Automated Warehouse Management

Since 2020, we have transitioned our warehouse management system from a physical process to a digital automated storage and retrieval system (ASRS), automating manual processes, data capture and inventory control. With its efficiency to maximise storage space, we have over 70,000 line items in our ASRS at RedChain.
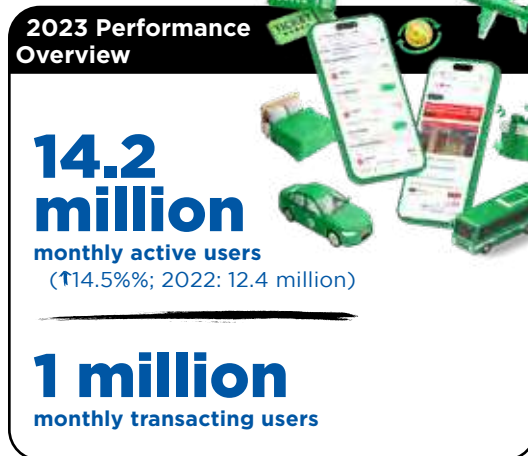
Utilisation of a barcode system entails carefully labelling and documenting each item. All transactions occur in real time and are traceable, providing valuable insights for inquiries and contributing to decision-making for future strategies.

This technology aids in:

- **Minimising workplace hazards and injuries** by eliminating the need to lift heavy items at height and heavy equipment manoeuvring

- **Eliminating labour-intensive duties** such as repetitive physical work and manual data entry which lead to human typo error and wrong information unintentionally

- **Ensuring accurate storage and management** of inventory and significant reduction on spares picking and binning processes

- **Streamlining material scheduling** via real-time monitoring and availability

- **Reducing the use of paper** for record and inventory keeping by 50%

AirAsia MOVE, formerly known as airasia Superapp is the newest online travel agent+ (OTA+) in town, providing the lowest AirAsia fares as well as best flights + hotel package deals with personalisation for travellers at the best value in Asean and beyond. It envisions travel complemented by a community-led experience through features such as AirAsia Chat, games, gifting, and a strong loyalty programme that rewards users across its expansive ecosystem.

2023 Performance Overview

14.2 million
monthly active users
(↑14.5%%; 2022: 12.4 million)

1 million
monthly transacting users

MOVE currently has 15 million monthly active users, more than 80% of whom area based in Asean. MOVE's ecosystem includes OTA services such as flight bookings from over 700 airlines, including the World's Best Low-Cost Carrier AirAsia and 900,000 hotels world-wide plus ride-hailing, dining experiences, insurance, duty-free shopping and more. It has been recognised by World Travel Awards as 'Asia's Leading Online Travel Agency 2023' in its first nomination in the OTA category.

BigPay also relies on Google Cloud as the primary infrastructure for its technology stack. A series of initiatives has successfully reduced monthly operating costs by nearly 35%. These efforts encompass re-sizing its technology environments, decreasing computer server provisioning, enhancing the efficiency of database queries, and expediting deployments. Additionally, BigPay has secured Committed Use Discounts with Google, resulting in savings of up to 40% on regular usage costs.

In order to deliver an enhanced user experience and align with Bank Negara Malaysia's standards for bolstering security by minimising reliance on SMS one-time passwords (OTP), BigPay has transitioned all transaction authentication to a two-factor authentication system with OTP generated within the BigPay mobile app itself. This not only accelerates the transaction workflow by eliminating external SMS dependencies but also fortifies security through the implementation of stringent device-binding controls that are consistently upheld.

TRANSFORMING INTO A
DIGITAL TRAVEL AND LIFESTYLE BRAND

teleport

With the mission to move items across the region better than anyone else, Teleport has been focusing on improving the scalability and automation of systems to enhance delivery operational efficiency and throughput. Accordingly, many manual operational processes were automated in 2023.

The following are key initiatives by Teleport to save time, money and effort on air logistics leveraging the use of technology:

Parcel Scanning Application

Through an internal logistics tracking app, Teleportal, a parcel scanning app was developed to:

1) assist operations in picking up parcels efficiently and accurately
2) alert operations if a parcel that is not in the order is picked up
3) alert operations if all parcels in the order are not picked up
4) track parcel count at each milestone of the journey to prevent loss or misplacement

The app has been 100% adopted in the production segment of operations, where it is helping to prevent any surplus or shortage in pickups.

Order Management System

To better manage critical documentation, Teleport developed a comprehensive module for merchant orders and tracking information which automatically:

1) assigns codes to parcels
2) detects dangerous goods and prohibited items
3) generates export and import customs clearance documents

Using the module, the customer experience and operations teams have reduced the time taken to manage orders and customs documents by 60 minutes.

Hub Operations Application

A comprehensive application for hub managers to view and digitally manage all inbound and outbound tasks on a given day. Features of this app help:

1) Hub managers to assign service providers for pickup, select the vehicle size, track the departure and arrival time
2) Validate the parcel count against what was delivered
3) Keep track of unmanifested (excess) parcels picked up
4) Track the OTP of the service providers

Mid-Mile Tracking Application

Digitally tracks the status of individual parcels, whether uplifted onto or offloaded from flights, and the parcel's current location (transit airport). Also allows the relevant teams to capture the reason for offloading the cargo or not uplifting it as per the plan.

This application was developed and piloted in 2023 and is scheduled to be launched in the first quarter of 2024.

These digital initiatives saved:

Thousands
of manual man-hours

A minimum of
59,736,000
sheets of A4 paper

airasia academy

In today's dynamic and fast-changing corporate environment, it is essential for companies to continuously upskill and reskill employees to remain relevant. airasia academy helps to meet this need by curating a range of learning content that is accessible and affordable, providing an inclusive ecosystem within the digital economy.

For larger organisations, airasia academy's Learning Management System allows for bulk purchase of courses and the ability to track employees' learning and development. Additionally, it provides white labelling services so that customers can curate their own content, learning, student and instructor management system.

As an edtech hub, airasia academy constantly seeks to advance learning accessibility for everyone. In 2024, it intends to introduce fully virtual instructors, automated course recommendations, and employ educational avatars to enhance the interactivity and engagement of learning. This will also contribute to minimising its carbon footprint.

airasia DR⊗NE

AirAsia Drone was established with a vision to pioneer the commercial application of emerging technologies in advanced air mobility and to expand AirAsia's connected network beyond airports. The Drone team focuses on three main areas:

Remote Pilot Training Organisation	Unmanned Aircraft Systems (UAS/Drones)	Electric Vertical Take-off & Landing (eVTOL/air taxi)

The idea of utilising UAS was raised during the pandemic to deliver medical supplies and vaccines as it was a fast, mainly contactless method of delivery especially to rural Malaysia. Once it became apparent that UAS could be used beyond delivery purposes, a team was set up to explore opportunities in this budding aviation sector.

At present, we provide high quality remote pilot training leveraging AirAsia's strong aviation background and decades of expertise.

Our performance on remote pilot training for 2023 is as follows:

1st Remote Pilot Training Organisation (RPTO) to be recognised by CAAM

>600 commercial remote pilots trained in 2023

>10 client organisations secured with training services contract

For UAS services, we are in the final stages of obtaining approval from CAAM, for example, the Special UAS Project (SUP) approval to operate delivery drones in commercial settings. Concurrently we are conducting a proof of concept (POC) to use nested drone technology for visual inspection in a high voltage electrical substation. This POC is done in collaboration with a major power and utilities company in Malaysia. For air taxi services, we co-authored a white paper highlighting the case for cross-border eVTOL use, and are working closely with CAAM to progress this new technology.

We have collaborated with numerous industry experts across the three key major areas to achieve our objectives, as indicated below:

Our Partnerships	
Remote Pilot Training Organisation	1. Universiti Malaysia Pahang Al-Sultan Abdullah (UMPSA) 2. Universiti Sains Malaysia (USM) 3. ProDrones - DJI Academy (UTC) 4. Aeros GeoTech
UAS Services	1. Swoop Aero 2. Vector KL 3. Grid Vision T & D
Air Taxi / eVTOL	1. Vertical Aerospace 2. AvolonE 3. Skyports Infrastructure

In line with Capital A's advancement as a tech-forward company, AirAsia Drone prides itself on being the epitome of creativity and innovation in the emerging sustainable tech industry. With an unwavering focus on excellence, AirAsia Drone is at the forefront of revolutionising the unmanned aircraft landscape, ensuring that we not only meet but exceed the evolving needs of our clients and the industries we serve.

Moving Forward

As we progress in broadening the digital facets of our business, we remain committed to refining and enhancing our processes for greater efficiency. We firmly believe in our capacity to innovate, aiming to transcend the conventional model of an airline-focused business and usher in a transformative era.

Information Security & Data Privacy

(GRI 3-3)

Our customers' information security and data privacy are top priorities. To uphold the integrity of our data, we continue to invest in increasingly advanced cybersecurity systems and processes. Our commitment to security is evident in efforts to adhere to industry best practices and align with top frameworks.

2023 Performance Overview

>82%
Allstars completed information security awareness training

No material breaches
of financial, customer of employee data

Our Management Approach

- ISO/IEC 27001 Information Security Management System with certification on core services
- Information Security Policy
- Data Governance Policy
- Personal Data Protection Act 2010 and other acts in the jurisdictions where we operate
- Payment Card Industry Data Security Standard
- Quarterly reviews with the Risk Management & Sustainability Committee (RMSC)

Supporting the UN SDGs

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

GROUP INFORMATION SECURITY

Our Group Chief Information Security Officer (CISO) oversees our information security and data privacy management across the lines of business, with Board oversight from the Capital A Risk Management and Sustainability Committee (RMSC), as well as other subsidiary and related boards. Capital A's information security organisation is founded on four key pillars.

Key Areas

1 Governance, Risk Management and Compliance

2 Data Security & Privacy Protection

3 Security Testing

4 Information Security Operations

① GOVERNANCE, RISK MANAGEMENT AND COMPLIANCE

Information Security Governance, Risk and Compliance (GRC) is responsible for managing Capital A's cyber governance and risk management while ensuring compliance with industry and government regulations. GRC also provides a structured approach to aligning information security with organisational objectives.

We empower all Allstars, from non-executives to senior management, with the knowledge to protect their data, as well as data belonging to the Group and our stakeholders.

Initiative	Description	2023 Updates
Implementation of Phishing Simulation	Simulated phishing attempts against employees to measure employee readiness and deliver targeted training for those who fail. Results are measured over time.	Initiated in November 2023 to enhance organisational security awareness and culture.
Implementation of automated security compliance and risk workflow	This application is capable of managing multiple compliance requirements such as ISO 27001 on information security management and Payment Card Industry Data Security Standard (PCI-DSS). This application will serve as the entry point of all information security risks for all airlines and other LOBs. The application is also capable of demonstrating the compliance posture with security standards adopted and implemented by the organisation.	The new software tracks, controls and consolidates documentation for audit validation.
Implementation of compliance assessment through an issue tracking software, Jira	Information security checklist which underlines all the best practices according to the Information Security Policy. The security assessment in Jira includes new additions such as data and access management.	Report on Compliance was launched in February 2023 to address information security concerns before any project goes live in a production environment.

Third-Party Risk Assessment (TPRA)

The Group's InfoSec team conducts an annual TPRA on all its service providers, the assessment consisting of three phases:

1 **Questionnaire:** a set of questions that helps to identify areas of weakness or gaps from third-party processes

2 **Risk Identification:** the risk owner identifies potential risks and ensures security controls are in place

3 **Risk Assessment & Approval:** if the residual risk remains "Very High" or "High", the risk owner must seek Group CISO approval. The risk owner is also responsible for the implementation of all action items in the plan

2 DATA SECURITY & PRIVACY PROTECTION

Capital A adheres to the Malaysian Personal Data Protection Act 2010 and complies with other regulations on data protection in the respective countries of operations. We have in place a formal structure for data governance which ensures the availability, usability, integrity, and security of data.

All Allstars are made aware of our data governance processes through annual training. A Data Access Approval System has been created and integrated with our IT Service Desk to automate the process to review and approve requests to access data belonging to the Group. Below are some updates on our data protection initiatives.

	Initiative	Description	Outcome	2023 Updates
	Implementation of a governance framework for Data Mesh architecture	The framework ensures data made available through Data Mesh architecture are properly secured and do not pose privacy risks.	Vetting of all data assets made available through Google Dataplex.	Labelling in our Data MeshTag template was rolled out in Q3 2023.
	Implementation of Privileged Access Management (PAM) system	PAM is a set of security controls that are put in place to protect, monitor and manage privileged access to sensitive information and systems.	IT admin users will no longer hold any privileged accounts or have access to critical IT systems. Their access and activities performed in critical IT systems will be approved and monitored.	Initiated deployment of PAM with targeted completion by January 2024.

Enhancements on Data Security Systems

In 2023, we undertook several initiatives to safeguard the data security of our Allstars and customers.

Scanning of emails and documents to prevent unmasked credit card numbers.

Stringent automated data approval system applied to all Allstars before any requested company data is released.

Limiting access to documents on Google Drive for internal or authorised personnel.

Personal data is retained only for as long as necessary and data purging is done through security assessments.

③ SECURITY TESTING

The primary objective of Information Security Testing is to provide assurance on the adequacy of security controls by coordinating security reviews through vulnerability assessment and penetration testing (VAPT) of the Group's IT infrastructure, network and web applications.

VAPT allows us to have a more detailed view of the threats facing our applications. Our penetration testers are responsible for identifying vulnerabilities within the Group's computing environment and for writing VAPT reports. These reports are sent to the respective system or application owner for remediation.

Our Infosec Testing enhancement strengthens the organisation's computing environment from cyber attack and cyber crime within technologies usage and users knowledge.

The Information Security Testing team also maintains our Bug Bounty program, a monetary award given to ethical hackers who identify vulnerabilities in our external facing systems.

In 2023, the Information Security Testing team introduced Adversary Simulation with the addition of our Red Team. Red Teams go beyond simple risk assessments and simulate multi-layer attacks, strengthening our controls, detection and response mechanisms. The Information Security Team has also added a Threat Intelligence Team and tools for monitoring and preparing for early identification of emerging cyber security threats and vulnerabilities.

④ INFORMATION SECURITY OPERATIONS

In line with the US National Institute of Standards and Technology Cybersecurity Framework, Security Operations has been structured with five fundamental functions (illustrated below). All the functions are performed concurrently and continuously to create an operational culture dedicated to managing information security risk.

5 FUNDAMENTAL FUNCTIONS

I — Identify
Develop an understanding of all systems

P — Protect
Implement appropriate safeguards

D — Detect
Conduct appropriate activities to identify the occurrence of information security events

R — Respond
Undertake appropriate action in response to the detection of information security events

R — Recover
Maintain and practise plans for resilience and to restore any capabilities/services that were impaired due to information security events

TRANSFORMING INTO A
DIGITAL TRAVEL AND LIFESTYLE BRAND

Below are some key initiatives implemented to strengthen our information security operations.

Initiative	Description	2023 Updates
Enhancements of Endpoint Detection and Response (EDR) system	EDR helps to detect, investigate and respond to security incidents such as malware and ransomware on endpoint devices, e.g., laptops, mobile devices, servers and cloud resources.	Expanded our Cyber Threat Intelligence, Identity Protection, Cloud Native Application Protection Platform, File Integrity Monitoring, Exposure Management and External Attack Surface Management.
Implementation of User Account / Identity Protection (IDP) system	IDP provides visibility while monitoring and identifying vulnerabilities and misconfiguration.	The new software tracks, controls and consolidates documentation for audit validation.
Upgrade of Web Application Security Solution	A set of security solutions that is put in front of public facing websites and API to protect from malicious attacks.	We migrated from multiple service providers to a few remaining endpoints. We now have consolidated controls and metrics on our web application firewall.

bigpay **Protecting the Data of Customers**

As a neobank, BigPay continuously tightens its security protocols to protect customers' data. Towards the end of December 2022, it onboarded a Security Operations Centre (SOC) to monitor production logs. Throughout 2023, BigPay continued to define its SOC capability. Meanwhile, efforts to prevent scams include education via marketing campaigns, multifactor authentication on app login and transactions, and device binding to ensure only one account is logged into one app.

CYBERSECURITY AWARENESS

Capital A continues to raise awareness and enhance knowledge of cybersecurity among our Allstars. Training and other programmes are carried out to cultivate a culture of compliance with security measures and protocols. In 2023, more than 23,000 Allstars attended a minimum two hours of information security training. Some key programmes tailored to specific stakeholder groups are highlighted below.

Information Security Awareness Education
Mandatory training for new joiners and existing Allstars, designed to help them understand the role they play in helping to combat information security breaches.

The e-module is now hosted on airasia academy and has an 82% completion rate in 2023.

Posts on Workplace
Bi-weekly sharing of new trends, best practices and reminders on information security via our internal communications platform to ensure our Allstars stay abreast of key information security topics.

Cyber Drill (Table Top)
Tabletop exercises simulate security procedures, processes and solutions to function the way they were meant to be. The information security team will simulate a real cyber attack on business entities' digital systems and technologies. The respective teams need to respond, troubleshoot and remediate the issue. Results from the exercise will help the information security team to address the gaps identified.

Secure Coding Awareness Training
The training shares the principle of designing code that adheres to code security best practices, safeguards and protects published code from known, unknown and unexpected vulnerabilities such as security exploits, embedded credentials, shared keys, confidential business data and personally identifiable information. The training is intended for developers and software engineers.

CYBERSECURITY BREACHES

GRI 418-1

There have been no material breaches of financial, customer or employee data in 2023. As with any organisation of our size, we detected and remediated a number of security events; however, none involved any material breach of information. To prevent cyber attacks, we have identified compromised guest accounts and account takeovers on our super app. We have also implemented Dark Web monitoring of the stolen identities and continue to invest in further enhancing our account protection mechanisms.

Extra measures were implemented in 2023 to manage cyber risks and avert any security breach.

Upgrade of devices, servers/cloud, and networks as well as their monitoring. We have initiated a Zero Trust Architecture project to embed security throughout all users, devices, network and applications.

Expanded our **security monitoring solutions** internally (servers, devices, cloud) and externally (threat management, attack surface management, Dark Web monitoring, identity protection) and consolidated and upgraded our single source of truth Security Information and Event Management (SIEM) solution.

Implemented more **robust controls on authentication and authorisation**, including protecting the most critical roles with a Privileged Access Management solution.

Enhanced our security architecture, **security testing, Security GRC, and Security Operation teams and tools.**

Moving Forward

In light of the evolving cybersecurity landscape and ever-present threats to our digital assets, we aim to strengthen our information security and data privacy further. In 2024, we will reinforce our Data Governance Committee and Data Security and Privacy Working Group to reflect the structural changes in the business. This initiative is a proactive step to fortify our defences, instil confidence among our stakeholders, and uphold the trust they place in us.

Environmental

Climate Strategy

(GRI 3-3)

NET BY

Capital A remains committed to addressing the impact of climate change and has set the goal of achieving Net Zero carbon emissions by 2050. We have outlined four aviation pathways towards this end, which are complemented by other initiatives under our Environmental Policy Statement to reduce our greenhouse gas (GHG) emissions and energy consumption, while ensuring that we also use water responsibly and protect biodiversity. In 2023, no sanctions nor any non-compliance was recorded in relation to environmental regulations or requirements.

For ease of comparison, we have restated the 2022 environmental data to include TAA statistics.

2023 Performance Overview

4.8 mil tonnes
of Scope 1 CO_2 emissions

9,971.6 tonnes
of Scope 2 CO_2 emissions

1.18 mil tonnes
of Scope 3 CO_2 emissions

129,469 tonnes CO_2 avoided through fuel efficiency programmes

64.4 gCO_2/ASK

74 gCO_2/RPK

Our Management Approach

- Environmental Policy Statement
- Sustainability Policy
- Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) requirements
- International Civil Aviation Organization requirements
- Environment Manual
- Environmental Quality Act 1974

Supporting the UN SDGs

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE   12 RESPONSIBLE CONSUMPTION AND PRODUCTION   13 CLIMATE ACTION   17 PARTNERSHIPS FOR THE GOALS

2023 Overview

As global resolve to tackle climate change strengthens, 2023 saw fresh commitments towards advancing emissions mitigation and energy transition targets, two of which are of particular significance to Capital A.

The first is an agreement reached at the Third ICAO Conference on Aviation and Alternative Fuels (CAAF/3) in November on a new collective aspiration to reduce CO_2 emissions in international aviation by 5% by 2030 through the use of cleaner aviation fuels. The second is the outcome of the 28th session of the Conference of Parties to the UN Framework Convention on Climate Change (COP28) a month later that approved a roadmap for transitioning away from fossil fuels in a just and orderly manner. The COP28 declaration further strengthens the impetus for the aviation industry to seek alternative fuel solutions to address long-term net zero goals.

In Asean, various country specific developments took place to boost national frameworks to deliver on international obligations. These included Malaysia's National Energy Transition Roadmap, published in August 2023, outlining among others a plan

ZERO 2050

to introduce a sustainable aviation fuel (SAF) blending mandate starting at 1% and increasing up to 47% by 2050. However, the document recognises current challenges in identifying suitable feedstock that meets sustainability criteria, and does not stipulate an implementation start date.

Similarly in September, the Philippines' Department of Energy announced that it was exploring the use of SAF to decarbonise the country's aviation sector. A study by the Civil Aviation Authority of the Philippines (CAAP), in collaboration with the European Aviation Safety Agency (EASA), indicates market interest in SAF but that significant steps are required to secure feedstock supplies and invest in new production infrastructure.

These developments reiterate the importance of aviation stakeholders taking clear steps towards incentivising and supporting SAF development as a long-term solution towards net zero. Their relevance is also underscored by CORSIA entering its first phase next year.

CORSIA Implementation Phases & Years	
Pilot	2021-2023
First	2024-2026
Second	2027-2035

For our part, AirAsia is pursuing a dual track approach to strengthening our climate strategy. In tandem with deepening our engagement with key stakeholders, we also began the process of developing a mechanism to fund our transition in the long term.

STAKEHOLDER ENGAGEMENT

Efforts to deepen our engagement focus primarily on high-level policymakers and decision-makers. Throughout the year, we initiated dialogues and joined meetings with officials from Asean ministries of transportation, civil aviation authorities and other industry players.

This was aided by AirAsia's active participation in the EU-Southeast Asia Cooperation on Mitigating Climate Change Impact from Civil Aviation (EU-SEA CCCA CORSIA) project implemented by EASA. In 2023, we attended multiple workshops and delivered four sharing sessions on AirAsia's best practice application of operational efficiency measures and in building national CORSIA awareness.

In recognition of our track record in advancing aviation sustainability, two AirAsia representatives - from our Flight Operations and Sustainability departments - have been appointed as technical experts to ICAO's Committee on Environmental Protection (CAEP), specifically in Working Group 2 (WG2) on Airport and Operations; and Working Group 4 on CORSIA. AirAsia delivered our first presentation on our operational efficiency programme at the ICAO CAEP WG2 meeting in Bangkok in November.

What is CAEP?

The Committee on Aviation Environmental Protection (CAEP) assists the ICAO Council in formulating new policies and adopting new Standards and Recommended Practices (SARPs) related to aircraft noise and emissions, and to the environmental impact of aviation more generally.

CAEP conducts studies related to noise, air quality and initiatives to reduce international aviation carbon emissions such as aircraft technology, operational improvements, SAF and CORSIA. Recommendations arising from the studies are reviewed and adopted by the ICAO Council which in turn reports to the ICAO Assembly, where international policies on aviation environmental protection are defined.

Highlights of government engagements at the national level include:
- Chairing quarterly meetings of the Malaysia National CORSIA Task Force
- Meetings with the Malaysian Minister of Natural Resources and Environmental Sustainability (MNRES) and submitting a white paper on 'Aviation and Malaysia's Green Economy'
- Meetings with the Malaysian Minister of Transport and submitting AirAsia's Proposals for Malaysia's Sustainable Aviation Blueprint
- Appointment to Malaysia's Climate Change Advisory Panel
- First meeting with Philippines' Secretary of Environment to present PAA's CORSIA approach

ADDRESSING CLIMATE CHANGE

Public outreach activities were also organised to develop a better understanding of aviation sustainability broadly and CORSIA in particular. In June, we hosted our first Sustainability Day at AirAsia RedQ inviting targeted stakeholder groups including analysts, investors, financial institutions, regulatory bodies and the media. The event, attended by over 200 participants from AirAsia's four operating countries, included a conference covering topical issues on environmental and social sustainability as well as a visit to RedChain, AirAsia's engineering complex. Attendees were introduced to a critical part of AirAsia's supply chain, namely the management of aircraft maintenance parts and components by AirAsia Digital Engineering.

In conjunction with the event, AirAsia also published our Guide to Aviation Sustainability, a handbook that was distributed to event participants and made available for download from Capital A's sustainability website. Meanwhile, sustainability briefings were organised by TAA at its annual Investor Day and in targeted stakeholder engagement sessions.

During the year, Capital A CEO Tan Sri Tony Fernandes and CSO Yap Mun Ching were invited to headline numerous international conferences as keynote and panel speakers. Among the influential platforms where they shared AirAsia's sustainability journey were:

- Sustainability Week Asia and US by Economist Impact;
- Aviation Festival Asia;
- Asia House London;
- China Aviation Trends Forum;
- ASEAN Business Advisory Council; and
- the inaugural Indonesia Carbon Digital Conference.

FUNDING AIRASIA'S CLIMATE TRANSITION

To manage climate-related financial risks, AirAsia has expanded our net zero model developed in previous years to quantify our carbon compliance exposure from CORSIA and prospective SAF mandates. Forecasts were generated using different scenarios with variances in growth rates, prices of CORSIA-eligible carbon credits, CORSIA-eligible fuels and SAF utilisation mandates. From this, we developed AirAsia's incremental net zero reduction targets aligned to ICAO's Long Term Aspiration Goal (LTAG) neutral scenario as follows.

Total Emissions Reduction Target
(Baseline Year: 2019)

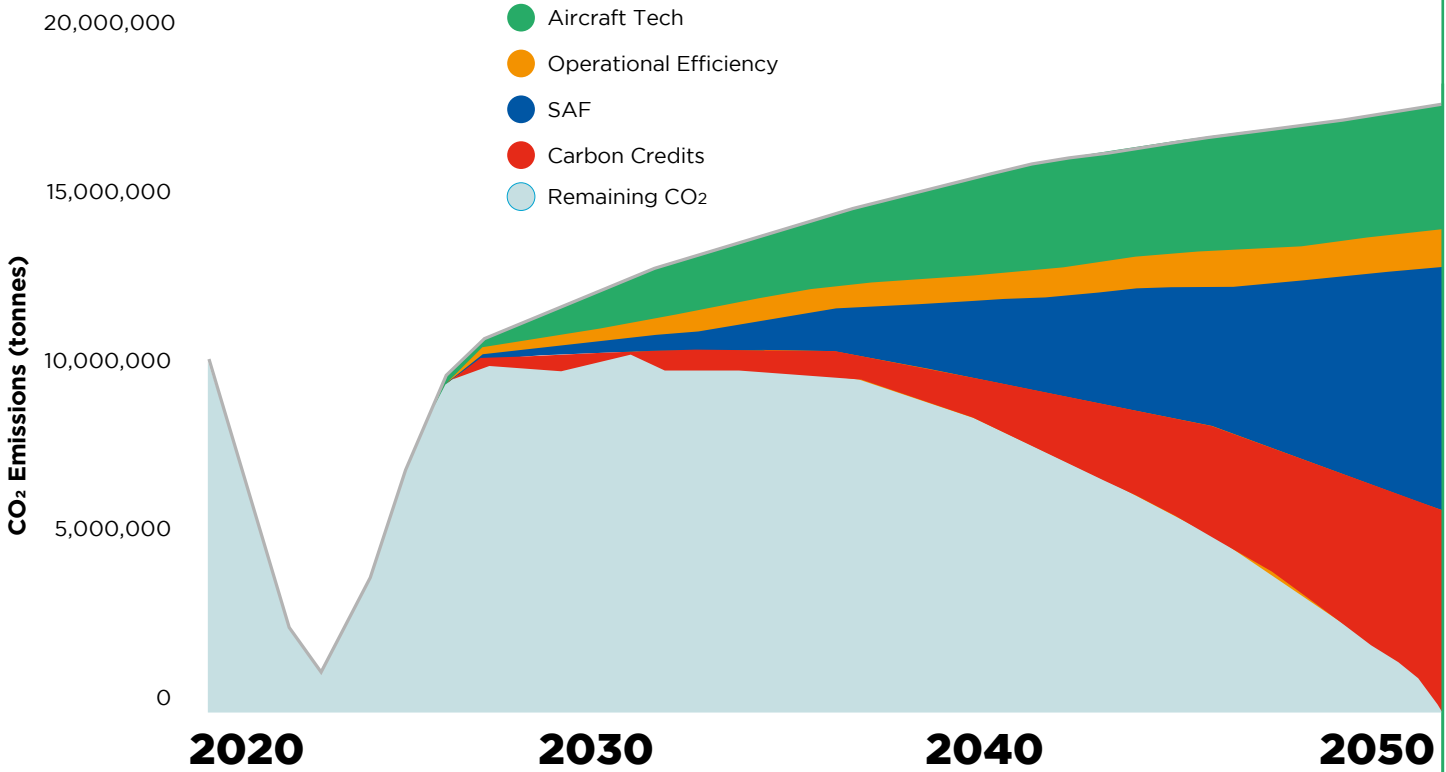| Year	Reduction
2025	5%
2030	20%
2035	35%
2040	55%
2045	75%
2050	100%
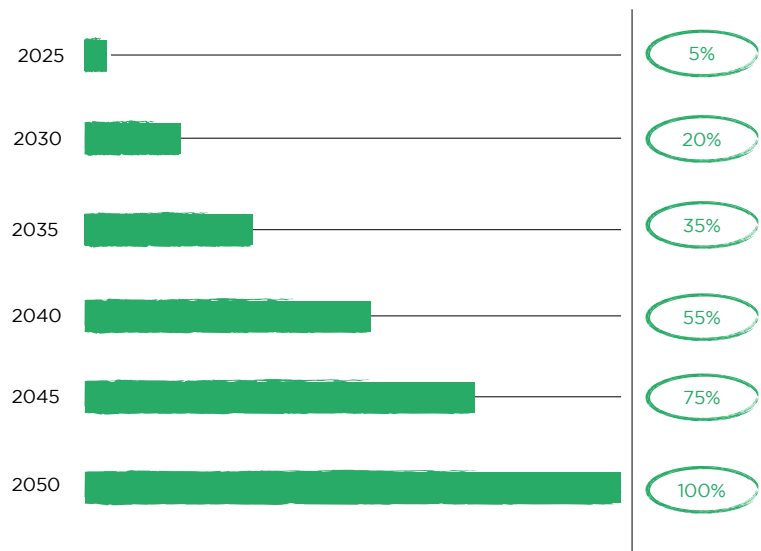
Data from scenario analyses of our expanded net zero model were used to forecast the cost of purchasing SAF and carbon credits to meet our projected compliance requirements. These forecasts were subsequently used to design a new funding mechanism to finance AirAsia's decarbonisation plan.

As a result of this exercise, we plan to introduce a new carbon fee to supplement AirAsia fares. Structured to create minimal impact on airfares, the fee will be earmarked for decarbonisation purposes. As of writing this report, our fee proposal is being evaluated by civil aviation authorities in AirAsia's operating countries for implementation from 2024 onwards.
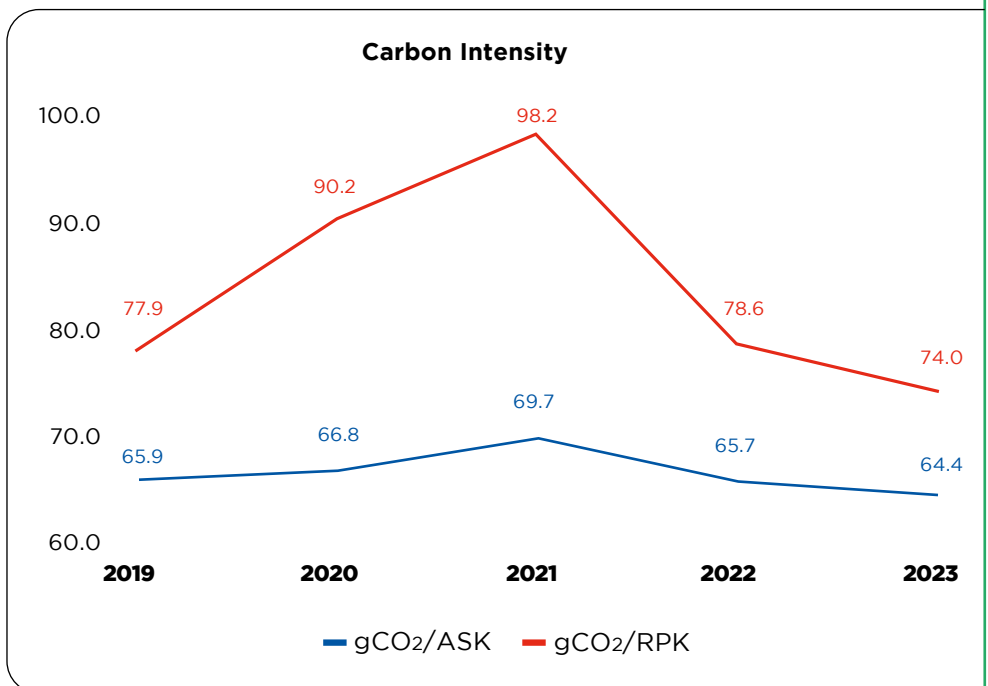
UPDATES ON NET ZERO APPROACHES

GRI 305-4

AirAsia's emissions reduction goals will be delivered through four pathways: upgrading our fleet, continuous improvement of our operational efficiency programme, utilisation of SAF, and offsetting using high quality carbon credits.

Legend:
- Aircraft Tech
- Operational Efficiency
- SAF
- Carbon Credits
- Remaining CO_2

Y-axis: CO_2 Emissions (tonnes) — 0, 5,000,000, 10,000,000, 15,000,000, 20,000,000

X-axis: 2020, 2030, 2040, 2050

Of these pathways, fleet management and fuel efficiency are well-established and have been detailed in our sustainability reports 2021 and 2022. For the first time since 2019, our carbon intensities have dropped below pre-pandemic levels. As operations stabilised throughout 2023 and load factors rose, both our CO_2/ASK and CO_2/RPK metrics improved with the latter converging towards the former. This has placed us once again among top performers among narrow body regional network operators and earned AirAsia a Gold Environmental Sustainability rating from the Centre for Aviation in its 2023 CAPA-Envest Global Airline Sustainability Benchmarking Report. The chart tracks the recovery of our carbon intensity measures.

Carbon Intensity

	2019	2020	2021	2022	2023
gCO₂/RPK	77.9	90.2	98.2	78.6	74.0
gCO₂/ASK	65.9	66.8	69.7	65.7	64.4

Legend: gCO₂/ASK, gCO₂/RPK

While continuing to prioritise our fleet management and fuel efficiency pathways in 2023, we also took concrete steps to prepare for the introduction of SAF and carbon credits into our carbon management toolkit when CORSIA's First Phase commences next year. The section below details the progress made in all four pathways.

ADDRESSING CLIMATE CHANGE

APPROACH 1:
OPERATIONAL EFFICIENCY

This year, AirAsia introduced a new fuel efficiency initiative - 400ft Thrust Reduction Altitude - in Malaysia and the Philippines. This was approved for implementation at all airports in the Philippines on 31 March 2023, while in Malaysia, approval was received for trial runs at five airports. Data from the trials are currently being reviewed by the Civil Aviation Authority of Malaysia (CAAM). As no safety issues or noise impact have been reported, the measure is likely to be rolled out at all airports in Malaysia by the first quarter of 2024.

What is 400ft Thrust Reduction Altitude?

This Airbus-approved fuel efficiency initiative allows pilots to reduce the aircraft's take-off thrust at 400ft (from 800ft) when conditions permit. Through its implementation, pilots have the potential to reduce fuel consumption by an average of 4.5kg and avoid 14.2kg of CO_2 emissions per flight. In 2023, PAA reduced its emissions by 714 tonnes using this manoeuvre.

In August 2023, AirAsia joined a workshop organised by EASA as part of its capacity-building assistance to CAAM to facilitate a review of Malaysia's State Action Plan version 3 (SAP3). The objective is to draft a new version, SAP4, incorporating updated emissions mitigation measures and reflecting more ambitious targets.

What is a State Action Plan?

The ICAO SAP initiative guides member states to establish their long-term strategies on climate change for the international aviation sector. Industry stakeholders are encouraged to work together to define a quantified baseline scenario, select appropriate emissions mitigation measures from ICAO's basket of measures, and calculate the expected results of implementing them. The SAPs are submitted on a triennial basis to ICAO to aid the agency in monitoring global progress towards meeting the goals set by its Assembly.

During the workshop, AirAsia's proposal to include a new mitigation measure - reduced contingency fuel - was accepted for inclusion as one of five targeted emissions mitigation measures to be undertaken by Malaysian carriers. The discussion included a commitment by Malaysia's Air Navigation Service Provider to move towards full implementation of Performance-based Navigation by end 2025 and to work with airlines to increase utilisation rates of Required Navigation Performance - Authorisation Required (RNP-AR), another operational efficiency measure (see chart below).

What is reduced contingency fuel?

Contingency fuel is carried to account for unforeseen circumstances such as changes to weather, route or ATC constraints. Based on thorough analysis of aircraft performance degradation and fuel planning performance for every flight, airlines are permitted to reduce the amount of contingency fuel carried so long as they identify an en-route site to land in the event that all the contingency fuel is used. On average, this would cut AirAsia's fuel consumption by 14kg and its CO_2 emissions by 44.2kg per flight.

The illustration below provides an overview of top performers in AirAsia's industry-leading fuel efficiency programme. Descriptions of all listed fuel efficiency measures are available in

https://www.capitala.com/misc/AirAsia_guideToSustainability-v5_FINAL.pdf
or from our previous sustainability report.

Ascent
- Opticlimb
- 400' Thrust Reduction Altitude

Pre-flight
- SET-D
- Statistical Taxi-Out Fuel Planning

PERFORMANCE HIGHLIGHTS 2023 (4 AOCS)

No.	Key Operational Efficiency Measure	Group Implementation Rate		Group Fuel Savings (t)	Group Emissions Avoided (tCO$_2$)
		2022	2023	2023	2023
1	OptiClimb	66%	67%	16,276	51,432
2	Single Engine Taxi - Departure	81%	45%	3,941	12,454
3	Reduced Flaps Landing	91%	73%	3,064	9,683
4	Descent Profile Optimiser	N/A	N/A	2,033	6,425
5	Single Engine Taxi - Arrival	99%	96%	1,911	6,038
6	Idle Fuel Flow Factor	100%	100%	1,734	5,478
7	Idle Reverse Landing	92%	79%	1,624	5,132
8	Thrust Reduction Altitude	88%	88%	1,478	4,670

Note: Table highlights 8 out of 20 operational efficiency measures monitored.

Total Invested
USD313,801

Fuel Saved
40,971 tonnes

CO$_2$ Avoided
129,469 tonnes

Equivalent No. of Trees Planted
> 2 million

Fuel Cost Saved
USD39,758,372

ROI
127%

Cruise
- Weight/Water Management
- Idle Fuel Flow Factor

Descent
- Descent Profile Optimiser
- RNP-AR

Land
- Reduced Flaps Landing
- Idle Reverse Thrust
- SET-A

APPROACH 2:
FLEET MANAGEMENT

Fleet management is a primary pathway for AirAsia to achieve net zero in the medium term. As highlighted in previous reports, AirAsia has ordered 362 Airbus A321neo aircraft to meet our fleet replacement and expansion requirements through to 2035. Not only is the A321neo model widely acknowledged to be the most fuel-efficient narrowbody jet aircraft on the market today, AirAsia's 240 single-class seating layout will further ensure that we reduce our carbon intensity per seat by up to 24%.

Among cabin interior features that will help us reduce our emissions are our selection of lightweight leather seats by Mirus Aircraft Seating which will lessen the weight of each A320 by 287kg and A321neo by 375kg compared to older seat models. On average, this helps cut AirAsia's annual CO_2 emissions by 413 tonnes. AirAsia's new A321neo planes will also be pre-installed with software that allows implementation of our advanced fuel efficiency programme detailed above, including measures such as descent profile optimiser and RNP-AR.

These benefits will accrue progressively as we receive our A321neo order from 2024 onwards. In 2023, our fleet strategy with regards to the A321neo order has been to negotiate for advancing our delivery schedule so that we can upgrade our fleet and meet capacity growth needs without a proportional growth in CO_2 emissions. This has met with some success as our expected delivery stream of new A321neos in 2024 has been increased from seven units to nine units in total, giving us more flexibility to manage our capacity growth across our network.

Throughout the year, AirAsia also continued to return as many aircraft into service as possible in the face of continued global shortages in aircraft parts, engines and maintenance hangar slots. While awaiting parts and slots to be available, the airline addressed its capacity constraints by introducing into service three operational A320 aircraft in Malaysia and five in Indonesia. With one lease expiry, the group added a net total of seven narrow body aircraft to the fleet by 31 December 2023. These changes helped to shave our average fleet age from 10.2 in 2022 to 10.0 this year.

Another significant development in our fleet strategy is Teleport's introduction of three A321 freighters to bring low-cost, reliable next-day deliveries for e-commerce and express parcels across Southeast Asia. The A321 freighters are a mid-life conversion fleet, with common operating procedures, common flight crew, and common aircraft parts as the rest of the AirAsia group. We expect this to be a key growth strategy for our logistics arm going forward.

Tables below provide more information on our fleet assets.

AirAsia's fleet distribution as of 31 December 2023

Model	# of Units	Average Age (years)	Capacity (seats)	# of Units Retired
A320	172	11.7	180/186	1
A320neo	40	5.7	186	0
A321neo	4	4.0	236	0
Total	216	10.0	N/A	1

Fleet Age

Fleet Age	% of Total Fleet	% of planes upgraded in the past two years
< 7 years	27%	15
7-13 years	47%	2
> 13 years	26%	0

Fleet Strength as at 31 December of each calendar year

Year	Fleet Size	Units in Service	% Operational
2022	212	124	58.5%
2023	216	159	73.6%

Teleport

Model	# of Units	Average Age (years)	Capacity (tons)	# of Units Retired
A321F	3	23.7	26	0

APPROACH 3:
SAF

Our efforts to prepare for SAF utilisation have been centred on gaining a better overview of production prospects in the region and exploring partnerships that could ease availability and affordability constraints in the medium to long term.

In Thailand, engagements with fuel producers enabled us to identify four developmental pipelines with the first coming online as early as 2025. Meanwhile, in Indonesia, high-level discussions were held on the country's aviation biofuels roadmap to meet national SAF mandate targets.

AirAsia also kicked off a prospective collaboration with Airbus' innovation team in August to identify areas of joint interest in increasing SAF accessibility in Asean. The cooperation aims to address challenges in feedstock availability and SAF price premiums by funding research into alternative feedstock and technologies. Discussions on formalising a partnership will continue into 2024.

Separately, AirAsia also held an initial meeting with the Roundtable on Sustainable Palm Oil (RSPO) in Kuala Lumpur to discuss possible avenues for the non-profit organisation to support technical research into the potential of using biowaste from RSPO certified facilities as SAF feedstock. Discussions on this matter are ongoing.

APPROACH 4:
CARBON OFFSETTING

Since chairing Malaysia's CORSIA Task Force from end 2022, AirAsia has been able to grow our understanding of carbon markets and offsetting mechanisms together with members of the task force. Among our achievements was the development of a net zero model that enabled estimations of the prospective market size of Malaysian and Asean aviation offsetting. Crucially, the task force opened the doors for the aviation sector to establish new relationships with climate change stakeholders, especially the Ministry of Natural Resources and Environmental Sustainability (MNRES).

Three meetings were held at AirAsia RedQ, during which selected task force members were invited to present their organisation's net zero strategies followed by an open exchange of views. Presenters included representatives from MNRES' Climate Change Division, Malaysia Airports and Bursa Carbon Exchange.

In parallel, AirAsia was appointed to MNRES' climate change advisory panel in July 2023 and invited to participate in COP28 and related meetings for the first time. We were able to gain a deeper understanding on how global climate change negotiations, especially those relating to Article 6 of the Paris Agreement, will impact carbon market developments and, by extension, airlines' ability to meet their CORSIA obligations.

Our growing interactions with environmental and climate change stakeholders culminated in AirAsia co-chairing the final workshop of the EU-SEA CCCA CORSIA Project with EASA on Carbon Markets and CORSIA Eligible Emission Units in December. The workshop introduced regional aviation stakeholders to carbon project developers, representatives from carbon registries, carbon trading platforms and certification bodies, as well as technical experts in international climate change frameworks.

These activities further laid the groundwork for plans to add carbon offsetting into our decarbonisation activities in the first phase of CORSIA.
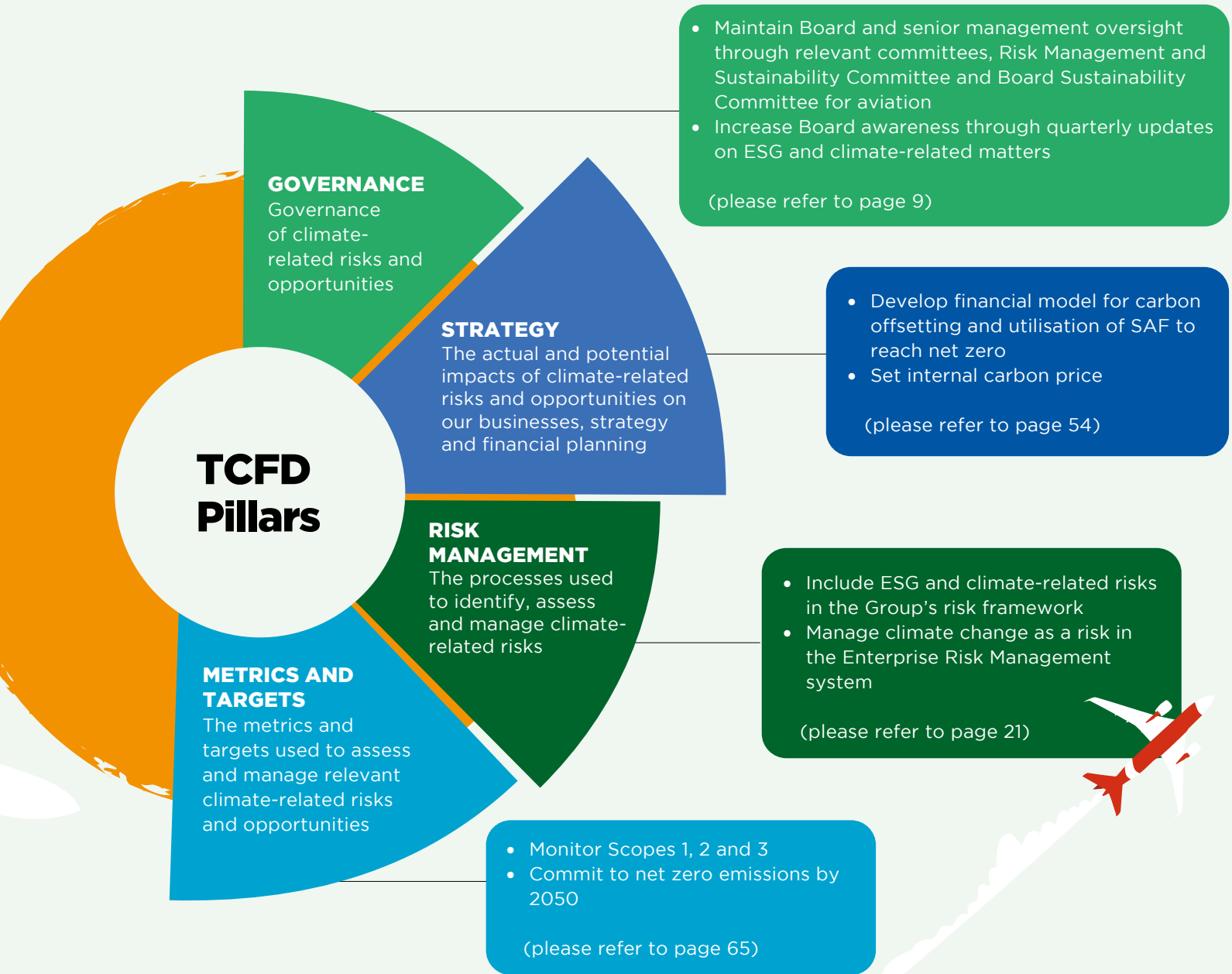
2024 OUTLOOK

As we enter 2024, the momentum has picked up on activities that started in the previous year to prepare for CORSIA's first phase. A material change between this phase and the preceding one is the lowering of CORSIA emissions cap for participating states to 85% of 2019 levels.

With most industry forecasts predicting full recovery of the international aviation sector by 2024, AirAsia's focus will be on ensuring that we are able to meet all compliance requirements while maintaining our competitive edge. Even as we address regulatory enquiries on our proposed carbon fee, we are continuing to prepare for its implementation by updating our systems and processes, and broadening our public outreach.

Other developments that can be expected are announcements on new partnerships to support R&D and invest in decarbonisation solutions. AirAsia will also continue to strengthen our relationships with policymakers and regulators to ensure the ability to present our views on new climate-related policies being drafted that may affect the future of aviation.

ALIGNING TO TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD)

Underlining our commitment to addressing and managing our climate-related impacts, Capital A became an official supporter of the TCFD in 2022.

TCFD Pillars

GOVERNANCE
Governance of climate-related risks and opportunities

- Maintain Board and senior management oversight through relevant committees, Risk Management and Sustainability Committee and Board Sustainability Committee for aviation
- Increase Board awareness through quarterly updates on ESG and climate-related matters

  (please refer to page 9)

STRATEGY
The actual and potential impacts of climate-related risks and opportunities on our businesses, strategy and financial planning

- Develop financial model for carbon offsetting and utilisation of SAF to reach net zero
- Set internal carbon price

  (please refer to page 54)

RISK MANAGEMENT
The processes used to identify, assess and manage climate-related risks

- Include ESG and climate-related risks in the Group's risk framework
- Manage climate change as a risk in the Enterprise Risk Management system

  (please refer to page 21)

METRICS AND TARGETS
The metrics and targets used to assess and manage relevant climate-related risks and opportunities

- Monitor Scopes 1, 2 and 3
- Commit to net zero emissions by 2050

  (please refer to page 65)

ADDRESSING CLIMATE CHANGE

| | | | | S Short term | M Medium term | L Long term |

Risk Type	Risk Timeframe	Climate-related Risk Description	Potential Financial Impact	Mitigation Strategy
Transition Risks	Policy and Legal	S M L	Imposition of new climate change regulations such as carbon taxes, emissions quotas or biofuel mandates	Increase in operating costs and fares which could dampen travel demand	• Regular engagement with civil aviation authorities and government bodies on climate change and decarbonisation plans for the aviation industry. • Monitor emerging regulations around the world to understand the risks to our business operations. • Develop Net Zero by 2050 strategy outlining our approach to the latest generation aircraft, operational improvements, SAF and carbon offsetting. • Ongoing discussions with regional fuel suppliers on making SAF available in the region. Our focus will be on maximising efficiency and using SAF in line with mandated requirements. A purchase commitment by AirAsia will strongly incentivise fuel suppliers to invest in and lower the long-term cost of SAF. • Set internal carbon price to forecast our cost of carbon offsetting.
			Exposure to litigation	Due to the long-term nature of our climate strategy, litigation related to 'greenwashing' or similar accusations could arise	• Communicate our sustainability strategy and plans transparently and accurately to stakeholders.
			New sustainability reporting requirements	Increase in reporting costs, including manpower expenses, measuring tools and audit fees	• Leverage existing frameworks and tech tools to meet new data reporting requirements. • Use available internal resources to undertake internal assurance before progressing to external assurance.

| Risk Type		Risk Timeframe	Climate-related Risk Description	Potential Financial Impact	Mitigation Strategy
Transition Risks (cont'd)	Technology	**L**	New technology developed to deliver low-carbon solutions such as zero emission aircraft may result in asset value loss of existing aircraft and equipment becoming obsolete	New investments needed to upgrade fleet and equipment	• Negotiate aircraft order contracts that allow for upgrades of unfulfilled deliveries. • Enhance fleet management strategy to build flexibilities in lease contracts.
	Market	**S** **M** **L**	Travellers and businesses respond to climate change by reducing their travel frequency	Lower demand for air travel will impact revenue	• Conduct brand campaign to communicate the Group's net zero strategy. • Implement a carbon offset programme that provides travellers with the option of offsetting their emissions.
	Reputation	**S** **M** **L**	Negative brand impact of being seen as not responding sufficiently to climate crisis	Guests may choose a competitor perceived as being more sustainable and investors may divest. Financial institutions may also impose a premium on lending	• Invest in carbon reduction initiatives and communicate decarbonisation efforts actively as part of the company's communication strategy.
Physical Risks	Acute	**M** **L**	Aircraft becoming inoperable at extremely high or low temperatures	Increase in cost of flight delays and cancellations	• Operate seasonal schedules and expand coverage of weather forecasting services. • Undertake preemptive cancellations to avoid guests and aircraft being stranded.
		S **M** **L**	Increased frequency and severity of climate events such as typhoons and floods	Cost of asset damage, increase in insurance premiums and revenue loss due to travel disruption	• Maintain robust business continuity plans and dynamic planning schedules at affected hubs.
	Chronic	**L**	Longer-term changes in weather patterns that result in rising sea levels rendering some airports inoperable	Higher airport charges at new facilities built to replace at-risk airports; and lower travel demand if new airports are far from city centres	• Select hub airports that are shielded from extreme weather events. • Ensure business continuity plans are effective and up to date. • Operate to airports that are adequately served by public transport to minimise potential increase in guests' travel-related carbon footprint.

ADDRESSING CLIMATE CHANGE

The following are among specific climate-related opportunities we have identified.

Climate-related Opportunities	Potential Financial Impact	Mitigation Strategy
Administrative efficiency	Digitalisation strategy reduces manual paperwork and cost of paper, printing and storage of documents.	• Continue to work with regulators to move towards e-documentation for regulatory record-keeping and submissions.
Resource diversification	Shift to SAF diversifies fuel supply and reduces exposure to rising energy costs and growing carbon regulation.	• Ongoing discussions with fuel suppliers to supply SAF at Malaysian airports and/or to develop SAF using locally available feedstock.
Resource efficiency	Fuel reduction via improvements in air traffic management and A321neo fleet conversion will further reduce operating costs and ensure AirAsia maintains its commercial advantage as the airline with the lowest cost/ASK and CO_2/ASK in the industry.	• Engage in regular consultations with civil aviation authorities to implement new fuel efficiency and emissions reduction measures, including proposing new measures to be added to national State Action Plans on Emissions Reductions. • Advocate improvements to the country's airspace system that could lower GHG emissions.
Products and services	Attract travellers keen to minimise their carbon footprint and experience sustainable travel activities. We could potentially gain from increased market share among responsible travellers and earn ancillary income from sales of sustainable travel activities.	• Implement a carbon offsetting programme to enable travellers to contribute to carbon offsetting. • Work with sustainable travel social enterprises to make sustainable travel activities accessible.
Markets	Recognise that climate impact-prone destinations may also be strong revenue generators in the recovery and rehabilitation phase.	• Resume commercial flights to affected destinations as soon as it is safe to do so to support rebuilding programmes.
Resilience	Continue to strengthen our network connectivity in hubs with low climate risk such as klia2.	• Invest in climate forecasting tools and services to inform fleet planning and route planning strategies. • Engage with airport partners to understand their approach to resilience.

We also recognise the latest scientific assessments as set out by the United Nations' Intergovernmental Panel on Climate Change (IPCC) and aim to conduct a climate-related scenario analysis based on the IPCC assessment in 2024.

MEASURING OUR CARBON FOOTPRINT

In order for our decarbonisation measures to be effective, it is essential to have a thorough understanding of our emissions footprint. In 2023, our total greenhouse gas (GHG) emissions - representing our Scope 1, Scope 2 and Scope 3 emissions - stood at approximately 6,036,692.6 tonnes. Our primary GHG emissions is CO_2 from the use of jet fuel. For our GHG inventory, we follow the approach and guidance defined in the Greenhouse Gas Protocol, with emissions data calculated using relevant emissions factors based on the countries where we operate.

19.5%

0.2%

Total GHG Emissions
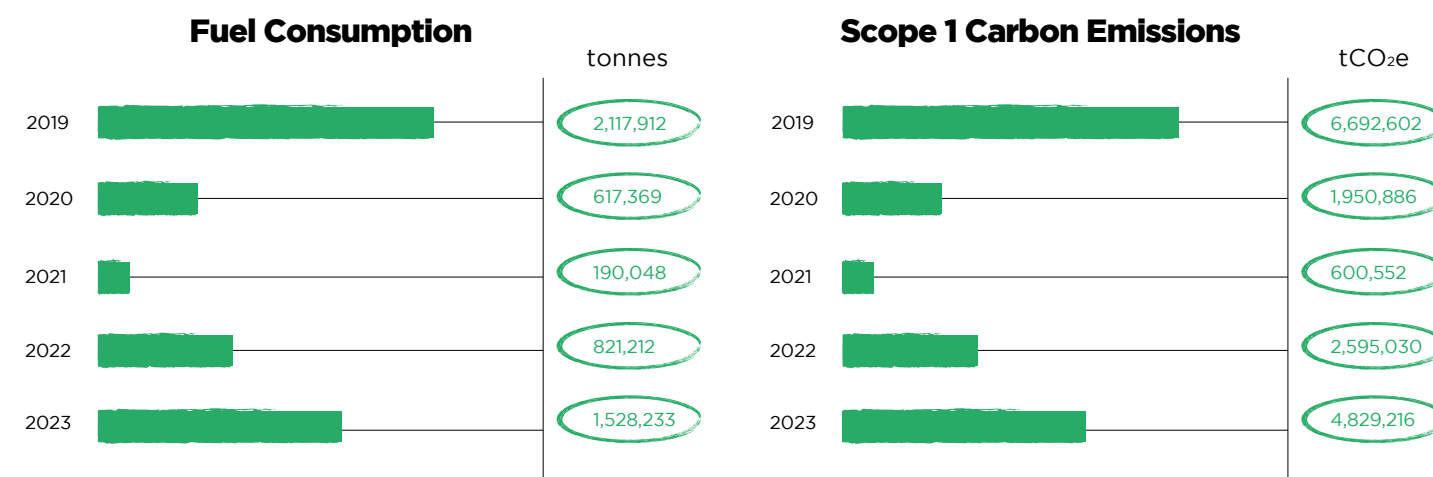**6,036,692.6 tonnes**
in **2023**

80.3%
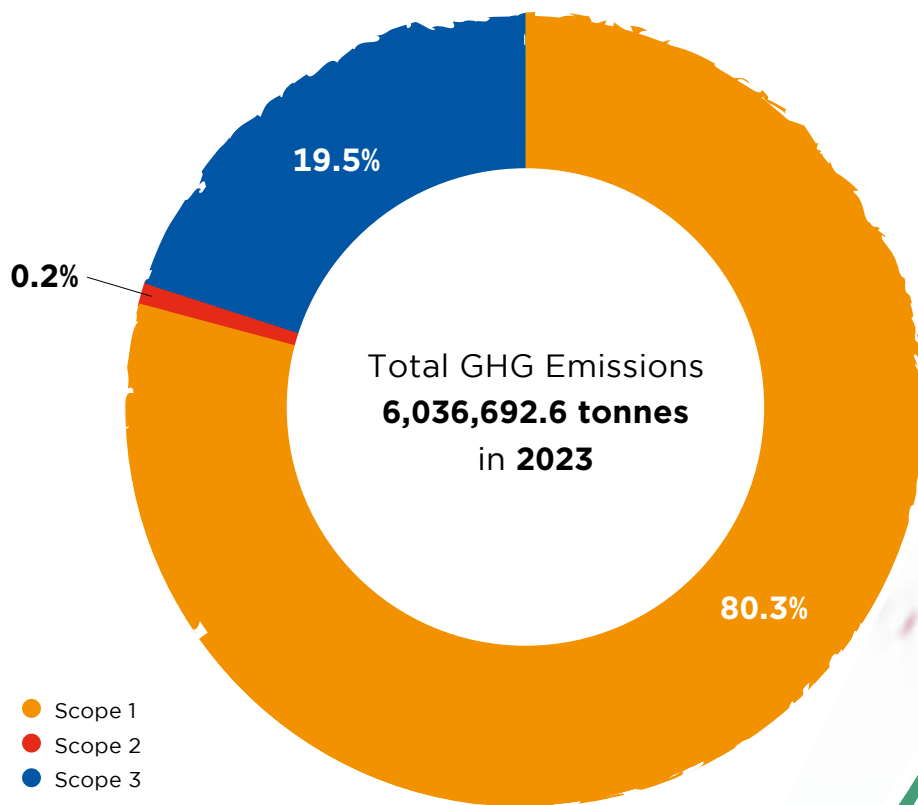
- Scope 1
- Scope 2
- Scope 3

ADDRESSING CLIMATE CHANGE

OVERVIEW OF GHG EMISSIONS 2023

Scope		Source	Emissions in 2023 (tCO₂e)
Scope 1		Airline operations, AirAsia	4,829,216.0
		Ground operations	5,223.5
		Teleport's freighter	13,278.0
Scope 2		Purchased electricity, buildings	9,971.6
Scope 3		Google cloud subscription	1,591.8
		Upstream emissions of purchased jet fuel	1,011,369.3
		Business travel	717.7
		Employee commuting	2,898.7
		Use of sold products	158,737.0
		Third-party delivery service providers	3,689.0

SCOPE 1 EMISSIONS

GRI 305-1, 305-5

Capital A's Scope 1 GHG emissions stem almost entirely from the burning of jet fuel by our aircraft, with a small portion from the fuel used by our ground service equipment. As the direct emissions from our digital and other businesses have been assessed to be immaterial, we only report Scope 1 emissions from our airline operations.

Fuel Consumption

tonnes

Year	
2019	2,117,912
2020	617,369
2021	190,048
2022	821,212
2023	1,528,233

Scope 1 Carbon Emissions

tCO₂e

Year	
2019	6,692,602
2020	1,950,886
2021	600,552
2022	2,595,030
2023	4,829,216

AirAsia's total fuel consumption saw a significant increase of 86%, from 821,212 tonnes in 2022 to 1,528,233 tonnes in 2023, with a specific fuel consumption of 3 litres/100RPK. This corresponds with the 86% increase in our Scope 1 emissions from 2,595,030 tCO_2e in 2022 to 4,829,216 tCO_2e in 2023. The increase in fuel consumption was mainly due to the recovery of operations in all our home countries and increase in the number of flights compared to the previous year. For the full year 2023, we reached 74% of the number of flights compared to 2019, pre-pandemic.

AirAsia reports its fuel consumption and Scope 1 emissions for all its AOCs in accordance with CORSIA. These reports are verified by authorised third-party independent auditors.

Ground Operations

For our ground operations, our fuel consumption is mainly from the ground vehicles used at airports.

1,653 tonnes
Fuel consumption in 2023
(↑27% from 2022)

5,223.5 tCO_2
Scope 1 emissions in 2023

Fuel consumption in 2023 stood at 1,653 tonnes, a 27% increase from 2022, attributed to the progressive expansion of our operations leading to higher fuel uptake.

Cargo

Teleport, which has been primarily involved in providing air cargo and door-to-door delivery services, received three A321F freighters in 2023.

Since then, Teleport has transported 87,401 tonnes of cargo, which is equivalent to fuel consumption and carbon emissions of:

4,178 tonnes
Fuel consumption in 2023

13,278 tCO_2
Scope 1 emissions in 2023

GREEN MOBILITY IN GROUND OPERATIONS

While ground operations constitute a smaller portion of fuel consumption compared to our aircraft, they remain significant contributors to overall energy usage. Notably, electricity and natural gas stand out as the primary energy sources within ground operations.

In October 2023, GTR took a significant step towards reducing its environmental footprint while enhancing operational efficiency by acquiring two Hangcha Aviation Tractor Model QSD320-XD3-MAI electric vehicles (EVs). The utilisation of EV will ensure we are not heavily dependent on the current fleet of diesel-powered tractors.

During the EVs' first full-trial phase in August, GTR observed that the EV tractor could sustain ground handling operations for seven hours on a single charge, promising significant savings of approximately 58% in GTR's overall consumable
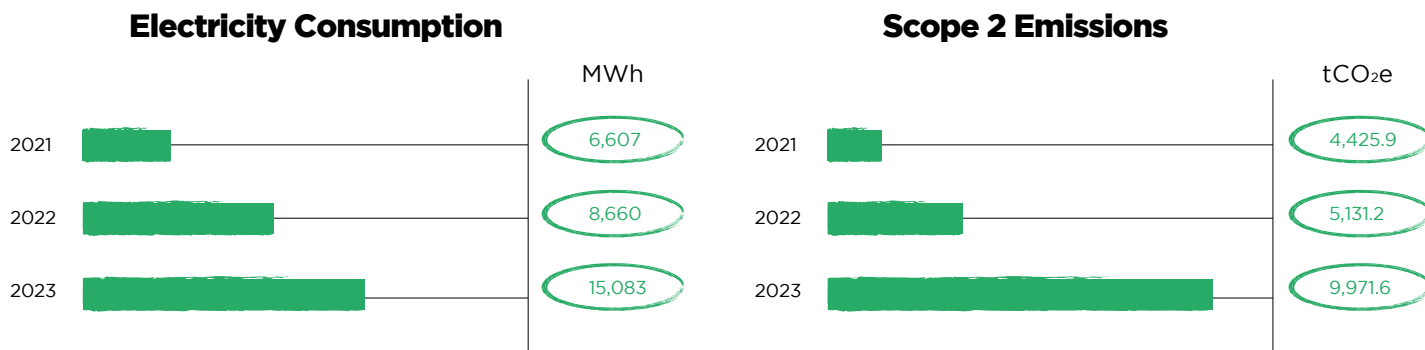
costs. GTR is gearing up for significant improvements in 2024, planning to deploy 20 additional EV tractors for its ramp operations. This will complement its broader strategy of integrating EVs across various aspects of operations, including baggage handling, transport and maintenance services. The company is also actively exploring the installation of solar panels at its warehouse. This strategic move would not only decrease electricity consumption but also facilitate the charging of EV forklifts using renewable energy. This forward-thinking approach underscores GTR's commitment to achieving net-zero carbon emissions for its EV forklift fleet in the foreseeable future.

ADDRESSING CLIMATE CHANGE

SCOPE 2 EMISSIONS

GRI 302-1, 302-3, 302-4, 305-2

Our Scope 2 disclosures cover emissions associated with energy consumption at all our facilities and offices.

Electricity Consumption

MWh

Year	Value
2021	6,607
2022	8,660
2023	15,083

Scope 2 Emissions

tCO₂e

Year	Value
2021	4,425.9
2022	5,131.2
2023	9,971.6

In 2023, our total electricity consumption was 15,083 MWh, a 75% increase compared to 2022 with an average building energy intensity of 96.9 kWh/m^2/year across all our office buildings.

As Scope 2 emissions are from purchased electricity for our buildings and offices, our Scope 2 emissions similarly increased by almost two-fold from 5,131.2 tCO_2 in 2022 to 9,971.6 tCO_2 in 2023, with a carbon intensity of 47.0 tCO_2/m^2.

Both our electricity consumption and Scope 2 emissions increased due to Allstars returning to the office and business operations resuming in full. In addition, as part of efforts to improve the management of our resource consumption, in 2023 we expanded our reporting scope and included TAA's airasia academy electricity consumption in our calculations.

In line with the Group's pursuit of efficiency, our facilities team has implemented various initiatives in our offices aimed at enhancing energy efficiency and reducing our overall consumption. These initiatives encompass:

Conversion to LED lighting at all AOC headquarters	Scheduled energy usage after working hours	Staggered switching for major equipment such as air conditioning

Our total energy consumption, including electricity for offices and fuel for aircraft, ground operations and Teleport freighters, amounted to 20,362,567 MWh in 2023. In 2024, the Sustainability department plans to explore ways to reduce our resources consumption and, subsequently, will set reduction targets for key departments.

SUSTAINABLE AIRCRAFT MAINTENANCE HANGARS

ADE is currently constructing a 14-line state-of-art aircraft maintenance hangar facility in Sepang. Aligned with the Group's sustainability objectives, the hangar is being constructed in accordance with the Malaysian green building standard, GreenRE, where the team is working to get the hangar certified to meet the platinum rating. This includes meeting parameters for indoor environment quality, environmental protection, innovative design, water and energy efficiency, and carbon footprint of development.

We anticipate the completion of the first phase of the hangar by the third quarter of 2024. Through ADE's commitment to the GreenRE standards, we envision this project to be exemplary of how ADE's aircraft maintenance facilities moving forward can actively contribute to fulfilling our sustainability objectives.

SCOPE 3 EMISSIONS

GRI 302-2, 305-3

Our estimated Scope 3 emissions contribute to about 19.5% of our overall emissions, with the largest component being upstream emissions associated with jet fuel production (85.8%), followed by emissions from Teleport's use of sold products (13.5%) and others.

As more than 85% of our Scope 3 emissions are from the extraction and refining of the jet fuel (well-to-tank emissions) for our flights, SAF utilisation will be the dominant method of managing this aspect of our carbon footprint in the future. In addition, as reducing carbon emissions is a shared responsibility between airlines and passengers, we plan to introduce a new carbon fee to fund AirAsia's climate transition. We hope to launch this programme in the first half of 2024.

For more information on our climate strategy, please refer to page 52 of this report.

As for our value chain, we will continue to work closely with our vendors and business partners to monitor and minimise our Scope 3 emissions. Additionally, we will expand the scope of our Scope 3 emissions monitoring to address more categories where relevant.

OTHER GREENHOUSE GAS EMISSIONS

GRI 305-7

In addition to GHG emissions, the combustion of jet fuel releases nitrogen oxides (NOx), sulphur oxides (SOx), carbon monoxide (CO) and volatile organic compounds that affect the quality of air.

Over the years, improved engine designs have gradually reduced emissions of other GHGs. Under Annex 16, Volume III of its international standards on environmental protection, ICAO has set acceptable levels of emissions from aircraft engines for such gases.

In compliance with these standards, we strive to maintain a young fleet of aircraft that use the latest technologies. As of 2023, all AirAsia aircraft engines meet the most stringent ICAO CAEP/8 NOx emissions standards. As we continue to phase out older aircraft in exchange for new Airbus A321neo models, we aim for 100% compliance with ICAO CAEP/8 NOx standards.

Indicators	2023
NOx emissions (tonnes)[1]	2,675
NOx emissions intensity (gNOx/RPK)[1]	0.041
SOx emissions (tonnes)[2]	285
Volatile Organic Compounds (VOC) emissions (kg)[2]	985,861

[1]. NOx emissions and compliance data are obtained from the ICAO Emissions Bank issue 28C dated 20 July 2021. The NOx emissions value per landing and takeoff (LTO) cycle is based on the weighted average of AirAsia's fleet composition as of 2023.

[2]. According to the US EPA, SO_2 represents the highest composition of SOx emissions, hence SO_2 is considered as SOx for the purpose of calculations. SO_2 and VOC emissions data are sourced from US EPA's Generic Aircraft Type Emission Factors table.

NOISE MANAGEMENT

Noise from aircraft engines could affect the physical and mental health of surrounding communities, and may even impact the natural ecosystem. Accordingly, all AirAsia aircraft meet the criteria established by ICAO Annex 16 Chapter 4 noise standards and comply with CAAM's directive on aircraft noise as well as airports' noise abatement procedures. Specific operational solutions are also sought to reduce noise emissions from aircraft. Whenever possible, we implement procedures such as idle reverse landing, reduced flap landing and one engine taxi which significantly reduce noise pollution. We will continue to meet and exceed ICAO's noise certification standards and work with airports to find solutions to noise pollution.

WATER CONSUMPTION

`GRI 303-1, 303-5`

Capital A's Sustainability Policy includes a commitment to conserving natural resources via efficient water use while continuing to meet our operational requirements. As such, we are putting in place various initiatives to improve water consumption across our operations.

Water Consumption

m³

Year	Value
2021	45,320
2022	83,289
2023	102,067

Water supply for all our offices is from municipal potable water sources. In 2023, we consumed 102,067m³ of water, a 22.6% increase from 2022 due to the full return to offices.

For enhanced transparency and better water usage, the TAA team plans to regularly cross-check its water metre readings with the airport authority as their office is located within the vicinity of the airport.

WASTEWATER MANAGEMENT

`GRI 303-4`

Capital A does not generate industrial effluents from our office, hence all sanitary and waste water from washing is discharged into government-operated centralised water treatment plants for treatment. In the Philippines, PAA's wastewater discharge is managed by the airport authority (MIAA).

In 2023, our IAA office started to recycle water from its sewage treatment plant to water the plants. There are plans to install a new water metre for its recycled water to monitor their outdoor plant watering system.

BIODIVERSITY

`GRI 303-4`

We believe in conserving the natural environment and biodiversity of the countries where we operate for the benefit of the ecosystem and local communities. As a responsible organisation, we are always exploring opportunities to minimise our ecological impact.

Through our philanthropic arm, AirAsia Foundation, we have supported numerous social enterprises across the region whose goals include biodiversity conservation. The table below summarises our contributions in 2023.

THAILAND

Fisherfolk
Improves the livelihood of local fisherfolk in southern Thailand via sustainable fishing practices and marine conservation

INDONESIA

Natural Acheh
Provides expertise and skills for rural women to farm oysters through a new cultivation method and enables the recovery of the mangrove forest

PHILIPPINES

Bambuhay
Supports reforestation efforts by equipping indigenous people in rural areas with sustainable alternative livelihood using bamboo

For more information on how we supported the social enterprises, please refer to page 102 of this report.

In the Philippines, AirAsia collaborated with Nayong Pilipino Pilipino Foundation in a tree planting initiative "Taking Off For A Greener Future". The primary objective was not only to restore the surroundings through reforestation but to also give back to the Filipinos by creating a greener and more vibrant space. The location of the tree planting initiative will be the future Nayong Pilipino Cultural Park. The event saw 200 native trees planted by 120 volunteers in Manila.

In July 2023, Teleport in collaboration with APE Malaysia's Restore Our Amazing Rainforest (ROAR) initiative, planted 365 trees in the Lower Kinabatangan Region, Sabah (location: 05°32'42.52" 118°18'45.95"). The effort will benefit wildlife by creating habitats for endangered animals, including the Bornean orangutan and pygmy elephant, while supporting local communities for years to come.

SIGNING THE UNITED FOR WILDLIFE TRANSPORT TASKFORCE BUCKINGHAM PALACE DECLARATION

As a player in the cargo business, Teleport places the utmost importance on the prevention of wildlife trafficking. In May 2023, Teleport became an official member of the United for Wildlife International Taskforce where it joins forces with companies across the transport sector to create awareness of illegal wildlife trade.

The Taskforce, founded by the Prince of Wales and the Royal Foundation, works towards Buckingham Palace's 11 commitments, including zero tolerance for illegal wildlife trade. The network of member organisations shares information and collaborates on detecting illegal wildlife products as well as developing new mechanisms to stop their transportation.

Teleport also adheres to the relevant local and international regulations on wildlife trafficking including IATA's Live Animals Regulations, Convention on International Trade in Endangered Species of Wild Fauna and Flora, Department of Quarantine and Inspection Services Malaysia regulations of wildlife trafficking, and CAAM Directive 18 on national transport of dangerous goods programme.

As a result of its strict compliance and vigilance to prevent wildlife trafficking activities, Teleport identified five incidents of wildlife trafficking where all shipments were stopped and addressed with the relevant authorities.

Waste Management

GRI 3-3, 306-1, 306-2

Efficient and well-planned waste management is essential to avoid unnecessary waste generation and environmental issues. Towards this end, we have incorporated a circular economy approach into our business and practise the 3Rs principle of reusing, reducing and recycling whenever possible.

2023 Performance Overview

1,003.1 tonnes
of non-hazardous waste generated

49%
waste diverted from disposal

18,784kg
RedQ office waste recycled

1,130kg
of used cooking oil recycled

1,715
life jackets upcycled

Our Management Approach

- Environmental Policy Statement
- Sustainability Policy
- Environmental Quality Act 1974
- Environmental Quality (Scheduled Wastes) Regulations 2005
- Solid Waste and Public Cleansing Management Act 2007

Supporting the UN SDGs

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

hazardous and non-hazardous
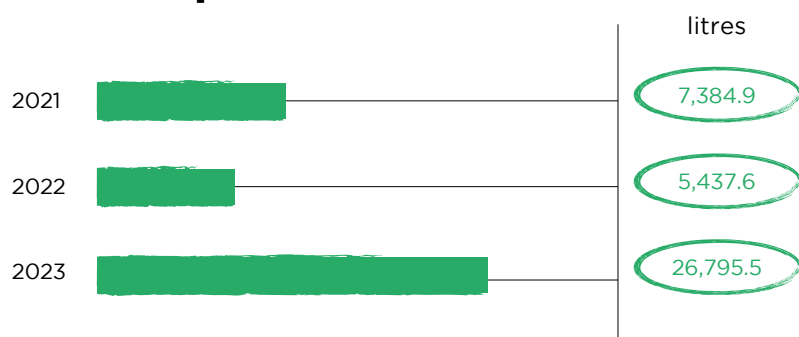
HAZARDOUS WASTE

`GRI 306-3`

Hazardous waste is harmful to human health and the environment, and therefore should be disposed of properly. Most of our hazardous waste is generated by our engineering operations, maintenance stations and hangars, and consists of spent oils/fluid, absorbents, containers, filters, oil rags, paint and grease. We engage licensed contractors to manage our hazardous waste in compliance with the Environmental Quality (Scheduled Wastes) Regulations 2005 in Malaysia and relevant environmental acts and regulations of the other countries where we operate.

In 2023, we generated 3,042.93 tonnes of solid hazardous waste, a 127% increase from 2022. Whereas for liquid waste, we generated 26,795.49 litres of liquid scheduled waste compared to 5,437.64 litres in 2022. The high level of waste generated in 2023 was due to reactivation of all aircraft which involves aircraft maintenance and draining of aircraft fluid. This year, we also expanded our scope of reporting (previously only the four AOCs) to include six hubs - Kuala Lumpur, Penang, Langkawi, Johor Bahru, Kota Kinabalu and Kuching - as well as ADE's three newly registered process areas.
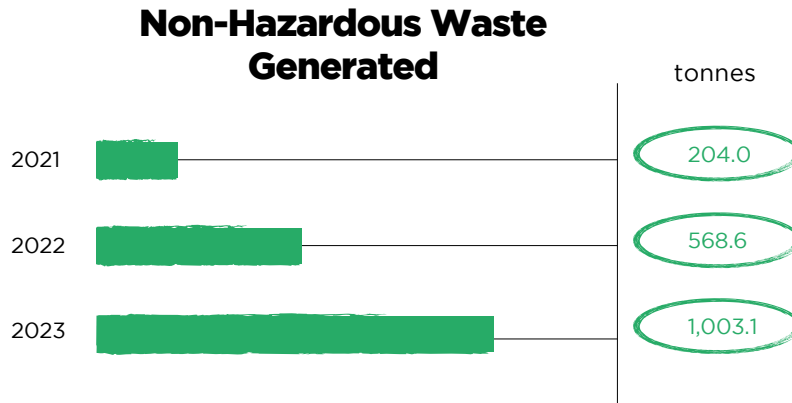
Solid Hazardous Waste

tonnes

Year	Value
2021	522.7
2022	1,343.4
2023	3,042.9

Liquid Hazardous Waste

litres

Year	Value
2021	7,384.9
2022	5,437.6
2023	26,795.5

NON-HAZARDOUS WASTE

GRI 306-3, 306-4, 306-5

Our non-hazardous waste encompasses general waste originating from our offices, warehouses and flights. In 2023, we witnessed a significant 76% increase in non-hazardous waste production, largely attributed to the resumption of full operations.

Non-Hazardous Waste Generated

tonnes

Year		tonnes
2021		204.0
2022		568.6
2023		1,003.1

Note:
1. Non-hazardous waste for AirAsia Malaysia and AirAsia Indonesia only include general waste from offices as cabin waste is managed by airport authorities.
2. Non-hazardous waste for AirAsia Philippines and AirAsia Thailand only include cabin waste collected from our flights as office waste is managed by airport authorities.

However, it is important to note that in 2023, 49% of our waste generated was diverted from disposal. Waste that is not disposed of is recycled, reused or used as an alternative fuel for cement production.

Waste Directed to and Diverted from Disposal in 2023

Year	disposed	diverted
2023	508.9	494.2

- Non-hazardous waste disposed (tonnes)
- Non-hazardous waste diverted from disposal (tonnes)

During the same year, the Group actively advocated several key sustainable practices to Allstars, including:

☑ Encouraging Allstars to bring their own cutlery and containers to the offices

☑ Prohibiting the use of single-use plastics such as plastic cutlery and plastic bags

☑ Implementing a fee for Allstars who use plastic containers

INFLIGHT WASTE COLLECTION

With the return to normal operations, MAA's cabin crew has resumed segregating recyclable waste. However, overseeing the recycling process becomes challenging once bags leave the aircraft and are managed by airport authorities. Nevertheless, we're persisting in our sustainability efforts by exploring the potential to include more recyclable items in our offerings and establishing our own alternative waste collector for better oversight. Additionally, our catalog includes a gentle reminder for passengers to request disposable items only when necessary.
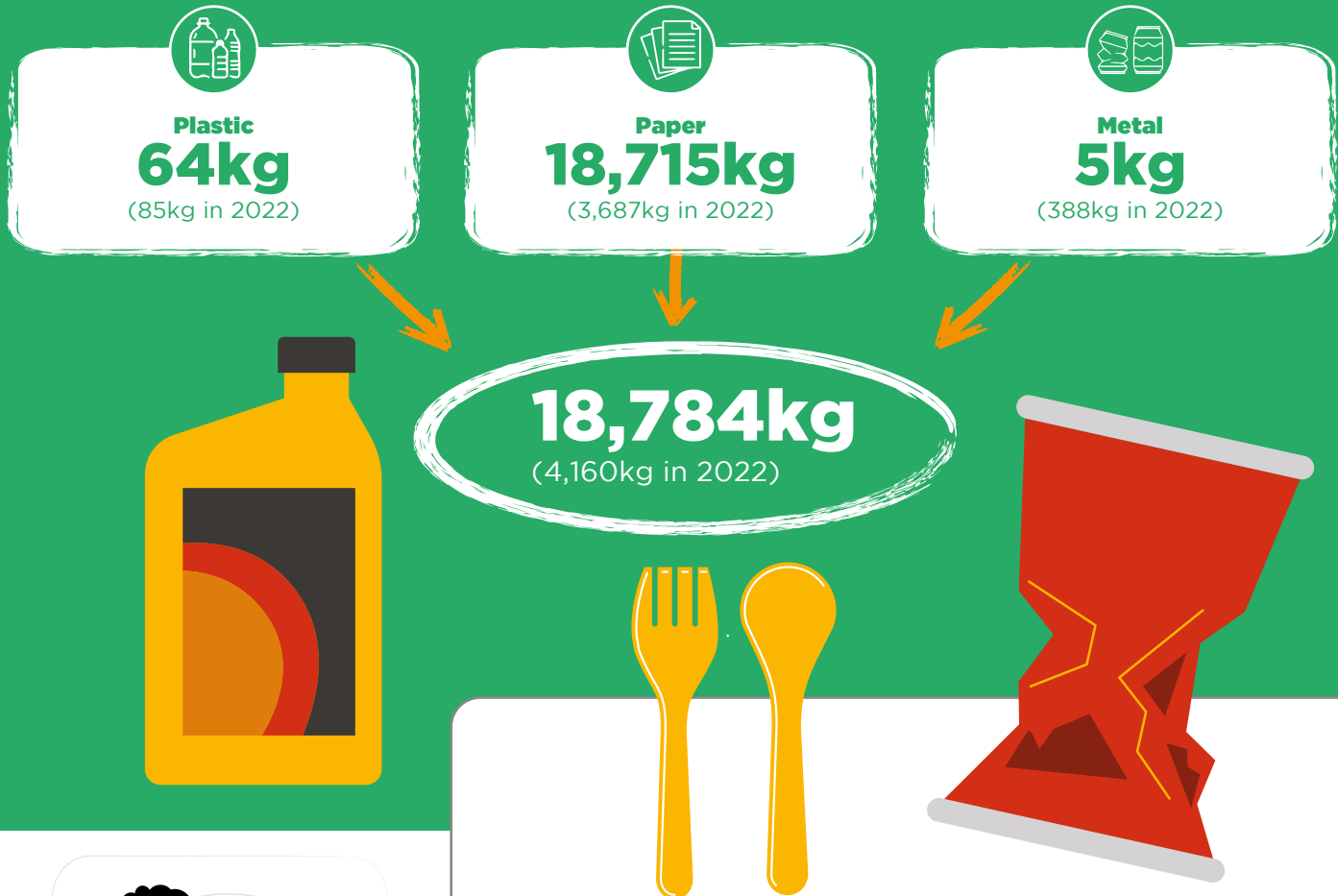
Our TAA and PAA cabin crew maintain their practice of segregating recyclable waste onboard. However for IAA flights, the responsibility of handling and managing the cabin waste lies with the airport authorities. In 2023, TAA collected 284.5 tonnes of cabin waste, which was 100% diverted from disposal. On the other hand, PAA collected 265.7 tonnes of cabin waste, 52% of which was recycled while the rest was sent to landfills.
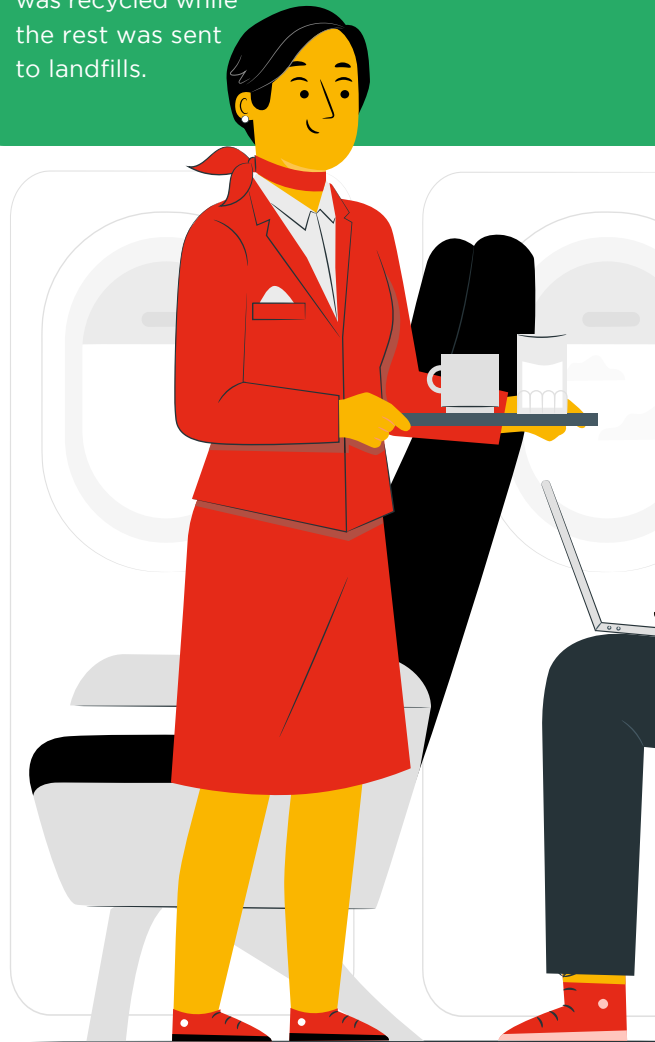
OFFICE WASTE COLLECTION

Recycling bins are provided for the collection of paper, plastic and aluminium items at every level of the building. Waste discarded in these bins is collected by appointed licensed contractors.

Our RedQ office recycled a total of 18,784kg of waste in 2023, which was a significant increase from 4,160kg in 2022 due to the resumption of flights and Allstars returning to the office full-time.

Plastic
64kg
(85kg in 2022)

Paper
18,715kg
(3,687kg in 2022)

Metal
5kg
(388kg in 2022)

18,784kg
(4,160kg in 2022)

Among our LOBs, Teleport and GTR have initiated their own recycling efforts:

GTR

In August 2023, GTR commenced monitoring and recycling of its plastic waste, especially plastic sheets used in their operations. A total of 36.2 tonnes of plastic sheet was recycled.

teleport

Teleport has placed segregated recycling bins for aluminium cans, plastic and paper in three of its offices, and plans to extend the programme to other offices in Thailand, Indonesia, Philippines and Singapore in 2024.

SUSTAINABLE PACKAGING SOLUTIONS

teleport

CARGO PLASTIC SHEET TO CANVAS COVER

As a cargo business that often uses plastics for packing protection of shipments, Teleport spent the whole year of 2023 testing the use of reusable protection covers made of canvas to reduce the use of plastic sheets. The first prototype of the canvas cover was completed in the second quarter of the year following which the team tested the cover with two vendors in the third quarter. Gathering feedback and findings from the trial, the final design ensuring the best usability and reliability was decided in November. The next step is to order the covers in bulk to slowly replace all plastic sheets in Teleport operations.

In 2023, Teleport estimates its performance as shown below:

100%
cargo plastic recycled

=

599.4
tonnes of plastic avoided from landfills

santan

INFLIGHT FOOD PACKAGING

Efforts to minimise our environmental footprint extend to Santan's inflight food packaging. While our dedication to eco-friendly practices remains unwavering, as a low-cost carrier, we face the challenge of finding materials that strike the balance between being environmentally friendly and economically viable. We are therefore collaborating with suppliers to identify innovative solutions that align with our commitment to sustainability without compromising on our cost-effective business model.

Other than to adopt more environmentally friendly packaging, we are also looking at more socially responsible packaging. During the year, we changed the packaging of our signature Pak Nasser's Nasi Lemak by transitioning to a free-flaps foil tray lid that is more safe and secure.

Our five-year packaging strategy incorporates the exploration and procurement of sustainable packaging alternatives as shown below:

SANTAN'S 5-YEAR PACKAGING STRATEGY

2022

Standardisation of Packaging Design & Cost Reduction
Standardising the design of inflight and on-ground packaging for a stronger brand presence.

FOOD WASTE

Since 2021, the Inflight team has set the target of limiting food waste to less than 30% of total consumption for all AirAsia flights. By using our AI demand planning tool, we are able to forecast catering demand and encourage guests to pre-book meals.

765,416kg
Food waste produced in 2023

In 2023, our food waste, of 765,416kg, was within the threshold. Our goal in 2024 is to further reduce our food waste to below 25% of total consumption.

USED COOKING OIL

With the mass production of food for catering and restaurants, we are aware of the high volume of cooking oil that we use. In June 2023, we finally kicked off our partnership with FatHopes Energy to collect, process and refine our used cooking oil (UCO).

1,130kg
UCO collected in 2023

2023

Green Packaging
Sourcing for affordable alternative green packaging (recyclable or biodegradable packaging elements) as well as to reduce disposable waste and carbon emissions.

2025

Packaging that Meets Shelf-Life Goal
Research packaging that is able to extend shelf life to meet the demands of the global food industry, reducing food waste on board. Santan will also ensure food safety and compliance with quality standards throughout its shelf life.

2024

Seasonal & Collection Packaging
Explore eco-friendly materials for our seasonal gift boxes without compromising on quality and collection value.