Community Care Programme is a pilot programme which aims to improve patient well-being and reduce unplanned visits to hospitals and caregiver burn-out. The programme includes phone or video consultation, home visits by SGH community nurses and Community Nurse Posts where PwP and caregivers can visit.

A clinical team will also monitor the PwP's conditions closely and provide timely advice and support in between their hospital appointments to improve the patients' well-being and ease the load on caregivers.

### Supporting New Parents with Evidence-Based Tips



ParentWise aims to nurture a generation of confident parents and caregivers through easy-to-use and evidence-based parenting tips. These tips were specially developed for new parents and parents with young children in Singapore.

The tips were based on the Temasek Foundation Early Childhood Compendium compiled by SEED Institute which focused on five key childhood development domains. Parents can refer to the tips on the ParentWise website.

There were also group-based sharing sessions, called WiseGroups, led by parenting experts, facilitators, and fellow parents. A total of 274 parents attended these sharing sessions, and they also participated in a four-week long WiseJourney programme where they learnt about self-care and socio-emotional learning in children.

## Synergies in Partnerships

# Collaborating for Better Food Security

With many countries relying on exports for their food staples, food security becomes a key concern when they face difficulties in the production and distribution of food. With climate change, economic and geopolitical challenges threatening food production and supply, governments need to plan ahead to proactively mitigate these risks.

For land-scarce Singapore, close to 90% of its food is imported making it vulnerable to international supply chain disruptions. To ensure its food security, Singapore diversifies its food sources and aims to produce 30% of its food by 2030 as a buffer against supply disruptions.

Indonesia's largest province, Riau Islands (also known as Kepulauan Riau or KEPRI in short) is also actively looking for solutions to increase its food production and improve its supply chain resilience to feed its population of 2.1 million people.

Dr H. Syamsul Bahrum, the Assistant for Economic and Development Affairs of the Provincial Government of Riau Islands, shared that KEPRI has gradually shifted from an agricultural economy to an industrial-based one now.

"85% of our population work in industrial sectors like tourism. About 1-3% of the population work in the agriculture and fishery sectors," said Dr Syamsul.

"There is a shift from agriculture to modern sectors: from farm jobs to industrial sectors. If people have a choice, they prefer working in the urban area." As a result of these changes, less arable land is used for growing crops – a challenge to KEPRI's goal of increasing its agricultural productivity and output for export. But the KEPRI government believes that technology can overcome this challenge.

Elaborating, Dr Syamsul said: "KEPRI is made up of 4% land and 96% water – and in agriculture, you need land, not water. So, we need to use technology and engage in capital-intensive agriculture instead of traditional agriculture."



At the same time, increasing food production can reduce KEPRI's vulnerability to supply disruptions, while improving its economic status as a food exporter, and the livelihoods of its farmers and fishermen.

With that in mind, the KEPRI government has partnered with Temasek Foundation and Singapore's Republic Polytechnic to share perspectives on innovations and technology affecting food security and supply chain.

“ We are cooperating, rather than competing. When we work together, we try to achieve mutual benefits like information transfer,” Dr Syamsul explained.



Through the programme, leaders, provincial government officials, entrepreneurs, and industry practitioners from Riau Islands will learn more about the latest technologies such as the Internet of Things, augmented reality, cloud and blockchain, and apply them to raise the level of food production in KEPRI.

The programme, comprising six workshops covering topics on digital transformation, sustainable urban farming, and aquaculture, will be conducted at Republic Polytechnic in Singapore and 16 institutions in Indonesia.

Dr Syamsul believes that the programme will be beneficial as peers from Indonesia and Singapore exchange insights and share learnings.

Dr Terence Chong, Director of International Relations at Republic Polytechnic, believes that technology, such as the LEAN methodology could be applied to overcome challenges posed by traditional agricultural practices. Some of these technologies could be adapted to support KEPRI's agriculture and aquaculture industries to overcome land constraints, grow crops more effectively and improve food resilience.

Watch highlights of Collaborating for Better Food Security



### Food Industry 4.0 and Supply Chain Programme in Riau Islands, Indonesia



In partnership with the Provincial Government of Riau Islands and Republic Polytechnic, Temasek Foundation is supporting the capability development of public officials and training institutions in Riau Islands on urban agriculture technology and aquaculture with Industry 4.0 principles. These include digital transformation, 3D printing, and the Internet of Things. Some 24 leaders and 120 provincial public officials, entrepreneurs and industry practitioners will participate in the programme and exchange insights with their peers from Republic Polytechnic and other food and technology organisations in Singapore.

## Synergies in Partnerships

# Exchanging Perspectives, Fostering Collaborations

### Staying Prepared Against Future Pandemics

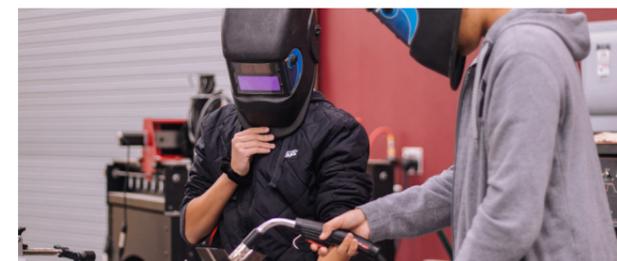


The COVID-19 global situation has heightened the need for countries to collaborate and better prepare their healthcare systems to withstand future pandemics. To increase the resilience of healthcare systems in South Asia,

Temasek Foundation partnered with Singapore Health Services to design a training programme on field hospital design and pandemic response management. The programme focused on the rapid response needed during the onset of a pandemic – particularly the set-up and clinical management of community healthcare facilities, hospital infrastructure design and facilities planning.

A three-day programme was conducted online in December 2021. It covered topics such as Singapore's pandemic response and management, designing and managing temporary isolation facilities, and future facility design for unknown disease outbreaks. Some 120 healthcare professionals from India, Sri Lanka, Bangladesh, and Nepal participated in the programme.

### Empowering Future Generations Through STEM



As the demand for Science, Technology, Engineering and Mathematics (STEM) talents in the world increases, there is a need for educators to incorporate hands-on learning in the classroom to develop students' interest and skills in these areas.

Together with Singapore Science Centre and Malaysia's Ministry of Education and its National STEM Association, Temasek Foundation is supporting a STEM curriculum development programme for educators in Malaysia.

Since November 2021, more than 150 educators in Selangor, Kelantan and Sabah have been developing a STEM curriculum for their respective schools, focusing on hands-on learning and the application of knowledge to solve real-world challenges through STEM, using the fundamentals of 2D and 3D design, and basic block programming.

### Raising the Bar of Asian Journalism



Since 2009, Temasek Foundation has been supporting the Asia Journalism Fellowship (AJF) Programme by bringing together seasoned journalists from Asia to develop capacities, build networks, and deepen their understanding of Asia.

Due to the COVID-19 pandemic disruption, the 2021 programme was conducted online from 16 August to 22 September 2021, instead of the typical three-month residency where the journalists would live, learn and work together in Singapore. A total of 17 journalists participated in the 2021 programme, where expert speakers including 2021 Nobel Prize Winner Ms Maria Ressa, the co-founder of Philippine online news site Rappler, shared perspectives on a wide range of topics such as diplomacy, climate change and public health.

10 AJF alumni from different cities also stepped up as mentors to the new fellows, conducting virtual city tours and bonding sessions, while others joined as guest speakers to share their professional experiences.

## Synergies in Innovations Engineering a SeaChange in Carbon Management

Changing weather patterns cause disruptions to the balance of nature, resulting in extreme weather events like heat waves, severe storms, flooding, drought and warm, rising ocean levels.

The biggest culprit for climate change?  
Carbon emissions.

To Gaurav N. Sant, a professor of engineering at the University of California, Los Angeles, large-scale removal of carbon is the most important challenge that we must tackle in the coming decades.

“Carbon dioxide accumulation in the atmosphere is the origin of climate change. This is a problem about 200 years in the making, since the start of the Industrial Revolution, when we began making steel and burning fossil fuels to produce energy. Every year, we emit 40

billion tonnes of carbon dioxide into the atmosphere,” said Gaurav, whose team won The Liveability Challenge 2021 for their carbon capture solution.

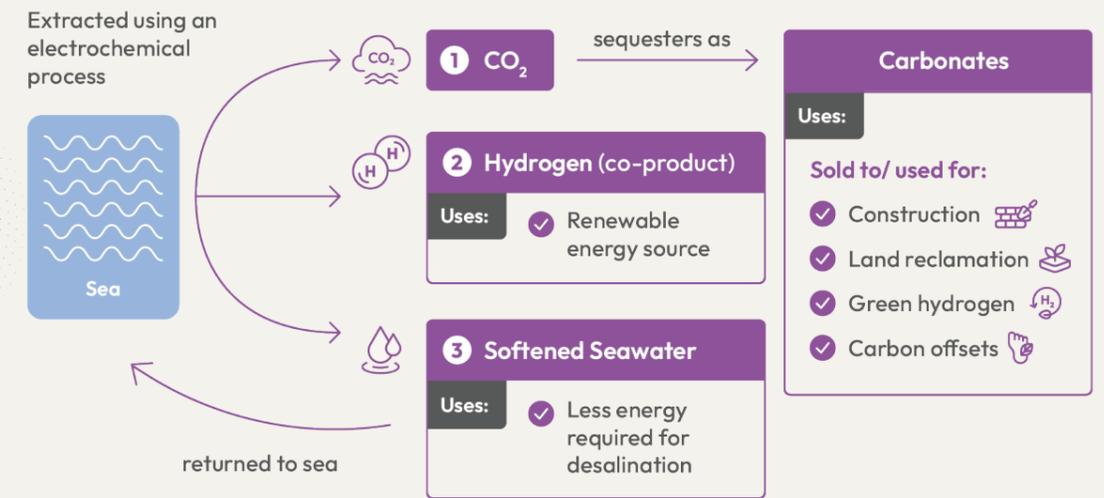
Yet, it can be difficult to change our lifestyles to reduce carbon emissions after becoming accustomed to the modern benefits that cause it. According to Gaurav, the issue of carbon emissions is challenging to resolve with current carbon management solutions which are expensive and difficult to scale.

For instance, carbon capture and sequestration technologies run the risk of carbon dioxide leakage and provide no useful end products. Capturing carbon dioxide from the air is also not effective as there is a low concentration of carbon dioxide in the atmosphere. The need to compress and transport carbon dioxide also drives up costs.



“Our oceans are the largest sink for man-made carbon emissions. It is also the largest natural system that achieves carbon management. With that in mind, we thought of how to expand the ocean’s ability to absorb carbon dioxide from the atmosphere,” shared Gaurav.

## SeaChange’s solution to extract carbon dioxide from the sea



### Using Nature to Manage Carbon Emissions

These issues motivated Gaurav and his team to develop SeaChange, a solution that converts carbon dioxide in the oceans into stable solids, which can be used to produce value-added materials for use in the construction industry.

Explaining the process, he added, “We pass an electric current through the seawater which allows us to recombine constituents of seawater. This allows us to lock up carbon dioxide permanently and for long periods.”

This process also produces useful by-products such as solid carbonates, hydrogen, and softened water.

These solid carbonates can be used for land restoration, cement, or concrete.

Additionally, the technology achieves circularity because it creates a source of clean energy while removing carbon dioxide emissions. All these can also be implemented on a global scale given the number of oceans.

The softened water produced is also one of the reasons why SeaChange is working with Singapore’s national water agency, PUB, to develop the world’s first carbon extracting desalination plant in Tuas.

### Collaborating for Greater Impact

According to Dr Gurdev Singh, Deputy Director at PUB’s Technology Department, SeaChange’s technology is attractive because it is aligned with PUB’s goals to reduce carbon emissions.

Gurdev came across SeaChange’s technology through Temasek Foundation. Upon realising the synergies between SeaChange’s technology and PUB’s desalination operations, PUB decided to partner SeaChange to trial their technology within their Tuas Research and Development facility.

The pilot allows PUB to determine the best way to integrate SeaChange’s technology into the process of desalinating seawater. At the same time, it also allows both parties to optimise carbon abatement and the resources that can be recovered through the process.

PUB expects to abate 60% of its carbon emissions by 2050 via the use of clean energy and reduce the energy requirements for water treatment processes. Carbon removal solutions, including SeaChange’s pilot decarbonisation system, can help to remove the remaining 40% of PUB’s carbon emissions in the future.



For Gaurav, partnering PUB allows SeaChange to experiment with the right deployment strategy. He expects to have an operational demonstration system in Singapore by the first quarter of 2023.

In the future, Gaurav hopes to build larger demonstration plants in Singapore and around the world.

“We are trying to reduce the risk of building a full-scale commercial plant by systematically scaling up to work out the kinks along the way,” he explained.

With these goals in mind, Gaurav and his team are continuously engineering a sea change in carbon management.

Watch highlights of Engineering a SeaChange in Carbon Management



## The Liveability Challenge



Presented by Temasek Foundation, The Liveability Challenge is a global platform that seeks ground-breaking solutions to tackle pressing sustainability issues. Finalists are given up to S\$1 million to fund their game-changing solutions.

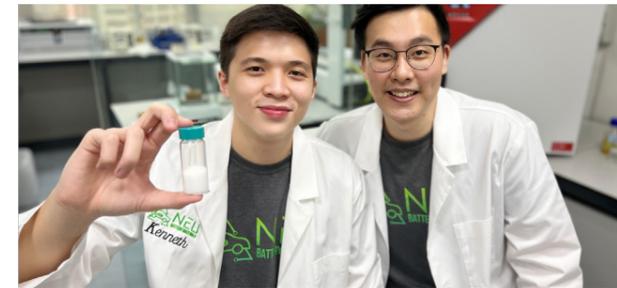
### Past Winners of The Liveability Challenge

- 2018: RWDC Industries for its biodegradable straws
- 2019: Sophie's Bionutrients for producing protein from microalgae using food manufacturing by-product
- 2020: TurtleTree for its cell-based milk production

## Synergies in Innovations

# Advancing Science for a Sustainable World

### A NEU Type of Lithium Battery

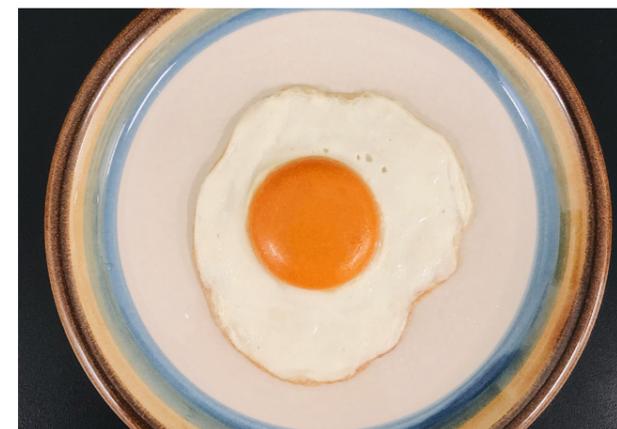


As the demand for electric vehicles soars worldwide, there is a severe shortage of lithium to make batteries that power these vehicles. Recycling lithium-ion batteries can solve this problem, but current recycling methods are costly, difficult to scale and often pollute the environment.

Supported by Temasek Foundation, Singapore start-up NEU Battery Materials aims to recycle lithium batteries to produce battery-grade raw materials. Its patented scalable technology uses electrochemical separation to recycle lithium batteries in a clean and sustainable manner.

This solution produces close to zero waste and minimal carbon emissions. It also creates a circular value chain and reduces the supply risks for lithium batteries. NEU Battery Materials is currently building a pilot plant to process the batteries in Singapore. It expects to begin commercialising its solution by 2023.

### Shoring up Singapore's Food Security with Innovative Technology



Float Foods, a food technology start-up, has created Asia's first plant-based whole egg substitute called OnlyEg. OnlyEg contains as many proteins and vitamins as a whole chicken egg and is compatible with various diets, such as those for vegans and egg intolerance.

Recognising that Float Foods' invention can help build a more secure food system, Temasek Foundation supported the start-up to scale up the development of OnlyEg, by improving its protein content and increasing its shelf life. The egg substitute is expected to be available in Singapore supermarkets by 2023.

### Mitigating Climate Change Through Mangrove Restoration



Indonesia has about 3 million hectares (30,000 km<sup>2</sup>) of mangrove forests growing along its 95,000 km coastline, which accounts for 23% of all global mangrove ecosystems. Protection and restoration of mangroves is one of the most important nature-based solutions to address climate change. It can also improve coastal ecosystems and community livelihoods.

Temasek Foundation partnered Yayasan Konservasi Alam Nusantara (YKAN), Sinar Mas Group and UBS Optimus Foundation to pilot a model for the protection and sustainable restoration of mangroves in the Ogan Komering Ilir (OKI) Regency in South Sumatra and provide benefits to the community through climate-smart aquaculture practices.

## Youth Programmes

# Nurturing a New Generation of Resilient Leaders

Through our youth programmes, Temasek Foundation has been engaging and supporting aspiring youth leaders in their interest and passion to do good and contribute to the community.

These initiatives include building the mental resilience of youths, nurturing their artistic and sporting talents,

as well as inculcating their interests in areas like sustainability and climate change. Through regional exchange programmes, youths from Singapore and across Asia can connect, share experiences and build friendships with their peers in the region.



### Arts Development Award

The Arts Development Award, jointly supported by Temasek Foundation and the School of the Arts (SOTA), aims to nurture the talents of primary school students from lower-income families who show artistic potential. The funding supports these young students to participate in arts enrichment classes

in areas such as traditional musical instruments and drama enrichment programmes.

Seow Yue Tong (top), a third-year Visual Arts student at SOTA is one of the Award recipients. With the funding, Yue Tong can better focus on honing her artistic talents. She enjoys experimenting with different visual arts mediums such as ceramics and oil painting in school.

### Temasek Foundation Inspire Fund for Athletes

High-performance sports training is often costly and challenging for young athletes to manage in their quest to be the best in their field. In partnership with Sport Singapore, the Temasek Foundation Inspire Fund for Athletes was set up in January 2021 to help aspiring Singapore sportspersons to achieve their sporting ambitions.

Kickboxer Nazri Sutari and Ju-jitsu exponents Fiona Toh and Oon Zi Gui credit the Inspire Fund for supporting them to participate in overseas training and competitions without worrying about the expenses. "When I got the help from the fund, I could actually afford to go for a training camp in Europe," said Nazri who noted that the camp was crucial to improve his technical skills. He has since won a silver and a bronze medal at the Serbia Open 2022 – a first for a Singaporean.



## #WeGotThis



Launched in September 2021, #WeGotThis (WGT) is a global youth sustainability incubator programme to empower youths to advocate for sustainability utilising the reach of social media. The programme is a collaboration between Temasek Foundation, the World Wide Fund for Nature Singapore, media platform Green Is The New Black and advertising agency Grey Singapore.

WGT comprises masterclasses by industry experts, boot camps, a six-month practicum and mentorship programme to help youths better understand issues

such as climate change, sustainability, innovation, living consciously and more.

The 2021 run of the programme attracted over 400 youths from around the world who attended the masterclasses, with guest speakers such as sustainability experts Ms Melissa Low and Mr Boris Le Montagner who shared insights on climate change and more. A total of 65 teams, comprising 89 youths, were selected to join the WGT incubator boot camp from 4 to 8 September 2021.

## Raising Awareness of Youth Mental Health



The "Truths About Us" is a 10-episode Chinese drama about a group of youths with mental health struggles. The drama, commissioned by Temasek Foundation, aims to raise awareness about mental health issues in

the community. Through the drama, viewers can learn to empathise with people facing mental health issues, how to support them and the resources available.

## Temasek Foundation-NUS Youths for SG: Building a Shared Future



To support youths in developing their strengths and interests, Temasek Foundation partnered with the National University of Singapore's School of Continuing and Lifelong Education to initiate a programme for youths to learn more about new technologies like quantum computing.

The programme also encourages participants to build their desired Singapore through games and activities like placemaking. In November 2021, a pilot three-day programme was conducted with 40 students from Yio Chu Kang Secondary School.

## Young Sustainability Champion



Launched in 2020, the Young Sustainability Champion programme is an annual competition that aims to raise awareness about sustainability and empower students to develop creative solutions based on environmental science and innovation. The programme is organised by Science Centre Singapore and supported by Temasek Foundation.

The 2021 run of the programme which focused on food sustainability issues in Singapore, attracted more than 10,000 students from over 70 schools,

with 200 students progressing to the mentorship and prototyping stage.

Team Carbs and Team Sustainability Champs eventually emerged as the champions in the Junior and Senior Top Teams respectively for their creative solutions to tackling food waste.

## ABOUT TEMASEK FOUNDATION

Temasek Foundation supports a diverse range of programmes that uplift lives and communities in Singapore and beyond.

Temasek Foundation's programmes, made possible through philanthropic endowments gifted by Temasek, strive towards achieving positive outcomes for individuals and communities now, and for generations to come.

Collectively, our programmes strengthen social resilience, foster international exchange and regional capabilities, advance science, and protect the planet.



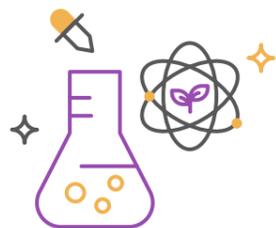
### Strengthening Social Resilience and Uplifting Lives

We endeavour to build a more resilient, harmonious and inclusive society in Singapore. Our outcome-focused programmes help to enhance our social fabric by supporting individuals, strengthening families and uplifting communities. We pilot programmes and research as well as support programmes that promote culture, heritage and values to benefit current and future generations.



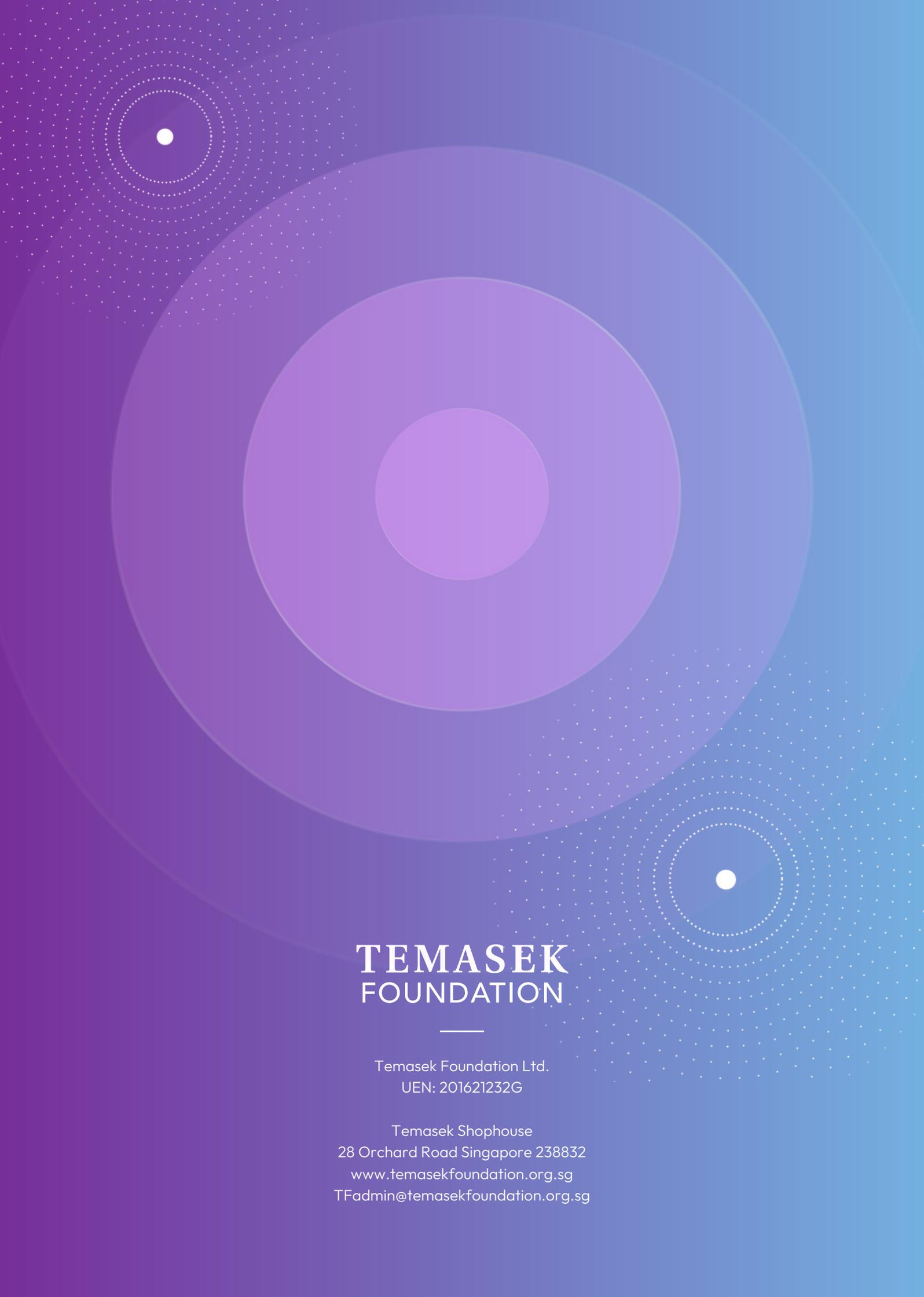
### Fostering International Exchange and Enhancing Regional Capabilities

We connect people through programmes that promote dialogues, mutual understanding and a more inclusive worldview. Our programmes also advance capability and capacity in areas such as healthcare, education, public administration, urban management, and disaster response.



### Advancing Science and Protecting the Planet for a Sustainable World

We champion sustainability and support research and education in science, technology, engineering and mathematics, and solution-oriented development projects that contribute to improving liveability. These programmes strengthen research capabilities and promote cross-functional collaboration in areas such as healthcare, education, climate change, wildlife conservation and the circular economy.



# TEMASEK FOUNDATION

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