

TEMASEK
FOUNDATION



**TO DO
GOOD WELL
TOGETHER**

TEMASEK FOUNDATION REPORT 2023

CONTENTS

Key Highlights	01
Chairman's Message	02

Our Leaders

Our Board of Directors, Our Executive Boards, and Our Management Team	04
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Introduction and Video Stories

Introduction ▶	06
Thriving with Dementia through Dance ▶	07
Paving a Circular Future ▶	07
Keeping the Sound of Multiculturalism Alive in Singapore ▶	07
Engineering Independence for Tertiary-educated Adults with Autism ▶	07

Impact Stories

Caring for Mothers and Babies	08
Powering a Renewable Future	14
Nurturing STEM-ready Teachers	20

Feature Stories

Joining Hands to Support Lives of Babies and Families	26
Saving the Earth with Agroforestry	30
Taking Action Together for Pandemic X	34

Key Highlights

Lives Touched

2.5M

Cumulative till
FY22/23

523,500
FY22/23



Programmes

1,480

Cumulative till
FY22/23

123
FY22/23



Total Funding Committed

\$987M

Cumulative till
FY22/23

\$63.5M
FY22/23



Follow-on Funding

Since 2016
\$530M

in follow-on
funding

Attracted by
60
sustainability innovations
funded from \$49M
in TF grants



Caring for People in a Fast-changing World



Mr Benny Lim
Chairman
Temasek Foundation

People are always at the heart of what we do at Temasek Foundation.

The year has been busy and eventful with 123 programmes conducted across close to 100 countries, impacting more than half a million lives. These programmes seek to catalyse growth and resilience, helping people, especially vulnerable groups, to navigate challenges and thrive in this fast-changing world.

We partnered with Trampoline to help persons with autism find suitable employment in the engineering sector and help employers to adapt workspaces and jobs to be more autism-friendly. In total, we are working with 16 employers to place up to 70 persons with autism.

One such happy case is that of Mr Muhammad Fadhlie. A recent graduate from the Institute of Technical Education with a Higher Nitec certificate, he faced difficulty finding jobs after graduating. Through our Growing Alternate Talent for Engineering Sector programme, we matched him with Grand Venture Technology who took him in as a trainee. Fadhlie enjoys attending work and engaging with his co-workers. He has since passed his probationary period and is now a full-time employee.



“

Every generation faces its own set of challenges. But our challenges do not define us – our responses do.



We have also been exploring using the power of music to inspire and uplift persons living with dementia who are often struck by fears and anxiety amidst daily struggles to live as a 'normal' person. We worked with Dementia & Co to organise monthly tea dances in four community centres for them to make friends and connections, and heal through music and social dancing. The ground-up group's founder Mdm Alison Lim, herself a person diagnosed with dementia, bonded in a similar way with her daughter, who is the co-founder. They have since reached out to 600 participants.

We also partnered with the KK Women's and Children's Hospital to provide music therapy for premature babies. Born at 27 weeks weighing just 1 kg with lungs not fully developed, baby Luca along with his parents, Mr Dominic Dass and Mdm Sarah Lithya, are among the 100 expected families to benefit – from baby-focused music sessions to stabilise the baby's vitals, reduce stress levels and increase nutritional intake, as well as parent-focused sessions to not just reduce stress, anxiety and depression, but also improve parent-infant bonding, and encourage the long-term use of music after baby Luca comes home from the hospital.

Every generation faces its own set of challenges. But our challenges do not define us – our responses do. In this regard, we are happy to be able to support the creative passion of people who want to make a difference to make the world a better place for all. One project Temasek Foundation sponsored was by Fairventures Social Forestry, the winner of The Liveability Challenge 2022. The aim of the project is to restore degraded land, sustainably manage forests and improve the livelihoods of farmers and villagers from timber and cash crops. Today Mr Muhammad Rizky Sudirman grows new seedlings to plant new trees in Fairventures' nursery. Together with others in his team, they aim to eventually manage 100,000 hectares and positively impact the livelihoods of more than 250,000 people on the ground. They hope to do their part to make a greener planet for all today as well as future generations.

We are as always inspired and encouraged by the passion and impact of the work of all our partners and friends. We look forward to doing more with them and to find new friends to partner and pursue the simple cause of doing good in the year ahead.

OUR LEADERS

Our Board of Directors



Mr Benny Lim
Chairman
Temasek Foundation



Ms Jennie Chua
Board Director



Mr Goh Geok Khim
Board Director



Mr Koo Tsai Kee
Board Director



Mr Lim Swee Say
Board Director



Mr Quek See Tiat
Board Director



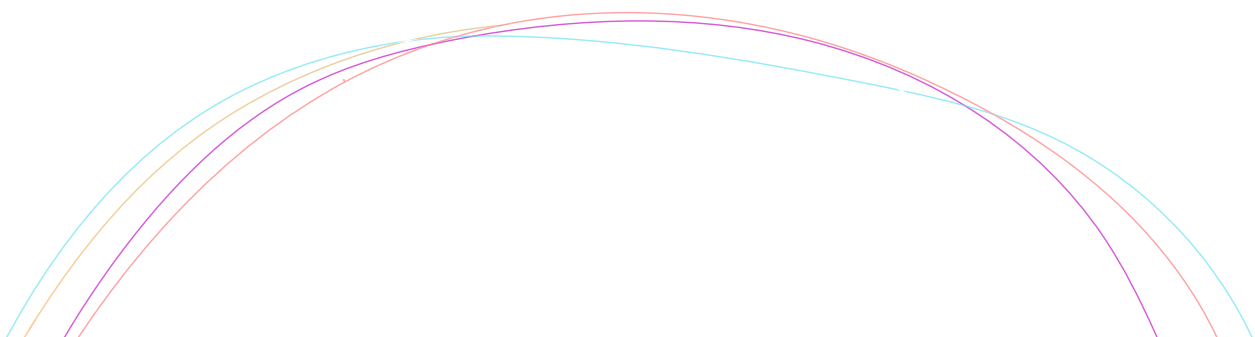
Professor Leo Tan
Board Director



Mr Tan Soo Nan
Board Director



Mr Teo Ming Kian
Board Director



Our Executive Boards

Cares Executive Board

Mr Lim Swee Say
Chairman

Prof Chong Yap Seng
Board Director

Mr Koo Tsai Kee
Board Director

Dr Aline Wong
Board Director

Mr Zainul Abidin Rasheed
Board Director

International Executive Board

Ms Jennie Chua
Chairman

Mr Goh Geok Khim
Chairman Emeritus

Tan Sri Faizah Mohd Tahir
Board Director

Mr Goh Yong Siang
Board Director

Mr Arif Rachmat
Board Director

Mr Tony Tan Caktiong
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

Mrs Trina Loh
Board Director

Ms Janet Neo
Board Director

Prof Quek Tong Boon
Board Director

Mr Rajiv Wahi
Board Director

Our Management Team



Mr Ng Boon Heong
Chief Executive Officer



Mr Benedict Cheong
Deputy Chief
Executive Officer



Mr Amrin Amin
Head,
Corporate Development



Mr Lim Hock Chuan
Head,
Programmes



Ms Woon Saet Nyoan
Head,
Community Networks
and Partnerships



Annual Report 2023 Introduction Video

Temasek Foundation is here to do good well together
– to achieve a lasting and sustainable impact.



Scan to watch
Annual Report 2023
Introduction video



Scan to watch

Thriving with Dementia through Dance

Dance away the fears and anxiety that one might face when confronting dementia! Overcoming the initial grief with the help of her daughter and care-partner, Jamie, Alison Lim now shares the freedom she finds in movement and music with others who are also struggling to live again.

Paving a Circular Future

Can you imagine travelling on roads paved with contaminated plastic waste that is headed for the landfill? With its proprietary technology, Magorium takes an abundant 'resource' - unsorted, unclean plastic waste - and turns it into NEWBitumen, a sustainable alternative with lower carbon footprint. This creates a circular economy for plastic waste by turning trash to treasure.



Scan to watch



Scan to watch

Keeping the Sound of Multiculturalism Alive in Singapore

Singapore is the meeting place of cultures, and out of this tiny city of diversity comes a melting pot of multicultural music.

The Asian Cultural Symphony Orchestra celebrates the diversity in our uniquely Singapore sound, promoting the roots of our people for generations to come.

Engineering Independence for Tertiary-educated Adults with Autism

For persons with disabilities (PWDs) with Autism Spectrum Disorder (ASD), finding jobs in the engineering sector can be a huge hurdle – one that non-profit organisation Trampoline is determined to help them cross.

Meet Kai Xuan, who now works as an assembly technician of a precision manufacturing company, after getting tailored support.



Scan to watch

Caring for Mothers and Babies

The Integrated Maternal and Child Wellness Hub (IMCWH) at SingHealth Polyclinics (SHP) – Punggol



Ensure healthy lives and promote well-being for all at all ages

Reduce inequality within and among countries

End poverty in all its forms everywhere

Introduction

The pilot IMCWH at Punggol Polyclinic in Singapore takes a holistic healthcare approach to enhance care coordination for mothers and young children. Driven by Temasek Foundation's grant of more than S\$2.5 million, it offers support during the most critical stage of a child's development — from birth to three years old.

Together with KK Women's and Children's Hospital (KKH) and SHP, it optimises maternal and child wellbeing in four ways:

- At 18 and 30 months, young children undergo Enhanced Developmental Screening (EDS), using additional screening tools to screen for developmental delays and autism
- Postnatal Depression Screening
- Nutrition and Growth
- Parenting Education

The programme adopts a two-tier approach. The first tier is helmed by a team of trained primary care nurses. At the second tier, specialists and allied health professionals will care for those who require further support.

The pilot model of integrated care at the Integrated Maternal and Child Wellness Hub (IMCWH) located at SingHealth Polyclinics (SHP) – Punggol will soon be rolled out to more polyclinics across Singapore to benefit more mothers and their children. Mother-child dyad services – from vaccinations to developmental screenings – will be available to empower mothers to better care for their babies.

Gap


The IMCHW pilot was initiated to address various gaps in care coordination for expectant mothers and young children.

“We first conceptualised this programme from evidence that the first thousand days are very important for the child’s brain development. It is also a period of vulnerability that offers opportunities for intervention to be effective,” explained Associate Professor Chan Yoke Hwee, Chairman, Division of Medicine, KKH.

Low literacy about nutrition and health is a concern for mothers, so educating them about the postnatal period and how to manage their newborns is critical, as it helps to sooner detect and attend to developmental issues.

During a child’s routine checks in the community, its rudimentary height and weight are recorded, and it receives basic developmental screenings and physical assessments. Although more comprehensive screening tools are available to enable better pick-up rates for developmental issues, these can be operationally challenging to conduct in a fast-paced primary care setting with high patient volumes.

In addition, screening for postnatal depression (PND), which affects up to 15 per cent of new mothers, was not routinely done. Healthcare professionals recognise PND as a serious problem. The sooner they can identify mothers who may be at a higher risk (e.g. past psychiatric history, obstetric complications, complicated delivery), the sooner she can be treated.



More than
14,000
screenings

Referrals increased by
70%
to Child Development Unit
among those aged one to two years

Scaled the IMCWH model to
TWO MORE POLYCLINICS, with plans
to expand to **ANOTHER POLYCLINIC**
by end of 2023



“

After being introduced to IMCWH, I felt very well supported, and I always know that I can approach the nurses during the polyclinic visits, if I need help.

Intervention

To address these gaps, nurses and doctors at Punggol Polyclinic received training by KKH healthcare professionals. This included early identification of children at risk of developmental delays and autism spectrum disorders, and providing postnatal support in areas such as lactation and emotional wellness.

Because polyclinics already provide immunisation and basic health checks for babies, they are able to ramp up these services. Enhanced screenings include an assessment of mothers' mental health and lactation concerns, along with child development, nutrition and child growth.

PND screening and counselling occurs at the two-month mark for mothers, while lactation support is offered from zero to six months. For babies, enhanced developmental screening and nutritional screening take place at 18 and 30 months.



Nurses and doctors at Punggol Polyclinic received training by KKH healthcare professionals. This included:

- Early identification of children at risk of developmental delays and autism spectrum disorders
- Providing postnatal support in areas such as lactation and emotional wellness.



Polyclinics ramped up immunisation and basic health checks for babies, enhancing screenings for child development, nutrition and child growth.

- For babies, enhanced developmental screening and nutritional screening take place at 18 and 30 months.



Enhanced screenings to assess mothers' mental health and lactation concerns.

- PND screening and counselling occurs at the two-month mark, while lactation support is offered from zero to six months.



Education materials were developed to raise awareness of child development, wellness and parenting. Topics covered included:

- Anticipatory guidance
- Development milestones
- Growth and nutrition
- Oral health
- PND
- Injury prevention for children from zero to three years old

These materials have been made accessible digitally and print.



Concurrently, education outreach was conducted to engage the community, and raise awareness of child development, wellness and parenting. Materials covered topics ranging from anticipatory guidance, development milestones, growth and nutrition, oral health, PND to injury prevention for children from zero to three years old.

These materials, including 13 educational videos, are available online, and accessible via QR codes on the clinic's wall murals, programme's website and KKH's YouTube page. Hard copy brochures on PND were also distributed to all mothers screened.

Caring for Mothers and Babies

Outcomes & Impacts

By December 2021, more than 14,000 screenings had been carried out. Brochures, webinars and online resources reached over 13,000 families.

Around 709 of 8,624 children (8%) who underwent EDS were screened positive for developmental delays and given subsequent support. About 471 of 4,046 (12%) 18-month-olds with a body mass index above the 90th percentile received intervention, while 136 of 5,561 (2.4%) mothers screened positive for PND were given support.

There was an increased referral rate for children with developmental delays. The 18-month touchpoint for EDS had the highest pick-up rate (10%). The number of referrals to KKH Department of Child Development, among those aged one to two years, increased by 70 per cent, and was double that of other SHP clinics.

The standard Child Development Screening (CDS) tools at 18 and 30-months were enhanced based on the learnings from IMCWH. Since the roll-out of the revised CDS in November 2020, the referral rates to KKH Department for Child Development from other SingHealth polyclinics saw a 67 per cent increase for 18-month screening.

Importantly, enhanced screening has opened up conversations between healthcare professionals and mothers such as Ms Michelle Kee, who has three children. "After being introduced to IMCWH, I felt very well supported, and I always know that I can approach the nurses during the polyclinic visits, if I need help. The current new polyclinics' design and environment are also enhanced to better suit mothers and children."

Efforts to Scale Impact

This pilot at Punggol Polyclinic drove the start of stronger care support for mothers and their babies across Singapore, in recognition of the growing importance of maternal mental wellness, breastfeeding and childhood development.

As part of the first phase of expansion, SHP has scaled the IMCWH model starting with the EDS to two other polyclinics with higher maternal and child health load, and plans to expand to another polyclinic by the end of 2023. Progressively, components such as postnatal depression screening, nutrition and growth, and parenting education will be added.

In March 2022, the Ministry of Health announced that mother-child dyad services will be rolled out to more polyclinics and targets to scale these services to 14 polyclinics by 2025.

“

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Powering a Renewable Future

Vanadium Redox-Flow Battery by VFlowTech

<p>7 AFFORDABLE AND CLEAN ENERGY</p> 	<p>Ensure access to affordable, reliable, sustainable and modern energy for all</p>
<p>11 SUSTAINABLE CITIES AND COMMUNITIES</p> 	<p>Make cities and human settlements inclusive, safe, resilient and sustainable</p>
<p>13 CLIMATE ACTION</p> 	<p>Take urgent action to combat climate change and its impacts</p>

Introduction

Singapore aims to raise solar energy within its grid by five-fold, aligned with 2030 targets outlined in its Green Plan — enough to power 350,000 households.

Plans are underway to install solar photovoltaic (PVs) atop public housing roofs and other areas to harvest solar energy, so managing the intermittent nature of renewable energy sources is critical.

The ESS regulates the release of renewables into the grid, so it needs to be both reliable and affordable i.e. cheaper than conventional oil or coal, to encourage users to switch.

These PowerCubes have a compact power stack design, with a round-trip efficiency higher than the industry standard, reduced parasitic losses, and effective operation in temperatures of up to 55°C. One of the most economical and versatile renewable batteries in the market, they can be used anywhere from homes to solar and wind farms.

Temasek Foundation's first grant to VFlowTech in 2019 facilitated its proof-of-concept, and catalysed follow-on investments for global expansion.

This innovation increases renewable energy supply, thereby enhancing liveability. In Singapore, VFlowTech’s vanadium redox-flow battery — the PowerCube — is a low-cost energy storage solution (ESS) that holds renewable sources such as solar power, to complement the grid and provide uninterrupted supply.

Gap

Without reliable ESS, the instability of renewables can cause power surges.

Grid disruptions can shut factories, affect public amenities, and disrupt critical operations including hospitals and the national power supply.

Singapore’s small islands including Pulau Ubin, Pulau Semakau, Lazarus Island and Kusu Island, are vulnerable. They rely heavily on diesel generators.

To switch to renewable sources, they need their own management system to ensure continuity. On some islands, renewables-based microgrids are already being planned to power houses and facilities.

Today’s most commonly used storage units are lead acid or lithium-ion batteries, which are not ideal. Lithium-ion options tend to overheat, and need cooling processes that drive up cost. They also lose effectiveness over time, making them unsuitable for large-scale, long-term storage.

To power 350,000 households through solar energy by 2030, there is a pressing need for a sustainable ESS that is low-cost, reliable, and durable.



25
cents/kWh
cheaper than diesel
generators

Meeting energy
needs in various
parts of the world

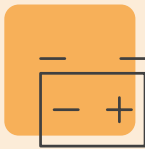
In 2021, acquired
US\$3m
from pre-Series A investors to
accelerate its commercialisation

In 2023, acquired another
US\$10m
Series A funding from investors



Without reliable ESS, unstable renewables can cause power surges. Grid disruptions can shut factories, affect public amenities, and disrupt critical operations including hospitals and the national power supply.

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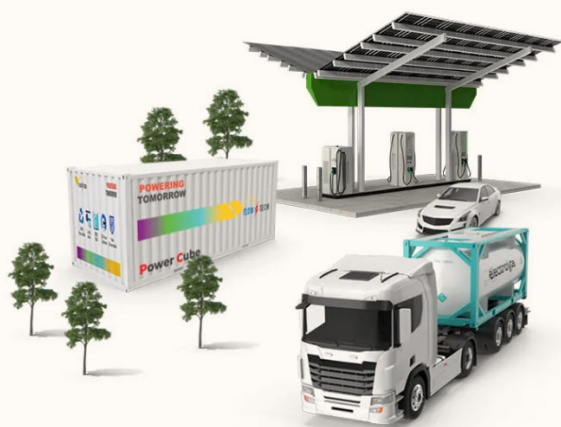
Intervention

After five years of research on vanadium redox technology at Singapore's Nanyang Technological University, VFlowTech has developed a unique, high performance, long-lasting and low-cost ESS – a battery with a lifespan of 25 years. This will support the push for renewable energy, and the need for future energy security.

In 2021, the company piloted its solar PV-connected 10kW - 100kWh ESS to power the common corridor and a lab at JTC CleanTech One building. The ESS provided a backup of 20 continuous hours of supply.

Following this success, VFlowTech attracted the interest of industry players from Japan to Australia.

In February 2023, VFlowTech announced that it had commercially deployed 30kWh and 100kWh units for home applications, and completed the production of its first MWh system for large-scale microgrid applications.



Powering a Renewable Future

Outcomes & Impacts

VFlowTech's ESS will empower Singapore to systematically integrate renewable energy into its grid, supplying across homes, offices, and its outlying islands.

One key outcome is its strong potential to drive the adoption of cheaper renewable energy, and at scale. In some cases, energy cost savings for users at offices and homes could be halved. For instance, VFlowTech's solution will cost 15 to 20 cents/kWh, down from the current costs of about 40 cents/kWh for electricity from diesel generators.

Additionally, on outlying islands, VFlowTech's solution can completely replace diesel, and provide clean energy with zero emissions. Flow batteries can be adapted to power vehicles as large as electric planes and ships.

VFlowTech's renewable ESS has been deployed to meet energy needs in various parts of the world through joint partnerships in Africa and Southeast Asia, with two batteries set to be deployed in Singapore's Pulau Ubin in 2023.

This innovation has the game-changing potential on how Singapore generates and uses energy, on track to driving sustainable communities.

As Dr Avishek Kumar, Co-Founder and Chief Executive Officer of VFlowTech pointed out: "Advancements in renewable ESS play a vital role in driving the acceleration of cleantech and achieving sustainability goals across industries.

"What sets our case study apart is its applicability beyond Singapore. By deploying our ESS in communities like Pulau Ubin, we demonstrate its potential to address the energy needs of rural areas worldwide. This showcases a just transition towards sustainable energy, creating a more equitable and environmentally conscious future."

“

Advancements in renewable ESS play a vital role in driving the acceleration of cleantech and achieving sustainability goals across industries.

Efforts to Scale Impact

In 2021, after successful testing on Jurong Island, VFlowTech acquired US\$3m from pre-Series A investors to accelerate its commercialisation.

By January 2023, it acquired another US\$10m Series A funding from investors from Japan, Singapore, Türkiye and the United States, in a round led by Japan-based venture capital (VC) firm Real Tech Holdings.

VFlowTech plans to use the infusion for a 200MWh production line capacity in order to scale up manufacturing of its 250kWh modular vanadium-based long duration ESS. Research and development efforts will also intensify.

It also intends to increase system capacity, and with its new partners, expand its reach into various countries such as India, Japan, Türkiye, and the United States.



Nurturing STEM-ready Teachers

STEM (Digital) Programme in Indonesia

<p>4 QUALITY EDUCATION</p> 	<p>Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all</p>
<p>8 DECENT WORK AND ECONOMIC GROWTH</p> 	<p>Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all</p>
<p>10 REDUCED INEQUALITIES</p> 	<p>Reduce inequality within and among countries</p>

Introduction

The STEM (Digital) Programme in Indonesia aims to strengthen the teaching capabilities of 200 STEM teachers by enhancing their e-learning pedagogies.

Piloted by Temasek Foundation in partnership with Amazon Web Services (AWS) and youth-serving nongovernmental organisation (NGO) Prestasi Junior Indonesia (PJI), teachers from Singapore's National Institute of Education (NIE) shared digital skills and curricular knowledge in integrated STEM lessons designs, enactment and assessment with Indonesia's STEM teachers.



Singapore's educators share e-learning science, technology, engineering and mathematics (STEM) pedagogies with Indonesia's secondary and high school teachers, to enhance their understanding of key industrial trends and enable them to better prepare students for a growing STEM industry.

Gap

Digital literacy is critical to many Asian economies undergoing digital transformation today. In Indonesia, a booming STEM industry relies on a steady stream of talents in technology.

However, said Bapak Wardani Sugiyanto, Director of Vocational High Schools, Ministry of Education, Culture, Research and Technology, Indonesia: "We are facing a learning crisis." At the first workshop in Bandung, Indonesia, in September 2022, he highlighted the urgency for teachers to learn how to design and run STEM lessons well.

He pointed out the importance of using multiple approaches and disciplines to problem solving. Today, this is enabled by technology that allows blended forms of learning. This is now a necessity rather than a choice.



The initial run with **96 EDUCATORS FROM 20 SCHOOLS** received **POSITIVE RESPONSES FROM OVER 90%** of its participants

More than
3,280
students have experienced these
new integrated STEM lessons



Intervention

Collectively, the programme's partners introduced technology-centric STEM curriculum into Indonesian schools.

Since the COVID-19 pandemic opened up classrooms to the use of technology to teach and learn through hybrid formats, NIE teachers were able to use hybrid modalities in their engagement with Indonesian secondary and high school STEM teachers of students in Grades 9 to 12.

Hybrid modalities comprise self-paced learning modules and in-person, hands-on workshops. The online learning modules include theoretical knowledge about STEM education, ways of integration, and basic digital knowledge. This accelerated the acquisition of skill sets during in-person hands-on workshops on coding the Internet of Things (IoT)-enabled devices, and the planning of STEM lessons involving real-world problems solving using IoT.

Important STEM skill sets including computational, design, engineering, and heuristic thinking were imbued through practical work, discussions, and presentations during the workshops.

The programme has four phases:



Phase
01

In Phase 1, Indonesian STEM teachers acquire STEM curriculum knowledge and basic digital knowledge by completing a series of micro lessons of bite-sized modules and mini-tasks.

Phase
02



In Phase 2, they attend STEM workshops in Indonesia to develop practical skills on coding IoT-enabled devices and design integrated STEM lessons. Following consultancy with NIE teachers on their STEM lesson packages, they implemented the STEM lessons and created STEM lesson packages for sharing with other STEM educators in the region.

In Phase 3, the teachers will share their STEM lesson packages and experience at a STEM Learning Conference. More STEM educators will benefit from the peer sharing.

Phase
03



In Phase 4, selected STEM teams will visit Singapore for a professional exchange with Singapore STEM educators, as part of their extended learning trajectory.

Phase
04



Temasek Foundation supported Singapore's NIE programme delivery, enabling the NIE team to conduct training. AWS provided BBC micro:bits coding and Inventor Grove Kits to all teachers on the programme.

PJI played a critical role in the selection of schools and providing local support for the teachers throughout their learning journey. They also co-developed the curriculum with the teachers, translated teaching materials, conducted 'live' translations for all workshops, and localised the experience. They assisted in logistics, printed special guidebooks, and facilitated in-person workshops.

Nurturing STEM-ready Teachers

Outcomes & Impacts

This pilot programme demonstrated an efficient and effective means to scale this to other parts of Indonesia, and beyond. It has since attracted potential funders to partner these efforts across Indonesia.

The co-constructed STEM lesson plans serve as exemplary models for other STEM educators who can adapt and contribute to the emerging STEM communities.

The programme will benefit 200 Grade 9 to 12 STEM educators in Indonesia. The initial run with 96 educators from 20 schools has received positive response from over 90 per cent of its participants.

To date, more than 3,280 students have experienced this new integrated STEM lessons. This integrated STEM approach will be implemented to motivate students to learn STEM and consider STEM careers.

“

The programme will benefit 200 Grade 9 to 12 STEM educators in Indonesia. The initial run with 96 educators from 20 schools has received positive response from over 90 per cent of its participants.

Efforts to Scale Impact

The programme reflects the importance and utility of strategic STEM capacity-building programmes through multi-stakeholder collaboration. The direct impact of the programme in building a stronger supply of talent for this industry demonstrates a strong potential for scaling to bridge the gap between STEM education curricula and industry needs.

This pilot in West Java with AWS, PJI and NIE is a working template for industry-NGO-university partnership in the region and beyond.

The co-constructed STEM lesson packages will seed and sustain efforts in developing the craft of STEM curriculum design and implementation. The collective efforts of STEM education communities will support the longer-term efforts to make quality STEM education more accessible through technologies.



Joining Hands to Support Lives of Babies and Families

The first 1,000 days of a child's life sets the foundation for his or her well-being. Project ARIF supports parents to strengthen this foundation, to form strong families and give their child the best start in life.



When Madam Dewi Lee Jia Hui, 32, became pregnant and had questions about her own and her baby's health, she could contact a medical social worker.

And when the trainee teacher gave birth to her baby in June 2022, she had another source of support to call upon – a nurse who provided support and gave her advice about breastfeeding.

The support, provided under Temasek Foundation's Achieving Resilient and Inspiring Families programme, or Project ARIF for short, was invaluable to the first-time mum and her husband, Mr Andisuria (Andi) Bin Herwannuddin.

The couple got married in 2021 and they sought community support for their marriage and medical advice to support Dewi's pregnancy, through Project ARIF.

Said Mr Andi, 40, "We enjoyed the quality sharing from the medical and relationship experts at Project ARIF. The advice benefitted us greatly and will certainly help many other young couples starting a family."

Mr Andi and Madam Dewi are one of 1,059 couples who have received support under Project ARIF since March 2021.



“

We enjoyed the quality sharing from the medical and relationship experts at Project ARIF. The advice benefitted us greatly and will certainly help many other young couples starting a family.



Creating a Supportive Community

Project ARIF is a pilot project that was launched in March 2021.

Under Project ARIF, newly-wed couples receive religious, marital, medical, and parenting guidance from a team of mosque personnel and Naib Kadi – deputy marriage solemnisers of Muslim marriages, as well as healthcare professionals from KK Women’s and Children’s Hospital (KKH) in the first two years of their marriage.

Supporting Project ARIF is part of the Temasek Foundation’s larger focus to boost maternal and child health in Singapore, particularly in families where children may easily fall behind the curve.

Said Mr Kee Kirk Chuen, Senior Director at Temasek Foundation, “The first 1,000 days of a child’s life is a critical period of the child’s development. It is when the most neural connections in the brain are formed.”

“If we do not use this opportunity to build a strong foundation for the child in terms of responsive caregiving health, and education, it can affect the child’s future. Temasek Foundation is focusing on maternal and child health because it is important that every generation prospers.”

Originally aimed to support up to 800 couples in forming strong and stable families and in nurturing the next generation, Project ARIF has currently exceeded 1,000 couples — despite the challenges faced while launching in the middle of the COVID-19 pandemic.

To this end, Project ARIF is one of the programmes TF is supporting in line with its focus on uplifting families and children, which includes:

- Kids Integrated Development Service 0-3, which optimises the developmental potential of young children from vulnerable families (2014 – 2019);
- TF Integrated Maternal and Child Wellness Hub at SingHealth Polyclinics –Punggol, which looks after new mothers and their children (2019 – 2022); and the
- “Anchor” programme, which supports children aged 0-3 years who have been exposed to challenging circumstances or traumatic events (2019 – 2024).

Nurturing

Marriages, Babies and Parents

For Mr Andi and Madam Dewi, the support is still ongoing. Through the programme, they have learnt about how to nurture their marriage even after the baby is born and family financial management.

Then there is another pregnant lady who was going through a divorce. Her Project ARIF case manager helped her cope emotionally and physically with the situation, and she is now a proud mother of a healthy baby girl and optimistic about the future.

Interactions with the couples can be extremely personal and authentic – from husbands who ask intimacy-related questions, to wives who need guidance on relationship matters.

It is not just the couples who benefit from the Project ARIF interactions.

The experts from the KKH, the Islamic Religious Council of Singapore (MUIS), and AMP Singapore, who form the backbone of the Project ARIF support network, also find themselves enjoying the process.

Mr Ahmad Khushairi Abidin, 41, a Master Trainer with Project ARIF and Lead Counsellor with AMP Singapore, is a Naib Kadi who gets to know the couples even before they are married and supports them after.

“

As much as the Project ARIF team come in as experts in our individual specialties, this experience has provided us many learning moments that have enriched our lives.

He has helped to direct couples who were trying to conceive to the relevant doctors, as well as provide emotional support. He said, “My greatest satisfaction is to be able to see the positive outcomes from the assistance that I have directly or indirectly rendered to the couples.”

Associate Professor Suzanna Sulaiman, Head and Senior Consultant at KKH’s Department of Obstetrics and Gynaecology, added, “As much as the Project ARIF team come in as experts in our individual specialties, this experience has provided us many learning moments that have enriched our lives.”

The success of the project, which serves the Malay-Muslim community, has given it reason to be expanded to serve other groups in future.

Ms Siti Munawarah Bte Maarooof, a Senior Medical Social Worker at KKH’s Department of Obstetrics and Gynaecology, said, “What sets Project ARIF apart from the other services in the community is that it integrates social work, religious counsel and medical support to provide a cohesive and robust support system for newlyweds.”

Reflecting on the programme name, Mr Lim Hock Chuan, Head of Programmes at Temasek Foundation said, “‘Arif’ means ‘wise’ in Malay. It is indeed a wise initiative to come together to provide community-based early support to couples. It will maximise health and social outcomes. We owe it to future generations of children to empower their parents to raise them up healthily.”

Saving the Earth with Agroforestry

Fairventures Social Forestry is a social enterprise with a different take on saving the Earth: It creates social and climate impact through an agroforestry business model which is economically sustainable, investable and can be replicated by other developers in tropical countries.



When Mr Robert Bürmann first visited Borneo in 2016, he saw large swathes of land which had been destroyed by monocultures, illegal logging and mining, and slash-and-burn agriculture.

But what he saw most clearly was that the local communities were doing this out of economic need. They had to make a living.

“It really hit me. No matter how nice a climate solution you may have, it would not last unless you create economic opportunities for the people. If people can feed their families living with the forest, they will protect it,” said Mr Bürmann, who has a background in impact investing.

So he started Fairventures Social Forestry in 2018. Its agroforestry approach gets farmers to cultivate fast-growing timber, selected cash crops, and non-timber forest products using sustainable farming methods, and sell them to global buyers.

Its game-changing potential has led it to win Temasek Foundation’s The Liveability Challenge in 2022, where the company secured S\$1 million in project funding to scale its model in Jambi and Central Java.

Ms Heng Li Lang, Senior Director at Temasek Foundation, said, “We are actually catalysing a business model which could be scaled up and potentially replicated to create social and climate impact.”



The nature-based solution offered by Fairventures is part of global efforts to remove or eliminate carbon dioxide emissions, which may include solutions based on technology.

Besides Fairventures, Temasek Foundation is also partnering organisations like Yayasan Konservasi Alam Nusantara, Sinar Mas Group, UBS Optimus Foundation as well as the Center for International Forestry Research on other nature-based projects to support villages and protect or restore terrestrial and coastal ecosystems such as mangrove forests.

Ms Heng added, “Nature-based solutions do more than just decarbonisation. It may be more cost-effective, offer benefits for wildlife or humans, and help to address root causes such as unsustainable land uses, overconsumption or social inequality.”

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Economics Matter

What differentiates Fairventures from other nature-based solutions is that at its heart, it creates economic opportunities for people in Indonesia, where the company started.

It is only by offering such opportunities to the local communities – who are paid salaries or earn an income to maintain the land, look after growing timber trees, and plant crops like ginger – that degraded areas can be reforested via an agroforestry approach.

This is where trees are integrated into crop farming systems, such that the people can also earn money from the growing of crops, also called intercropping, while waiting for the timber to mature and be sold.

As this is a revenue-generating enterprise, it also becomes attractive to investors, which further strengthens its viability.

Developing the 'Showcase'

In developing the Fairventures' approach, Mr Bürmann, who is the enterprise's founder and Chief Executive Officer, visited Indonesia several times a year from 2016 to understand the local community and context before officially launching in 2018. The team – comprising about five staff in Europe and 30 on the ground in Indonesia – worked on an initial area in Borneo, Indonesia spanning about 3,000 hectares of degraded land, on which four local communities comprising about 400 families lived.

Indeed, engaging the locals was one of the biggest challenges. A socialisation team had to be specially formed to knock on doors, stay close and learn from the local people, answer their questions, address concerns and explain repeatedly how the Fairventures model would work for them.

"It's something we learnt had to be done well because otherwise, people do not buy in to the concepts and it would not succeed," he said.

It was also a challenge to find investors who understood what they did, and the time it would take for returns to kick in.

Which was why winning The Liveability Challenge helped to raise their profile, and brought their model to the attention of more investors especially in Asia. "It was fantastic for us as it brought us to a different level," he said.

Social, Climate, Business Impact

Over the last five years, the team, together with the locals, have planted over 420 hectares of trees and about 20 hectares of crops. They have reduced about 50,000 tonnes of carbon dioxide from the atmosphere.

They have also created over 150 jobs for the community, of whom over 60 per cent are taken up by women. On average, family incomes rose by about 30 per cent. With the stability from this income, the locals are also using it to start side-businesses, such as opening small shops and restaurants.

With the success of the initial area, the aim is for Fairventures to make a bigger impact by managing 100,000 hectares in the next ten years and impact 25,000 livelihoods on the ground. This would also reduce haze pollution.

Mr Bürmann pointed out, “There are 2 billion hectares of degraded areas on this planet. We cannot stop at 100,000 hectares. Which is why we hope to develop our system into something that other developers can potentially ‘franchise’. It would work in any tropical climate.”

When asked to reflect on the Fairventures journey over the last five years in Indonesia, Mr Bürmann said, “I’m really happy to see that we created jobs for

people, that we made a difference. And when I walk through the fields and see hundreds of hectares of trees growing, it’s just fascinating. To see a system which we had drawn up on a piece of paper come to life.”

Speaking on disruptive innovators supported by Temasek Foundation like Fairventures, Mr Lim Hock Chuan, Head of Programmes at Temasek Foundation added, “We hope our efforts will build capabilities and opportunities to improve our liveability and capture sustainable growth for our communities.”

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Taking Action Together for Pandemic X

First there was SARS, and then there was COVID-19. To prepare for the next pandemic as well as other public health threats, the World One Health Congress is bringing together scientists, clinicians and health experts to form the “scientist-warriors” to protect humanity.



Pandemic X will come, it's a matter of time. The next pandemic is likely to be more infectious, more transmissible, and could be deadly.

It's like battling an unknown enemy. We have to be familiar with the terrain, prepare early and get our systems and people ready.

Mr Stanley Lee, a Senior Director at Temasek Foundation, said: "When it comes to pandemic management, there is peace time preparation and a war time response. The rigour in peace time preparation would determine and limit the severity of economic and social losses to people and nations as seen during COVID-19."

To prepare the region for Pandemic X, lessons learnt from the SARS-CoV-2 pandemic, gathered from the region's economies, will be acted upon to form an action plan among stakeholders.

This preparation is already taking place at the World One Health Congress 2022 – a gathering of global scientists biennially.

Running parallel to the Congress is the Pinnacle Series, a specially curated series of events to convene and share new knowledge, form ideas and partnerships and take action to combat future public health threats, particularly in preparation for Pandemic X.

Funded by Temasek Foundation, it is a platform for invited scientists, public health and policy leaders from Asia – where 60 per cent of the world's population live including some of the most vulnerable – particularly Southeast Asia.



By convening such a platform, Temasek Foundation is committing its support for Asia's readiness against an impending pandemic that may dwarf COVID-19 in severity.

Towards this end, the Foundation is deepening cooperation in public health research with the Brunei's Ministry of Health; supported the 2nd ASEAN Digital Public Health Conference where ASEAN leaders called for greater collaboration across the region and sectors; and launched a programme with healthcare cluster SingHealth to collaborate with their peers from Indonesia, Malaysia, the Philippines, Thailand and Vietnam to better manage pre-hospital emergency capabilities among responders.

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We hope the dialogues could promote trust, collaboration, learning and capability-building to strengthen resilience of regional and national health systems, and enhance front-line defence through timely development of vaccines and diagnostic kits so that outbreaks can be contained quickly.

Bringing Regional Leaders and Experts Together

The 7th edition of the World One Health Congress was held in Singapore from 7-11 November 2022. It attracted 2,383 attendees from 74 countries, including 255 Temasek Foundation Pinnacle Series participants who shared some of the most valuable lessons learnt from the COVID-19 pandemic. Another 1,250 attended the Pinnacle Series sessions online.

Participants included policy makers, public health researchers, scientists, and practising clinicians from around Asia.

Participants learnt from each other about potential infectious disease threats in Southeast Asia, the need to build research talent capacity in the region, genomic sequencing for public health surveillance in Asia, and how to harness next-generation sequencing and big data tools, among other topics.

Experts from countries including Singapore, Indonesia, and Thailand also shared their pandemic experiences.

A participant who is a rheumatologist from the University of the Philippines Manila, Dr Lisa Trabaco, said, “As an aspiring health informatician, I enjoyed the tech sessions best, especially the AI ones. It also gives me a bigger perspective dealing with inflammatory diseases.”

Another participant, a researcher from the National Research and Innovation Agency in Indonesia, Mrs Farida Handayani, said she was inspired to share a study on their efforts to control zoonoses at the next Congress.

Mr Lee said “We hope the dialogues could promote trust, collaboration, learning and capability-building to strengthen resilience of regional and national health systems, and enhance front-line defence through timely development of vaccines and diagnostic kits so that outbreaks can be contained quickly.”

Building on Potential Impact Areas Now

This collaboration continues outside of the conference rooms.

There was strong support for the Asia Pathogen Genomics Initiative, which was shared at a Pinnacle Series session by Professor Paul Pronyk, Director, SingHealth Duke-NUS Global Health Institute, Duke-NUS Medical School, at the Congress.

Set up to better monitor disease threats, detect possible outbreaks and enable timely public health action, it has seen greater collaboration within Asian countries than before COVID-19.

At another Pinnacle Series session, Professor Andy Hor, Deputy Chief Executive (Research), Agency for Science, Technology and Research, lauded efforts by ASEAN countries working together to boost the region's response to COVID-19 and further prepare for new future emerging diseases.

Singapore made investments in health, biomedical science and engineering which paid off during COVID-19, as Singapore was able to respond relatively quickly to emerging threats.



Professor Hor talked about further commitments to innovative research and development in pandemic response, such as the Programme for Research in Epidemic Preparedness and Response (PREPARE).

Hosted by the National Centre for Infectious Disease, PREPARE is laying the foundation for better preparedness against Pandemic X, by strengthening essential research capabilities, research translational platforms, and expertise.

Moving forward, Temasek Foundation seeks to be part of the global community to enhance capabilities and capacity to use scans and surveillance to pick up threats. Research-based solutions on global health, applicable to environment, humans and animals will continue to be important. Programmes in these areas will continue to be the focus for Temasek Foundation to strengthen our collective epidemic preparedness.

On the various initiatives being undertaken, Mr Lim Hock Chuan, Head, Programmes, Temasek Foundation said "Asia needs to build capabilities now to be ready. We hope healthcare leaders and experts can continue with a spirit of learning and exchange to prepare for Pandemic X."





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