Total Defence Day Special Edition

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Extending every effort

In this special issue, IN looks at the new ideas and ongoing plans that safeguard the nation's access to basic necessities.



SERVING UP FOOD FIT FOR A SCI-FI MOVIE

This food paradise is also an up-and-coming food laboratory. By developing cutting-edge food sources, Singapore is looking to secure a reliable supply of food for decades to come. ANG YIYING and ANDREA GOH find out what novel food is and talk to start-ups that are changing the face of farming.



Just Egg frittata is made using Just's vegan mung bean eggs, a plant-based egg substitute product. ST FILE PHOTO

The alternative protein industry and urban farming have been taking off in Singapore. For a country where most food is imported, developing these sectors play a key role in diversifying Singapore's food sources.

For instance, the Singapore Food Agency launched a $50 million Agriculture Productivity Fund in 2014. The fund aims to help farmers boost yields and increase production capabilities to meet Singapore's 30 by 30 goal, that is, producing 30 per cent of local nutritional needs by 2030. And in 2021, the Agri-Food Cluster Transformation Fund worth $60 million was introduced to boost local agricultural production through technology. Currently, Singapore imports more than 90 per cent of its food.

When it comes to alternative protein, not only have companies producing such foods set up facilities here, Singapore has also become the first country to approve some of these products for sale here. For instance, the world's first cell-cultured meat product, lab-grown chicken by Californian start-up Eat Just, was approved by the Singapore Food Agency in 2020 and served in a restaurant.

In the second half of this year, a hybrid meat innovation centre will open here. Hybrid meat refers to a combination of cell-cultured meat and plant-based meat. The centre will be a collaboration between Dutch cultivated pork company Meatable and local plant-based butcher Love Handle.

Alternative protein is on the (future) menu

PROTEIN POWDER

This yellow microbe-based protein, which was created by Finnish start-up Solar Foods, can be infused into food.

Microbes are microscopic organisms that are too tiny to be seen with the naked eye.

Microbes are fed with gases such as hydrogen, nitrogen and carbon dioxide so that they can construct amino acids, carbohydrates, fats, and vitamins that are nutrients for humans. The microbes will grow and react with the gases in bioreactors to make Solein.

The protein powder comprises 65 per cent to 70 per cent protein and contains all nine essential amino acids required by a human body. Singapore is the first country to approve the novel food and consumers here can expect to try Solein-infused food in 2024.



Solein being fermented in a bioreactor. PHOTO: SOLAR FOODS

PLANT-BASED EGG SUBSTITUTE

There are a number of companies offering egg substitutes that look and taste similar to real eggs. Alternative protein company Eat Just created the Just Egg bottled plant-based egg product. It is made primarily with mung bean protein and turmeric, while local start-up Float Foods offers egg-substitute products made with a mix of legumes.

LAB-GROWN SEAFOOD
Shrimp or eel meat grown in a lab are the next big thing.

For instance, Singapore-based Shiok Meats created a shrimp-based prototype dish in 2021 – siew mai made with cell-based shrimp and plant-based pork. Meanwhile, Nanyang Polytechnic and Singapore food-tech start-up Umami Meats are working on producing cell-cultured flesh of Japanese eel and other exotic fish.

INSECT PROTEIN
Insects are known for their high protein content and have been cited as an alternative protein source. The United Nations' Food and Agriculture Organisation said edible insects have high nutrient content, require less feed and emit less greenhouse gases compared with farmed livestock.

Local start-ups are already raring to make this protein mainstream.

One is Altimate Nutrition, a spin-off from Republic Polytechnic, which produces flavoured cricket protein bars, and Asia Insect Farm Solutions, which produces cricket powder for use in flour or cookies.

Meat specialist improves luncheon meat by going vegetarian

Canned luncheon meat is an Asian favourite, but it also has a reputation for being high in sodium and, generally, not very healthy.

A traditional Singapore-based manufacturer of canned luncheon meat has come up with a plant-based version made with soya and seaweed, among other ingredients, offering a healthier twist to the ingredient.

It is produced by Anew Foods, a new brand started by OTS Holdings Limited – a meat-processing company that has been around the Singapore food manufacturing scene for 30 years. Ms Ong Shiya, brand and corporate marketing manager of OTS Holdings, said: "We transferred our knowledge – manufacturing knowledge and know-hows – from animal-based luncheon meat to plant-based luncheon meat."

On coming up with the plant-based luncheon meat that was launched in June 2022, Ms Ong said: "There is a gap in the plant-based market for something different, something new. A lot of brands have already launched the western type of formats, which are your

minced meats, beef patties, nuggets, so on and so forth. The big guys are already there, been there and done that, and a lot of followers are in the same space.

"We wanted to not be in the same space as them, and we wanted to work on something that we definitely have the knowledge on. We were confident in the maturity of our canned technology, and we wanted to address a gap in which there were no plant-based products at the same time."



Mr Ong Bee Chip, managing director of OTS Holdings, with the range of Anew plant-based products. Anew's soya-based luncheon meat comes in three flavours – classic, black pepper and barbecue. ST FILE PHOTO

NEW PRODUCT HAS MULTIPLE BENEFITS

Anew Foods aims to address "pain points" linked to traditional luncheon meat, such as it being perceived as high-sodium, high-cholesterol and having no fibre. With the switch to plant-based protein, soya in this case, the company was able to eliminate fat and cholesterol while making it nutritious.

Ms Ong said: "The main component is soya. So soya has higher protein values than meat itself. When we take it into consideration, switching (from) animal to plant-based protein, it provides more nutrition."

There are some other benefits too. The dry plant-based protein is mixed with liquid to form a base, which is processed to create a more even texture. Spices, juices and other ingredients are added, then they are all mixed together and canned. The product is cooked before it reaches the consumer, which means it can be eaten directly from the can. She added that canned products would be easier to export as well.

Since the product's launch, the company received feedback from supermarket sampling that, while the taste and texture were good, the product was on the saltier side, so it went back, reformulated and relaunched the product.

The company sees flexitarians (people who try to have a more plant-based diet but are not fully vegetarian) and consumers of traditional luncheon meat who are looking for an upgrade as its main target market. After the product launch, the company received feedback from Buddhist vegetarians who hoped to have a version without onion and

garlic, a religious requirement. However, the company said that it would be difficult to leave out these spices, so it was still looking into this request.

Anew Foods also offers plant-based sauces. On food diversification, Ms Ong said that going into the plant-based space and offering more alternatives would also mean helping consumers to accept plant-based products, reducing the need for animal protein. Supporting local manufacturers would also help strengthen food resilience.

Small but mighty crop packs big nutritional punch

Microgreens, the young seedlings of vegetables and herbs, could change the current way you consume vegetables in a big way.

The leaves of microgreens are generally more nutrient-dense than the larger leaves from the same species. So you get more nutrition while eating less. Even the act of eating microgreens could result in less waste. For example, with traditional broccoli, many people typically eat only the top part and throw away the tough, hard stems. With broccoli microgreens, people will be consuming the entire plant.

Petalicious, a local farm producing microgreens and edible flowers, grows 40 to 50 varieties of microgreens at its Pandan Loop location using seeds sourced from all around the world. Microgreens are the young shoots harvested just after the first leaves have developed, when they stand only around 2.5cm to 7.5cm tall.



ST PHOTOS: GAVIN FOO

Seeds are planted in soil-filled trays and placed on cultivation racks under specialised lighting systems, that – depending on spectrum and intensity – can change the crops' size, shape and taste.

Petalicious founder, Mr Darren Ho (right), saw a gap in the market when local restaurant and hotel chefs told the 33-year-old about the large quantities of microgreens they were using regularly. Typically, they are imported from

overseas, but due to their delicate nature, microgreens can end up wilted and unusable by the time they reach chefs here. In contrast, he said, there is a much smaller loss rate when growing them locally.

“I listened to what the market wanted, and I tried to bridge the gap,” said Mr Ho. “And that's how this farm was born.” Petalicious currently sells only to other businesses, such as hotels and restaurants, but this could soon change. “We will be launching our retail pack that everyday consumers can buy,” said Mr Ho, envisioning microgreens being sold in a way where shoppers can pick and choose what greens and condiments they want to pair.



He added: “We want them to have a carry home kind of thing. So they can (take) this... put it on their tabletop and their kids (get a sense of) interactiveness, to put (the microgreens in) the dish themselves, so they know like ‘oh, this is from a local farm’ or ‘I can plant this myself.’”

Microgreens have a much shorter growth cycle than traditional vegetables. The average growing time for microgreens is 16 days, whereas fully-grown vegetables typically need 28 to 35 days before they can be harvested.

GREAT FOR SMALL SPACES

Farming microgreens, due to the far smaller amount of time and space needed, is also more accessible to the average person than growing traditional crops. There are machines like the Aejou, a “grow fridge” that reduces the work needed to almost zero, as it can handle the entire growing process.

These miniature farm devices, created by Petalicious in partnership with a metal manufacturer, take up only as much space as a mini-fridge or up to as much space as a large double-door refrigerator. All the settings on these fully-automated, climate-controlled devices can be adjusted remotely using an app.

Petalicious has recently launched a pilot programme in collaboration with four schools, allowing them to buy or rent the machine and incorporate it into lessons for subjects such as science or IT.

Mr Ho considered this decentralised farming aspect – where farming is not consolidated in a few large industrial farms, but spread out to other places too – the most relevant to the Total Defence concept of "everyone having a role to play". Such devices could pave the way for community-level farming, where there is a captive crowd around to operate the farm. "If you go to a school, (students) are there 12 hours a day, Mondays to Fridays," he said.

He added: "Imagine this: if every classroom used (this device) to grow lettuce, actually, MOE would be the biggest farm in Singapore."

This concept of decentralised farming is not new. People in other countries have had backyard gardens for ages. But using such technology, the average Singaporean's lack of garden space would not be an issue.

Ultimately, Mr Ho hopes these devices might be expanded past classrooms, to even hospital rooms and government facilities, to maximise Singapore's farmable land.

Sources: Science Direct, ResearchGate, NPR

WEAVING S'PORE'S FOOD BASKET WITH THREADS FROM HERE AND ABROAD

As Singapore imports most of its food, maintaining a reliable global network that runs seamlessly is a multi-layered process that is looked after by Singapore Food Agency officers like Germaine Thong. They help ensure the nation has sustainable and safe food now and in the future. SERENE LUO finds out how they do it.

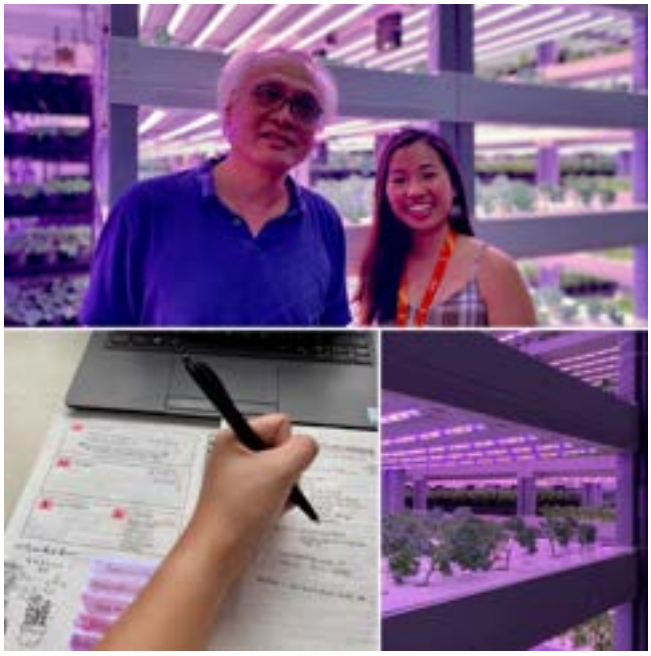


Agri-tech company Citiponics runs a Singapore Food Agency rooftop urban farming pilot project in Ang Mo Kio. ST FILE PHOTO

Where does food come from, 12-year-old Germaine Thong wondered, as she wandered the aisles at supermarkets and corridors of wet markets. Her curiosity was further fuelled by her mother's stories of rearing her own chickens in her backyard, and collecting her own fresh eggs.

Fast forward a decade or so, and that interest in food led the now 25-year-old to take up a Singapore Food Agency scholarship to study food science and technology at the National University of Singapore.

Now, as a manager in SFA's industry development and community partnership division, she is deeply involved in developing Singapore's agri-food sector. She works with local farms, in what is called a "farm to fork" approach, looking at how food is grown all the way to when they end up on tables.



Ms Thong works with farmers and encourages them to use more productive and sustainable technology in food production. PHOTOS: COURTESY OF SINGAPORE FOOD AGENCY

She visits farmers to see how she can help them improve their yields, meets with industry partners to find out about the latest techniques and technologies and, using her experiences, suggests plans and ways to help Singapore reach its "30 by 30" goal.

The goal refers to Singapore being able to provide 30 per cent of its own nutritional needs by 2030. This is crucial as most food here – from meat and vegetables to rice – is imported, some from as far away as Brazil and Poland. Being able to fill more of the nation's food needs locally will make the country more resilient during times of global shortages or uncertainty.

PROGRESSIVE FARMING METHODS REAPING REWARDS

She said of one of her experiences at a local farm: "They used to sow seeds by hand, which took up a lot of time. I advised them to use an automated seeding machine and connected them with a company that provided the machine.

"When they eventually did, the farm could speed up their processes to less than 25 per cent of the required time and fewer workers were needed for the task." That meant that the farm, which had around eight workers, could redeploy staff to take on more important tasks, such as the marketing of produce, sales or planning for new varieties of crops.

Ms Thong noted that people often think that farming is old school and laborious, but times have changed. She said: "Most farmers I meet today are very educated and progressive. They use innovative technology that make their work processes more productive and enable their crops to stand against the elements, so farming today is much more high-tech than what many assume it to be."

For instance, some veggie farms have tapped an SFA grant to use artificial intelligence and Internet of Things tech to grow more produce. However, as of 2022, only about 1 per cent of Singapore's land is given over to agricultural use.

As part of her job, in January 2022, she visited Pure Harvest Smart Farms in Al-Ain, in the United Arab Emirates, where she said she got a "TIL (Today I Learnt) moment".

"Never in my wildest dreams did I imagine that tomatoes, berries, and leafy vegetables could be grown in the desert. I mean, how do these crops grow in such a dry and hot environment?" she said. "But the impossible happened, thanks to Internet of Things-enabled growing systems, such that even in the harshest of climates, the farm could still grow its crops all year round."



Tomatoes harvested from Pure Harvest Smart Farms, in the United Arab Emirates. Using technology to monitor environmental conditions, the farm is able to grow more than 35 varieties of tomatoes, alongside lettuce and strawberries.

The farm she visited used technology to monitor environmental conditions around the clock in the greenhouse, and was able to grow more than 35 varieties of tomatoes, which came in a range of colours, and even tasted like strawberries or other fruit. Tomatoes usually grow in temperatures of about 18 to 23 deg C, whereas temperatures in the UAE start from about 13 deg C and can soar above 42 deg C.

"It gives me hope that we (Singapore) can also do more to supply locally grown food in a sustainable and productive manner," she said.

That said, working with farmers requires a lot of patience and good communication skills to build rapport and trust, she added, as the farmers ultimately make the final decision on their own businesses. Sometimes, they get anxious about their businesses; other times, they may find regulations chafing.

GLOBAL SUPPLY CAN CHANGE QUICKLY

Ms Thong noted that when it comes to food sustainability, Singapore was in a position to "catch a cold when other countries sneeze". She said: "When these countries face shortages and inflation, they will restrict their exports to safeguard enough food for their own people to consume."

So even though Singapore is not directly hurt by the Ukraine war or intense rain and floods due to climate change that destroy crops, supply can still be hurt by knock-on effects, Ms Thong explained. This was evident in the restriction on chicken exports from Malaysia in 2022, as well as the seasonal price increase in vegetables every time the monsoon rains reduce crop yields in the region.

While governments across the world work together to strengthen food security, such as by raising international food standards so that people have safe food sources, on the ground, families and individuals can help too.

Said Ms Thong: "Two words: Support local! When your family purchases locally farmed eggs, vegetables and fishes, the local demand will help our farmers earn a decent living and encourage them to be more productive. When that happens, it may encourage them to upscale their businesses and even invest in technology and innovation; so they can farm better and produce more with less in a sustainable manner."

WASTE NOT WANT NOT: 'UGLY FOOD' GIVEN SECOND CHANCE

Food wastage is an ongoing concern, but food rescue groups are taking on the challenge to ensure edible food gets to tables and is not binned for the wrong reasons. LIM YU HANNAH JADE follows one group and reveals what goes into conducting a 'rescue operation'.



Fridge Rescue Community volunteers collecting vegetables and fruits that are considered as "ugly", but are still edible. They rescue food from Pasir Panjang Wholesale Centre and distribute it around Singapore to anyone who wants them. ST PHOTOS: JASON QUAH

Twice a week, a rescue operation takes place in one of Singapore's main wholesale markets. Armed with a few large trolleys, keen eyes and strong arms, these operators split into groups to "save" produce from an untimely end.

Fridge Restock Community (FRC) volunteers are a regular sight on Tuesdays and Wednesdays. About 20 of them spend the first half of the day scouring Pasir Panjang Wholesale Market for fruits and vegetables that cannot be sold in time to retailers

because they are too near their expiry date, or are misshapen, bruised or overripe. Food rescue groups like FRC rescue "ugly" food items that are edible, but destined for the bin. On some collection days, FRC can collect up to 5,000kg, including pricey produce like avocados, blueberries and raspberries.

When IN went on one rescue trip in December, over 30 boxes of rejected celery, surplus pineapples and sprouting onions had been collected within the first hour of work. FRC's efforts are part of a larger drive to reduce food wastage and ensure that food is accessible to people who may not have the capacity to buy fresh food.



Rescued food includes those that cannot be sold in time to retailers because they are too near their expiry date, or are misshapen, bruised or overripe.

In recent years, food rescue has become more accepted and practised worldwide, as well as in Singapore, as people's attitudes towards ugly but edible food have changed over time. Yet, the National Environment Agency reported that 817,000 tonnes of food waste was generated in Singapore in 2021 alone.

A high level of food wastage strains local food security, as over 90 per cent of the country's food supply is imported. This is because Singapore's small land size constrains the amount of land that can be set aside for farming.

LOOKS DON'T MATTER

Homemakers, young people, retirees and corporate professionals make up FRC's 50-person volunteer group. It all started in 2017 when FRC's founder, Mr Daniel Yap, found two freegans searching for carrots and radishes in a dumpster outside his minimart in Little India. Freeganism is a lifestyle philosophy that limits participation in the conventional economy and minimises consumption of resources, particularly through recovering wasted goods such as food.

After learning that his discarded produce was being cleaned and used for meals, he was inspired to work with SG Food Rescue, another group that collects discarded produce. He eventually set up FRC in 2020.

After collecting the "ugly" food, FRC volunteers distribute them at 13 distribution points around Singapore, one of which is Nee Soon East Community Centre. When IN visited

the CC while tagging along with FRC in December, about 150 people had been queuing from as early as 8am to take their pick of the items.



FRC volunteers distribute the rescued food at 13 distribution points around Singapore, one of which is Nee Soon East Community Centre. Anyone who wants the food can take it.

It was the second time that 10-year-old Krystie Cheong was visiting the distribution centre with her 46-year-old domestic helper, Ms Maribel Caluza Lalas. They usually select fruits to make cakes or salads at home. Krystie said that she hoped her parents would come to these distribution drives more often, as they help defray the rising cost of living. By doing so, she said her parents would be able to save more money to buy her "chocolate and slime", her favourite snack and favourite toy.

Another recipient, Ethan Poon, 12, said he would visit the distribution centre during the school holidays as he felt bored at home. When asked if he was afraid of eating blemished food, he said: "Nothing to be fearful about, it's just food."

Ms Caroline Chia, 42, has been an FRC volunteer since 2020. She said that the rescued food benefited mostly elderly citizens who live alone, and people who have been retrenched and need to support their families. She explained: "We don't collect fees and there are no background checks...(this is for anyone who is) willing to queue (up) and get food."

COLLECTIVE EFFORT WORKS BETTER

There are several groups which do food rescues. Divert for 2nd Life (D2L) specialises in collecting surplus food from many businesses around Singapore, and redistributes the goods to users through the Goodhood.sg app. On Goodhood.sg, registered and verified users can share items and services with other users. D2L partners with the app's company to track the number of food recipients reached.

Another popular group is Food Rescue Sengkang (FRSK). It collects not just fruit and veggies, but also perishable food items, ranging from frozen snow crab legs to abalone. Marketing director Daphne Chew, 41, came across FRSK on Facebook last year. She

visited FRSK's food drive held near Thanggam LRT station, in Sengkang, and found that for a $2 donation, she could take at least 10 items; ranging from grapes, organic salads to strawberries.

The produce was not in tip-top condition. Some of the items were mouldy and overripe, but they were edible. Ms Chew said: "Someone spent time planting, growing, nurturing the food item... whatever we can do to prevent (food wastage) is a win."

This excess supply of food has also been turned into a business opportunity. For instance, Treatsure runs an app that connects surplus food to consumers who are willing to pay for it. Apart from running an online grocery that sells surplus food from various suppliers, Treatsure's buffet-in-a-box venture involves guests paying, from $10 a box, to pick out buffet dishes at hotels, like Fairmont Singapore, during the last half-hour of their buffet services. At Fairmont's Asian Market Cafe buffet, an adult usually pays at least $78 while a child typically pays at least $39.

When Treatsure's co-founder Teng Hin Preston Wong visited the Grand Copthorne Waterfront Singapore during one such session, a mother came up to him and thanked him for making the cost of hotel meals, which were a luxury for her family, more affordable.

CHANGING MINDS REMAINS A CHALLENGE

While attitudes towards ugly food are changing, change may not be happening fast enough. Said Mr Teng: "We have not had a whopping change in the majority (of consumers in Singapore) to go for surplus food as the first choice." But he hoped that would change. He added: "The rising cost of living (will) drive consumers into finding more value options for meals."

Separately, FRC's Mr Yap faced complaints from residents at Dorsett Road who thought that running a community fridge, which stocked the surplus produce FRC collected for anyone to take, would attract pests.

Another challenge is finding ways to encourage people to actively support food waste reduction efforts. During a food rescue trip with D2L, Melissa Hecker rescued 60 boxes of close-to-expiry oat milk from a food retailer. Two days later, the sixth-year School of the Arts student brought three or four cartons of the oat milk to school and poured cups of it for 30 of her schoolmates, who were sceptical about its taste. The oat milk had expired on the day of the party, which she announced as a disclaimer in her cohort's groupchat.

The 17-year-old's "oat milk party" convinced 17 of them that "ugly" food was indeed just as edible as fresh food. But Melissa noted: "While they expressed interest in the whole cause, they were not as interested in having to rescue (the "ugly" food) themselves."

Another youth food rescue volunteer is Ms Kayla Seow, who has been going on weekly food rescue trips with her mother since 2020. The 19-year-old university student said: "I think there are definitely more young people now than before (in food rescue)... Although I do wish that more youth seek out opportunities to support food sustainability efforts."

Sources: The Straits Times, National Environment Agency, Fridge Restock Community, Groundup Central, Fridge Restock Community on Facebook, Treatsure.co, Temasek, Towards Zero Waste, SG Food Rescue





In 1996, a food court promotion that offered free food samples left behind excessive waste because the distributed dishes were not finished. ST FILE PHOTO

BIN THE FOOD WASTING HABIT TO IMPROVE FOOD SECURITY

Throwing away food may seem to be a minor issue but, when all the waste adds up, a significant amount of resources is also discarded in the process. GRACE CHAN RIE MAE and RANJANA VENKATESAN offer some ways you can stop contributing to this growing problem.

During the Japanese Occupation from 1942 to 1945, many people went hungry because the supply of basic foodstuff, everything from rice to sugar to meat, was tightly controlled by the Japanese military.

Today, although Singapore has robust links to global food supplies, that does not mean that shortages do not occasionally occur.

For instance, Malaysia decided to curb exports of chilled chicken to Singapore for several months in 2022. This caused the price of chicken here to rise. And when India, one of the world's largest exporters of rice, put restrictions on rice

exports last September, the move disrupted rice trading in many parts of Asia.

Unfortunately, food wastage is an issue of concern in Singapore. In 2021, 817,000 tonnes of food waste were generated here. It was a steep 23 per cent increase from the 665,000 tonnes of food waste created in 2020, the National Environment Agency reported.

Developing habits to reduce food waste can help to solve this wastage. It would even help your family save money and improve your cooking skills!

5 practical actions with big effects

BE A PASSIONATE PICKY EATER

If a dish has an ingredient you dislike, politely request that it be excluded from your order. This is better than sheepishly accepting it to reduce hassle and then picking it out of your dish later. This reduces the amount of food waste, and saves you time.

DON'T BITE OFF MORE THAN YOU CAN CHEW

At a school canteen or hawker centre, food portions are usually standardised for all customers. However, if you have a small appetite, or do not feel so hungry, do not hesitate to ask the vendor to give you a slightly smaller portion. The food you cannot finish is better off on someone else's plate than in the rubbish.



Uneaten food is a common sight in Singapore. It can be easily avoided by ordering just what is needed instead of accepting standard portions. ST FILE PHOTO

FIND YOUR FOOD EXCHANGE SOULMATE

A great way to ensure nothing goes to waste is to dine with someone who likes what you dislike, and will not mind taking it off your hands.

It is even better if you like something they dislike too. For instance, you could swop your mushroom for their tofu, your egg white for their egg yolk – a fair and friendly food trade.

Additionally, when trying new foods, it may be practical to order a small portion and split it with your partner. Do this in case you do not like it enough to finish a full portion. However, do not forget to follow good hygiene practices, such as using clean cutlery to exchange your food items, before you start eating.

BE A PROFESSIONAL 'FRIDGESCAPER'

When leftovers are transferred into food containers and stored in a refrigerator, they may be overlooked, forgotten and slowly pushed farther and farther into the frigid depths of the fridge by other containers. Eventually, they are wasted as they have to be thrown out.

There is a simple solution to this. Together with a family member, take up the "fridgescaping challenge" and clean out your refrigerator. Toss out expired food, clean the shelves and drawers, and follow the "Fifo" or "first in, first out" maxim, to put a stop to this form of food waste.

TURN LAST WEEK'S TRASH INTO TODAY'S TREASURE

Channel the masterchef within you when dealing with random leftovers of food. After all, making delicious food out of whatever ingredients one has at hand is how recipes are born.

For instance, besides reheating the dish, you could add new spices to make it into something new. For instance, leftover roast chicken, with the addition of some chilli padi and basil, could be turned into a Thai-style stir-fry.

Go to https://str.sg/fdwaste to watch an animated short about how you can break the food waste habit.



Hotpot leftovers can be turned into fillings for dumplings like wonton and gyoza. This tip can be applied this coming Chinese New Year. TNP FILE PHOTO

CUSHIONING RISING COSTS TO ENSURE FOOD ACCESSIBILITY

Global events have led to rising food prices that have made access to nutritious food for some households here challenging. NISHALINI SARALATAN looks at what is causing the turmoil and how Singapore is dealing with it.



A Yishun resident using a prepaid card to redeem ready-to-cook chicken from a vending machine maintained by Free Food For All in November 2022. ST PHOTO: FELINE LIM

The crowded coffee shops, bustling supermarkets and queues outside pricey eateries may give you the impression that food is not something hard to come by. But global conflicts and shortages have pushed grocery and energy bills up here, impacting some people's ability to meet their daily food needs.

From May 2021 to 2022, the UN's Food and Agriculture Organisation's Food Price index rose 22.8 per cent due to events like the Russian invasion of Ukraine or shortages due to the Covid-19 pandemic.

Food accessibility, which is mostly determined by a consumer's ability to afford it, is not a new issue here, but it has been made worse by recent economic headwinds.

In October 2022, Deputy Prime Minister Lawrence Wong said that every Singaporean household would be given more Community Development Council (CDC) vouchers to cushion the effects of inflation and the goods and services tax rate increase.

The $300 worth of vouchers were given out from Jan 3 this year. Half of them can be used at participating supermarkets, while the others can be used at hawker stalls or heartland stores. Since the CDC vouchers were first introduced in June 2020, households have used them to cope with the cost of living while bolstering financial support for small local businesses.

Volunteers have also been providing aid. For instance, on Nov 13, 2022, food charity Free Food For All launched a vending machine with frozen marinated chicken and meats. This vending machine, located at Block 162 in Yishun Street 11, will benefit 150 low-income families and elderly in the area.

Under this initiative, each household has a prepaid card which will be topped up automatically at the start of each month. Families can then redeem seven packets of marinated frozen chicken and meat each month. The ease and convenience with which needy families can access such affordable ready-to-cook foods help them greatly, as they can struggle to get nutritious food due to its higher price.

This is in addition to a community fridge that was launched at the same block in January 2020. It is stocked with vegetables and fruit every week. These foods are excess foods from an online grocery store, which helps reduce food wastage.

SECURING THE FOOD SUPPLY

Securing Singapore's food supply is more than just ensuring that people here can afford it. Food accessibility is part of food security, which also includes ensuring that food gets here, and making sure that it is not only safe to eat but also meets general nutritional needs.

Worldwide, the World Food Programme estimated that some 828 million people go hungry daily, while those in "acute food insecurity" have increased from 135 million to 345 million since 2019.

For example, Sri Lanka is now among the top 10 countries in the world most affected by high food inflation, which was at 74 per cent there as at end-November 2022. People there have had to reduce meal sizes as well as sell assets, like scooters and gold jewellery, to put food on the table.

In Egypt, families are struggling to purchase staple foods, such as beans and lentils, and are turning to cheaper protein sources like chicken feet.

For some children in the United Kingdom, free school meals are the only hot meal they get in a day. More families there are also turning to food banks to get staples, like pasta and rice, as the price of them has, in some cases, more than doubled.

Here are two reasons why food security has been negatively impacted worldwide:



Children eating lunch at St Mary's RC Primary School, in Battersea, south London, on Nov 29, 2022. With the United Kingdom's inflation hovering around its highest level in four decades, more children are bringing cheaper food from home, in some cases donated. Only children whose families are deemed by the government to be the poorest are entitled to a free school meal. PHOTO: AFP

CONFLICT

Covid-19, and the lockdowns brought about by it, disrupted global food production and supply chains. The Russian invasion that started in 2022 caused further disruptions, as Ukraine is a key producer of grains, corn and edible oils.

Such disruption has a domino effect, a situation in which one event causes a series of similar events to happen one after the other. For instance, as Ukraine was unable to farm corn, the drop in global supply led to a spike in its price. This in turn affected a country such as Malaysia, which depended on corn as animal feed for its chickens. As its supply of chicken fell because of the lack of cheap feed, Malaysia, to preserve its now smaller chicken supply for its own people, temporarily banned its export. This led to a shortage of chicken in Singapore.

CLIMATE SHOCKS

Climate change is posing challenges that are reducing the quality and production of food and crops. For instance, rising temperatures, unpredictable weather, and deteriorating soil pose substantial threats to a country like Indonesia, which is the world's fourth-biggest producer of coffee.

And Pakistan, which is heavily dependent on agriculture, is facing a shortage of chillies because of extreme weather. The crops were first exposed to extreme heat and then to heavy floods that wreaked havoc last August and September.

Sources: The Straits Times, The Guardian

CRITICAL THINKING QUESTIONS

Rising food prices have affected most families, not only those who have lower incomes. But you can do your part to rein in rising food bills. For instance, if you compare the cost of ordered food to what is prepared at home, you would be better able to make informed decisions to help the family's budget.

Additionally, making such mindful comparisons can help you be cost-effective in your decision-making. Cost-effectiveness does not necessarily refer only to buying things that are cheap. It could also mean getting good value for what you buy.

One way to do so would be to do your grocery shopping for your family weekly rather than daily. Planning helps you to buy only what is needed and also reduces food wastage.

Activity 1

Calculate the cost per serving of cooked food you recently bought and compare it to the cost per serving of food prepared at home.

1. Make two observations about the cost of meals purchased outside as compared to home-cooked meals.

2. Which meals are most cost-effective or give the best value for money? Why do you think so?

3. List some ways in which you could make meals even more cost-effective yet nutritious.

Activity 2

Farmers, and consumers are just two groups of people who are impacted by the rising food prices.

1. Which other groups do you think are affected too?

2. What challenges do you think each group faces?

3. Use what you have read and do further online research to discuss your findings with a partner. For example, unpredictable weather could delay growing seasons and cause farmers to incur extra expenses. This could eventually result in pricier produce that is harder for customers to afford.

KEEPING THE WATER RUNNING: HOW S'PORE STAYS HYDRATED

The country's lack of natural water sources is a longstanding issue. DEBRA ANN FRANCISCO looks at how the nation has worked hard to build up water supplies and where your water today comes from.



The text below is presented in slides on the CCE website (cce.straitstimes.com).

When the British arrived in Singapore, one of the first tasks ordered by Stamford Raffles was to dig a well for drinking water. He knew that the island's development was dependent on a sustainable supply of water. In the same year, the construction of a basic reservoir at the foot of Fort Canning Hill was also completed.

There were decades of failed attempts to build a new reservoir after this due to a lack of funds. From Singapore's founding to the 1860s, the rapidly growing population had to turn to contaminated wells and streams to meet their needs.

A NEW RESERVOIR IN LATE 1860S

In 1862, the Bengal Presidency in Calcutta, which was in charge of the administration of the British colonies in the Far East, finally agreed to pay half of the amount needed for the construction of a reservoir.

The rest of the amount was raised through a loan the government took out and a sum of money contributed by Straits Chinese merchant Tan Kim Seng. The Impounding Reservoir (known as MacRitchie Reservoir today) was completed in the late 1860s.

WATER AGREEMENTS

In 1927, Singapore and Johor signed an agreement that permitted Singapore to rent land in Johor and import its water for free.

Three more agreements, in 1961, 1962 and 1990, were later signed to import water from Malaysia at an agreed price. Only two are in force today and will expire in 2061.

SECURING SUPPLIES FOR THE FUTURE

When Singapore gained independence in 1965, its water came from only two sources – local catchment areas and imported water from Malaysia.

In 1977, a massive clean-up of the Singapore River began. Farms, factories and food stalls that had been polluting the waterway with sewerage for more than a century were relocated.

This extensive operation, which involved the resettling of thousands of residents living and working along the river as farmers, hawkers and more, and the clean-up of the river itself, took exactly 10 years to complete. More than a century's worth of debris was removed from the riverbed by 1987.

Thanks to this early move, the development of the Marina Barrage and Marina Reservoir was made possible 30 years later, as the clean waterway could be part of a new water catchment area that would boost Singapore's local water supply.

In 2008, the Marina Barrage, a dam built across the Marina Channel, was completed. It formed Singapore's 15th reservoir. The catchment area is also Singapore's largest.

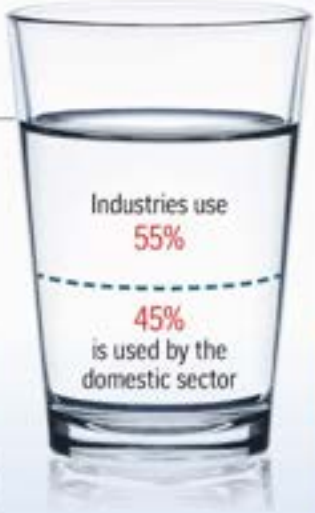
Today, Singapore relies on four national taps – water from local catchment, imported water, high-grade reclaimed water known as Newater and desalinated water. Our island has come a long way from that first well Raffles ordered to be built in 1819.

Sources: The Straits Times, National Archives of Singapore, biblioasia.nlb.gov.sg, www.pub.gov.sg, eresources.nlb.gov.sg, wateroam.com

How Singapore keeps its taps flowing

There are "four national taps" that diversify Singapore's water sources: local catchment, imported water from Malaysia, Newater, and desalination.

Singapore's water demand is expected to almost double to 800 million gallons a day by 2060



4 NATIONAL TAPS

1. LOCAL CATCHMENT

- Rain that falls on two-thirds of Singapore's land mass is channelled to its reservoirs.
- Water quality is monitored by both PUB and the National Environment Agency to control pollution and algae growth.
- Singapore's catchments are not used simply for water security, but also serve as test beds for floating solar panels, to make up for a lack of land for sprawling solar farms. The floating solar panel test bed on Tengeh Reservoir is the world's largest.
- From MacRitchie Reservoir, which was completed in the 1960s,

17 reservoirs now dot the country

PHOTOS: SHIN MINGHAI/ NEWS, STRAITS TIMES FILE PHOTOS, LARRIE ZHONG/ ISTOCKPHOTOS
STRAITS TIMES GRAPHICS





2. IMPORTED FROM MALAYSIA

- Singapore can draw up to 250 million gallons of water a day from the Johor River under the 1962 Water Agreement.
- As of 2018, around half of Singapore's water comes from this imported water, and PUB built the $317 million Linggiu Reservoir in Johor in 1993 to help ensure the reliability of the water.
- The price at which raw water is sold to Singapore has caused bilateral tensions, especially during the latter half of Malaysian Prime Minister Mahathir Mohamad's previous leadership between 1981 and 2003.
- Tun Dr Mahathir revived the issue in 2018, saying that the price was "ridiculous" and that Malaysia would approach Singapore to renegotiate the deal.

Map showing where Singapore gets its water locally



3. NEWATER PLANTS

- Newater is used mainly for industrial purposes, but is also blended with raw water in reservoirs during dry periods.
- By 2060, Newater is expected to contribute 55 per cent of Singapore's water demand.
- In 2021, PUB laid 38km of new sewers and renewed 20km of existing sewers so that more used water can flow into water reclamation plants, which then ultimately ends up in Newater factories for further treatment to become potable water.
- Newater is drinking water made by purifying sewage. It is produced through a process using membranes to extract pure water from used water.

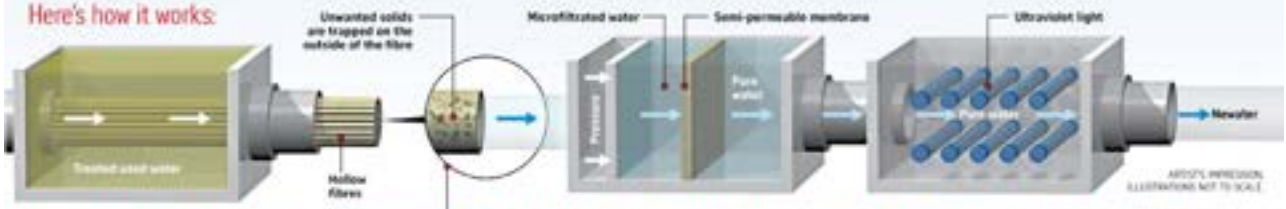




4. DESALINATION PLANTS

- Desalination turns seawater into drinking water through reverse osmosis.
- The new plant on Jurong Island can produce up to 30 million gallons, or 137,000 cubic metres of water daily, the equivalent of 55 Olympic-size swimming pools, which is 7 per cent of Singapore's current water consumption.
- It is the most manpower-efficient of all the plants in Singapore, manned by only two or three people.

Here's how it works:



ARTIST'S IMPRESSION. ILLUSTRATIONS NOT TO SCALE

MICROFILTRATION → REVERSE OSMOSIS → UV DISINFECTION

1 Treated used water passes through fibres. Suspended solids and bacteria of more than 0.2 microns are filtered out.

2 Water is conducted through the middle of the hollow fibre.

3 High pressure forces the water through special membranes which trap contaminants (dissolved salts, chemical contaminants, drugs and viruses), allowing only pure water through.

4 In this final step, the pure water is further disinfected with ultraviolet light. The process is inexpensive and fast, and leaves no taste or odour in the water.

FLIPPING THE 'FOUR SWITCHES' THAT PAVE THE WAY TO SUSTAINABLE ENERGY

Reducing carbon emissions while providing enough energy for the country to function is Singapore's goal. TANG BI FENG looks at how the nation is doing this.

From powering street lamps and your home's air-conditioning to factory machinery, Singapore's infrastructure and growing economy need large amounts of electricity daily.

This energy comes at a cost. Statistics from the Energy Market Authority show that the power sector accounts for about 40 per cent of Singapore's total carbon emissions today. There is also a need to ensure that the nation's energy network is reliable, cost-effective and is developed in line with the country's goal of reaching net-zero carbon emissions by 2050.

This drive for energy sustainability has led to the use of the "four switches" – natural gas, solar, regional power grids and emerging low-carbon alternatives.

NATURAL GAS

The main fuel used to generate electricity in Singapore is natural gas. According to the National Climate Change Secretariat, natural gas is used to power about 95 per cent of the country's electricity demands today, up from 19 per cent since 2000, when oil was the preferred fuel.



The LNG terminal on Jurong Island allows Singapore to store imported natural gas from around the world instead of relying on piped natural gas from Malaysia and Indonesia. PHOTO: SLNGCORP

Natural gas, a type of fossil fuel, is a hydrocarbon gas mixture consisting primarily of methane. Compared to

other fossil fuels, such as coal and oil, natural gas emits the lowest amounts of greenhouse gases and air pollutants when burnt, making it the cleanest form of fossil fuel.

As Singapore does not have any natural gas of its own, it imports it. Traditionally, the colourless and odourless gas was transported through pipelines from Malaysia and Indonesia. However, to diversify the nation's natural gas supply and enhance energy security, Singapore launched its first liquefied natural gas (LNG) terminal on Jurong Island in May 2013.

Instead of travelling only by pipeline, natural gas can now also be shipped by sea from all over the world. Singapore currently buys LNG from countries like Australia, the United States, Qatar and Angola, among others.

Each of the tanks at the Jurong LNG terminal are large enough to hold two Airbus A380 planes inside them, and the largest one can hold enough to meet two weeks' of the country's energy consumption.

SOLAR

Solar energy is the cleanest and most abundant renewable energy source available. Singapore harnesses solar power using photovoltaic cells, commonly known as solar panels.

When the sun shines onto a solar panel, the photovoltaic cells absorb energy. This energy creates electrical charges that move in response to an internal electric field in the cell, causing electricity to flow.

As part of the Singapore Green Plan 2030, Singapore aims to increase solar deployment to 2 gigawatt-peak (GWp) by 2030, which is enough to power 350,000 Singapore households for a whole year.

While solar energy is attractive, two main challenges remain. First, not all parts of the world receive the same amount of sunlight. In tropical and urban Singapore, clouds and tall buildings tend to block sunlight from reaching the solar panels, making them inefficient to use. This poses solar intermittency issues, where the energy collected will vary throughout a day.

To overcome this challenge, energy storage systems, that work like large batteries, are used to store collected solar power for future use.

Second, land-scarce Singapore does not have large spaces to dedicate to solar farms, unlike India, China and Egypt. For instance, India's Bhadla Solar Park is the world's largest solar farm. It spans 5,700ha, which is large enough to fit about 200 Singapore Zoos.

To tackle the land scarcity problem, Singapore is delving into rooftop and floating solar systems as alternative solutions. For instance, launched in 2014, the SolarNova programme led by the Economic Development Board and the Housing Board (HDB) aims to accelerate the deployment of solar photovoltaic systems.

Under the programme, the HDB will install solar panels on 8,400 HDB blocks by 2025. So far, 2,700 HDB blocks have been outfitted in various estates including Tanjong Pagar, Choa Chu Kang and Bishan.

The solar energy harnessed from these solar panels is used to power common services, such as the lifts, lights and water pumps, in HDB estates, with excess energy channelled to the power grid.

Not only are solar panels moving upwards, they are also moving onto water. An inland floating solar farm, about 45 football fields in size, was constructed on Tengeh Reservoir and officially opened in 2021.



The floating solar photovoltaic system at Tengeh Reservoir has a capacity of 60 megawatt-peak. ST FILE PHOTO

Although Singapore is on track to achieve its deployment goal of 2 gigawatt-peak by 2030, the electricity generated from solar power will still be insufficient.

Due to land constraints, efforts by Singapore to deploy solar power will only cover about 3 per cent of the country's current electricity demands.

REGIONAL POWER GRIDS

Though there are other renewable sources, such as hydropower or wind power, harnessing them is not feasible here. For instance, wind speeds here are not high enough for wind turbines to operate, and there is a lack of river systems with fast-flowing water throughout the year.

However, Singapore is situated in a resource-rich region where neighbouring countries

have abundant renewable energy sources. So, tapping them to form a regional power grid is an effective way to source renewable energy.

Regional power grids allow countries that have a surplus of electricity from renewable sources, like hydropower, to trade it with other countries.

Singapore plans to import up to 4 gigawatts of clean energy from regional countries, fulfilling 30 per cent of the country's electricity needs, by 2035.

For a start, Singapore is participating in the Laos PDR-Thailand-Malaysia-Singapore Power Integration Project, which commenced in 2022 and will run for a period of two years. Under this project, Laos will provide up to 100 megawatts of renewable hydropower to Singapore via Thailand and Malaysia using existing interconnections.

It is the first multilateral cross-border electricity trade involving four Asean countries and the first renewable energy import into Singapore.

EMERGING LOW-CARBON ALTERNATIVES

Singapore is exploring three low-carbon technologies to reduce long-term carbon emissions. First, the National Hydrogen Strategy was launched in 2022 to develop hydrogen as a major decarbonisation pathway. Hydrogen does not produce any greenhouse gases when burnt, and would thus significantly reduce carbon emissions.

Second, carbon capture, utilisation, and storage technologies can trap carbon dioxide released from power plants, removing them from the atmosphere. The greenhouse gas will then be transported and stored underground permanently or used as raw materials to produce alternative fuels.

Last, recent developments in geothermal technology may allow Singapore to harness geothermal energy from steam and hot water found at greater depths. This is opposed to conventional geothermal technology that relies on hot permeable reservoirs at shallower depths, which Singapore lacks.

Although most of these technologies are still in their infancy, they display immense potential to reduce carbon emissions, boosting Singapore's journey to reach net-zero emissions by 2050.

As such, Singapore is investing heavily in the research and development of the low-carbon energy field. Under the low-carbon energy research funding initiative, $55 million was awarded in 2021 to 12 projects to accelerate decarbonisation. A further

$129 million will be set aside for phase two of the initiative, said Deputy Prime Minister Lawrence Wong at the Singapore Energy Lecture on Oct 25, 2022, at the start of Singapore International Energy Week.

Despite the many benefits of these low-carbon alternatives, research, development, the building of infrastructure, and carrying out these technologies will be costly.

Sources: National Climate Change Secretariat, Ministry of Energy and Natural Resources, Malaysia, Sembcorp, Housing Board, Singapore Green Plan, United Nations Environment Programme, Energy Market Authority

DON'T BE KNOCKED OUT BY A POWER OUTAGE

Electricity is available conveniently here, so it is easy to take it for granted. However, the cost of using it has spiked worldwide and ongoing global conflicts show that power networks can just as easily be disrupted. JEFF ANG reports.



A pub lit with candles during a power outage after critical civil infrastructure was hit by Russian missile attacks in Lviv, Ukraine, on Nov 24, 2022. PHOTO: REUTERS

There is perhaps no better time than now to start practising habits of conserving energy as, due to a variety of factors, energy prices have been rising.

As economies around the world move towards normality after the worst of the Covid-19 pandemic, there has been a rebound in the demand for energy.

This pushed up oil consumption and resulted in spikes in energy prices all over the world. The increase has stressed the finances of both businesses and households, especially lower-income ones.

Also, the ongoing invasion of Ukraine by Russia has further disrupted energy and

food supply chains in Europe. This has had a knock-on effect worldwide.

As Singapore imports almost all its energy through piped natural gas from Indonesia and Malaysia, and liquefied natural gas from other countries, it is inevitably affected by global turbulence.

Now that you know how precious energy is and how easily it can be disrupted, you should be aware of how to adapt to situations when energy or electricity has to be rationed.

STORE INFO OFFLINE

During a power outage, your mobile phone becomes one of the most vital tools for getting information and communicating. Do whatever you can to make its battery life last as long as possible. For instance, dim the screen brightness, turn off Wi-Fi and switch to power-saving mode.

However, your mobile phone battery will eventually run out, and you may not be able to recharge it. So it is a good idea to write down essential phone numbers and other information, such as the phone numbers of your emergency contacts, in a notebook.

PREPARE AN EMERGENCY KIT

A power outage can happen at any time, so it is good to have equipment that can help your family cope with one. Prepare an emergency kit in advance.

Some things to include are: flashlights, a battery-operated radio, spare batteries, first-aid supplies and perhaps a small supply of drinking water and food. Candles can be added too, but be aware that they are a fire hazard. Keep your emergency kit where it can be easily accessed by anyone.



Emergency supplies should include dried food and bottled water. PHOTO: REUTERS

PRIORITISE YOUR FOOD SUPPLY

In the event of a prolonged power disruption, the food in your refrigerator can be kept for about four hours without going bad. Eat these first before they go bad.

For food that can be stored for a longer time, such as biscuits and dried or canned food, they should be kept until you have eaten the food in the refrigerator.

BLACKOUT TIP: UNPLUG YOUR APPLIANCES
If there is a large-scale power disruption, you should ask your parents to unplug anything with electrical circuitry, such as the microwave, refrigerator and television. This will protect your appliances from damage when the power comes back on, and there is a spike or surge in the power lines.

5 WAYS TO PREVENT SHOCKING POWER BILLS

Use the fan before switching on the air-con
If you ever needed a reason to use the fan instead of the air-conditioner, here are 400 of them. On a warm day, doing this could save you about $400 a year.

The energy used by just one air-conditioner equals the energy used by 11 fans. On a really hot day, consider running the air-conditioner just for an hour to cool a room, and then switch to a fan after that.

Turn off electrical appliances at their sockets
Many devices are usually left plugged in even when they are not in use. What we do not realise is that these devices continue to run on standby power and consume energy. These devices include appliances, such as laptops, smart TVs, modems and routers.

To stop this pointless energy consumption, switch off the devices at the socket, especially when they will not be used for an extended period.

Turn off water heater; avoid taking long showers

Another simple way that you can save energy is to cut down on the time you spend in the shower. Besides saving water, taking shorter showers also reduces the energy consumed. Another tip is to turn off the shower when you are soaping or shampooing. Most people who leave the water running are just lazy or doing it out of habit.

If you are the tough sort, you could take showers without using the water heater, as that will save you more energy. Also, remember to switch off the heater after showering.

Use the refrigerator efficiently

Considering that it is always running, the refrigerator is a major source of household energy consumption. This makes it more important to learn how to make it energy efficient.

For instance, allow hot food to cool before storing it in the refrigerator, as it takes more energy to cool hot food. And do not overload the refrigerator with items, as they may block air circulation and reduce its cooling capabilities.



If a fridge is packed with items, the cool air will not be able to circulate efficiently. ST FILE PHOTO

Also, decide what you want before opening the refrigerator so that air leakage is reduced. Finally, make sure that you properly close the refrigerator door so warm air does not get in.

Use both sides of a piece of paper

You may be wondering what saving paper has to do with conserving energy. However, you must remember that our energy ecosystem is an extremely connected one. One kilogram of paper requires about 324 litres of water to produce. By saving more paper, the resources used to make it are saved too.

Sources: straitstimes.com, tristate.coop, nea.gov.sg, consumerreports.org, getpreparted.ga.ca

SPEND SOME TIME TO LEARN HOW TO SAVE A LIFE

The Community Emergency Preparedness Programme, organised by the Singapore Civil Defence Force, is a free half-day course that aims to equip the public with life-saving skills. TANG BI FENG and EUNICE SNG, who have no experience in first aid, join it to find out what they can pick up.



At the half-day CEPP programme, you can learn CPR-AED skills, how to put out fires and basic first aid. More than 350,000 people have taken part in the programme since its inception in 2003. ST PHOTOS: JASON QUAH

Bi Feng: Eunice and I arrived at the SCDF 4th Division HQ in Bukit Batok Road at 9am. The class we joined had about 25 middle-aged participants from JustWalkJer, a walking-based activity group organised by ActiveSG. They were chatting excitedly, ready and eager to learn.

Once the room settled down, retired SCDF officer Abdul Malik, 64, introduced us to the various skills we were going to learn that day. They ranged from first aid and life-saving

to firefighting. I was most excited to learn how to use a fire extinguisher due to the recent rise in residential fire cases.

Eunice: Mr Malik had a light-hearted attitude and actively engaged the participants, giving clear instructions on how the different first-aid techniques were performed. He demonstrated the procedures using pictures and detailed videos. With his chirpy personality, I felt less intimidated and could ease into the content of the course.

BASIC FIRST AID

Eunice: After the introduction, we started learning how to treat a bleeding wound caused by traffic accidents or terror attacks. We learnt a three-step process – press, tie, tell.

Mr Malik introduced another technique to stop further bleeding after "pressing and tying" called the windlass technique. This involves using a pen to twist a bandage such that extra pressure would be applied on the wound.

I tried it on Bi Feng. The process was surprisingly simple to do, especially with extra guidance from the SCDF personnel in the room.

Bi Feng: Although Eunice made only one rotation with the pen on my upper arm, I could feel significant tightness, and my arm felt weak after she removed the tourniquet. I was convinced of the technique's effectiveness.

Besides stopping excessive bleeding, we also learnt how to deal with sprains and choking cases in this segment. Mr Malik taught the class to differentiate between the two types of choking – partial airway obstruction and full airway obstruction. We then practised the Heimlich manoeuvre, which is used only when the patient's airway is fully obstructed, on one another.

SAVE-A-LIFE INITIATIVE

Bi Feng: Did you know that most cardiac arrest cases in Singapore die? However, a person's chance of survival can double or even triple if cardiopulmonary resuscitation (CPR) is administered immediately after cardiac arrest.

After learning about this during the class, I felt a huge responsibility to equip myself with the skills needed. I listened attentively to the theory session by Mr Malik on how to perform CPR and use an automated external defibrillator (AED).

Eunice: We then took turns to perform CPR on the dummy under the guidance of the student volunteers from Civil Defence Lionhearters and SCDF staff.



At first, pressing down on the dummy's chest felt difficult. I had to apply a lot of force, but then I realised that it was because I was exerting only my arm muscles. The volunteers told me to lean in so that I applied my full body weight. This made the process easier.

They counted a regular rhythm for me to perform the compression to. So all I needed to do was to follow their beat.

Overall, I felt that it was an accessible introduction to CPR. However, I think that applying the technique on a human being in real life would be a whole different experience altogether because of the heightened anxiety of helping an unconscious person.

To be truly qualified to perform CPR, I think I would have to consistently practise it without supervision and imagine myself in emergency situations to feel emotionally prepared.

EXTINGUISHING FIRES

Eunice: At noon, the class proceeded to an open area for the practical session on how to use fire extinguishers. The SCDF staff lit a fire in a wok filled with oil for us to practise on, while the participants looked on expectantly – myself included.

One by one, we stepped forward to handle the fire extinguisher. I picked it up with a slight heave and got ready to confront the leaping flames.

Bi Feng: As I stood before the fire, I was worried that I would not be able to correctly execute the steps taught. However, when I pressed the handle of the fire extinguisher, gushes of cold carbon dioxide gas escaped the cylinder and engulfed the flames.

It was an exhilarating experience, and the fire was extinguished immediately.

This practical session was definitely the highlight of the programme for me and I feel proud knowing that I can now play a part in combating minor fires when the need arises.

A USEFUL INTRODUCTION

After four hours, while we were physically and mentally tired, we felt more confident in performing first aid. (Check out a video that summed up we did at https://str.sg/cepp)

This free programme is a taster course that exposes the public to practical life-saving techniques. It is recommended for anyone above 13 years old. We feel that it is suitable for students who have no prior experience and want to equip themselves with basic knowledge.

We recommend you sign up with friends for moral support. Who knows? You may end up saving a life with your newly acquired skills.

Three ways to become a certified first aider

1. Singapore Red Cross Society Cert First Aider with CPR + AED course **What you will learn:** Hands-only CPR, AED usage and basic first aid **Cost:** $130 (before GST) **Duration:** 9am to 6pm (8 hours)	**2. St John Singapore** Basic First Aid course **What you will learn:** Hands-only CPR, AED usage and basic first aid made simple for easy learning (suitable for youths below 16) **Cost:** $57.43 (before GST) **Duration:** Two full-day sessions (15 hours)
3. Complete the Total Defence Gold Badge programme if you are in a uniform group.	

MEET THE CIVIL DEFENCE LIONHEARTERS

The Civil Defence (CD) Lionhearters is made up of SCDF's group of youth volunteers who study at various tertiary institutions. They are trained in first aid skills and help out when there are emergencies around Singapore.

President of the Nanyang Technological University CD Lionhearters Ong Meng Kiat, 23, recalled an incident where he received a crisis call from SCDF's myResponder app on an afternoon in January 2019. A man in his 50s had collapsed in his neighbourhood.

As the man's heart had stopped beating, Mr Ong applied his training and conducted cardiopulmonary resuscitation until the paramedics arrived. Mr Ong was unable to rescue the victim, but the deceased man's son later thanked him for his efforts.

That encounter gave Mr Ong a sense of purpose. “If there is something that needs to be done for a life at stake, I will do it,” he said.

The CD Lionhearters also serve as ambassadors, sharing their life-saving knowledge with the public during community outreach events. Volunteer Lai Jiong Shen, 22, recalled an elderly woman who brought along her grandchildren to one of the Emergency Preparedness events.

She was particularly interested in picking up the skills because her son had passed away after a cardiac arrest. “I was quite sad when I heard her story,” said Mr Lai. “So, I just do my best to help the public in hopes that I can impact someone’s life.”

Another volunteer, Mr Loh Jun Ren, 22, stressed that emergencies can happen any time and anywhere, so it was important for young people to have the skills to handle these life-threatening situations.

Mr David Khoo, 22, agreed: “Imagine your loved one, let’s say your mother or your friend, getting cardiac arrest, and you are not able to do anything about it.”

“Having the required knowledge will give you confidence because if anything happens to those around you, at least you know what you need to do and not just panic.”

Sources: redcross.sg, stjohn.org.sg, mindef.gov.sg

ARE YOU READY TO SURVIVE THE UNEXPECTED?

Stadium, festival, outdoor party. These places of fun have suddenly turned into deadly killing grounds because of mismanagement and oversight. When all else fails, ANG YIYING lists the strategies you need to know if you find yourself caught up in an emergency situation.

You are stuck among a mass of bodies. People are pressing in from all sides, and you are not walking any more – you are being pushed along by an increasingly anxious crowd.

POTENTIAL DANGER: CROWD CRUSH

A "crowd crush" refers to a situation where there are more than six people in a 4m by 4m square of space. Pressure builds as people cannot move around freely and the lack of space restricts one's breathing, in some cases causing suffocation.

People who have experienced this describe feeling like the crowd is fluid and carrying them along like waves. They are no longer in control of how and where to move. If a disturbance occurs, such as someone falling, it creates a void and leads to a chain reaction of other people falling into the void. People cannot avoid falling onto one another, eventually creating stacks of bodies.



On Oct 29, last year, Seoul's Itaewon district was packed with people celebrating Halloween. The overcrowding led to a deadly crowd crush in which 158 people were killed. PHOTO: REUTERS

This is believed to be what happened in Itaewon, South Korea, during the Halloween crush last

October. The crowd crush killed at least 158 and injured 196. Most of the victims were young adults.

What to do: Unfortunately, experts say that by the time you realise you are caught in a crowd crush, there is little that can be done. However, there are some tactics you can try to minimise the damage to yourself and others.

- If the crowd is very dense such that you are being shuffled along, move along with the crowd instead of resisting it or going against it so that you do not fall. Even if you find yourself going in a direction you do not want to, do not attempt to walk against the flow of the crowd.
- You must also keep your eyes peeled for exits. If the crowd carries you to a point near one and there is a lull in the movement, try to move towards it by moving horizontally or diagonally.
- Keep your arms in front of you so that it gives you a little more space between yourself and the person in front.
- Stand with one foot in front of the other, so you have firmer footing. If you drop something, do not pick it up, as you could end up falling or causing others to fall.
- If you do end up falling, try to minimise injuries to yourself by lying on your left side. The objective is to protect your heart and lungs in the event that others fall on you.

Prevention strategy: Develop situational awareness, which means being observant of what is happening around you.

- If you are at a location with many people, check out where the exits are.
- When you begin to feel uncomfortable in a crowd, just head for an exit.
- If you have concerns about crowd control, inform the relevant personnel, for instance, event staff or security.

A blurry shape flashes by the corner of your eye, and you hear a thud. You turn and realise that a person is on the ground.

POTENTIAL DANGER: CARDIAC ARREST

It could be a simple slip and fall or fainting spell, but if a person's collapse is due to a cardiac arrest or heart attack, then the chances of death are much higher.

In 2019, Mr Koh Aik Koon collapsed while playing basketball in Dunman High School's indoor sports hall. It turned out he had suffered cardiac arrest. Through the quick thinking and efforts of the people nearby, including four students in the school, a teacher, an alumnus and a nearby Singapore Civil Defence Force full-time national serviceman, Mr Koh was saved. Their collective efforts included setting up an automated external defibrillator, performing cardiopulmonary resuscitation (CPR) and guiding an ambulance to the victim.

What to do: People may collapse for different reasons. First, check if the victim has a pulse and is still breathing.

If pulse and breathing cannot be detected, call 995. Be specific in your call by describing your location and the victim's symptoms as accurately as possible. While waiting for help to arrive, CPR may have to be administered. If you do not know CPR, ask if there is someone nearby who is trained to do so.



A cardiac arrest victim's chances of survival drop by 7 per cent to 10 per cent every minute if CPR or an automated external defibrillator (AED) is not applied. You can use the myResponder app to see where the nearest AEDs are located. ST FILE PHOTO

If the victim is unconscious, but still has a pulse, is breathing and has no other injuries, put the person on his back and raise his legs above heart level. Fainting is usually due to low blood pressure, and elevating the feet would help blood circulate back to the heart. If the person does not regain consciousness shortly after, call 995. If the person wakes up, help the person up to rest and see if you can render any other help.

Prevention strategy: Here is what you should do should you feel like collapsing.

- When you feel faint, sit down and put your head between your legs.
- If you are with someone, get the person to accompany you to a clinic to check that your light-headedness is not a symptom of a more serious condition.
- If you are alone, ask around for help to get to the closest clinic.

A charred smell suffocates you. You see flames licking the corners of the room.

POTENTIAL DANGERS: SMOKE INHALATION AND BURNS

Home fires can occur with little warning. Most times, they can be dealt with if the people on site have some basic fire safety knowledge. However, a fire can quickly turn deadly when people are caught unawares. For instance, in May 2022, a fire that broke out in a Bedok North flat in the early morning killed three people, including a toddler.

What to do: If the fire is small and there is a nearby fire extinguisher, you can try to put out the fire. Do so only if you assess there is no risk to yourself, and you are confident. But if you sense the fire is out of control, call 995. You should also alert people nearby. If you are not on the ground floor, make your way to safety using the stairs.

However, if you are not able to leave the building due to fire or obstruction, find an unaffected room with a window to wait for help. Close the door behind you without locking it, and cover gaps around the doorway to prevent smoke from entering. Call 995 to report your location and stay close to an open window. If you do not have a phone on hand, call out for help from the window.

Prevention strategy: In a parliamentary reply in 2022, the Ministry of Home Affairs said that in the past five years, the main causes of fires in Housing Board estates were unattended cooking, indiscriminate disposal of lighted materials, such as cigarette butts, and fires of electrical origin which could be caused by faulty wirings and electrical appliances. To prevent fire from breaking out:



An overloaded power point can lead to a fire. TNP FILE PHOTO

- Do not leave your switched-on cooking appliances unattended.
- Always dispose of lit material carefully.
- Make sure electrical appliances are in good working order.
- Do not overload power points.
- In the case of a medical emergency or fire, call 995.

Sources: The Straits Times, NYTimes, Washington Post, Mayo Clinic, Singapore Civil Defence Force, HealthXchange

DEFENDING THE NATION'S CYBER BORDERS

IN looks at the role of the SAF's Digital and Intelligence Service and why the setting up of it is a timely move.



Employees from 16 organisations, including Singtel and Sembcorp, joined specialists from the Digital and Intelligence Service in the inaugural Critical Infrastructure Defence Exercise held in November 2022. CMG FILE PHOTO

In October 2022, the Singapore Armed Forces (SAF) officially established its fourth service – the Digital and Intelligence Service (DIS). This was two months after Parliament approved amendments to the SAF Act and the Constitution to include the DIS as a service under the SAF.

To mark the occasion, DIS servicemen, decked out in ceremonial uniforms, took part in an inauguration parade at the SAFTI Military Institute on Oct 28, which was officiated by President Halimah Yacob.

THE ROLE OF DIS

The formation of the DIS was first announced during the Budget debate in Parliament in March 2022, as the SAF wanted to move decisively to meet growing threats in the digital domain.

The DIS was set up to provide timely intelligence and safeguard Singapore against digital threats, including cyber attacks and electronic warfare. It aims to "raise, train and sustain digital forces and capabilities to fulfil their mission to defend the peace and security of Singapore from evolving and increasingly complex threats in the digital domain".

The new service integrated the existing Command, Control, Communications, Computers and Intelligence (C4I) as well as cyber capabilities of the SAF over the last decade under a unified structure.

Speaking to reporters at a press briefing, Colonel Letchumanan Narayanan, head of the DIS Implementation Office, said military regulars under the Military Domain Experts Scheme will form the core of the new service. Defence executive officers, who are civilians, will also contribute expertise in areas including cyber, policy formulation and operating and maintaining networks.

Full-time national servicemen will be deployed based on their aptitudes, such as in imagery analysis or open-source research, he added.

Colonel Letchumanan said the DIS' capabilities are not about hardware. "We can talk about servers and networks, but the real capabilities are people. That is one of the major reasons behind having a service – to allow us to recruit, retain and build the right people," he added.

NATIONAL DIGITAL DEFENCE NOW NECESSARY

Even though Singapore has not been a victim of a nationwide cyber attack, the country has to remain guarded because an increasing amount of day-to-day life takes place online.

During the Budget debate last March, Defence Minister Ng Eng Hen said that the digital terrain has become as real as the land, air and sea domains. He said: "Threats that emanate in the digital domain can readily impact events in the real physical world. That divide between virtual and physical, in security terms, is a false one as the two are in fact intricately interwoven."

He added that there have been clear examples of countries or non-state entities, such as terrorist groups, that use a combination of attacks through both domains. Dr Ng said: "When we look at all these incidents in the digital domain, what then should our response be? Fortunately, our intelligence sources have not identified such orchestrated

attempts to subvert or subjugate Singapore using hybrid means. But that does not mean the threat will never come, so I think we best prepare now with a longer runway."

"For the SAF, a clear-cut response is a fourth service," he added. The sentiment is one echoed by the President during her speech at the DIS inauguration parade. Madam Halimah said the formation of the DIS was timely and necessary for the SAF to adapt to face security threats in the digital and information domains.

She also highlighted the threat of hybrid warfare, where digital attacks by state and non-state actors can result in the disruption of essential services, local elections, as well as theft of data.

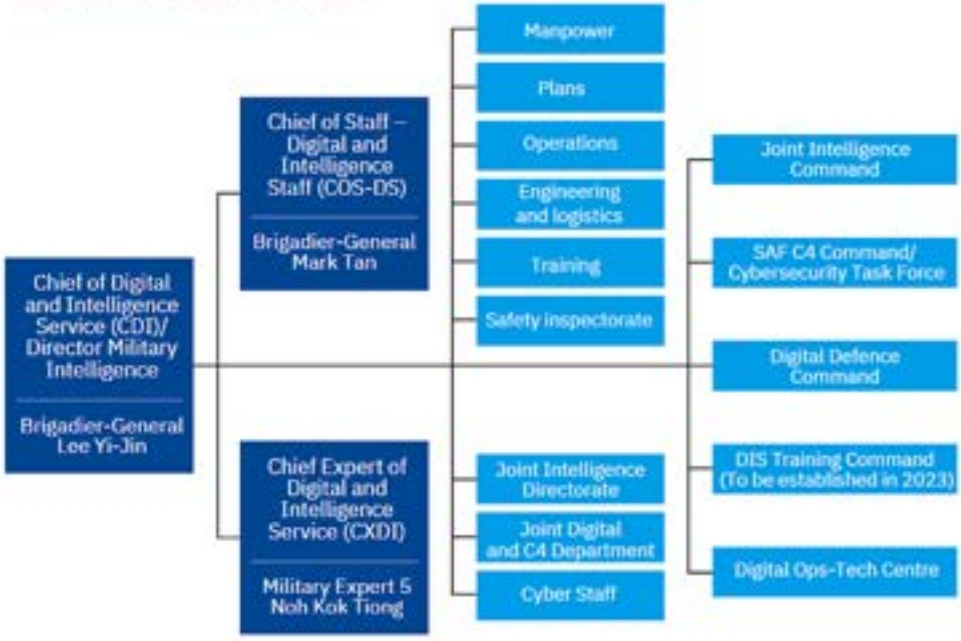
DIS operations will take place even during peacetime and function as an early warning system for the rest of the SAF.

Sources: The Straits Times, mindef.gov.sg

Defending S'pore against digital threats

The Digital and Intelligence Service (DIS) joins the army, navy and air force as the fourth arm of the Singapore Armed Forces (SAF). The service is tasked to obtain intelligence and protect the nation against digital threats.

ORGANISATIONAL STRUCTURE



ROLES AND RESPONSIBILITIES

CDI
- A two-star-general appointment, drives mission outcomes in the service

COS-DS
- Similar to the Chief of Staff roles in the other three services

CXDI
- Equivalent to Sergeant Major of the Army, Air Force Command Chief and Master Chief Navy
- Plans and oversees the development of personnel
- Ensures regimentation and operational discipline

Joint Intelligence Command
- Provides accurate and timely intelligence for early warning and decision-making
- Comprises a headquarters and two brigade-level groups, the Imagery Support Group and Counter-Terrorism Intelligence Group

SAF C4 Command/Cybersecurity Task Force
- Operates and safeguards the C4 – command, control, communications and computers – capabilities of the Defence Ministry and SAF
- Consists of the C4 Operations Group and the Cyber Defence Group

Digital Defence Command
- Responsible for psychological defence to improve resilience of servicemen
- Also develops capabilities for electronic protection, which involves guarding against electronic attacks from hostile forces

DIS Training Command
- Develops personnel through vocational and competency training schools
- Expected to be established in 2023

Digital Ops-Tech Centre
- Boosts development in data science and artificial intelligence technologies to maintain the SAF's edge in these areas
- Partners the defence technology community, government agencies, academic institutions and industry experts to stay updated on best practices

DIS EMBLEMS AND THEIR SYMBOLISM

CREST



SERVICE FLAG



SOURCE AND PHOTOS: MINDEF STRAITS TIMES GRAPHICS

‘INVISIBLE WAR’ RAGES IN THE DIGITAL REALM

The freedom of cyberspace means that conflict is inevitable. ANG YIYING finds out what Singapore is doing to keep your digital life secure.

Digital threats may seem less deadly than physical ones, but they can also cause extensive disruption to your life. Such conflict on the Web can be instigated by individual criminals, organised groups or even states for purposes of financial or political gain.

Recognising that such dangers exist, the Singapore Armed Forces have set up the Digital and Intelligence Service (DIS).

Defence Minister Ng Eng Hen said in Parliament: “For the SAF, it has asked itself this simple question, just as it does if the threat came from the air, land or sea: How does it detect, mitigate or repel any potential aggressor – an orchestrated cyber attack by state and non-state actors – that means to do Singapore and Singaporeans harm?”



Brigadier-General Lee Yi-Jin, chief of the Digital and Intelligence Service, receiving the state colours from President Halimah Yacob at the inauguration ceremony at the Safti Military Institute in October 2022. ST FILE PHOTO

He described the DIS as one that would defend the Republic’s digital borders.

IN looks at two recent digital threats that have caused serious harm.

Critical infrastructure held hostage: Attack on the US’ largest oil pipeline in 2021

In May 2021, a cyber attack disrupted the operation of the largest oil pipeline in the United States – one that transports almost half of the fuel supply of the country’s east coast.

The criminals – believed to be a group operating out of Russia known as DarkSide – left a ransom note on Colonial Pipeline’s IT system, saying that it had material from the

company's shared internal drive. They demanded approximately US$5 million (S$6.7 million) in exchange for the files.

Colonial Pipeline had to take its computing systems offline to contain the threat. This led to its operations being shut for three days, resulting in petrol stations along the US' east coast running out of supplies.

The hijack also compromised industrial and military operations as the pipeline supplied about 90 US military installations and 26 oil refineries, revealed a source.

The company's chief executive would later reveal that the ransom was paid one day after the hack. Paying ransom to hackers is considered a controversial move, as it could encourage future attacks.



In 2021, many petrol stations along the United States' east coast ran out of supplies after the ransomware attack on Colonial Pipeline as the company had to take its computer network offline. PHOTO: REUTERS

What is a ransomware attack?
Ransomware is a type of malware (malicious software) that locks up a victim's data or computer network so that he is not able to access it. This type of attack is mostly used against businesses or organisations and is relatively easy to execute because it can be performed via e-mail links. It is called a ransomware attack because a hacker demands money in exchange for releasing the data, control of a computer network or for not publicly disclosing sensitive data.

A cyber-security consultant who responded to the attack would later say the hack was the result of a single compromised password. Hackers gained entry into the networks of Colonial Pipeline on April 29 through a virtual private network account, which allowed employees to remotely access the company's computer network, said Mr Charles Carmakal, senior vice-president at cyber-security firm and Google subsidiary Mandiant.

The account was no longer in use at the time of the attack, but could still be used to access Colonial's network, he said. It is not certain how the hackers obtained the

password, although a possibility is that a Colonial Pipeline employee may have used the same password on another account that was previously hacked.

Distorting reality with fake news: Russia using lies to attack Ukraine

Leading up to Russia's invasion of Ukraine in February 2022, Russia had run a series of disinformation campaigns to support its reasons for the attack. For instance, it made unfounded claims that Ukraine was helmed by a neo-Nazi regime. Neo-Nazi refers to the belief in a racist ideology that was promoted by the Nazi political group that started World War II.

When international media reported on how the Russian invasion had led to the deaths of civilians, the Russian disinformation campaign started labelling such news reports as "fake news". It was done through the Russian media sources the Kremlin controls and by the use of bot accounts online.

What is disinformation?
Disinformation is false information spread deliberately to deceive people. A disinformation campaign is a focused effort to spread lies in order to cause harm, for instance, to weaken people's confidence in a government.

Those who have been monitoring Russian propaganda are now warning that Russian-affiliated sites and social media accounts have turned their sights on Ukraine's European allies.



Russia, the Philippines, and the American election were discussed at an online hearing of the special European Parliament committee on foreign interference and disinformation in all democratic processes in the European Union, held in Brussels, Belgium, in February 2022. PHOTO: REUTERS

They are now aimed at stoking resentment against the 7.8 million Ukrainian refugees who fled to European countries. This is because European countries have spoken up against Russia's aggression and

implemented sanctions on the country, so Russia wants to reduce this support.

The Washington Post reported on a fake news clip that was widely circulated on social media. It purportedly showed a German home owner crying because Ukrainian refugees had set her home on fire. The video even used the logo of Bild, a German media outlet. However, forensic analysis of the bogus news clip revealed that it was stitched together from footage of unrelated events.

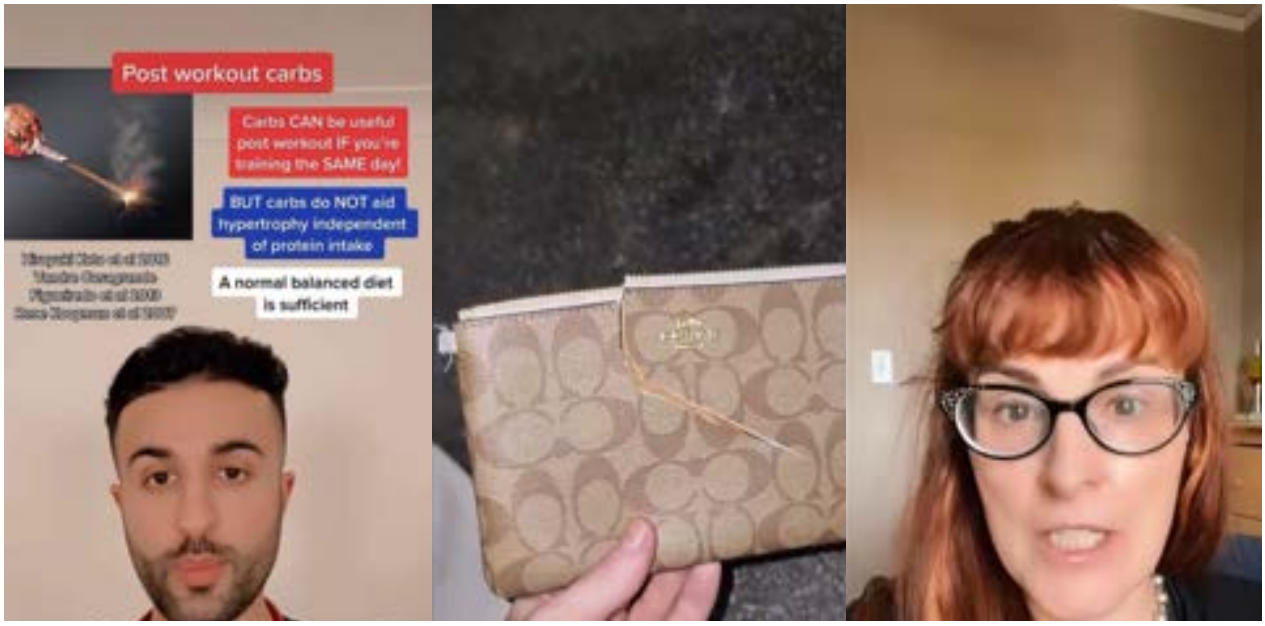
Russia wants to spread such lies about Ukrainian refugees to undermine Europe's support for Ukraine by triggering outrage to increase social and political tensions.

Mr Joseph Bodnar, an analyst focusing on Russian disinformation at the organisation Alliance for Securing Democracy, said that Russia's efforts are designed to "undermine the EU's global standing, reduce the European public's support for Ukraine, and cause political disruption within the EU".

Sources: The Straits Times, Bloomberg, CNBC, Washington Post

GOOD AND BAD SIT SIDE BY SIDE ON TIKTOK, BE CAREFUL WHO YOU HANG WITH

The power the social media platform has to circulate information has increased greatly as more users are using it on a daily basis. ZAN SAM looks at how it is being used to do good and how you can avoid the questionable content that shows up on your feed.



When used for good, TikTok can impact lives positively. (From left) Dr Idrees Mughal (@dr_idz) debunks claims such as those made by fad diets, Ms Tiffany Butler (@dumpsterdivingmama) called out luxury brand Coach for waste which led to a change in the store's policy, and epidemiologist Katrine Wallace (@epidemiologistkat) helps combat the misinformation spread by anti-vaxxers. PHOTOS: TIKTOK

When TikTok first burst onto the social media scene, it was full of cringe-worthy dance videos. These online eyesores are not gone, but a quick swipe through your For You page may take you to more worthwhile content.

TLDR: TikTok is growing up. Users are now using it for activism and raising awareness. For example, creators in the United States are talking trash – literally. They go dumpster diving around their neighbourhoods, then post videos of their hauls to highlight the wastefulness of retailers that toss out unwanted items instead of repurposing them.

Their efforts have led to change. Luxury

brand Coach was called out by TikTok user Ms Tiffany Butler (@dumpsterdivingmama) for slashing and throwing away handbags that had been returned in store. After her video went viral, the brand said it would stop "destroying in-store returns of damaged, defective, worn and otherwise unsaleable goods" and instead try to reuse them.

And over the past two years, healthcare workers around the world banded together to dispel common myths about the Covid-19 and the vaccine. Epidemiologist Katrine Wallace (@epidemiologistkat) said she made her first video only after she came across Covid-19 conspiracy theories on the app. Three years later, she has about 275,000 followers and a series explaining common techniques that anti-vaxxers and Covid-19 sceptics use to mislead audiences.

FALSE NARRATIVES HARD TO FILTER OUT

On TikTok, spreading entertaining content is fairly straightforward. If more people watch a clip, this signals to the app that it has "attention-grabbing" power. The app will then prioritise it and show it more often; this often leads to even more views.

And, as anyone can make a 15-second TikTok while calling himself an expert, this also means misinformation and disinformation can easily spread on the platform. Once a misleading clip gains momentum, TikTok's powerful recommendation program makes those that contain inaccurate claims difficult to take down.

Researchers at NewsGuard, a journalism tool that tracks online information, have found that when users search TikTok for information about news stories that involve Covid-19 vaccines or school shootings, almost 20 per cent of the videos in the search results contain misinformation.

Misinformation is false or inaccurate information and examples include rumours, insults and pranks.



A verifying health claims page from the AFP Fact Check is displayed on a mobile phone with a TikTok video of Onion Water shown in the background in Washington, the United States, in December. An onion-heavy homemade cure for flu is the latest medical misinformation swirling on TikTok. PHOTO: AGENCE FRANCE-PRESSE

Disinformation is deliberate malicious content such as hoaxes, scams and propaganda.

For instance, during the Philippine presidential elections in 2022, supporters of two candidates – Mr Ferdinand Marcos Jr and Ms Leni Robredo – started spreading misinformation and disinformation about their opponents. Statements made by either party were often incorrectly quoted or used out of context on videos posted to TikTok. In one instance, anti-corruption comments made by Ms Robredo were manipulated to show her saying that she would, in fact, lead a corrupt administration.

Such political antics have also happened in Germany, where users pretended to be public officials during the last national elections. Over in Kenya, videos containing hate speech about presidential candidates were constantly uploaded to the platform.

An area of TikTok riddled with unverified claims is public health. Many health claims tend to go unscrutinised until individuals with actual medical knowledge speak up. However, the number of people posting unchecked information far outnumber those who create videos based on evidence.

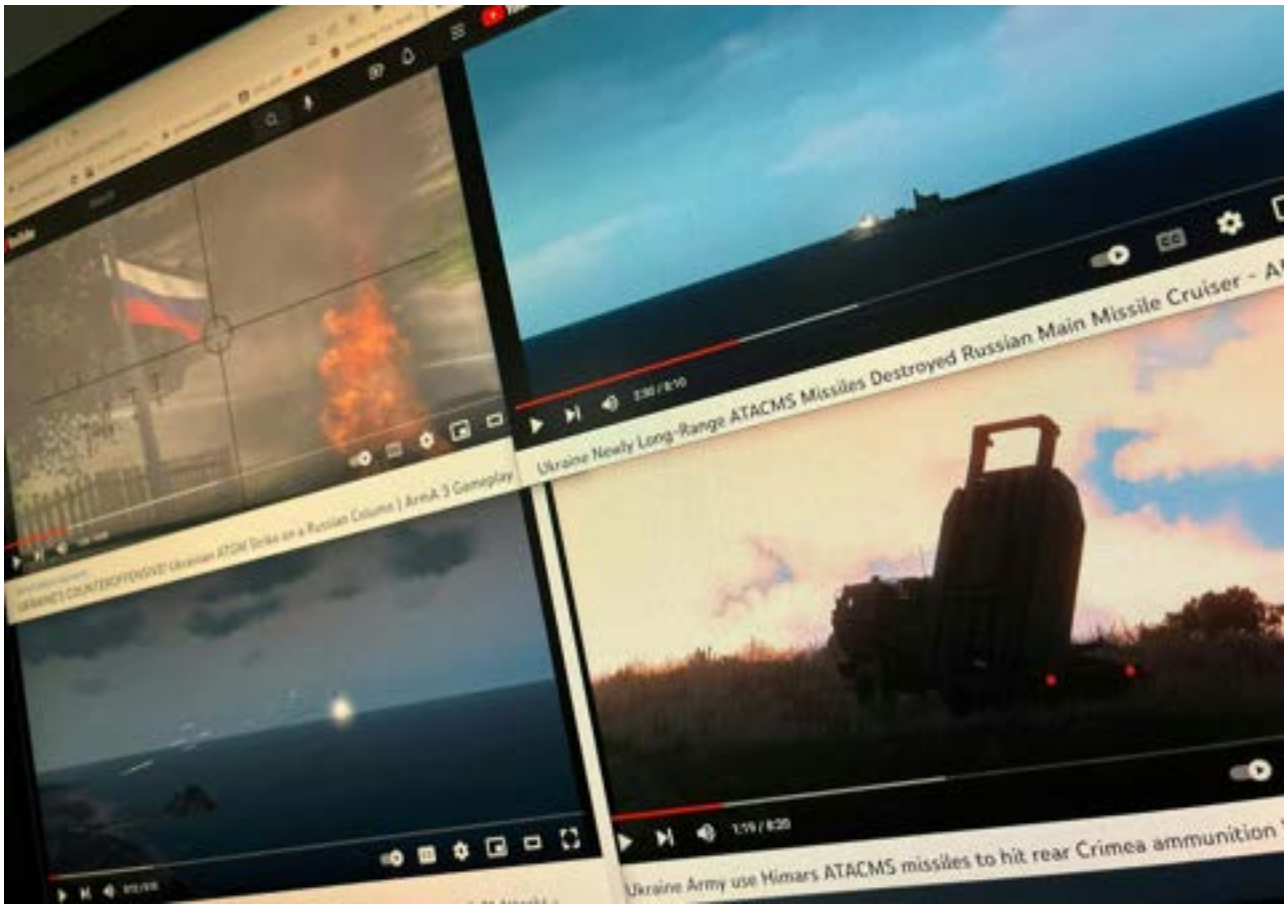
In a New York Times interview, Dr Idrees Mughal (@dr_idz), said that he is often tagged in 100 to 200 videos a day from users requesting that he debunk claims made by others. The Britain-based doctor talks about fad diets, "cancer-causing" foods and vegetables containing "toxic" chemicals on his account.

IMPROVEMENT BETTER WITH COMMUNITY INPUT

On its end, TikTok has been working to counter harmful videos. If moderators find a video with false information, TikTok removes it or blocks it from appearing in For You feeds. Users who continually post such videos may get suspended too. From April 1 to June 30, 2022, TikTok said it removed more than 33 million accounts which sought "to mislead people or use TikTok to deceptively sway public opinion".

Of course, there is room for improvement. Type "global warming" – a neutral phrase – into the search bar, and suggestions like "global warming doesn't exist" and "global warming debunked" still show up. Ultimately, while social media companies like TikTok have the power to – and ought to – control the spread of fake news on their platforms, social media users also have a role to play. This includes verifying information before sharing it, or reporting questionable videos.

Content is communication: Everything you see and hear can influence your thinking



Footage from the war-themed Arma 3 video game has been used repeatedly in recent months in fake videos about the Russian offensive in Ukraine. This disinformation spreads when mistakenly broadcast by the media or tagged as authentic news when shared on social media. PHOTO: AFP

As you read this, you are receiving a message from this writer. In this case, it is a direct and obvious one telling you to be careful about what you read.

However, in many other cases, messages are hidden in amusing or emotional "wrapping" so you think they are harmless. As these tend to contain negative ideas, watching or reading too much of them could warp your view of the world. Even people who have gone through higher education can be affected by these well-crafted "information weapons".

The Straits Times last week reported that a 38-year-old Ministry of Education (MOE) teacher was detained in October 2022 for planning to engage in armed violence overseas. The Internal Security Department said he was influenced by radical online videos.

The man, who is the first public servant to be dealt with for terrorism-related offences, had also tried, unsuccessfully, to influence his family members and children to adopt his segregationist and hardline beliefs. He did so by sharing videos that promoted intolerance.

The MOE said: “This case reflects the ever-present dangers of radicalisation, including online radicalisation, which all of us must remain vigilant against.

“MOE regards this case very seriously and will continue to work closely with ISD and the community to safeguard our schools and students against such threats.”

Here are three ways you can avoid being negatively influenced by disinformation or just plain misunderstandings.

1 WATCH OUT FOR BIAS BUBBLES

Social media algorithms can create an echo chamber where a viewer’s existing opinions and ideologies are reinforced.

For instance, say you claim the Earth is flat. You scroll through social media, watch tons of videos uploaded by people who agree with you, and like or share them. The algorithm will then push you similar content as you have indicated that you enjoy them. This constant feed of information further cements your belief that you must be right.

If you do not stop to consider other sources of content, especially those that disagree with you, then you will be stuck in a web of lies.

2 IDENTIFY THE SOURCE

Of course, this method is not foolproof – as former US president Donald Trump is known for tweeting disinformation from his verified account – but it serves as a layer of protection nonetheless.

Doing this is not so easy though as there are numerous satirical accounts and memes, but once satirical content spreads without the original context, people often start mistaking it for authentic information.

In September 2022, French news presenter Pascal Praud, while on live television, attributed remarks to the country's energy minister that were actually invented by a parody Twitter account. Once he was alerted to the blunder, he apologised for making the comment and admitted that he had been fooled.

3 INVESTIGATE IMAGES

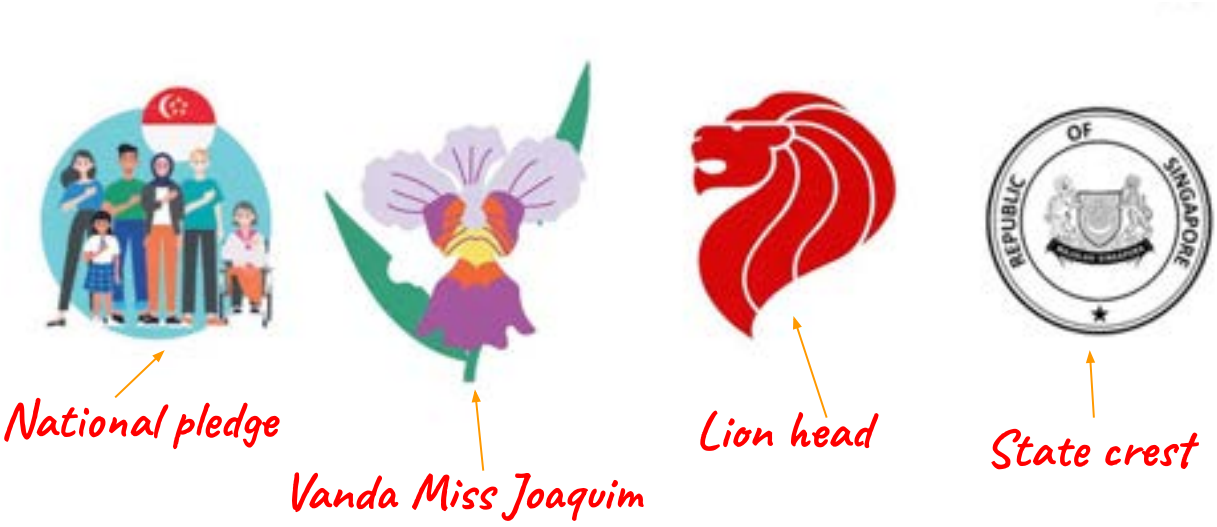
When you see a suspicious video or image that does not quite match its accompanying text or message, screenshot it and drop it into the Google Images search bar to find out where it originated or was previously used.

Another option is to search relevant phrases from the post on Google or YouTube. You will be able to find either the original post, or news coverage that may offer more context to the situation.

Sources: CNN, NYTimes, TikTok, AFP, France24

NOW WE HAVE MORE ICONS THAT SCREAM SINGAPORE

National symbols are representations of a country's identity that can be used to promote and publicise what is special about the country. Singapore recently added more of these in September 2022. NUR SYAHIIDAH ZAINAL reports.



More markers of national identity have recently been recognised as national symbols. The national pledge, the national flower (Vanda Miss Joaquim), the lion head symbol and the public seal will now be formally recognised alongside the state flag, the state crest (also known as the national coat of arms), and the National Anthem.

The move came after Parliament introduced the new National Symbols Bill on Sept 13 last year.

WHAT DID THE BILL DO?

The Bill replaces the Singapore Arms and Flag and National Anthem Act. The Act was introduced in 1959. It governed the use of only the state crest, national flag and National Anthem.

This new Bill covers all the seven national symbols, as well as the three presidential symbols, namely the presidential standard, crest and seal.

The law will allow these symbols to be used more flexibly, giving Singaporeans more opportunities to use them to express national pride and solidarity, such as displaying the flag outside of the National Day period.

The Bill will also protect all the national symbols against disrespectful use, with higher penalties for those who abuse them. Those who misuse the symbols can face a fine of up to $30,000 or a jail term of up to six months, or both penalties. More serious offences, such as the burning or desecration of the flag, would attract higher penalties.

In addition, a prescribed person – such as the Minister for Culture, Community and Youth, for example – can permit or prohibit the use of the symbols in appropriate situations.

WHY ARE NATIONAL SYMBOLS IMPORTANT?

National symbols are iconic representations that a country uses to portray itself to the world. These symbols usually reflect a country's history, culture and values.

They are often used to represent the country in a dignified and respectful manner during national celebrations and other significant events, such as at international sporting events or conferences. Go to https://str.sg/symb to find out more.



Members of the Singapore Armed Forces Veterans' League attended the 60th anniversary commemoration of the national symbols at the National Gallery Singapore in 2019. ST FILE PHOTO

QUIZ TIME

1 What do the five stars on the national flag represent?

2 The national anthem was rearranged — from a higher musical key of G major to the lower F major — to make it easier to sing. When was this done?

3 Which animals are shown on the state crest?

4 Vanda Miss Joaquim was named the national flower in which year?

5 Which year did students first begin reciting the pledge at the start of the school day?

6 The public seal is often affixed to state documents. Name two other items where you can spot it.

7 What does the lion head symbolise?

Answers: 1. Democracy, peace, progress, justice and equality 2. Jan 19, 2001 3. Lion and tiger 4. 1981 5. 1966 6. National currency and passport 7. Courage, strength and excellence



TOTAL DEFENCE TAKES THE STING OUT OF TURMOIL

Total Defence involves the protection of every part of a country. JEFF ANG looks at how TD principles have been applied to events here and around the world.

UKRAINE: Sticking together in defence

The unthinkable happened on Feb 24, 2022, when Russia invaded Ukraine to overthrow Ukrainian President Volodymyr Zelensky's government. With the odds in favour of Russia in terms of the number of troops and weaponry, many expected a swift Russian victory. But, after months of fighting, Russia, repelled by ferocious Ukrainian resistance aided by global allies, has gained little ground.



An entertainer performing for children at a volunteer centre during the partial blackout in the eastern Ukrainian city of Kharkiv on Nov 26, 2022, amid the Russian invasion of Ukraine. PHOTO: AFP

TOTAL DEFENCE IN ACTION

Total Defence (TD) involves every citizen, individually and collectively, helping to build a strong, secure and cohesive nation. One of the pillars of Singapore's TD is military defence, which includes maintaining a cohesive defence force that makes potential aggressors think twice before attacking.

This concept was put into practice by Ukrainians. At the start of the invasion, the country's army was inferior to that of Russia's, which spends more on it annually. Ukraine had to dig deeper to boost its existing military defence.

Without much fanfare, its ordinary citizens stepped up. Within days of the invasion, the Ukrainian city of Kyiv transited into war mode, with civilians carrying rifles and preparing defences that stuck out like a sore thumb in the historical city.



A volunteer medic from the First Volunteer Mobile Hospital evacuating a wounded Ukrainian soldier from a stabilising mobile hospital in the vicinity of Bakhmut, Donetsk region. Bakhmut has been dubbed "the meat grinder" due to the brutal trench warfare, artillery duels and frontal assaults that have taken place there for over six months. PHOTO: AFP

These actions were mirrored throughout the country as Ukrainians who did not evacuate prepared for a fight. From economists to nightclub managers, citizens of varied ages received rifles from the Ukrainian military, and formed makeshift army units, all while dressed in attire such as jeans and sweatpants.

This collective effort worked as well as it could. Russian forces did not expect such stiff resistance and were slowed down, at the very least. This bought enough time for Ukraine to receive help from aboard.

Other pillars of TD Ukrainians displayed were civil and social. Volunteers sewed army uniforms that were more suitable and comfortable for women; some taught English to Ukrainian soldiers to help them understand and make full use of the combat aid from the United States and other English-speaking countries, while others donated blood to help the wounded, among other things.

The willingness of the Ukrainian citizens to fight is in sharp contrast to the situation in Russia. There have been reports of underprepared Russian military units whose soldiers

did not even know why exactly they were fighting. In September last year, Russia pushed ahead with its biggest conscription since World War II to mobilise 300,000 men to support the invasion. This move came about despite repeated earlier assurances from the Russian military that only career soldiers on long-term contracts would be deployed. The mobilisation sparked a mass exodus of men hoping to avoid the call-up, and anti-war protests in 38 Russian cities saw many arrested.

Even now, there are reports of Russian conscripts not having adequate equipment, training and even orders. The lack of clear and compassionate governance in Russia has handed Ukrainians the psychological edge.

SINGAPORE: Adapting to Covid-19 threats

When the Covid-19 pandemic started to spread in 2020, Singapore's various government agencies sprang into action to deal with the challenges that it posed.

Before there was a vaccine, various safety measures were implemented, including restricted travel, social distancing and mask-wearing. Securing a reliable vaccine supply has also been a priority. Over the past two years, five pharmaceutical companies have committed to set up plants here, which will potentially manufacture over a billion doses of vaccines a year.

HOW TOTAL DEFENCE PLAYED A PART

The authorities' response against Covid-19 was more than just a top-down approach. Although they led the way by implementing rules, such as making mask-wearing compulsory for a time, spreading reliable information and forming guidelines, such as advising businesses how to transition to work from home. The impact of the virus on Singapore could have been much worse if not for the collective effort of the majority of residents in the country.

Following the spirit of the civil defence pillar of TD, many Singaporeans pitched in to help one another, and were socially responsible. The nation was thus able to reduce the impact of the virus here.

Unfortunately, the spread of Covid-19 was accompanied by the increased circulation of misinformation online. To defend against this, the Protection from Online Falsehoods and Manipulation Act Office was set up to tackle fake news and deliberate online

falsehoods, which undermine social cohesion. This can be said to be part of the digital defence pillar of TD.

When it came into action during the pandemic, online forums, blogs and social media platforms were ordered to publish corrections over false and misleading statements about Covid-19. These statements included claims that mortuaries, funeral parlours, and crematoria here were facing a "pile-up" due to more deaths from the virus. Such falsehoods, if left unchecked, can spread and lead to undue public concern.

SINGAPORE: Developing a robust workforce

The aim of the economic defence pillar of TD is to protect the nation's financial health and capabilities. This is a multi-layered effort that includes education, helping the poor and even collecting taxes.

HOW TOTAL DEFENCE PLAYED A PART

Recently, technology firms here reported 1,270 layoffs of resident workers from July to mid-November in 2022, almost five times the 260 resident workers laid off in the first half of 2022. This loss of jobs was a global trend, as many large tech firms, such as Meta, Apple and Amazon, downsized due to economic headwinds worldwide and flagging investor confidence in the sector.

Such changes in the economy are not surprising, so it is vital that people are ready to adapt. To help workers here remain up to date and resilient to change, the Government has emphasised the importance of continual retraining and upgrading as part of the economic defence TD pillar.

Education does not end when you leave school. It is also good to be aware of how the jobs landscape changes so that you can equip yourself with the right skills to stay relevant.

Source: The Straits Times

VOLUNTEER AIMS TO REDUCE WORRIES OVER BMT

Once she was only a concerned parent, but now Joanna Peck helps ease the worries of other families with children entering national service. LIM YU HANNAH JADE asks her how she started on this journey.



A national service enlistee having his temperature taken on reporting at Selarang Camp in Loyang in 2021. Those who enlisted during the pandemic period had the added worry of having to deal with the spread of Covid-19. ST FILE PHOTO

Ms Joanna Peck was very worried when her son, who is shy and awkward in social situations, was called up to serve national service (NS) in 2020.

"One of my concerns for him was his ability to cope with basic military training (and) his ability to go into an environment for three weeks with no breaks," said the 52-year-old customer relations officer.

Though her husband had served in the central Singapore Armed Forces band and her brother had served in the Republic of Singapore Air Force, they had not shared much

about their experiences. So Ms Peck felt that she needed to take on the role of preparing her son for NS.

This journey made her realise that there were not many NS preparation resources for parents. This led her to volunteer with local group SGFamilies to help parents and their boys prepare for national service through pre-enlistment talks.

SGFamilies, a group formed by parents here in 2019, aims to tackle issues which parents and their children are concerned about. The group also organises activities focusing on examination-related issues and young people's concerns about their self-esteem and emotional management.



Ms Peck received the NS Advocate Award at the Total Defence Awards last year. CMG FILE PHOTO

For her work, Minister of State for Home Affairs and National Development Muhammad Faishal Ibrahim presented her with the NS Advocate Award at the Total Defence Awards on Nov 10, 2022. An SGFamilies volunteer, who is also a colonel with the Ministry of Defence, had nominated Ms Peck, who received the accolade for the first time.

She said: "This award, really to me, is not my award, it's the team's award. A series (of talks) like this cannot happen with just one person."

KEEPING PARENTS INFORMED

Ms Peck has been volunteering with SGFamilies since 2019. She first started by helping the pre-NS talks team, but now manages the group's Facebook and Instagram accounts. She creates posters, publishes them on social media, and also sends them to various grassroots groups.

Ms Peck also liaises regularly with grassroots organisations and ministers to invite them to pre-NS talks as guest speakers, and even prepares talking points for them.

Her biggest challenge volunteering with SGFamilies is finding speakers who have different or unusual experiences, and articulate panellists who are willing to share their NS experiences.

For instance, during the Covid-19 pandemic in 2021, Ms Peck said that many parents were concerned that their children may contract the virus while they were in camp. But two active NS men managed to ease their concerns by sharing their training and in-camp experiences.

Ms Peck strongly encourages parents of pre-enlistees to spend time with their children as well as time away from them. She believes that this is crucial in helping children nurture their own identities and will strengthen the parent-child bond in the long run.

Ms Peck hopes to continue advocating for NS as she helps her second son, who is now an 18-year-old student in the Institute of Technical Education, prepare for his national service enlistment.

One hundred and seventy-one awards were handed out to various organisations, companies and individuals at the Total Defence Awards in 2022. The award recognises the support they provide for Total Defence and NS.

MARK TOTAL DEFENCE DAY WITH A SPECIAL TRIP

ANDREA GOH has a list of fun and informative Total Defence-related activities.

THROUGH THE LENS OF TIME

The Singapore Discovery Centre's Through the Lens of Time exhibit is an experiential journey through 700 years of Singapore's past: highlighting points in time that played significant roles in moulding the nation.

Visitors venture through myriad sets, such as one based on the 1983 cable car tragedy – one of Singapore's worst-ever civil disasters – featuring intense first-hand accounts of the initial tragedy and daring rescue, with a life-sized cable car, to boot.

Another section is a recreation of Japanese-occupied Singapore – complete with building debris, broken shop signs, and descriptions that do not shy away from the horrors of the occupation.



SANDBOX

Also at the Singapore Discovery Centre is the Sandbox gallery (right), an interactive exhibition focused on the role the everyday Singaporean plays in Singapore's present and future.

Located here are sections like the Situation Room, a gamified look into the complex decision-making needed to counter Singapore's threats, such as conflicts and disasters. Another section, Battlefield Command, places you in a futuristic command centre where you defend against land, air and sea threats in a co-op simulation game.

REDACTED? AN UNCENSORED LOOK AT OUR HOME

This showcase features four specially curated installations tackling a variety of contemporary topics: Take a deep dive into scams in Red Herrings, or ponder complex social issues in Red Faced that include the challenges faced by at-risk communities.

Then, immerse yourself in the reality of rising sea levels in Red Hot, as you see what a water level rise of 80cm may do to you. Finally, fill your nostrils with some strong-smelling local cuisines in Red Whine.

Through the Lens of Time and the Sandbox are open from noon to 6pm on weekdays, and from 11am to 8pm on weekends, public and school holidays. Singapore Discovery Centre is a 10-minute walk from Joo Koon MRT.

WAR MEMORIAL SERVICE

On a more solemn note, the Singapore Chinese Chamber of Commerce and Industry (SCCCI) will hold its 56th annual War Memorial Service on Feb 15. The event is conducted to remember the victims of the Japanese Occupation.

During the service, a minute of silence will be observed, and wreaths will be laid by representatives of various groups, such as the Singapore Armed Forces Veterans' League, to honour the victims. There will also be a speech by SCCCI president Kho Choon Keng.

When multiple mass graves of civilians killed during the Occupation were discovered in 1962, the SCCCI requested land from the Government and undertook fund-raising efforts to properly bury them and to erect a memorial. The Civilian War Memorial was completed in 1967, and SCCCI has been holding a service for the victims every Feb 15 since then.

The service begins at 9am on Feb 15, and is open to the public. The War Memorial Park is located at the intersection of Bras Basah Road and Beach Road.

Sources: SCCCI, NLB