

# Caring for our Environment

**Harnessing technology and renewable energy to develop innovative solutions that create a positive impact on the environment.**

## UN SDG



## IN THIS SECTION

### Electrification

[Go to page 15](#)

### Solarisation

[Go to page 16](#)

### Optimisation

[Go to page 17](#)

### Reducing Food and Packaging Waste

[Go to page 18](#)

### Sustainable Sourcing and Packaging

[Go to page 18](#)



# Environmental

SATS has been investing in several initiatives over the years to reduce our carbon footprint. Our decarbonisation strategy includes electrification, solarisation, and optimisation. To generate greater impact for our decarbonisation strategy, we have developed a fuller picture of our carbon footprint in FY2021-22. Using the Quantis assessment tool recognised by the Science Based Targets initiative (SBTi), we have established that our Scope 3 carbon emission for the baseline year FY2019-20 were 836,000 tCO<sub>2</sub>e, and made up 87% of our total carbon footprint that year. Purchased goods and services, in large part the agricultural products used in our food business, accounted for the biggest share at 64% of our Scope 3. Using this analysis, SATS is looking to set meaningful science-based targets before engaging all relevant value chain stakeholders across our key sources of emissions to reduce our carbon footprint. Simultaneously, we are accelerating our ongoing work on reducing carbon emissions for the 13% of our total carbon footprint from Scope 1 and 2.

## Electrification

We continue to expand our fleet of electric vehicles and ground support equipment (GSE) by replacing diesel-powered ones with an electric version at the end of their useful life. Projects completed and planned within the year were:

- **Installation of three electric vehicle (EV) charging stations at AAT in Hong Kong. The EV charging stations enable the reduction in monthly fuel consumption of 150-200 litres of petrol per vehicle.**
- **Purchase of 20 electrical GSE for the Delhi, Bengaluru, and Hyderabad stations in India. AISATS plans to achieve 100% conversion of light motorised GSE to electric versions by 2025.**

Our plan for electrification is dependent on the support of stakeholders, such as Changi Airport Group (CAG), to provide the infrastructure needed to charge our vehicles, and the availability of electric versions for some of our vehicles and equipment. In some cases, alternatives are not yet commercially

available. To advance our electrification plan, we are constantly engaged in tripartite engagements on charging infrastructure on the airside.

Our electrification plan goes beyond just GSE. We are trialling other vehicles to explore converting them to electric. Between February to April 2022, SATS successfully conducted trials on two models of electric vans, and we plan to install charging stations at our catering centres for these vans. Within our food preparation facilities, we have also been deploying electric reach trucks, which eliminate fumes within the facilities.

We are also exploring other forms of sustainable energy resources, such as biodiesel, as an alternative to fuel vehicles that do not have a commercially available electric variant at the moment. The use of alternative fuels could also mitigate risks of electrical downtime and strengthen our operational resilience in a 24/7 airport environment.

We are working actively with the Civil Aviation Authority of Singapore (CAAS) and the Agency for Science, Technology and Research (A\*STAR) on harvesting kinetic energy to increase the operational lifespan of the batteries in GPS trackers used to locate our non-motorised equipment. Phase 1 of the study concluded in end-2020

with a successful on-bench proof-of-concept setup of the rotational energy harvester. We are now in the second phase, and have translated the bench-top energy harvester to a rugged form factor to validate its performance on actual non-motorised equipment through field trials. We hope to reduce energy and battery consumption, as well as the frequency of manual battery replacements with energy harvesters.

We have also put in place plans to further reduce carbon emissions in the near term. At our airfreight terminals in Singapore, we have installed 70 EV charging stations to charge 141 forklifts which are expected to be delivered by October 2022, and we are targeting to convert 116 diesel tractors to electric by the end of FY2022-23. Installation of an on-premise fast charger at Maldives Inflight Catering for operationalising an electric hi-lift is expected to be completed in August 2022. The electric hi-lift conforms to IATA standards and is equipped with safety features such as buzzer alarms and an anti-collision proximity switch. Powered by a Li-ion type battery, each unit is expected to abate 24 tCO<sub>2</sub>e annually over its diesel counterpart.

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## Solarisation

In FY2021-22, we commissioned three new sites in Singapore for solar installation, expanding our total renewable energy capacity by 5,470 kilowatt-peak to a total of 9,081 kilowatt-peak. We will abate approximately 4,448 tCO<sub>2</sub>e of energy on a yearly basis, generating more than 10,000 MWh annually. We target to increase our renewable energy portfolio up to 15,000 MWh annually.

In India, AISATS has also installed solar panels on the rooftop of its Bengaluru station which provides up to 55% of its energy needs, leading to an abatement of 1.4 tCO<sub>2</sub>e for FY2021-22.

Solar Installation	Installed Capacity (kWp)	Turn-on Date	Projected Annual Solar Production (MWh/year)	Projected Annual Carbon Emissions Abatement (tCO <sub>2</sub> e/year)
AFT 1-4	4,388	10 November 2021	5,266	2,151
AFT 5-6	3,611	23 February 2017 <sup>(AFT5)</sup> 10 April 2017 <sup>(AFT6)</sup>	4,333	1,770
ICC1	618	1 December 2021	733	299
ICC2	464	1 October 2021	557	228
Total	9,081		10,889	4,448



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## Optimisation

In the year, we have also upgraded our facilities or rationalised activities across our buildings to optimise and reduce energy usage. For example, we channelled funds from the sale of our Renewable Energy Certificates to replace 840 of the high-bay lights in our cargo warehouse in Singapore to energy-efficient LED lights, and abated 225 tCO<sub>2</sub>e in the form of energy savings. SATS China has converted manual light switches to sensor switches and replaced 30 lights around the production facility with solar-powered lights, resulting in energy savings of 20 kWh/day and 200 kWh/day respectively. SATS TFK has converted 70% of existing lights to LED for all non-kitchen areas, resulting in a 34% reduction in energy consumption. SATS TFK has plans to increase the conversion to cover 80% of all existing lights. Maldives Inflight Catering has replaced all of its existing 534 lights to LED, achieving an estimated annual reduction of 32,400 kWh in energy consumption.

In addition to the use of LED lights, we have also introduced other measures to reduce our carbon footprint, such as optimising machine

maintenance cycles and improving system productivity through the use of Industrial Internet-of-Things (IIoT) technology. At SATS’ meal production facility at Inflight Catering Centre 2 in Singapore, Edge IoT devices have been connected to operational equipment to collect real-time data to be sent to the cloud for analysis. The production team receives insights on each equipment to help them make informed decisions on optimising maintenance schedules and equipment utilisation. Each equipment also has an Overall Equipment Effectiveness (OEE) tagged to it to indicate its performance in the timeframe selected. The OEE is derived based on users’ input of the equipment’s operating parameters, for example, uptime/downtime, energy consumption. The IIoT provides real-time visibility to help the production team understand current energy performance across different machines and groups, allowing the team to identify abnormal energy consumption patterns and quantify energy efficiency gaps. We are working towards incorporating production data with energy consumption patterns to derive a plan for energy management in day-to-day operations to improve energy efficiency by eliminating possible energy wastage in the production line.

Across our network, we have also implemented other solutions to reduce our carbon footprint. SATS Coolport operations in Singapore, for example, has installed a new cooling water pump with variable speed drive that produces higher output with lower power consumption. The upgrade resulted in the indirect abatement of 1,671 kg of carbon emissions annually through energy savings.

Other initiatives include the consolidation of AISATS facility spaces that led to an estimated reduction of 300 tCO<sub>2</sub>e of electricity used. SATS TFK has also consolidated and streamlined delivery of bulk food purchases to a single facility at Haneda Airport, resulting in an 8% reduction in annual diesel consumption during FY2021-22. SATS China started using recycled water from water purification and washing of vegetables after treatment, which resulted in total water consumption reduction of 5 tons/day.

We are also incorporating sustainability features into new buildings to create greater impact in the long term. For example, the SATS Food Hub is being designed to achieve a Green Mark Platinum Super Low Energy (SLE) rating to achieve 60% energy savings

from 2005 building codes. We will be incorporating a number of features, such as solar installation, waste water treatment for non-potable use, waste segregation, intuitive digital building smart system, and district cooling supply.

The Tianjin Central Kitchen, which will be completed in August 2022, has included multiple energy efficient initiatives to reduce the resource intensity of the facility. For example, variable-frequency drives are installed for the chiller compressors to achieve energy savings of more than 15%, while evaporative instead of water-cooled condensers will be used, eradicating the need for water pumps, cooling towers and basins, leading to water savings of 90%. Air coolers instead of heat exchange tubes will be used for cooling equipment, improving energy efficiency. The evaporator adopts hot gas defrosting or automatic defrosting to further reduce electricity consumption.



AAT won “Sustainable Warehouse Operator of the Year 2022 award, and received “Wastewi\$e” Certification (Excellent Level) and “Energywi\$e” Certification (Excellent Level) from the Hong Kong Green Organization Certification.

## AAT Awarded Sustainable Warehouse Operator of the Year 2022

We are very proud that our subsidiary AAT has won the prestigious “Sustainable Warehouse Operator of the Year 2022” award in the Freightweek Sustainability Awards. They achieved 50% reduction in their carbon footprint since 2008 through the implementation of a variety of infrastructural upgrades previously mentioned. AAT also received the “Wastewi\$e” Certification (Excellent Level) and “Energywi\$e” Certification (Excellent Level) from the Hong Kong Green Organisation Certification (HKGOC) in recognition of our commitment to and efforts in environmental protection through energy conservation, waste reduction and recycling.





# Environmental

## Reducing Food and Packaging Waste

We found that food waste generated from our catering operations in Singapore, arising from expired raw materials to cooked food, contributes to 4% of our total production output. The bigger problem in tackling food and packaging waste comes from flights that land in Singapore for the airlines whose waste we manage. In our constant search for innovative solutions to achieve 'closed-loop' waste treatment, SATS TFK initiated a proof-of-concept trial for an anaerobic digestion system at our catering facility. The anaerobic digester can recover some energy stored in the food waste before it is sent to end-of-life treatment facilities. It has a capacity to convert energy from 50 kg of food waste per day to three different forms of energy: biogas, waste heat and digestate by-products. Biogas can be used to power a generator in our facility to produce electricity while waste heat can be used for our production heating needs, and digestate by-products can be treated and recycled as fertiliser for landscaping purposes.

Our catering operations across our network are also innovating new ways to reduce food and packaging waste. In Japan, SATS TFK has initiated

several short-term targets to reduce food waste related costs by 30% by 2024. They are rerouting overproduced food at Narita Airport to the staff canteen, resulting in 1,095 kg of excess food being rerouted in FY2021-22. SATS TFK is also targeting to save JPY 174 million annually by implementing an AI-enabled system to track food waste generated in kitchens. They have also implemented the removal of moisture from food waste before disposal to reduce weight and haulage cost, leading to an estimated JPY 1 million being saved in FY2021-22. Our kitchen in Maldives Inflight Catering has implemented a waste management initiative to segregate organic food waste to be repurposed as fertiliser. An automatic waste composting machine has been installed in June this year. The composting machine is capable of processing up to 500 kg of waste daily and converting food and horticultural waste into fertiliser within 24 hours. In Hong Kong, AAT engages a refuse collection vendor to segregate and recycle waste off-site. Used wooden pallets which are still in good condition are also sent to a local logistics partner company to be reused.

In March 2021, Monty's switched to a waste management provider with a policy of zero-waste to landfill. The waste management company provides

monthly reports detailing the amount of waste being incinerated, recycled and the amount of food waste that is anaerobically digested at their site. Through staff training at Monty's, the proportion of recycled waste, including food waste, increased from 30% to 70%.

## Sustainable Sourcing and Packaging

SATS TFK has been certified by the Marine Stewardship Council for using sustainably sourced seafood in line with the council's internationally recognised standards for sustainable fishing and seafood traceability. We use these products to develop new menu delights for our non-travel business in Japan, displaying the Blue Seafood label on our product packaging to advocate sustainably sourced seafood consumption.

SATS new F&B concept, Twyst, utilises sustainable bowls and lids for both dine-in and takeaway orders. Made from the fibrous substance that is left behind after the juice of the sugarcane plant is harvested, the bowl is suitable for home composting while the PET lid is recyclable. SATS in China has switched to using biodegradable cutlery for domestic flights. Since January 2022, 165,000 pieces of such cutlery were used.



Blue Seafood label on our product packaging to advocate sustainably sourced seafood consumption.

