

# Sustainability

## REPORT 2017-18



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## FEEDBACK

We warmly welcome all stakeholders to share their feedback, insights and perspectives about our approach to sustainability and sustainability reporting. These may be directed to [sustainability@changiairport.com](mailto:sustainability@changiairport.com).

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“Beyond an airport”

## Introduction

**C**hangi continues to push the boundaries of what an airport can be to create unique experiences for all who pass through its doors. Sustainability is an integral part of Changi's business and has been embedded in its operations and developments to ensure sustainable growth for generations to come. Changi's sustainability efforts ensure that the airport continues to expand its network to the rest of the world in a way that minimises impact to the environment and communities.

### ABOUT CHANGI AIRPORT GROUP

Changi Airport Group (Singapore) Pte Ltd (CAG) was formed on 16 June 2009 and the corporatisation of Changi Airport followed on 1 July 2009. As the company managing Changi Airport, CAG undertakes key functions focusing on airport operations and management, air hub development, commercial activities and airport emergency services.

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**CHANGI**  
airport group

# Sustainability Highlights

CHANGI AIRPORT GROUP 2017-18



## Corporate Governance



**Zero** confirmed incidents of **corruption**



**Zero** employee work-related **fatalities**

## Social



Ranked **Top 3 Most Attractive Employer** by Randstad for the 4th consecutive year



Touched the lives of **2,130 beneficiaries** through Changi Foundation



Voted World's Best Airport for the **6th consecutive year**



Collaborated with **21 airport partners** for Changi Foundation programmes

## Economic



**63 million** passenger movements



**2.1 million** cargo tonnage



Connected to **over 400 cities** worldwide

## Environmental



Reduction in GHG emissions intensity by **6.3%\***



Achieved **ACA Level 3** to reduce emissions airport-wide



Diverted over **600 tons** of food waste



Changi Airport Community Environmental Forum participated by **nearly 50 companies**



Enabled **fully-electric** baggage tractors for T4

\* comparing FY2016/17 & 17/18



# CEO's Message



**Lee Seow Hiang**  
Chief Executive Officer

**W**e are pleased to share with the Changi Airport community and our stakeholders, the inaugural Changi Airport Group ("CAG") Sustainability Report ("SR").

Sustainability, in terms of CAG's efforts across the economic, environmental, social and corporate governance dimensions, is deeply integrated into our Vision of 'Exceptional People, Connecting Lives'. The heartbeat of Changi Airport is its 50,000-strong ONE Changi community where a Sustainable Changi is a future we build together.

With the opening of Terminal 4 in October 2017, our passenger terminals have the capacity to handle up to 82 million passengers per annum. In 2019, Jewel Changi Airport will be another gem to be unveiled as a destination unto itself, offering exciting facilities and attractions for our travellers as well as Singapore residents. We are also designing and building our future airport site at Changi East, which will boost operating capacity to over 130 million passengers per annum. Our developments are designed with environmental considerations and to create value for our stakeholders by operating Changi Airport in a sustainable manner.

**“The heartbeat of Changi Airport is its 50,000-strong ONE Changi community where a Sustainable Changi is a future we build together”**

Our sustainability approach is a collaborative one which has been developed through close interactions with our airport partners. We have grouped our initiatives into six sustainability thrusts that resonate with CAG and which are mapped to Singapore's national objectives and the United Nations Sustainable Development Goals.

#### FULFILLING CAREERS

Our family of over 1,900 passionate and exceptional employees is the lifeblood of CAG. We strive to bring out the best in our employees by developing them holistically throughout their careers and fostering a unique Changi spirit.

Employee turnover rate of 5.7% is significantly lower than the annualised national labour turnover rate of 21.6% and the air transport industry's turnover rate of 10.8%. CAG has also been recognised as Singapore's most attractive employer by Randstad for the second time.

#### SAFEGUARDING LIVES

We place a premium on the safety of both the airport community and our travellers. In this regard, Changi Airport has received a deficiency-free rating from the International Federation of Airline Pilots' Associations ("IFALPA") 37 times. We also had zero employee work-related fatalities for Financial Year 2017/18.

Behind the scenes, CAG coordinates airport-wide contingency drills every year to validate emergency-response procedures and work with our airport partners to cultivate an airside safety culture. All these are done to ensure a safe travel experience and operating environment.

#### INVIGORATING TRAVELS

Changi Airport has a special place in the heart for many Singaporeans and is the first point of contact with Singapore for our international travellers. We aim to consistently make the travel experience a refreshing one through the attributes of the Changi Service DNA – Personalised, Stress-Free and Positively Surprising.

We rejuvenate our facilities to keep pace with the changing needs of our travellers and have a year-round calendar of themed events to create unique Changi moments. As a testament of travellers' airport experience, Changi Airport has been voted the World's Best Airport by Skytrax for six consecutive years.



**ENRICHING COMMUNITIES**

CAG has over the years leveraged our Changi Foundation programmes to reach out to our youth beneficiaries. Our employees help to level up the job readiness of our beneficiaries through a myriad of activities ranging from one-on-one academic coaching, to mentoring at the Changi workplace and even weekend evening soccer games through the CAG-Saturday Night Lights programme.

Our corporate citizenry efforts were enriched with the participation of 21 airport partners who provided job attachment and experiential programme opportunities. In our SR, we are committing to an ambitious target of 25% staff volunteerism rate by 2020 and to engage an even wider group of 35 airport partners.

**THRIVING ECONOMY**

In FY2017/18, Changi Airport handled 63 million passengers, with a flight taking off or landing every 80 seconds. We connect Singapore with the world, facilitating trade and leisure links to over 400 cities across 100 countries and territories.

The airport represents a key gateway for air cargo, accounting for more than half of Singapore's non-oil trade by value. With a record 2.1 million tonnes handled in the year, Changi Airport consistently ranks among the top 10 largest airports in the world for international cargo tonnage.

In partnership with our airlines and industry stakeholders, our team is committed to growing our connectivity to the world and strengthening our status as a global air hub.

Together, Changi Airport's eco-system contributes a significant 6% to Singapore's GDP.

**FLOURISHING PLANET**

We are committed to conserving our planet and have implemented solutions to optimise our energy and water usage to reduce Changi Airport's environmental footprint. For the first time, we have set an ambitious target to reduce Changi's carbon emissions intensity by 20% from FY2017/18 till FY2029/30. This commitment is also in support of Singapore's Climate Action efforts.

CAG undertook more than 10 projects in the past two years to improve Changi's energy efficiency, including electric vehicle chargers to encourage the conversion from diesel to electric-powered baggage tractors, a segmented baggage handling system at T4 to conserve electricity during off-peak hours, and the use of natural sky-lighting for our passenger terminals. Our energy efficiency efforts are validated by the Airport Council International's Level 3 Airport Carbon Accreditation which recognises CAG's efforts to optimise our carbon footprint and to bring our airport partners on board.

We also innovated with food waste digestors across terminals, which use microbes to convert organic waste into water. This initiative cut over 200 tonnes of food waste in 2017.

In terms of climate resilience, the entire Changi East site, where Terminal 5 will be built, has been designed to be at 5.5 metres above the mean sea level. In addition, an extensive drainage network will be built at Changi East to ensure that the possibility of flooding is minimised.

**CONNECTING THE WORLD SUSTAINABLY**

This SR marks a new chapter in CAG's sustainability journey and is a timely one as CAG marks its 10th Anniversary since corporatisation in 2009.

We are thankful to our airport partners for their collaboration and will pursue more initiatives in the coming years to connect the world more sustainably and to push the boundaries for an even more sustainable Changi Airport.

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LEE Seow Hiang  
Chief Executive Officer

**ABOUT THE REPORT**

**CAG's intent is to capture, measure progress and drive overall sustainability action across Changi Airport. This publication is intended to be useful for stakeholders as it communicates CAG's shared Sustainable Changi vision, approach and performance.**

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**REPORTING SCOPE**

This report covers the assets and operations under CAG's business control at Singapore Changi Airport for the period of 1<sup>st</sup> April 2017 to 31<sup>st</sup> March 2018, unless otherwise stated. The scope covers the activities of the four passenger terminal buildings and at the aircraft operating areas of Changi Airport. The four terminal buildings are referred to as Terminal 1 (T1), Terminal 2 (T2), Terminal 3 (T3) and Terminal 4 (T4) in this report. This report is published as a supplement to CAG's Annual Report 2017/18<sup>1</sup>.

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**REPORTING FRAMEWORK**

This report has been prepared in accordance with the *Global Reporting Initiative (GRI) Standards: Core option* and the GRI Reporting Principles for Report Content and Report Quality. The GRI Standards have been selected as they are the first global standards for sustainability reporting and represent the global best practice for reporting on a range of sustainability topics. CAG also applied the additional disclosure requirements and guidance set forth by the *GRI Airport Operators Sector Disclosures*, which covers key aspects that are meaningful and relevant to its sector.

CAG is also disclosing Changi Airport's impact on, and contributions to, the United Nations (UN) Sustainable Development Goals (SDGs). Reference has been made to two guidance documents, (i) *Business Reporting on the SDGs*, published by the GRI and UN Global Compact and (ii) *Aviation: Benefits Beyond Borders (2018)*, published by the Air Transport Action Group which shows how the aviation industry can support and achieve the SDGs.

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<sup>1</sup> Available online at <http://www.changiairport.com/corporate>

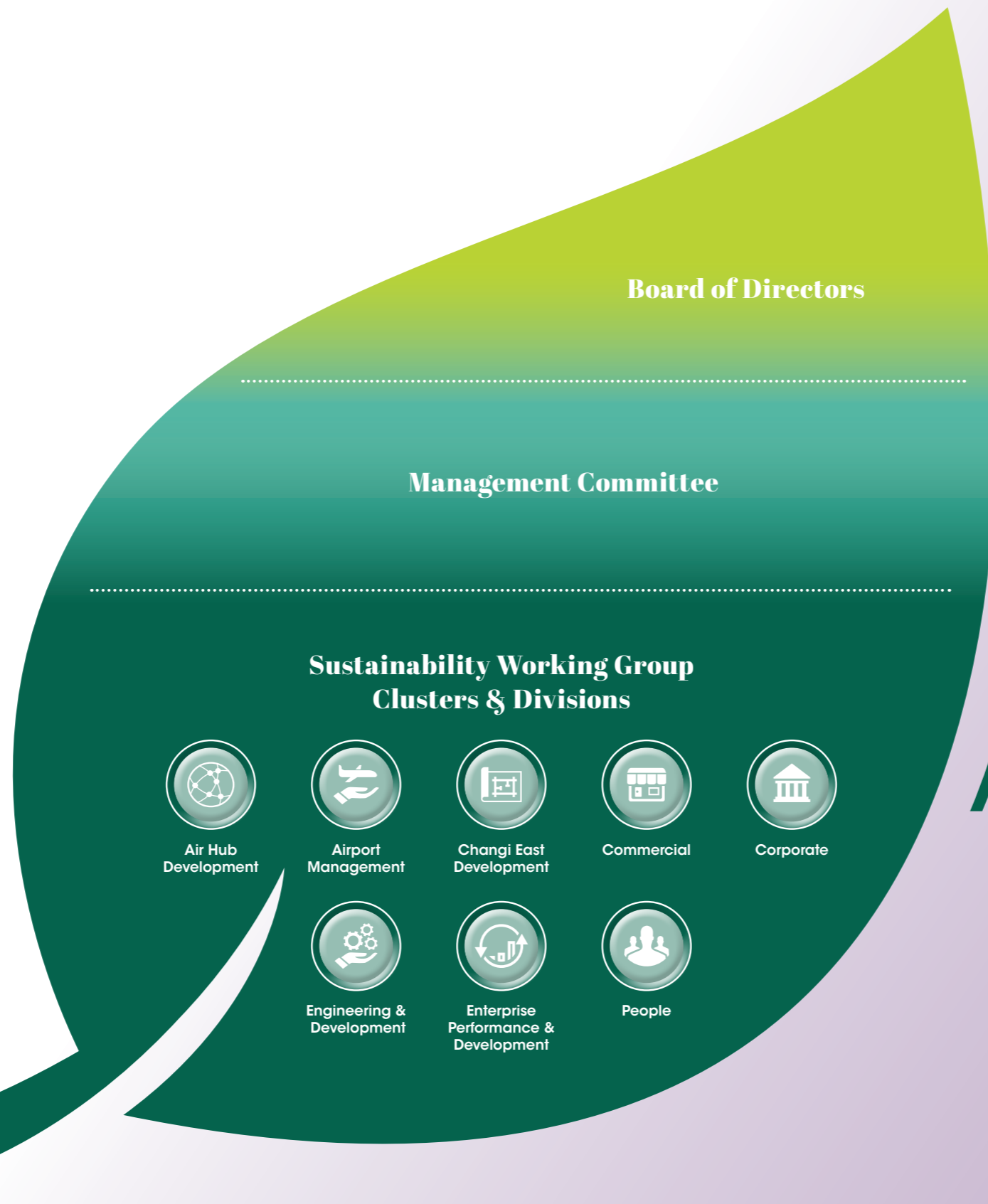
“Building a future, with passion”

# CAG's Sustainability Approach

**SUSTAINABILITY GOVERNANCE**

CAG believes that operating in a sustainable manner is a natural extension of its business and principles. Sustainability has to be integrated across all levels of the organisation and every individual in CAG plays an important role in contributing to sustainable development. This is why CAG's Sustainability Governance structure largely mirrors that of its Organisation Structure, with its leadership being the vanguard of positive change.

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**Board of Directors**

- The Board sets the tone from the top and holds the ultimate accountability for the integration of sustainability within CAG

**Management Committee**

- Management validates CAG's material sustainability matters and sets directions on sustainability strategies, policies, practices and targets
- They monitor CAG's sustainability performance and provide periodic updates to the Board

**Sustainability Working Group Clusters & Divisions**



Air Hub Development



Airport Management



Changi East Development



Commercial



Corporate



Engineering & Development



Enterprise Performance & Development



People

- Stakeholders across Clusters and Divisions implement CAG's sustainability initiatives and continually make improvements to CAG's sustainability process
- They collect and report their sustainability data and information to the Sustainability Working Group


# “Listening to our airport community”






## STAKEHOLDER ENGAGEMENT

CAG's key stakeholders are entities and individuals that affect, and are affected by, CAG. Through day-to-day conversations and regular interactions, CAG hears their concerns and

matters that impact them most. These valuable inputs enable CAG to identify which sustainability matters are critical to focus on.

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Key Stakeholder Groups	Key Interests	Key Engagement Methods
 <p>CAG Employees</p>	<ul style="list-style-type: none"> <li>Employee well-being</li> </ul>	<ul style="list-style-type: none"> <li>Recognition schemes (e.g. Core Value Awards)</li> <li>Employee Engagement Survey</li> <li>Participatory dialogue – Townhall</li> <li>Health programmes</li> <li>In.Touch Mobile App, Intranet</li> </ul>
	<ul style="list-style-type: none"> <li>Employee development</li> </ul>	<ul style="list-style-type: none"> <li>Staff orientation sessions</li> <li>Formal skills training, learning trips</li> <li>Annual performance review</li> <li>Internal newsletters</li> <li>Community volunteering</li> </ul>
	<ul style="list-style-type: none"> <li>Innovation</li> </ul>	<ul style="list-style-type: none"> <li>Learning Festival, LEAN Workshop</li> </ul>
	<ul style="list-style-type: none"> <li>Occupational health and safety</li> </ul>	<ul style="list-style-type: none"> <li>Safety Management System</li> <li>Emergency drills (e.g. Exercise Northstar &amp; Bobcat)</li> <li>Safety audits</li> </ul>
	<ul style="list-style-type: none"> <li>Corporate governance and internal controls</li> </ul>	<ul style="list-style-type: none"> <li>Key and ad-hoc committees and working groups</li> <li>Internal audits and inspections</li> </ul>
	<ul style="list-style-type: none"> <li>Compliance with statutory/legal requirements</li> </ul>	<ul style="list-style-type: none"> <li>External audits</li> </ul>
 <p>Contractors &amp; Suppliers</p>	<ul style="list-style-type: none"> <li>Compliance with legal requirements and CAG's standards</li> <li>Service performance standards</li> <li>Supply chain management</li> </ul>	<ul style="list-style-type: none"> <li>Procurement policy and tendering procedures</li> <li>Compliance audits</li> <li>Quality Service Management training</li> <li>Recognition awards (e.g. Annual First Class Service Act)</li> <li>Supplier evaluation</li> </ul>
	<ul style="list-style-type: none"> <li>Airport planning and development</li> <li>Business continuity planning</li> </ul>	<ul style="list-style-type: none"> <li>Forums and conferences (e.g. Changi Aerodrome Operational Safety Forum, Changi Airport Community Environment Forum)</li> <li>Regular and needs-based meetings (e.g. Changi Airport Airside Operational and Safety Committee meetings)</li> <li>Consultations (e.g. Singapore Changi Airport Operations Committee)</li> </ul>
	<ul style="list-style-type: none"> <li>Airport safety and security</li> </ul>	<ul style="list-style-type: none"> <li>24/7 in-house Airport Emergency Services</li> <li>Online safety reporting and incursion apps (In.Touch iFeedback, SWEETmini, RIPPLE)</li> <li>24/7 hazard reporting hotline</li> </ul>
 <p>Airport Business Partners</p>	<ul style="list-style-type: none"> <li>Recognition of contributions from the airport community</li> </ul>	<ul style="list-style-type: none"> <li>Annual Airport Celebration</li> <li>Airport Safety Awards</li> <li>Extra Mile Awards</li> </ul>
	<ul style="list-style-type: none"> <li>Collaborative innovation</li> </ul>	<ul style="list-style-type: none"> <li>Trials to test-bed new technologies</li> </ul>
	<ul style="list-style-type: none"> <li>Compliance and corporate governance</li> </ul>	<ul style="list-style-type: none"> <li>Airport orientation programmes</li> <li>Control centres</li> <li>Aerodrome safety audit</li> </ul>
	<ul style="list-style-type: none"> <li>Customer feedback and consumption trends</li> </ul>	<ul style="list-style-type: none"> <li>Sharing of survey results and findings</li> <li>Meetings</li> </ul>

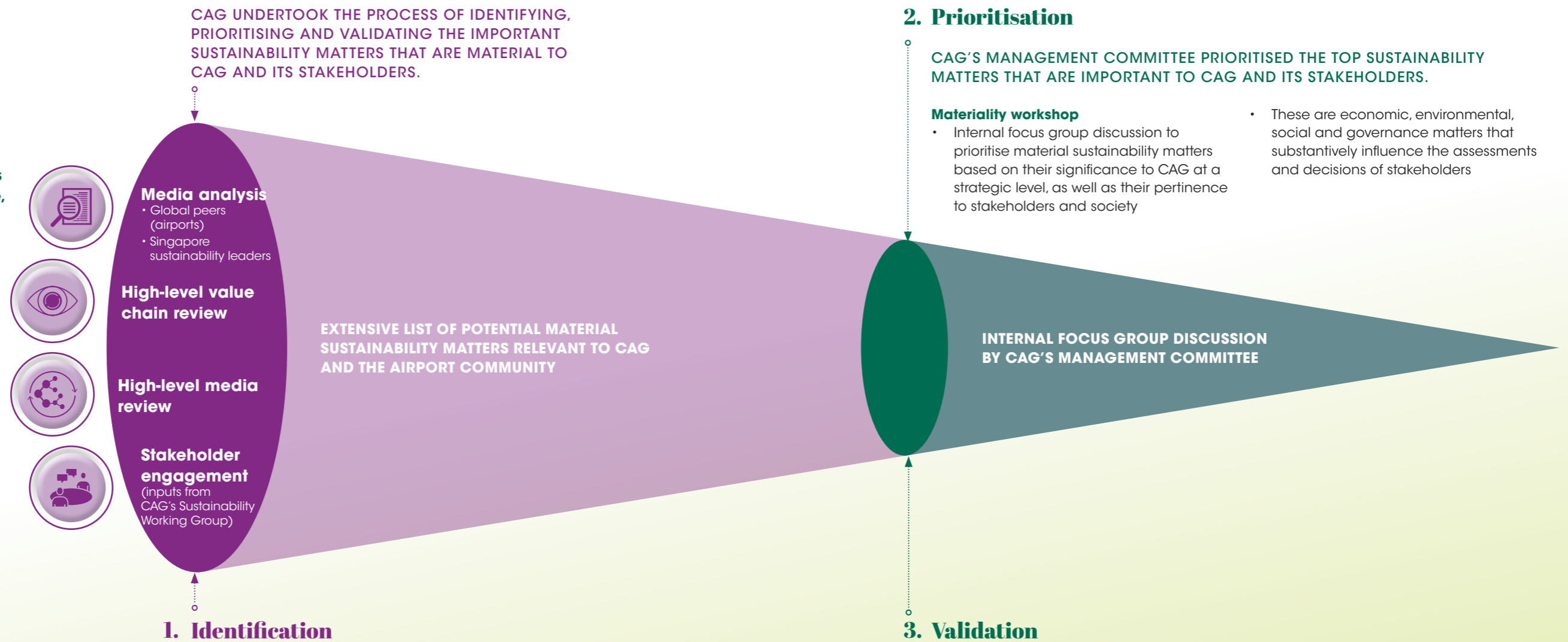
Key Stakeholder Groups	Key Interests	Key Engagement Methods
 <p>Passengers &amp; Visitors</p>	<ul style="list-style-type: none"> <li>Passenger experience and satisfaction</li> </ul>	<ul style="list-style-type: none"> <li>Customer service (e.g. information counters, mobile Changi Experience Agents, etc.)</li> <li>Real-time Instant Feedback System for swift action</li> <li>iChangi one-stop app for flight, airline and airport information</li> <li>Fault reporting hotline</li> </ul>
	<ul style="list-style-type: none"> <li>Airport attractions</li> </ul>	<ul style="list-style-type: none"> <li>Festive and themed events</li> <li>Retail and F&amp;B offers and incentives</li> <li>Web and social media platforms (Changi Media Centre)</li> </ul>
 <p>Government &amp; Regulators</p>	<ul style="list-style-type: none"> <li>Airport planning and development</li> </ul>	<ul style="list-style-type: none"> <li>Dialogue with government ministries and agencies</li> <li>Participating in regional groups</li> </ul>
	<ul style="list-style-type: none"> <li>Compliance</li> </ul>	<ul style="list-style-type: none"> <li>Reporting to CAAS and statutory agencies in compliance with regulatory requirements</li> </ul>
	<ul style="list-style-type: none"> <li>Contribution to Singapore's national objectives</li> </ul>	<ul style="list-style-type: none"> <li>Consultative meetings and briefings with CAAS and Ministry of Transport and relevant government agencies</li> </ul>
 <p>Non-Governmental Organisations (NGOs)</p>	<ul style="list-style-type: none"> <li>Networking</li> </ul>	<ul style="list-style-type: none"> <li>Forums and conferences</li> </ul>
	<ul style="list-style-type: none"> <li>Collaboration and partnerships</li> </ul>	<ul style="list-style-type: none"> <li>Joint exhibitions and meetings</li> </ul>
 <p>Media</p>	<ul style="list-style-type: none"> <li>Airport developments and features</li> </ul>	<ul style="list-style-type: none"> <li>Media briefings and airport visits</li> <li>Meetings with key media outlets</li> <li>Press releases and publications (e.g. Annual Report)</li> </ul>
 <p>Community</p>	<ul style="list-style-type: none"> <li>Contributing to our wider community</li> </ul>	<ul style="list-style-type: none"> <li>Changi Foundation programmes</li> <li>Staff volunteering at various charity and voluntary welfare organisations</li> <li>Curriculum advisory support for tertiary education institutions and the Singapore Aviation Academy</li> </ul>

# “The things that matter most to you”

## MATERIALITY ASSESSMENT

Material sustainability topics are defined as matters that significantly impact CAG and its key stakeholders. Materiality Assessment enables CAG to identify and prioritise these sustainability matters that are critical to manage, monitor and focus on.

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CAG UNDERTOOK THE PROCESS OF IDENTIFYING, PRIORITISING AND VALIDATING THE IMPORTANT SUSTAINABILITY MATTERS THAT ARE MATERIAL TO CAG AND ITS STAKEHOLDERS.

### Media analysis

- Global peers (airports)
- Singapore sustainability leaders

### High-level value chain review

### High-level media review

### Stakeholder engagement

(inputs from CAG's Sustainability Working Group)

EXTENSIVE LIST OF POTENTIAL MATERIAL SUSTAINABILITY MATTERS RELEVANT TO CAG AND THE AIRPORT COMMUNITY

## 2. Prioritisation

CAG'S MANAGEMENT COMMITTEE PRIORITISED THE TOP SUSTAINABILITY MATTERS THAT ARE IMPORTANT TO CAG AND ITS STAKEHOLDERS.

### Materiality workshop

- Internal focus group discussion to prioritise material sustainability matters based on their significance to CAG at a strategic level, as well as their pertinence to stakeholders and society
- These are economic, environmental, social and governance matters that substantively influence the assessments and decisions of stakeholders

INTERNAL FOCUS GROUP DISCUSSION BY CAG'S MANAGEMENT COMMITTEE

## 1. Identification

AN EXTENSIVE LIST OF POTENTIAL MATERIAL SUSTAINABILITY TOPICS WAS DETERMINED THROUGH THE FOLLOWING TESTS OF MATERIALITY:

### Media analysis

- Emerging sustainability risks and opportunities, hotbed trends and developments specific to CAG or relevant to the airport industry

### Industry scan and peer evaluation

- Broad sustainability topics typically reported by CAG's peers in the global airport industry and Singapore's sustainability leaders

### Value chain review

- Sustainable value drivers based on CAG's business model and core competencies, from a value chain perspective

### Stakeholder engagement

- Internal focus group discussions with CAG's Sustainability Working Group to understand the sustainability impacts and key interests and expectations of stakeholders
- Understanding the needs and concerns of external stakeholders through day to day interactions

## 3. Validation

A TOTAL OF 10 SUSTAINABILITY MATTERS WERE VALIDATED AS MATERIAL AND ALIGNED UNDER 6 SUSTAINABILITY THRUSTS THAT RESONATE WITH CAG.

### Management validation

- The Management Committee works closely with the various divisions to validate, communicate and embed sustainability priorities within CAG



# Sustainable Changi

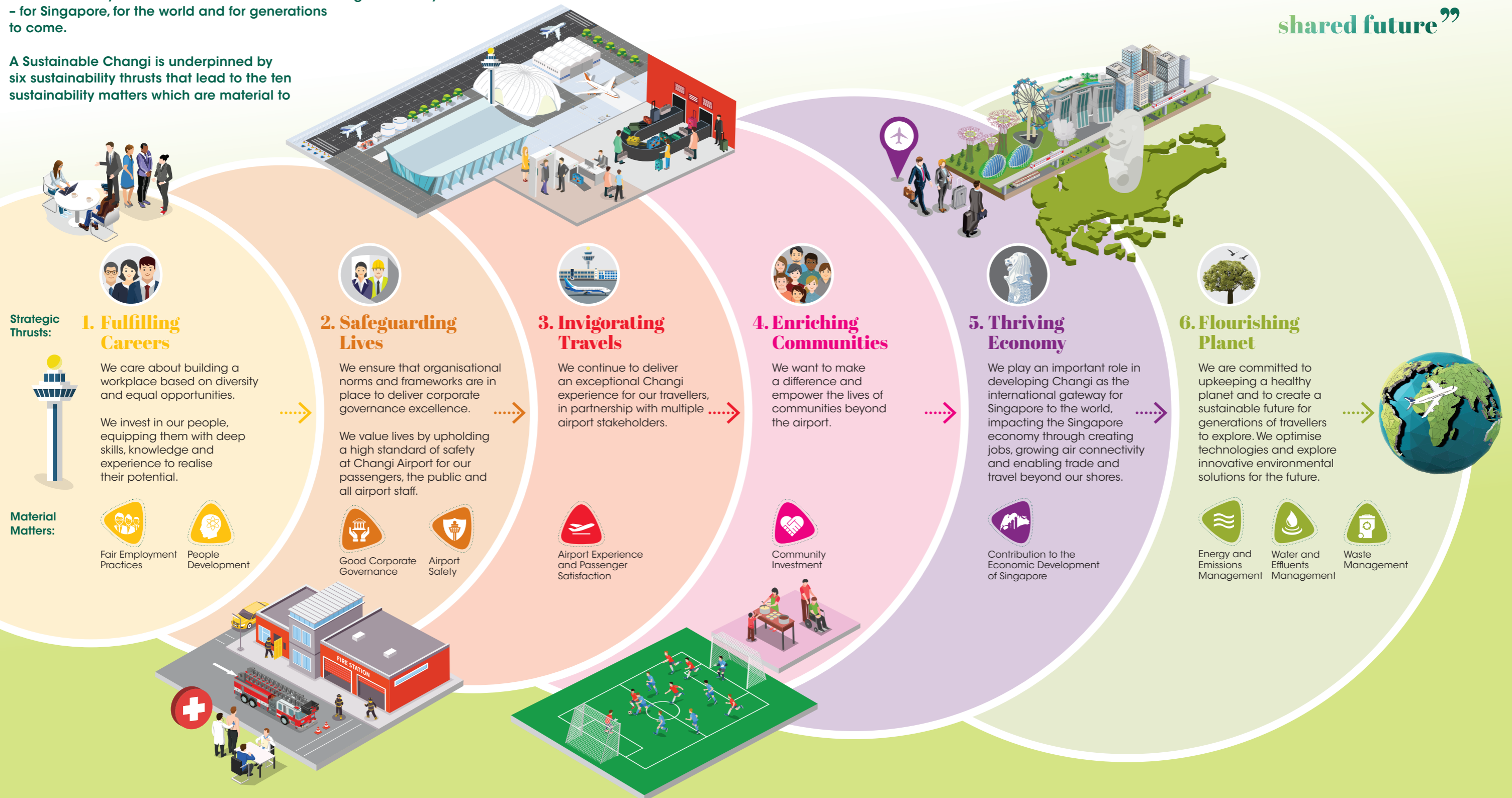
CONNECTING THE WORLD SUSTAINABLY

Changi co-creates a future that generations can be excited about. CAG's business is to connect people together, linking them to the world in a sustainable way. Our destination is a shared future - for Singapore, for the world and for generations to come.

Changi Airport. These priorities and values radiate internally from the CAG family all the way out to the surrounding community, Singapore and the global ecosystem.

A Sustainable Changi is underpinned by six sustainability thrusts that lead to the ten sustainability matters which are material to

“Because the destination is a shared future”



# “Our roadmap for sustainable development”

## CAG'S CONTRIBUTION TO THE SUSTAINABLE DEVELOPMENT GOALS (SDGs)

Evaluating the impact arising from the management of its material topics from a value chain perspective, CAG has identified 5 SDGs (and 18 SDG targets) as its key priority and impact areas, and 9 SDGs (and 24 SDG targets) as high priority and impact areas.

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The full SDG index can be found in Appendix B

## CAG'S SUSTAINABILITY TARGETS

Aligning its sustainability targets with national and global goals, CAG wants to continue its sustainability journey to drive real progress on the ground.

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Strategic Thrusts	Material Matter(s)	Target(s)	Performance FY2017/18		
<b>Fulfilling Careers</b> 	<b>People Development</b> 	Employees attending at least 1 training programme, yearly	Achieved 91.4%		
		Implement a new Enterprise Learning Management System by FY2019/20	On-track		
<b>Safeguarding Lives</b> 	<b>Good Corporate Governance</b> 	Zero confirmed incidents of corruption, yearly	Achieved		
		Zero confirmed non-compliance with applicable laws and regulations, yearly	Achieved		
		Zero number of fines, yearly	Achieved		
<b>Invigorating Travels</b> 	<b>Airport Safety</b> 	Zero employee work-related fatalities, yearly	Achieved		
		Deficiency-free rating from the International Federation of Air Line Pilots' Associations (IFALPA), yearly	Achieved (37 times consecutively)		
<b>Enriching Communities</b> 	<b>Airport Experience and Satisfaction</b> 	Good yearly performance for the Customer Satisfaction Index of Singapore (CSISG)	Achieved (78%)		
		<b>Community Investment</b> 	Achieve 25% staff volunteerism yearly by FY2020/21 Achieve 3,000 volunteer hours yearly by FY2020/21 Engage 35 airport partners in Changi Foundation programmes yearly by FY2020/21 To offer minimally 80 job attachments to youth beneficiaries yearly from FY2020/21 onwards	On-track On-track On-track On-track	
<b>Flourishing Planet</b> 	<b>Energy and Emissions Management</b> 	Maintain ISO 14001:2015 certification	Achieved		
		<b>Water and Effluents Management</b> 	<b>Energy and Emissions Management</b> 	Reduce carbon emissions intensity by 20% by FY2029/30 (based on 2017/18 levels)	On-track
		<b>Waste Management</b> 	Maintain Airport Carbon Accreditation (ACA) Level 3 certification	Achieved	
	<b>Waste Management</b> 	Achieve 8.5% waste recycling rate by FY2019/20	On-track (7%)		



# Fulfilling

## CAREERS

Employees are the heart and soul of CAG and its greatest assets.

CAG defines World-Class through its passion and culture of excellence, and aspires to be a company where ordinary people achieve exceptional results through teamwork, integrity and excellence. The focus of its first Strategic Thrust starts from within – its treasured employees.



## “Our people make all the difference to us”

CAG’s 1,943 employees come from different beginnings and different stages of their career. CAG is committed to provide every employee a platform to develop and see through their ideas in making a positive impact to the communities it serves. In 2018, CAG was recognised as Singapore’s Most Attractive Employer by Randstad for the second time. This is an affirmation of its brand identity, which is built upon compelling and genuine employee stories.



**Noor Hazlin Bin Razali**

### Why I joined the aviation industry....

It has been my dream to work for the world’s best airport since I was young. It gives me a sense of pride and belonging to my country. I have been working in the aviation sector for almost 20 years. I started off as an Operation and Licensing Assistant (OLA) in the aviation industry at 24 years old and joined CAG in 2009 after its corporatisation

### How I developed in my career in Changi Airport Group....

I started off overseeing baggage operations and belt allocation for arrival flights. I then moved to the Apron Control Centre as a Duty Supervisor to ensure timely arrival of flights through coordinating flight arrival schedules, gate allocation and towing of aircraft, etc.

Now, my role as an Airside Duty Manager in the Airside Management Centre requires me to be on top of all operations taking place within Changi’s airside. With my team of 8 airside officers, we support the varied needs of our ground handlers

and airlines. We also play a key role in ensuring that airside operations run smoothly for all, from routine operational checks on aircraft stands and airside facilities, enforcement of airside operational and safety standards, to effective management of incidents and accidents within the airside compound.

### How furthering my studies has impacted me....

I’ve always liked learning new things and challenging my abilities at work. Through my work, I’m very familiar with “under-wing” (airside) operations, and have been wanting to learn more about “above-wing” operations which involves passenger-facing activities. Hence, I sounded out my supervisors and our People Team, who then helped me explore different options to upgrade myself, and supported me in obtaining the SkillsFuture Study Award. With this, I embarked on a 2.5-year diploma programme in Aviation Management with Temasek Polytechnic. So far, I’ve learnt a lot more about the different airport functions, and how the

above and under-wing activities integrate with each other within the entire airport eco-system. With this holistic perspective, I am now able to better appreciate and communicate with co-workers in other functions, as well as being able to anticipate and manage issues at work more effectively.

### How I developed personally....

I’ve learnt a lot about people management and leadership under the guidance of good mentors. My supervisors lead by example, and taught me how to see things from different perspectives, to take a step back and analyse the situation, to remain calm under pressure, to put myself in another person’s shoes and to communicate effectively.

In my current role, I encourage my team mates to learn from one another. For instance, I remind them to always take a step back and learn to adapt in any situation as new information may come in anytime, which may then require totally different application of procedures and resources. While coaching them on handling different incidents and issues at work, I also constantly encourage them to try out new things to help them grow professionally.

### My philosophy in work and life....

Working in the world’s best airport means I have to always keep high standards and expectations in my job. I strongly believe in teamwork. I hold onto a quote I once read, ‘If everyone is moving forward together, then success will take care of itself’.

## PROFILE

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## FAIR EMPLOYMENT PRACTICES

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**WHY**  
is this important to CAG?

Employees are the key drivers of value creation in the airport community and beyond. This is why increasing focus is placed on CAG's human capital strategies to bring about outcomes of strong employee morale and satisfaction, retention rates and a pipeline of leaders necessary for the sustained growth of CAG.

**HOW**  
does CAG manage this?



POLICIES

- CAG's Employment Philosophy



PRACTICES

- Freedom of association and collective bargaining
- Grievance mechanism and non-discrimination
- Employment benefits and welfare

**WHO**  
manages this at CAG?

TALENT MANAGEMENT COMMITTEE

PEOPLE MATTERS COMMITTEE



PEOPLE TEAM

PEOPLE SERVICES & REWARDS

PEOPLE DEVELOPMENT & EXPERIENCE

**WHICH**  
SDG does CAG contribute to?



“We want to make all the difference to our people”

CAG is committed to making all the difference to the life of every employee, whether they are permanent or temporary staff. This begins with providing them an inclusive, fair and trusting workplace where every individual has equal opportunities to grow and pursue their aspirations.

**CAG'S EMPLOYMENT PHILOSOPHY**

CAG's corporate policy embraces the 5 Principles of Fair Employment Practices, as endorsed by the Tripartite Alliance for Fair and Progressive Employment Practices (TAFEP). CAG is a TAFEP Human Capital Partner, committed to developing the skills and knowledge of employees at different career stages and sharing best practices with a community of employers.

102-16

**FREEDOM OF ASSOCIATION AND COLLECTIVE BARGAINING**

33% of CAG's workforce are part of the staff union, the Singapore Manual and Mercantile Workers' Union (SMMWU), a large union affiliated to the National Trades Union Congress (NTUC) representing mainly commerce and service workers in the private sector. Collective Bargaining Agreements pertaining to general terms and conditions of employment are in place - of which 65% of CAG's employees are covered.

CAG maintains close ties with the airport unions and the NTUC Aerospace and Aviation Cluster to improve the welfare of workers in the airport. Regular dialogues are held with key airport unions to share operational challenges that airport workers face. A key outcome of these dialogues is the Delta Airside Café that offers the airside community affordable and accessible meal options without having to travel far and to clear multiple security checks. CAG was given the Partner Award at NTUC's May Day Awards 2017 for uplifting lives and welfare in the workplace.

102-41

407-1

**GRIEVANCE MECHANISM AND NON-DISCRIMINATION**

It is important that employees have a course of action available when any grievances arise. CAG has in place a fair and objective grievance mechanism to ensure that every incident is handled systematically and reasonably. CAG does not condone discrimination of any person on any grounds - be it at the workplace or against any other stakeholders. Every employee has direct access to the CEO when encountered with a problem and has a complaint or suggestion.

102-17

406-1

**“CAG encourages its employees to speak up whenever they encounter a situation that goes against its values and principles.”**

**33%**  
employees in union

**65%**  
employees covered by Collective Bargaining Agreements

**0**  
reported incidents of discrimination

**“Fostering the Changi spirit”**

**C**AG is passionate about its people. Aside from rewarding employees for their performance with remuneration that commensurate with the effort and performance outcome delivered to celebrate their hard work and success, CAG also offers a market competitive suite of employment benefits for its employees.

**EMPLOYMENT BENEFITS AND WELFARE**

CAG believes in building a deep engagement with, and among its people. Introduced in 2016, one of CAG's initiatives, 'Fun Friday', brings together employees to have fun, bond, learn and relax over interesting activities.

Investing in employee wellbeing is part of CAG's employee engagement efforts. CAG's workplace wellness programme - Healthy Habits Healthy Life (HHHL) - is anchored by 3 key health pillars - Healthy Eating, Physical Fitness and Mental Wellbeing. This programme aims to encourage employees to take ownership of their health by engaging in healthy habits at work and beyond.

CAG advocates regular health screenings and a lifestyle survey is conducted to understand employees' health interests and needs. The Annual Corporate Health Screening results can identify potential health risks and trends and propose new programmes to effectively target these areas. For instance, in 2017, CAG introduced the Cholesterol Intervention Programme and Weight Management Programme in response to the top 2 health risks identified.

401-2



Staff had the opportunity to unleash their creative flair during the 'Green Lantern Fun Friday' by painting their D.I.Y lantern. Mooncakes were lovingly made by youth from Metta Cafe. Staff could also recycle their pre-loved textiles with H&M at the event.

## “Bringing people together from different beginnings”



**C**AG embraces individuals from different beginnings across all walks of life. The diversity of cultures, experiences and perspectives is integral to CAG’s success in delivering the Changi Experience.

### NEW HIRES

During the year, CAG welcomed 164 new team members into the CAG family. As a sizeable portion of CAG’s workforce comprises the Airport Emergency Service (AES) team, and due to the nature and physical expectations of these careers, the applicant profile has predominantly been younger males. Aside from the AES team, CAG’s new hire rates are largely comparable across gender and age groups, with an overall new hire rate of 8.4%.

401-1

**164**  
new hires

**8.4%**  
new hire rate



<sup>†</sup> Rates are computed by total employee numbers of the relevant gender/age group as at year-end FY2017/18, rounded to the nearest decimal place.

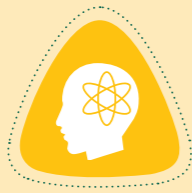
### TURNOVER

Employee turnover at CAG is fairly healthy, with an overall turnover rate of 5.7% for the year. CAG’s employee turnover rate is well below the annualised national labour turnover rate (21.6%) and that of the air transport industry (10.8%)<sup>2</sup>, reflecting its deep commitment towards retaining its talents.

401-1

**110**  
turnover

**5.7%**  
turnover rate



## PEOPLE DEVELOPMENT

103-1 103-2 103-3

### WHY

is this important to CAG?

### HOW

does CAG manage this?

### WHAT

are CAG's targets?

### WHO

manages this at CAG?

### WHICH

SDG does CAG contribute to?

“Nurturing the builders of tomorrow”

CAG inculcates a learning culture at the workplace. Ensuring that teams achieve the right level and type of training is vital for CAG to fulfill its vision and deliver excellence to stakeholders.

CAG wants to grow together with its people. Investing in its people enables CAG to equip them with the right skills and expertise to address the critical roles and functions across the organisation. Greater engagement and development in turn contributes to greater job satisfaction and motivation, enabling CAG to sustain its performance and achieve its business goals.



#### POLICIES

- CAG's Learning Policy



#### PRACTICES

- Training Programmes
- Performance Management Framework
- Annual Potential Assessment Exercise



#### TARGETS

**ACHIEVED**  
91.4%

Employees to attend at least 1 training programme, yearly



**ON TRACK**

Implement a new Enterprise Learning Management System by FY2019/20

TALENT MANAGEMENT COMMITTEE

PEOPLE MATTERS COMMITTEE



PEOPLE TEAM

PEOPLE SERVICES & REWARDS

PEOPLE DEVELOPMENT & EXPERIENCE





**TRAINING PROGRAMMES**

In 2017, CAG embedded a 3-year Digital Learning journey into its learning and development strategy and plan. In a bid to encourage its employees to embrace new ways of learning, CAG set out to explore and introduce new forms of learning through gamification, blended learning, digital book summaries and online libraries.

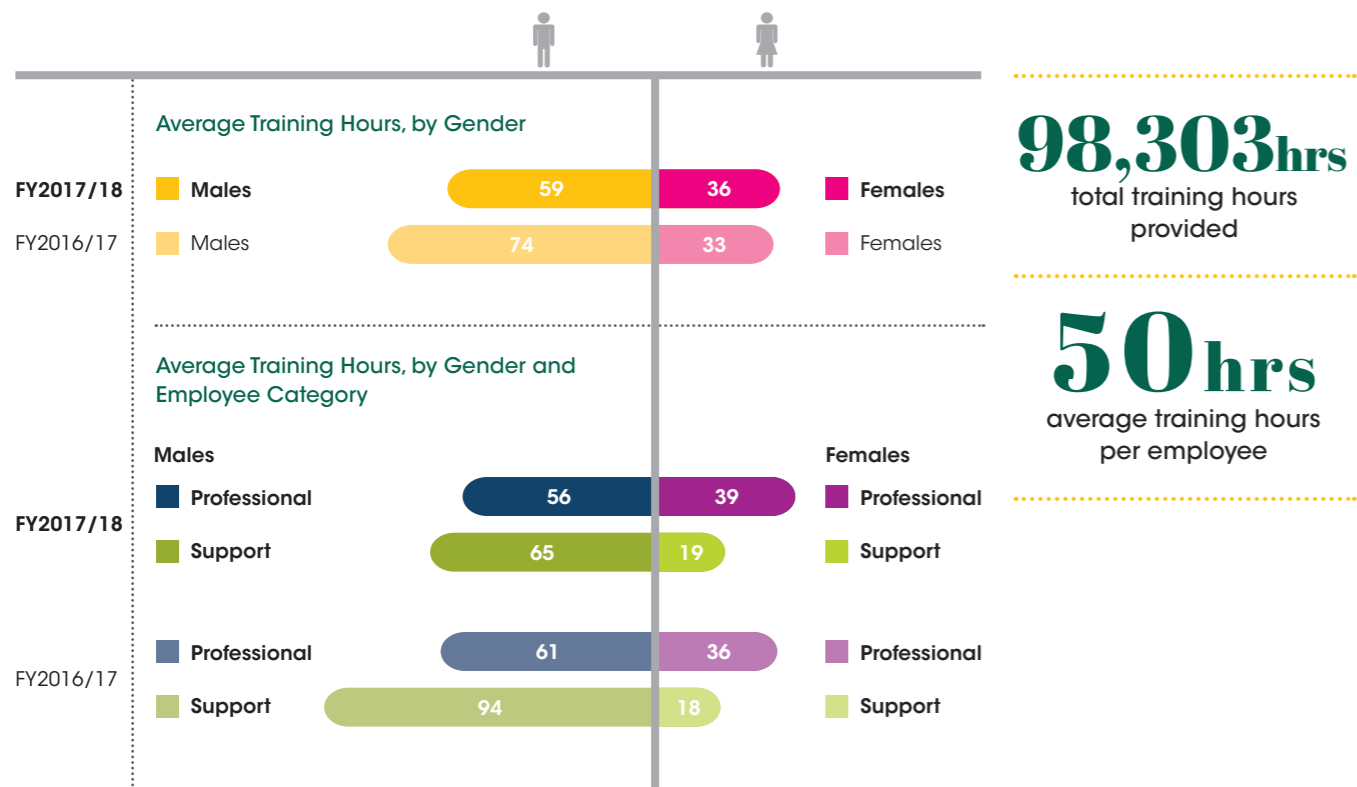
To nurture the habit of continuous learning, CAG organises annual learning festivals (Learnfest) for its employees, designed to encourage them to learn in a fun and relaxed setting, and to create a conducive environment to support active community sharing. The theme for this year – “Start Something Today”, encourages every employee to be an entrepreneur and innovator. CAG continually reinvents itself to stay ahead in today’s fast-changing environment, and encourage employees to bring innovative ideas into action.

The People Development team works closely with the various functions across CAG to map out functional competencies and identify learning plans to address their developmental needs.

751 training programmes were conducted at CAG. This reflects a total of 98,303 hours of training provided to CAG’s employees, averaging 50 hours of training per individual. A breakdown of the average training hours by gender and employment category is provided below.

Types of Training Programmes	Examples
Leadership Development	<ul style="list-style-type: none"> <li>Leadership Milestone Programme</li> <li>CAG Leadership Dialogue</li> </ul>
People Manager Skills	<ul style="list-style-type: none"> <li>Performance Management in CAG</li> <li>Conducting Career Conversations</li> <li>ThinkHR</li> </ul>
Onboarding	<ul style="list-style-type: none"> <li>New Hire Orientation Programme</li> </ul>
Foundation Programmes	<ul style="list-style-type: none"> <li>CAG Essentials</li> </ul>
Functional Training	<ul style="list-style-type: none"> <li>External training events</li> <li>Trainings organised by the Division or Cluster</li> </ul>

404-1 404-2



† Average Training Hours are computed by the total employee numbers of the relevant gender/age group as at year-end, rounded to the nearest decimal place.

“CAG cares about the development of every employee and engages in regular conversations with them throughout the year through a structured Performance Management Framework.”

**PERFORMANCE MANAGEMENT FRAMEWORK**

100% of CAG’s regular employees participated in annual performance and career development reviews.

Analysing talent data and insights from talent trends help drive continuous improvement of CAG’s talent management and development efforts. By identifying talent needs and diagnosing gaps, CAG will be able to have a clearer understanding of the required solutions for today and the future.

Regular employees undergo three reviews annually. At the start of the year, employees undergo performance & development planning where they discuss developmental needs and career plans. Performance goals are also set at this stage. Subsequently, a stock-take of progress will be done at the mid-year point. Finally at the year-end performance review, discussions will be conducted to review employees’ performance and highlight areas for improvement.

404-3

**ANNUAL POTENTIAL ASSESSMENT EXERCISE**

It is important that CAG sustains an available and deep pool of talent – not only to meet its current business needs but also those required of the future as well. Company-wide potential assessment and succession planning exercises are key activities in CAG’s annual Talent Management Cycle. The Talent Management Council is chaired by CAG’s CEO.

**100%**  
participation  
in annual review



# Safeguarding LIVES

Nothing is more important than human life. CAG puts in place good governance and prudent risk management strategies that are key in tackling the multiplicity of threats that will impact CAG and its stakeholders.

What used to be isolated risks are now evolving and becoming increasingly complex and interconnected – in terms of their disruptive potential and pervasiveness. CAG evolves its approach and accelerates change in its capabilities towards securing its assets, ensuring the safety of airport operations and above all, the protecting the lives of everyone at the airport.





## GOOD CORPORATE GOVERNANCE

102-30 103-1 103-2 103-3

### WHY

is this important to CAG?

### HOW

does CAG manage this?

### WHAT

are CAG's targets?

### WHO

manages this at CAG?

### WHICH

SDG does CAG contribute to?

“Good corporate governance is a tailwind to success”

Viewing risk management through the lens of sustainability is important to pursue sustainable growth while also addressing the unconventional, long-term risks that will impact CAG.

Corporate governance is the way CAG runs its organisation and delivers value to its stakeholders. It impacts all aspects of CAG, from strategic decision-making to risk management and compliance. Good governance is vital for efficiency and sustainable growth – not just within CAG but in the wider economies and communities that it is a part of. It underpins CAG’s accountability and integrity and minimises uncertainty within its operations.



#### POLICIES

- CAG’s Risk Management Policy
- CAG’s Enterprise Risk Management Framework
- CAG’s Code of Conduct
- CAG’s Whistleblowing Framework



#### PRACTICES

- Training and awareness



#### TARGETS



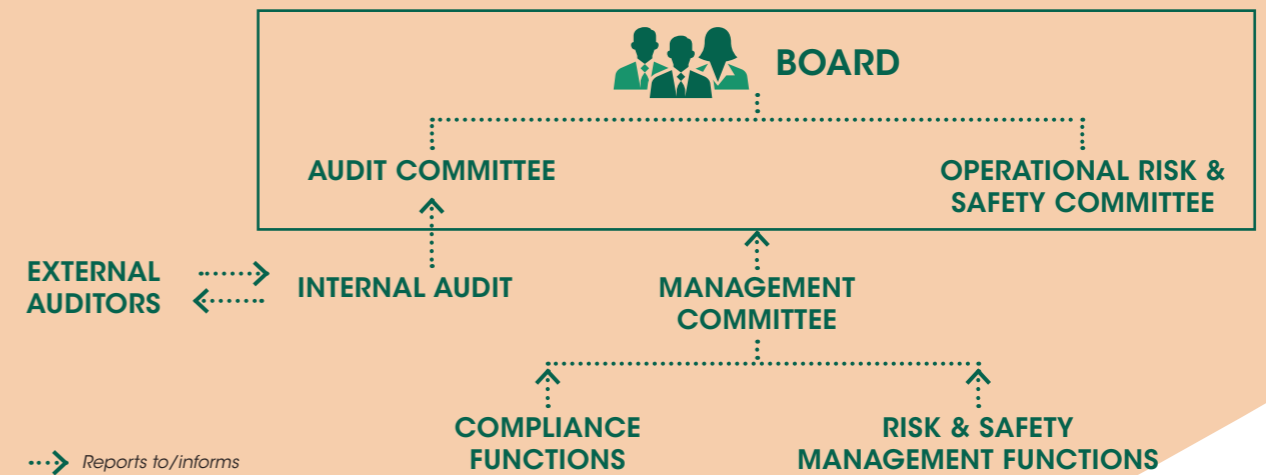
ACHIEVED

Zero confirmed incidents of corruption, yearly



ACHIEVED

Zero confirmed non-compliance with applicable laws and regulations, yearly



Every employee and every individual working in the airport community is a valued manager of risks. Collectively, they manage a wide range of risks which includes operational and safety, regulatory, financial and developmental projects risks.



**CAG'S RISK MANAGEMENT POLICY**

CAG defines risk as anything that might prevent it from achieving its business goals and objectives. CAG's policy is to minimise the materialisation of risk and the impact of damage as low as practically possible by:

- Identifying risk as early as possible
- Analysing and prioritising the risk
- Planning the necessary measures to mitigate the risk
- Implementing the appropriate measures
- Monitoring the risk

102-11

**CAG'S ENTERPRISE RISK MANAGEMENT (ERM) FRAMEWORK**

CAG's ERM Framework sets out the overarching philosophy, principles, requirements and responsibilities for a sound approach to risk governance and management required within CAG.

The central theme and objectives of CAG's ERM Framework is to:

- Integrate and provide a unified picture of risk for CAG's Management, Board of Directors and stakeholders
- Provide a consistent process for the prioritisation and allocation of resources, and coordination of existing individual risk management actions to manage enterprise risks effectively; and
- Promote a culture of proactive risk management and minimise uncertainty in CAG

CAG's Framework takes reference from applicable international standards, including ISO 31000 Risk Management and COSO ERM Framework, and the Risk Governance Guidance for Listed Boards, where practical.

The CAG Enterprise Risk Management (ERM) Framework begins from the policy which sets out the overall objectives, attitude and approach to CAG's ERM. This document also comprises the risk governance structure which shows the various roles and responsibilities of CAG's stakeholders. Methods are encompassed within the framework that guides the stakeholders on risk identification, monitoring and management activities. Stakeholders can then utilise tools & enablers to categorise their findings to develop appropriate risk matrices and registers, facilitating CAG's ERM activities.

102-11

**“CAG is deeply committed to its central core value – integrity – which is at the heart of all it does. CAG strives to meet and maintain the highest standards of corporate governance and professionalism.”**

**CAG'S CODE OF CONDUCT AND WHISTLEBLOWING FRAMEWORK**

To thrive and to operate a sustainable business over the long term, and to uphold and protect its brand and reputation, CAG strongly believes that it is accountable to its immediate business and regulatory environment, as well as to the global community.

CAG's Code of Conduct sets out the principles, policies and standards of conduct that it expects of all employees in their day-to-day activities and in the decisions they make. CAG adopts a zero-tolerance stance towards corruption and other unethical or illegal conduct, and has a Whistleblowing Framework to prevent, detect and deter such actions.

102-16 102-17

**ANTI-CORRUPTION**

Like all organisations, CAG too is vulnerable to risks of corruption. Such risks exists throughout the value chain and may involve CAG's own employees, business partners and other stakeholders.

CAG has zero tolerance towards corruption and makes it a point to increase awareness and training necessary for employees to understand these risks. Throughout the year, CAG staff are updated on legal topics including anti-corruption and anti-bribery.

205-3

**COMPLIANCE**

CAG strives to be fully compliant with all applicable laws and regulations and maintains an open communication channel with its stakeholders, including the Government of Singapore, the Civil Aviation Authority of Singapore (CAAS) and the International Civil Aviation Organization (ICAO).

307-1 416-2 417-2 417-3 419-1

0 confirmed incidents of corruption

0 fines



## AIRPORT SAFETY

103-1 103-2 103-3

### WHY

is this important to CAG?

### HOW

does CAG manage this?

### WHAT

are CAG's targets?

### WHO

manages this at CAG?

### WHICH

SDG does CAG contribute to?

Safety is CAG's core value, with the intent for every individual to return home soundly to their loved ones each day. Safety is not just a basic right, it is how CAG cares for and cherishes its people. Together with its airport partners, CAG creates a strong safety culture that goes hand in hand with its commitment to delivering a world-class, quality experience.



SELECT

- CAG's Safety Management System
- CAG's Fire Safety Manual



SELECT

- Airport Emergency Plan
- Safety Hazard Reporting
- Annual Airport Safety Awards
- Safety Briefings
- Induction Trainings



TARGETS



ACHIEVED

Zero employee work-related fatalities, yearly



ACHIEVED

Deficiency-free rating from the International Federation of Air Line Pilots' Associations (IFALPA), yearly



### OPERATIONAL RISK & SAFETY COMMITTEE



“Nothing is more important than human life”

CAG's total quality approach to safety is upheld by CAG's Airport Emergency Service, Aerodrome Safety Unit and Aviation Security Unit, and implemented on the ground by relevant CAG divisions, service providers and airport partners.

SAFETY AND SECURITY AT CHANGI AIRPORT



**Airport  
Emergency  
Service  
(AES)**

CAG's AES is a highly trained specialist unit positioned to take charge of fast-action rescue and fire protection, and other emergency situations such as bomb warnings, chemical and biological threats.



**Aerodrome  
Safety Unit  
(ASU)**

CAG's ASU works closely with the aerodrome safety regulator and operational divisions to ensure that safety is maintained at the highest level. ASU: The unit oversees the implementation of CAG's Safety Management System and ensures continued compliance with regulatory safety requirements.



**Aviation  
Security Unit  
(AvSec)**

CAG's AvSec Unit performs the key function of maintaining high standards of security management. It operationalises all airport security requirements and addresses security incidents, collaborating closely with agencies and security contractors.



**Various CAG  
Divisions and  
Business Units**

Strict safety and security standards in all aspects of operations within the airport community are implemented on the ground by relevant CAG divisions, service providers, and airport partners.

**CAG'S SAFETY MANAGEMENT SYSTEM**

Under its Safety Management System, CAG seeks to continually improve safety performance and safety risk management, encourage an open and learning culture, and provide the necessary resources and training.

CAG collaborates with its airport partners – such as ground handling agents, airlines, and its regulator CAAS – through regular engagements, working together as a team to achieve the highest safety standards.

**AERODROME SAFETY AND WORKPLACE SAFETY AND HEALTH**

CAG is recognised as a dependable airport operator upholding a high standard of aerodrome safety, by the International Federation of Air Line Pilots' Associations (IFALPA) which has awarded Singapore Changi Airport a deficiency-free rating 37 times since 1982. CAG also ensures that Changi Airport complies with aerodrome safety requirements, by maintaining the aerodrome certification issued by CAAS.

As a responsible duty-holder under the Workplace Safety & Health (WSH) Act, CAG works closely with its contractors and airport partners to ensure compliance with WSH requirements at the airport, where more than 50,000 personnel work at. CAG is committed to the safety and well-being of its employees, achieving zero work-related fatalities. CAG applies a proactive approach to workplace safety and health (WSH) management, by conducting WSH risk assessments to identify safety hazards and implementing safety risk controls for all work activities.

CAG closely monitors staff injuries and ill health cases related to work, analyse contributing factors and take immediate preventive measures. Based on GRI-defined criteria, CAG's employee work-related injury rate is 3.62, mainly due to minor training injuries sustained by personnel under the Airport Emergency Service (AES) division. This is primarily due to their operational training which is higher risk by nature. AES investigated every workplace occurrence, reviewed its Training Safety framework and implemented various safety measures targeted at minimising training hazards. There are also regular outreach sessions on lessons learnt and safety messages to increase employees' awareness on the training risks that they are exposed to. Safety standards in AES are certified to OHSAS 18001:2007, verifying its Occupational Health and Safety Management System.

403-2

**SAFETY HAZARD REPORTING**

CAG is committed to the proactive identification and management of safety hazards that may jeopardise or weaken its safety defences. Airport staff and users are encouraged to report hazards through various channels:

- CAG e-Services portal
- Corporate safety email
- 24/7 hotline
- SWEETmini mobile app

The online hazard reporting form found on CAG's e-Services portal and the corporate safety email are voluntary and confidential reporting channels managed by ASU. Airport users can report hazards and offer suggestions to address these hazards. For hazards which require immediate attention, users can report them through a 24/7 hotline.

0

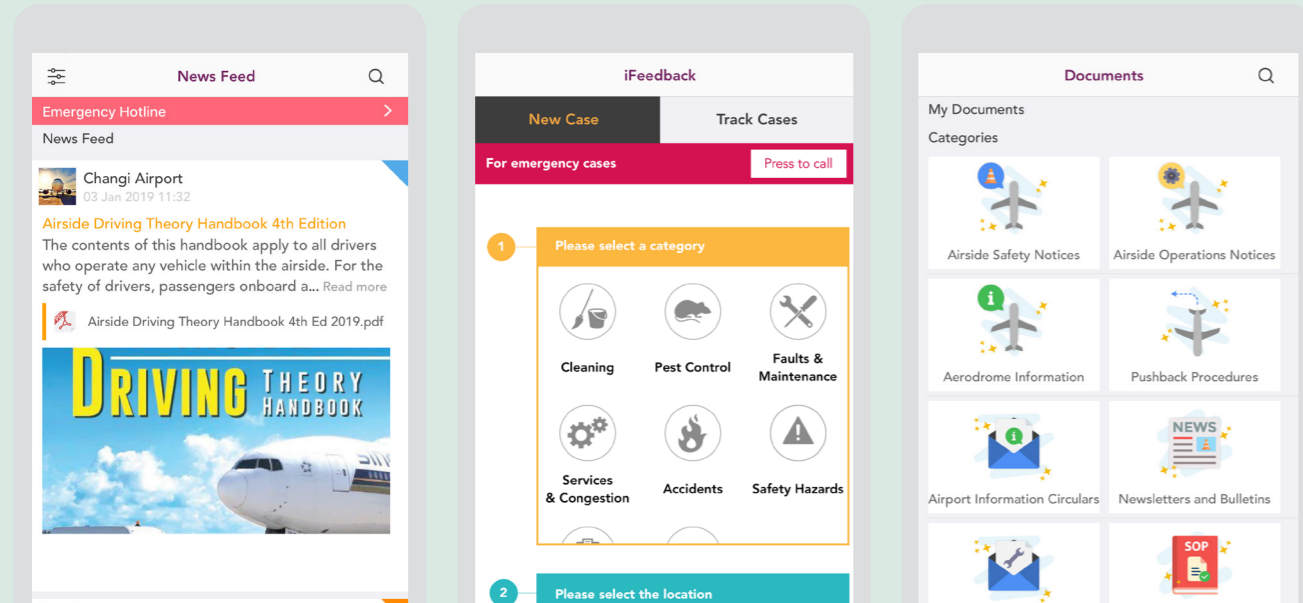
work-related fatalities  
among CAG staff

3.62

work-related injury rate

## SWEETmini Mobile App for the Changi Workforce

The app promotes Changi's Safety Culture by communicating safety-related news and reminders to the workforce. It enables the workforce to be the organisation's eyes and ears on the ground by providing them with an easy means to report hazards and submit safety feedback on the go.



**News Feed** - Staff are kept up-to-date with useful content such as safety lessons, upcoming events, newsletters, contests and more!

**iFeedback** - With this user-friendly platform, feedback and hazard reports by the community has increased. Changi Airport is safer and more efficient with issues being surfaced and resolved faster.

**Documents** - Staff can refer to relevant documents and perform their duties confidently.

## Runway Incursion Prevention Pre-warning Location Equipment (RIPPLE)

A lot of effort goes into ensuring that the runway is always ready and safe for use. Using 'Category One vehicles', these yellow vehicles, once given the green-light by Air Traffic Control, go onto the runways to perform safety checks.

RIPPLE helps to prevent lapses by warning drivers when they are approaching the vicinity of a runway. Implemented in July 2017, the tool has since been installed in all 'Category One vehicles'.

The pre-warning system works by using a Global Positioning System (GPS) to draw a geographic boundary, or geofence, 150 metres from the centre of the runway. Based on the GPS reading, the system automatically sends a visual and audio alert to the driver if his vehicle enters the demarcated area. Likewise, RIPPLE alerts the driver when the vehicle exits the geofence. This results in better situational awareness on the driver's part.

Since the implementation of RIPPLE, there has been no runway incursions by vehicles.



Geofenced Boundaries

RIPPLE device mounted on vehicle dashboard

Alert upon entering geofenced boundary

Alert upon leaving geofenced boundary

“CAG recognised outstanding safety acts and projects undertaken by airport staff, and these staff were honoured at the inaugural Airport Safety Awards ceremony on 11th August 2017.”

### AIRPORT SAFETY AWARDS

These awards, given out quarterly and annually to individuals and teams, honour airport staff who exemplify the safety culture based on three broad categories – Innovation & System Thinking, Safety Awareness & Courageous Act, and Safety Promotion & Culture Building. Separate awards were also given for team and individual efforts.

In FY2017/18, 37 award winners who have made outstanding contributions towards airport safety were honoured.

37

Airport Safety Awards presented



*Thank You for Helping to Keep Our Airports Safe*

### INDIVIDUAL AWARD WINNERS



### TEAM AWARD WINNERS



*Congratulations to All Award Winners!*

**“Emergency preparedness is vital for CAG and its partners to respond swiftly, neutralise any threats decisively and safeguard lives and critical infrastructure. CAG continues to enhance its response and rescue capabilities to ensure that all stakeholders at the airport enjoy a safe and stress-free experience; assured that the airport community is resilient and geared to smoothly manage a crisis should it occur.”**

**EMERGENCY PREPAREDNESS**

The Airport Emergency Plan at Changi coordinates the efforts of mutual aid agencies within the airport and its immediate vicinity. The AES team is responsible for managing the Airport Emergency Plan and takes charge of the rescue and fire-fighting and other crash site operations of this plan. These plans are tested annually in the form of drills.

8 terminal fire drills were conducted, as well as 2 full-scale exercises. One involved a simulated aircraft incident at sea (*Exercise Bobcat*) and the other, a counter-terrorism exercise conducted by the Singapore Police Force (*Exercise Northstar*).

**8**  
terminal fire drills

**2**  
full-scale exercises

**>5,000**  
participants involved

**Exercise Bobcat**

*Exercise Bobcat* is a full-scale aircraft emergency exercise drill conducted at Changi Airport, bringing together multiple agencies, including CAG, CAAS, SPF, SCDF, SAF, MOH, MPA, Silkair, SATS and dnata.



Practising the 'Full Emergency' and 'Aircraft Crash at Sea' emergency, response, mitigation and coordination procedures



CAG CARE Officers attending to Next-of-kins at the Relatives Holding Area

**Exercise Northstar**

In a time where global acts of terrorism pose serious threats, CAG took steps to strengthen its readiness and community resilience through its participation in *Exercise Northstar*, a multi-agency anti-terror exercise organised by the Singapore Police Force at T3 on 17 October 2017. Observed by Singapore's Prime Minister Lee Hsien Loong and several Cabinet Ministers, this was the first time the exercise was held at Changi Airport.

During the drill, simulations included a shooting rampage by gunmen and a suicide bombing. In line with SGSecure's 'Run, Hide and Tell', an advisory message, 'Watch Out, Help Out, and Move Out' was communicated to the airport community through various platforms. CAG practised crisis communications for passengers and the airport community during the exercise, further raising the level of awareness and preparedness among airport partners.



Singapore Police Force Gurkha Contingent and Airport Police in action



Singapore Civil Defence Force attending to a casualty

The year saw CAG and the airport community's resilience in managing a situation at Changi Airport. On 16 May 2017, a fire broke out in T2 and was eventually traced to a source in the Air Handling Station (AHS) room. CAG promptly executed emergency plans and focused on fire-fighting and evacuation in the initial phase, followed by the full diversion of T2's operations to T3, before re-opening T2 after the terminal was cleared of smoke and ready to resume operations. Despite the many challenges to be tackled, T2 was back in operations some 9 hours after. Evacuation was carried out safely in accordance with fire evacuation procedures, and there were no casualties from the incident. Neither was there a need for the diversion of arrival flights to neighbouring airports. Through the incident, lessons were drawn and a review was carried out to enhance the emergency preparedness plans of Changi Airport.

**SAFETY INFRASTRUCTURE**

CAG provides a Category 10 level of fire protection, the highest possible fire protection coverage in accordance with ICAO standards. At all times, CAG's AES fire-fighting vehicles must respond to the scene of an aircraft accident in 2 minutes, not exceeding 3 minutes and bring the fire under control within a minute upon arrival. This is swiftly followed by rescue and evacuation efforts to nearby medical facilities.

In line with ICAO's recommendation to deal with aircraft crashes at the waters surrounding the airport, the AES is equipped with sea rescue capabilities. It has a fleet of emergency resources based in a Sea Rescue Base off the waters of Changi Airport. Operating highly specialised emergency vessels and equipment in the event of aircraft incidents out at sea, the Sea Rescue Base is also the only hovercraft operator in Singapore.





# Invigorating TRAVELS

For many of us in Singapore, Changi Airport will always hold a special place close to our hearts, being the first and last encounter of home when we travel. For millions of foreign guests, Changi Airport is a place filled with friendly smiles, comfortable rest areas, inspiring art, retail and gastronomic delights; built to reflect the best of what Singapore stands for – hospitality, innovation and excellence.

Behind it all is the ONE Changi family of over 50,000 airport staff, who in their many roles collectively deliver the award-winning Changi Experience.





# AIRPORT EXPERIENCE & PASSENGER SATISFACTION

103-1 103-2 103-3

**WHY**  
is this important to CAG?

**HOW**  
does CAG manage this?

**WHAT**  
are CAG's targets?

**WHO**  
manages this at CAG?

**WHICH**  
SDG does CAG contribute to?

Changi Airport is the gateway to Singapore, where travellers spend their first and last moments in the country and where lasting impressions of Singapore are made. CAG understands that the stress of travel impacts travellers and aims to make their time at the airport an enjoyable and positive one - through service excellence, innovation and operational efficiency.



**POLICIES**

- Changi Quality Service Management



**PRACTICES**

- Creating a WOW Passenger Experience
- Harnessing Technology and Automation
- Bringing out the best of ONE Changi



**TARGETS**

**ACHIEVED**  
78% (above industry average)

Good yearly performance for the Customer Satisfaction Index of Singapore (CSISG), yearly



**AIRPORT EXPERIENCE TEAM**

**QUALITY SERVICE MANAGEMENT TEAM**



“The Changi Experience”

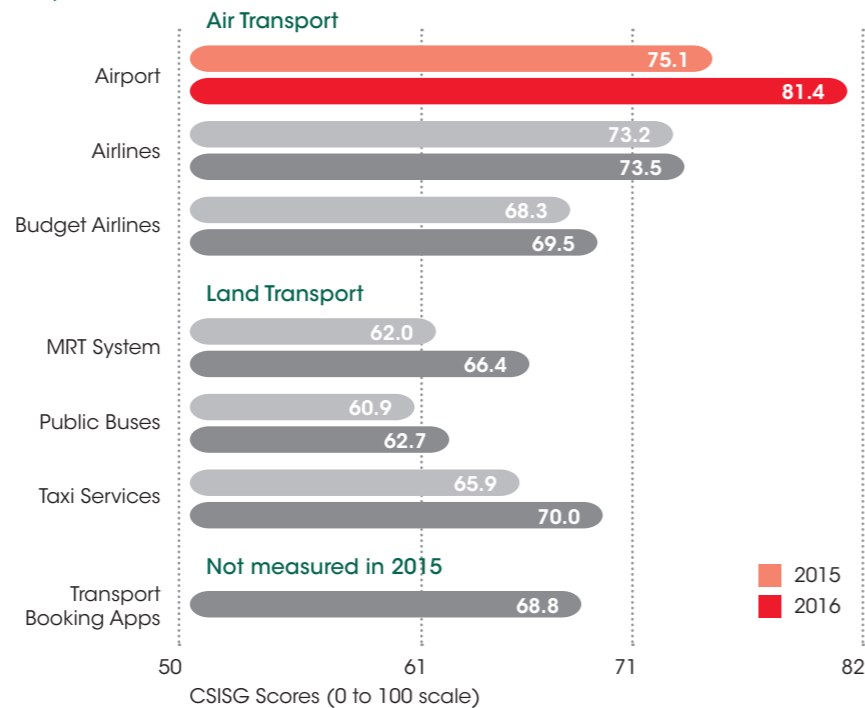
Beyond world-class airport facilities, efficient operations and excellent customer service, the Changi Experience is about connecting people and enhancing their lives.

## “Every customer is unique”

Whether you are a traveller, local visitor, shopper or diner, CAG believes that every guest is special, with different needs, and that providing excellent service means not treating each person as just one of many. So, from a signature Changi greeting, to personally welcoming and greeting each passenger, to a priority service for those with special needs, frontline staff engages each guest by being helpful and attentive.

### CUSTOMER SERVICE INDEX OF SINGAPORE (“CSISG”) 2016

In 2016, the CSISG measured a statistically significant<sup>3</sup> increase in customer satisfaction at Changi Airport at 81.4 points, which is an 8.4% increase from 2015.



**About the Customer Service Index of Singapore (CSISG)**  
Launched in April 2008 by the Institute of Service Excellence and the Singapore Workforce Development Agency, the Customer Satisfaction Index of Singapore measures the performance of a wide range of companies and sectors across Singapore.

## “Creating a wow Changi Experience”

The Changi Experience has touched lives from around the world. Changi Airport continually creates positively surprising experiences for all who come through its doors.



A specially developed orchid tea fragrance is diffused throughout the airport to give a fresh, delightful ambience.



Changi Airport's playlist comprises a selection of soothing instrumental pieces from international artistes and familiar classics.



A travelling wooden food cart offers complimentary kacang puteh, a traditional snack of nuts and beans.



If you fall asleep at Changi Airport, you might be surprised with a blanket, water and snacks when you wake up.



Changi Airport grows many of its plants in its own nursery. A dedicated horticulture team cares for the millions of plants at the airport.



Singapore has its very own national butterfly – the Common Rose Butterfly, or *Pachliopta aristolochiae asteris* – which can be spotted among the thousands of butterflies at the Butterfly Garden in T3.



A hybrid orchid has been named after Changi Airport – *Dendrobium "Changi Airport"* – in commemoration of the opening of the Orchid Garden in Terminal 2.



The newly revamped 5-storey Green Wall at T3 features over 113,000 individual plants of more than 50 species – almost 4 times that of the old wall.

### FY2017/18 AWARDS AND ACCOLADES<sup>4</sup>

Changi Airport is one of the world's most awarded airports, with over 530 accolades since its opening in 1981. In 2018, Changi Airport has been named the world's best for the sixth consecutive year in the annual World Airport Awards by Skytrax.

## Uniquely Changi, Uniquely Singapore

Changi Airport is an integral part of the Singapore experience and is well-positioned for visitors to learn more about what Singapore has to offer. Striving to deliver a unique airport experience, CAG continuously designs refreshing, interactive experiences to engage visitors and create pleasant memories of their visit to Singapore and Changi Airport. CAG works closely with partners such as the Singapore Tourism Board (STB) and National Heritage Board (NHB) to promote the Singapore experience at the airport.

### 'Make it Your Singapore' showcase



Where photographs come to life: Capturing monochromatic moments through use of motion-sensing technology



Choose from a wide selection of Singapore's iconic backgrounds including Gardens by the Bay, Merlion Park and not forgetting our airport's control tower and T1 Kinetic Rain art installation!

<sup>3</sup> Statistical significance for the CSISG study is measured at a confidence interval of 90%. For more information on the CSISG, refer to <https://ise.smu.edu.sg/about-csisg>

<sup>4</sup> For more information on Changi Airport's awards and accolades, refer to <http://www.changiairport.com/en/aboutus.html>.

## “Harnessing technology and automation”

Technology is a key enabler for many of the productivity improvements that the airport undertakes to stay efficient. CAG provides an exceptional passenger experience that is enhanced by cutting-edge technology.

### SMART AIRPORT

SMART stands for Service Management through Analytics and Resource Transformation. Data analytics allows CAG to respond quickly in real-time and to analyse for longer-term trends. This data-driven feedback provides deeper insights for continual system improvements in CAG's service ecosystem.

- Aircraft and ground vehicle movements are tracked and collated onto maps and graphical charts to enhance operations coordination and management. This assists operations staff to proactively prepare for possible surges in flight or passenger traffic.
- Video analytics are employed at key service touch points to measure and improve service standards.

## “Universal Design for all to enjoy”

CAG constantly rejuvenates its infrastructure and facilities to keep the Changi Experience refreshing for all. All terminals are designed to be inclusive and friendly for families, children, elderly, the visually and physically impaired.

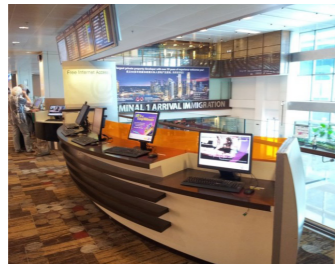
T1 has been awarded GoldPLUS in 2012 by the BCA Universal Design Mark scheme for its user-friendly design. Following an extensive refurbishment, T1 now features not

only a revitalised look but also optimised passenger flow at key areas to enhance the airport experience for both travellers and visitors. Spatial comfort is greatly enhanced through changes to the layout, introduction of wider thoroughfares, higher ceilings and improved lighting.

Several information counters, internet kiosks, water coolers and restroom basins are designed to be at a height accessible to children and wheelchair users.



Information counter



Internet kiosk



Water cooler



Toilet features

## “Bringing out the best of ONE Changi”

A big part of Changi Airport's success is the 'Heartware' of its 50,000-strong airport community. CAG continues to build the culture of 'ONE Changi', which underpins the belief that all agencies need to work together as one to deliver value to the passengers and visitors at Changi Airport.

Since 1994, Changi Airport has been honouring outstanding individuals who have exemplified service excellence by going beyond their call of duty. In celebration of the Silver jubilee of the Annual Airport Celebration (AAC), CAG introduced three new awards in 2018:

- 'Changi Hero Award' to recognise staff who have stepped forward in

a life threatening situation to take charge and aid passengers

- 'Changi Service Star' which recognises the remarkable achievement for staff who have won top service awards multiple times. It is conferred to individual award winners who have won Service Personality of the Year or Outstanding Service or Custodial (Gold) award at least three times.
- 'Special Commendation Award' to commend an airport partner who has consistently been a supportive employer to airport staff over the years. It acknowledges a partner organisation for its consistent and exceptional efforts in contributing to service excellence in Changi Airport.

Paying tribute to its service heroes at AAC 2018, 30 awards across eight categories were given out at the event which was graced by Coordinating Minister for Infrastructure and Minister for Transport, Mr Khaw Boon Wan. The other five award categories are 'Service Personality of the Year', 'Outstanding Service Staff of the Year', 'Outstanding Custodial Staff of the Year', 'Outstanding Service Team of the Year' and 'Service Partner of the Year'.

Award recipients were selected based on the extent to which they had gone beyond the call of duty to assist passengers; their self-initiative, resourcefulness and creativity in handling a difficult situation; as well as passengers' feedback.

## Recognising Changi's Everyday Heroes

**HONOURING THE CHAMPIONS OF SERVICE**  
Changi Experience Executive Saurabh and Changi Experience Supervisor Mousy attended to a distressed passenger with a toddler. During their travels, the passenger and her toddler had been separated from

her husband. Saurabh spoke to the husband on the phone and assured him that they would take care of his wife and child, and that they would liaise with the airlines to see what could be done to reunite them. Saurabh and Mousy calmed his wife down, and got some food for her and her child.

In the morning, the case was handed over to Changi Experience Executive Puvan and Changi Experience Agent Faisal, who were on the next shift. Saurabh stayed on as he was the only Bengali speaker available to liaise with her husband. Not long after, the airlines informed Saurabh that the re-booking could now be processed.

Saurabh liaised with the airlines to arrange flight re-bookings for them and assured the family that his team would help with the arrangements. The lady and her child were escorted to an area near the Information Counter to rest. Blankets and refreshments were given to the passengers to make them more comfortable. Saurabh found out later that the lady passenger was actually pregnant. Worried that she was not eating much, Saurabh bought her curry chicken rice, which she ate.

Puvan, Faisal and Saurabh escorted the lady and the child through check-in, immigration, and all the way to their boarding gate. Faisal even brought a plush toy and chocolates for the little boy, who was delighted. Once they ensured that the passengers safely boarded the flight, the husband was informed. A few hours later, the husband called to update that he had reunited with his family. He was extremely thankful for the help rendered to him.



From L - R: Mousy Loo Schu Way, Loo Schu Way (Mousy), Puvaneswary D/O Machap, Muhammad Faisal Bin Hussein, Mitra Saurabh (Not in photo)



# Enriching COMMUNITIES

CAG believes in the potential of people and seek to enhance lives not simply through its business but also through its corporate social responsibility efforts.



## COMMUNITY INVESTMENT

103-1 103-2 103-3

### WHY

is this important to CAG?

### HOW

does CAG manage this?

### WHAT

are CAG's targets?

### WHO

manages this at CAG?

### WHICH

SDG does CAG contribute to?

CAG gives back to the communities in many ways through staff volunteerism, corporate philanthropy and stakeholder partnerships. Building resilience of the underprivileged is vital in strengthening the social fabric and fundamental in global sustainable development.



#### POLICIES

- Changi Foundation Framework



#### PRACTICES

- Corporate social responsibility (CSR) activities
- Airport partner engagement



#### TARGETS

	<b>ON TRACK</b>		<b>ON TRACK</b>		<b>ON TRACK</b>
Achieve 25% staff volunteerism yearly by FY2020/21		Achieve 3,000 volunteer hours yearly by FY2020/21		Engage 35 airport partners in Changi Foundation programmes yearly by FY2020/21	To offer minimally 80 job attachments to youth beneficiaries yearly from FY2020/21 onwards



#### PEOPLE TEAM



“Bringing our community together”

**C**hangi Foundation - the philanthropic arm of CAG - was established in 2012 with the central purpose of reaching out to and supporting disadvantaged youths. Going beyond mere funding of programmes, CAG strives to be an organisation which makes a difference to the communities it operates in. Changi Foundation's all-rounded projects and programmes aim to touch the lives of more than 600 disadvantaged youths each year.

## “Defining clear purpose with desired outcomes”

Changi’s Community Investment is guided by the Changi Foundation Framework, which provides a clear purpose with desired outcomes for all programmes rolled out by CAG. Through these programmes, delivered with sincerity and passion, CAG offers and provide opportunities, tools and knowledge to empower youths.

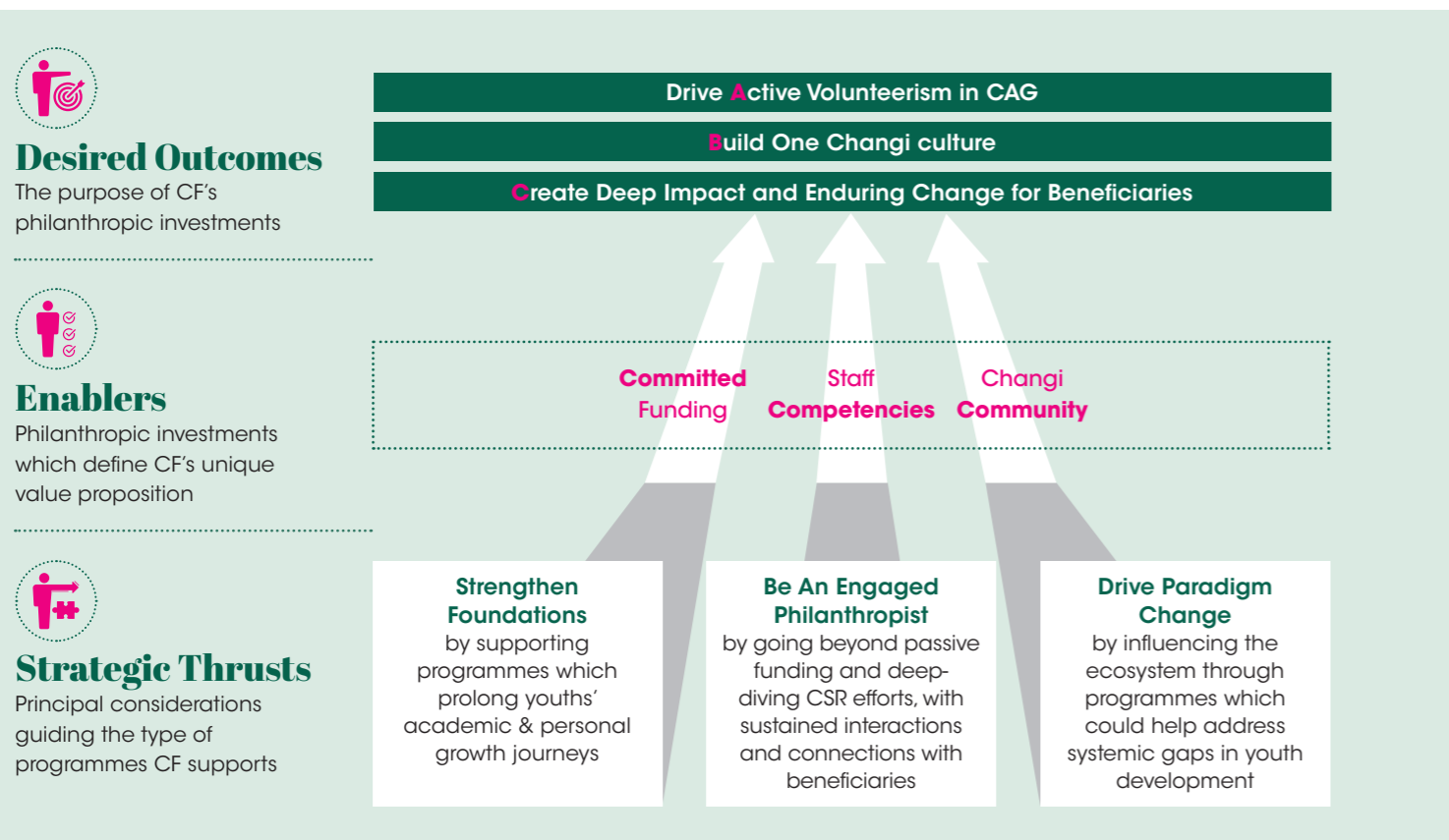
Changi Foundation believes in the potential of youths who, for reasons often beyond their control, have fewer

opportunities, and greater barriers to success than their peers.

### VOLUNTEER SERVICE LEAVE (VSL) POLICY

Employees are entitled to Volunteer Service Leave (VSL) annually. To further encourage volunteerism amongst employees, CAG increased its VSL from 3 days to 5 days in FY2017/18. Employees may use 2 days of their VSL for any charitable causes of their choice and 3 days for CSR activities organised by Changi Foundation in support of its main beneficiaries – NorthLight School and Metta School.

### CHANGI FOUNDATION (CF) FRAMEWORK



### CHANGI FOUNDATION ACTIVITIES

At CAG, active volunteerism is strongly articulated from its leadership and embedded within its culture. Aside to guiding the development of work plans and setting the strategic direction of Changi Foundation, CAG’s leaders invest time in its CSR programmes. Employees are encouraged to volunteer and gather fellow colleagues to join them in the spirit of giving back. The CSR team is

also constantly challenged by leadership to explore new, impactful programmes for its beneficiaries.

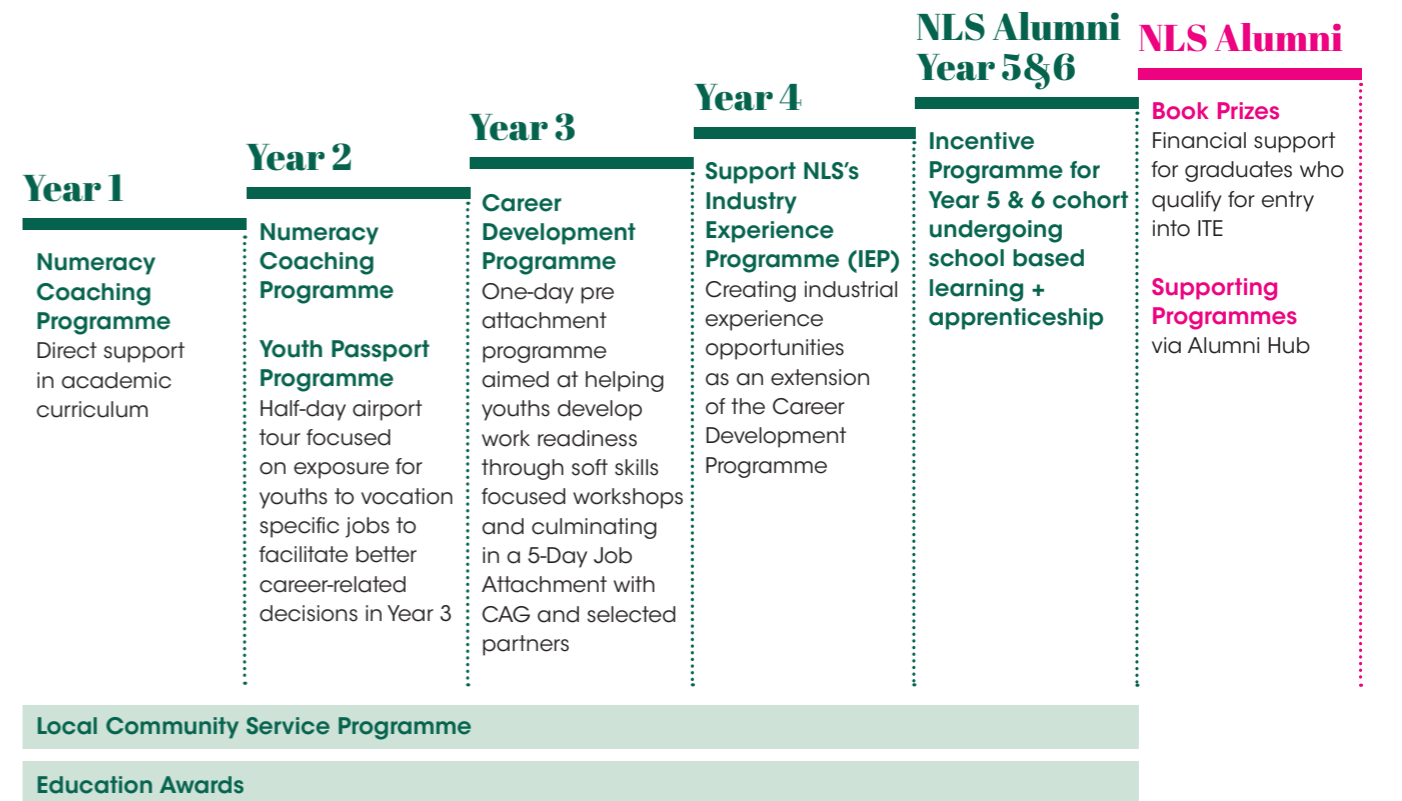
Before each CSR activity, pre-programme briefings will be conducted to provide all volunteers with a better understanding of the beneficiaries and the roles they have to play.

## “Materialising these outcomes”

As CAG’s philanthropic arm, Changi Foundation identifies key programmes to help achieve its outcomes to empower youths. Two key beneficiaries of Changi Foundation are NorthLight School and Metta School.

### NORTHLIGHT SCHOOL

NorthLight School is Changi Foundation's first and major beneficiary. Changi Foundation believes in the value of a meaningful, long-term CSR engagement and has been supporting them since 2014. Changi Foundation’s programmes with NorthLight School complements the school curriculum and caters to different academic levels aimed at raising the youths’ job readiness. A summary of Changi Foundation’s key engagement activities is summarised below:



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In line with its desired outcome to create deep impact and enduring change for beneficiaries, Changi Foundation puts in place outcome indicators<sup>5</sup> to better evaluate the efficacy of its programmes. Post-programme participation, 88% of the NorthLight School youths reflected that they felt inspired about their future.

In its endeavour towards active volunteerism, employee sentiments are also measured post-programme. 88% of employee volunteers reported feeling a greater affinity to CAG and its role in the community.

**NorthLight School Youths**

**88%**

felt inspired about their future

**87%**

felt inspired about their future career

**90%**

felt a greater sense of self-esteem

**81%**

felt greater engagement in school

**CAG's Employee Volunteers**

**88%**

felt a greater affinity to CAG and its role in the community

**86%**

felt that they gained greater awareness of issues in the community

**84%**

felt that they had made a positive impact on the youths

**METTA SCHOOL**

CAG believes in equal opportunities and non-discrimination. Metta School is Changi Foundation's second adopted beneficiary since 2018. Through this partnership, it hopes to touch the lives of more disadvantaged youths. Presently, the two programmes that Changi Foundation supports Metta School in are as follows:

**What and how**



**Social Competence Programme**

Provides opportunities for autistic students to acquire daily living skills through experiential learning.

60-min facilitated learning with CAG employee volunteers and airport partners within the airport setting (supermarket and food court, with planned progression to the clinic).

**Job Trial Programme**

Facilitates the transition from school to work for students who may not be able to progress to the Institute of Technical Education (ITE).

Two week job trial with various airport partners under the supervision of Metta School teachers and job coaches.

Students may be re-hired by airport partners in their second year for a nine month work programme.

Metta School's focus on employability for its higher functioning students, and acquisition of independent living skills for its autistic students, allows Changi Foundation to leverage the strengths of CAG's employees, the airport community, and the airport's amenities. Work experience for Metta School's more-abled students can be offered through placements with airport partners. In addition, the students' vocational skills make them a good fit for some of the jobs CAG's partners offer.

Learning of independent living skills for its autistic students – such as banking services, medical services, grocery purchase, etc. – can be done within CAG's premises. As a mini-city, Changi Airport offers these key amenities, in an authentic and conducive setting. Airport partners can also co-volunteer with CAG's employees, thereby enhancing service understanding and forging a closer 'One Changi' culture.

<sup>5</sup> For the NorthLight School youths, 4 key indicators were measured – (1) feeling inspired about their future; (2) feeling inspired about their career; (3) demonstrated increase in self-esteem; and (4) demonstrated greater engagement in school  
For CAG's employees, 3 key indicators were measured – (1) feeling greater affinity to CAG and its role in the community; (2) feeling that they have gained awareness of issues in the community; and (3) feeling that they made a positive impact on the youths



## “Leveraging our Airport Partners to multiply the impact”

**D**esiring to build the One Changi culture, CAG engages airport partners in its CSR programmes to provide youths an authentic learning platform.

### ENRICHING CSR PROGRAMMES THROUGH AIRPORT PARTNER ENGAGEMENT

The job attachments offered by airport partners provide youths the platform to learn, develop their job-readiness skills and experience the realities of working life. In 2017, 18 of the 21 airport partners supporting Changi Foundation's programmes offered work exposure opportunities for 58 students.

# 58

job attachments offered

### Reflections of A Dedicated CAG Volunteer - Seng Kee

"I chanced upon these 10 characters 施恩不求报，与人不追悔 one day and it has shaped my beliefs on volunteering ever since. It translates to "for whatever that has been rendered, one shall not expect anything in return nor regret one's actions". These wise words encapsulate the spirit of giving and has become the guiding principle in my volunteering journey.

From numeracy coaching for NorthLight School students to character building through football through the Saturday Night Lights (SNL) programme organised by SportCares, I have participated in various programmes and had countless opportunities to interact with youth from diverse backgrounds.

My fondest memory was from the SNL programme that taught me a lesson on human relationships. A "salam" or handshake is a way of greeting among Muslims. Before the start of every football session, I would see the Muslim youths proactively approaching their coaches with a "salam". In just one handshake, I could sense the virtues of gratitude, humbleness and respect from them. It was a humbling experience and I



decided to change my behaviour as well. Rather than approaching the youths from a position of seniority, I decided to initiate the first move and make conversation with them! This definitely paid off as it helped to build great rapport and trust among us. Regardless of rank and file, social status, race or religion, everyone should strive to make the FIRST move to connect with one other. This can pave the way towards a more

harmonious society where we can collectively make a difference!

I fervently believe that volunteerism and positive role modelling can go a long way in shaping someone's life. My journey began without expecting anything tangible in return. What I have gained is immeasurable and is life changing for me."

## More Than A Job



Swensen's staff and NorthLight students preparing for a group cheer before starting their shift

Have you ever felt that a trip to Changi Airport would not be complete with a hearty meal at Swensen's? This would probably be on the top of every child's mind when they are here!

Swensen's opened its doors in T1 back in 1981 and one of our oldest brands here at Changi. It is little wonder that they immediately agreed to partner Changi Foundation when the latter launched a job attachment programme for NorthLight students in 2014. It was a natural extension of the food chain's philosophy of giving back to the society.

FY2017/18 marks the third year of participation by Swensen's who hosted eight NorthLight School students on this programme. With 18 airport partners on board, the programme provides students with job readiness skills and real-

world experience by exposing them to various jobs available in Changi Airport.

Swensen's Area Manager, Lai Ing Eer shares her experience...

"I started working at Swensen's at the age of 18. Having worked my way up the corporate ladder, I believe in giving back to society through coaching young adults to better prepare them for the workforce. Together with my branch managers, we mentored and guided the students over five days.

On the very first day, we could tell that students were unsure of themselves and were uneasy about carrying out tasks that required interaction with other staff in the restaurant. Through careful explanation of the workings and operations of a restaurant, that was where my managers and I started to see improvement. On the

third day, students were taught to take and process orders, as well as perform proper waiting. By the fourth day, it was evident that students were clamouring to take on more roles.

Every beginning has an end and every end has a new beginning. As much as the students were reluctant to leave us, we were assured they were now better prepared. Nothing brought us greater joy than to see them smiling from ear to ear as they collected their certificate of accomplishment. It was the hardest I have clapped in a while! What was most heartening to us was definitely when all eight students responded with a resounding "YES!" when asked if they would return to work at Swensen's after graduation."



# Thriving

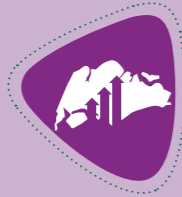
## ECONOMY

Changi Airport's economic footprint extends beyond the air transport industry. The connections that Changi creates between people, cities and markets generate immense benefits in establishing Singapore as a vibrant and connected city of opportunity.

Through its connectivity, Changi Airport sees one of the world's highest passenger and cargo volumes, and on a broader scale, enables our airport partners and the Singapore economy to thrive. In FY2017/18, Changi Airport maintained sustainable financial performance, and handled a record 63 million passenger movements. Airfreight throughput crossed the 2-million tonne mark for the first time, reaching 2.1 million tonnes for the financial year.



← SC1 C6 SC1 →



## CONTRIBUTION TO THE ECONOMIC DEVELOPMENT OF SINGAPORE

103-1 103-2 103-3

### WHY

is this important to CAG?

### HOW

does CAG manage this?

### WHAT

are CAG's targets?

### WHO

manages this at CAG?

### WHICH

SDG does CAG contribute to?

Changi Airport is one of the key infrastructure assets that influences the economic development of Singapore. As the manager and operator of Changi Airport, CAG works with government agencies and the private sector to design Changi Airport's future-ready strategies. This includes enhancing Changi's connectivity and attractiveness, strengthening cargo and route development, building adequate airport capacity, etc. These are critical in building Changi Airport's long-term competitiveness, entrenching Singapore's position as a leading global air hub and in turn, creating a thriving economy.

CAG continually engages government and trade partners globally to grow connectivity



TARGETS



ON TRACK

Completion of T1 Expansion Project by 2019



ON TRACK

Build capacity ahead of growth with Terminal 5 planing and development



ACROSS ALL CAG DIVISIONS



1 NO POVERTY



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



11 SUSTAINABLE CITIES AND COMMUNITIES



17 PARTNERSHIPS FOR THE GOALS

“Creating positive impact to Singapore's economy”

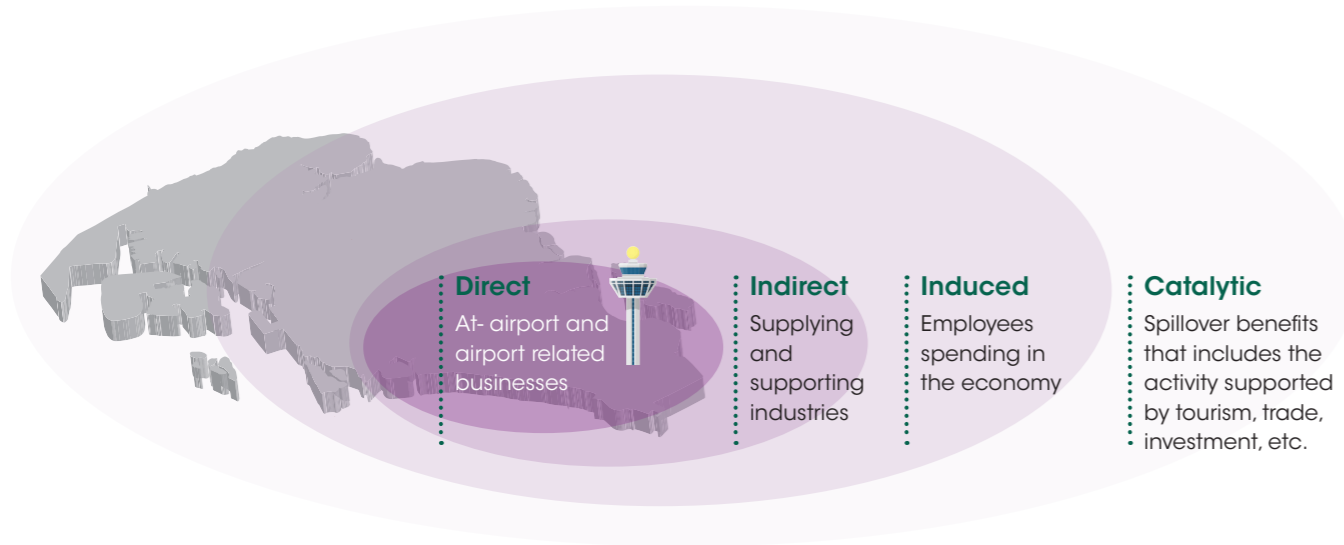
CAG's economic footprint has direct, indirect, induced and catalytic impacts – such as its contribution to Singapore's GDP, taxes paid and jobs generated along its value chain.

**ECONOMIC IMPACT OF SINGAPORE'S AIR TRANSPORT INDUSTRY**

The air transport industry contributes to approximately 6% of Singapore's GDP from its direct, indirect, and induced impact. In addition, there are wider benefits through activities such as tourism, trade and investments, which are collectively termed as catalytic impact.<sup>6</sup> As an

airport operator, CAG's economic contribution can be measured by its financial performance and distribution to stakeholders, such as wages and benefits, government taxes, purchases and community investments.

203-2



**“Delivering sustainable economic value to stakeholders”**

**C**AG's deep commitment to its purpose and core activities enables Changi to create and distribute economic value across its ecosystem.

**SUSTAINABLE ECONOMIC VALUE**

Economic value generated by the Group<sup>7</sup> grew 21.4% to S\$2.7 billion in FY2017/18 and was distributed to stakeholders through various avenues including to employees through wages and benefits, government through taxes, suppliers through purchases, and community investments. Of the total economic value distributed, community investment increased by 14.6% to S\$2.6 million in FY2017/18. CAG reaches out to the community through Changi Foundation, the philanthropic arm of CAG, who is constantly looking out for ways to enhance the lives of disadvantaged youths. The remaining economic value generated has been reinvested into various capacity enhancement projects, including T4, T1 Expansion and Changi East.

Full details of CAG's financial information is made available in CAG's Annual Report FY2017/18.

201-1 203-1

**S\$1.8b**  
economic value distributed

<sup>6</sup> Based on data from the Study of Economic Impact of Air Transport on Singapore by CAAS and Intervistas (2011).  
<sup>7</sup> The CAG Group comprises Changi Airport and its subsidiaries, including Changi Airports International Group, Jewel Changi Airport Group and Changi Travel Services Group.

**“Transforming Singapore's air transport industry”**

**C**AG collaborates closely with government, businesses and civil society in support of the nation's Future Economy strategies.

**CAG'S ROLE IN SINGAPORE'S FUTURE ECONOMY**

In January 2016, the Committee on the Future Economy (CFE) was convened by the Singapore Government to review Singapore's economic strategies. CAG participates in the Subcommittee on the Future of Connectivity, and the Subcommittee on the Future City. CAG is one of 16 key representatives in Singapore's Air Transport Industry Tripartite Committee (ITC), which formulates and drives the strategy and implementation of the Air Transport Industry Transformation Map (ITM).<sup>8</sup>

The Air Transport ITM provides a roadmap for the future of Singapore aviation through four thrusts:

- Innovation
- Productivity
- Jobs and Skills
- Enterprise

203-2

**Changi Airport Living Lab Programme**

To stay ahead of the challenges in an increasingly complex operating environment, CAG invests in driving innovation and productivity at Changi Airport.

In 2017, CAG launched a S\$50 million Changi Airport Living Lab Programme, which saw CAG collaborating with innovation-driven companies and start-ups to develop and trial new technology solutions in a live airport environment. The lab has been introduced in partnership with the Economic Development Board (EDB) and with the support of CAAS.

The programme provides a platform for CAG, government agencies, ground handlers, concessionaires and security providers, to co-create, test and

demonstrate new solutions for a future-ready Changi Airport. The key focus areas include:

1. Automation and robotics – opportunities to optimise scarce manpower resources and empower the airport workforce to operate at higher efficiency and productivity levels.
2. Data analytics and the Internet of Things (IoT) – opportunities to enable a more accurate and real-time perspective of airport operations. This will allow Changi Airport to better optimise its operational processes, and power smarter decision-making. Consumer analytics will offer deeper insights into travellers' habits and preferences, thereby strengthening the airport's lifestyle product offerings.

3. Non-intrusive security technologies – opportunities for Changi Airport to enhance the passenger experience and reduce the stress of undergoing security clearance, while strengthening safety and security standards.
4. Smart infrastructure management – opportunities to leverage new technologies such as sensors, IoT and smart controls to optimise infrastructure resources.

Changi Airport has already started testing some of these pioneering solutions, including autonomous cleaning robots. The use of automated guided vehicles to transfer passengers between terminals is also being considered.

<sup>8</sup> For more information on the Air Transport Industry Transformation Map, refer to <https://www.mti.gov.sg/MTIInsights/Pages/ITM-TradeConnectivity-AirTransport.aspx>

## “Our connectivity to the world”

Each week, 7,200 flights land or depart from Changi Airport, connecting travellers to more than 400 cities in about 100 countries and territories. Changi Airport handled a record 63 million passengers, an increase from 59.4 million passengers in FY2016/17.

### PASSENGER MOVEMENTS

On 18 December 2017, Changi Airport set a new record and welcomed its 60th million passenger for the year. The passenger was amongst those on board Scoot flight TR7 from Gold Coast, Australia. In commemoration of this milestone, all passengers on-board this flight received an exclusive goodie bag and were treated to a buffet spread. In addition, 6 lucky passengers were selected to participate in a quiz, walking away with attractive prizes.

G4-A01



### AIRCRAFT MOVEMENTS

As Asia Pacific's leading air hub and home to a total catchment population of 10 million within a 2-hour radius, Changi Airport is well-positioned with its rich connectivity to help airlines take advantage of the world's growing demand for air travel.

Today, a flight takes off or lands at Changi Airport approximately once every 80 seconds, with partner airlines flying to some 400 cities across 100 countries and territories worldwide

G4-A02

63  
million  
passengers

↑6%  
from FY2016/17

377,429  
total aircraft movements

↑4%  
from FY2016/17

## “A trusted global cargo hub”

By providing future-ready infrastructure, Changi enables efficient management of air cargo, which accounts for more than 50% of Singapore's total non-oil trade value.

### AIR FREIGHT MOVEMENTS

#### Air Cargo Performance

Changi Airport has consistently maintained its position as one of the region's key hubs for air cargo, being the 7th largest airports in the world for international air cargo traffic.<sup>9</sup>

In FY2017/18, airfreight throughput at Changi Airport crossed the 2-million mark for the first time, growing 7% year-on-year to reach 2.1 million tonnes of cargo.

#### International Air Connectivity

Changi Airport served 24 cargo airlines operating 320 weekly freighter flights, connecting 48 cities worldwide. Its regional freighters offer coverage and interline opportunities to emerging Southeast Asian markets.

#### Operational Expertise

##### World-class Cold-Chain Facilities

With dedicated temperature-controlled facilities, Changi Airport is able to provide cold chain solutions to store temperature sensitive cargo such as perishables products and pharmaceuticals cargo, for subsequent distribution locally and globally. Changi Airport's cold-chain facilities have a total handling capability of up to 325,000 tonnes of temperature-sensitive cargo annually. CAG supported the first batch of companies to undergo the IATA CEIV Pharma certification<sup>10</sup> and in early 2017, Changi Airport became the first airport community in Asia Pacific to attain the IATA CEIV Pharma certification across the supply chain comprising an airline, ground handlers and freight forwarders. With these efforts, Singapore is now an air cargo hub with the most number of IATA CEIV Pharma certified logistics companies in the Asia Pacific region.

In October 2017, CAG formalised the Pharma@Changi initiative with nine other CEIV-certified partners in Singapore. The members will jointly pursue the best standards in pharmaceuticals handling, and promote Changi Airport as a trusted and reliable pharmaceutical air cargo hub in the region.

G4-A03



2.1  
million tonnes  
total air freight movements

↑7%  
from FY2016/17

<sup>9</sup> Airport Council International 2017

<sup>10</sup> IATA Centre of Excellence for Independent Validators in Pharmaceutical Logistics (CEIV Pharma). CEIV Pharma addresses industry's need for more safety, security, compliance and efficiency, by the creation of a globally consistent and recognised pharmaceutical product handling certification. By establishing a common baseline from existing regulations and standards, this certification ensures international and national compliance to safeguard product integrity while addressing specific air cargo needs.

# Singapore's Connectivity to China

CAG has opened new frontiers together with airlines, travel agencies and government agencies to grow connectivity between Singapore and China. As of 31 March 2018, there are more than 350 weekly services between the two countries, connecting 35 cities in China, operated by 13 airlines. This represents an increase of over 80 weekly services and 11 cities in a span of the last 5 years.

**Air links have helped to boost tourism, trade and diplomatic ties, as well as supported several economic initiatives, including the:**

- Chongqing – 3rd Sino-Singapore project (Chongqing Connectivity Initiative)
- Urumqi, Xi'an – Silk Road Economic Belt
- Nanning – Southern Transport Corridor

The Memorandum of Strategic Cooperation was signed by CAG on 8 January 2016 with Chongqing Airport Group and four airline partners - West Air, Chongqing Airlines, SilkAir and Air China. Under this MOU, all signatories were committed to growing capacity between Singapore and Chongqing. This was carried out in support of the third government-to-government bilateral project officially announced in November 2015 to be based in Chongqing, aimed to enhance connectivity and drive the development of Western China.

As a direct result of the joint efforts between CAG, Chongqing Airport Group and airline partners, air connectivity between Singapore and Chongqing has increased more than threefold from 4 times ...to the current 14 times weekly. CAG continues to grow air connectivity as a catalyst to deepen Singapore's bilateral trade and economic exchanges with China.



CAG with Chongqing Airport Group and airline partners

# Singapore's Connectivity to Europe

Europe is home to some of the most important financial centers and advanced technologies in the world. Singapore's connectivity to the region has developed both our economy and air hub over the years.

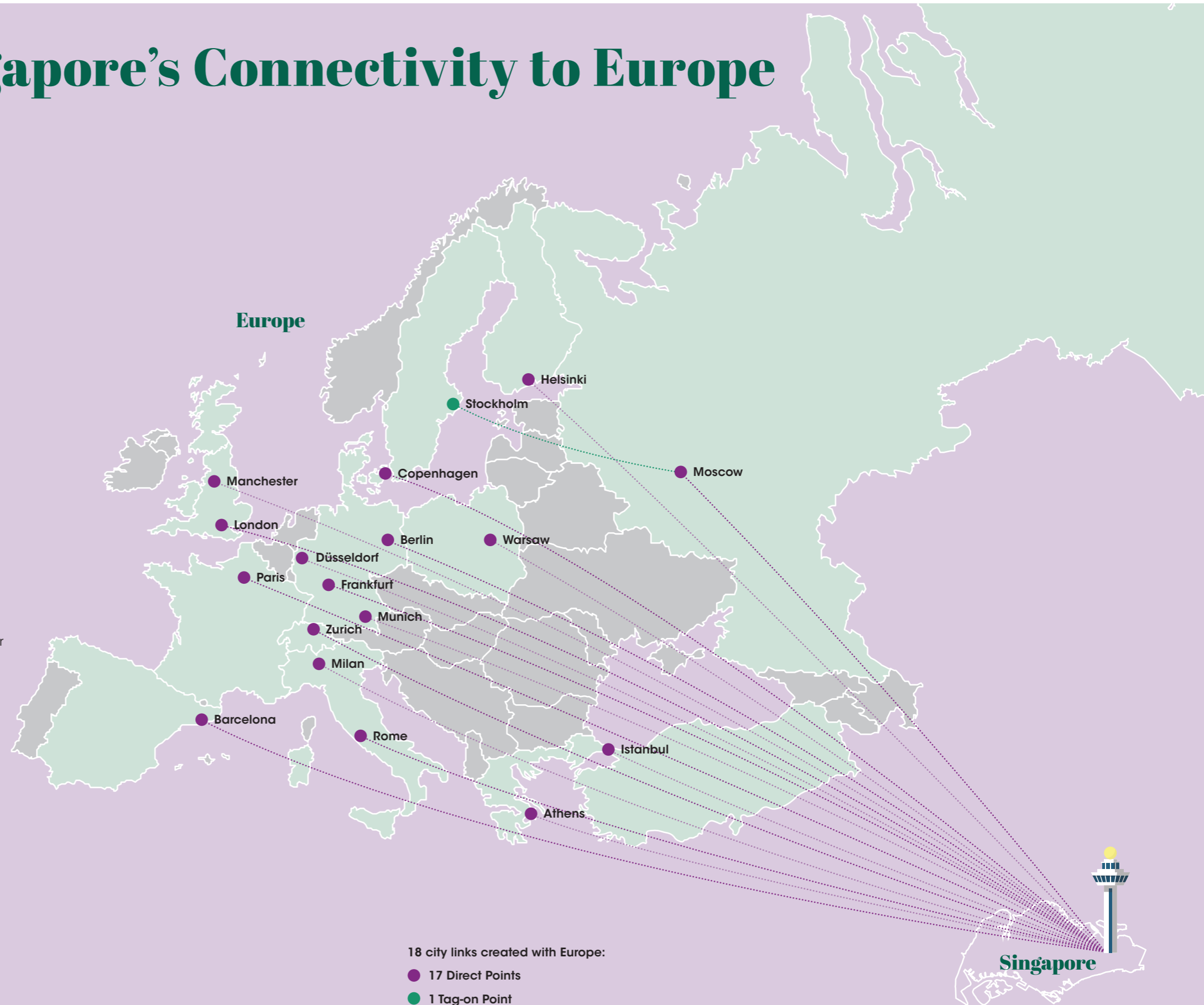
As of 31 March 2018, Singapore is connected to 17 cities across Europe with 9 airlines operating more than 170 weekly services.

In FY2017/18 alone, we added two new city links – Stockholm (SIA) and Athens (Scoot), providing alternative gateways to Scandinavia and the Mediterranean. Singapore's link to Scandinavia was boosted with the launch of Singapore Airlines' new service to Stockholm, the capital of Sweden, which is one of the fastest growing economies in the region. With the increased flight options for tourism and business flows to Scandinavia, CAG worked jointly with the embassies of Denmark, Finland, Norway and Sweden to organise a destination promotion event within Changi Airport which featured key tourism attractions and products of renowned companies from the region such as Lego and Nihola.

Meanwhile, we continued to strengthen our existing city links. Lufthansa started its Munich-Singapore service offering passengers, particularly time-sensitive business travellers an alternative option to the existing daily flight. Other markets such as Amsterdam, Zurich and Istanbul also saw increased seat capacity as the existing airlines, KLM Royal Dutch Airlines, Swiss International Air Lines and Turkish Airlines, deployed larger aircraft to Singapore.

The "Kangaroo Route" saw the return of Qantas Airways with its Sydney-Singapore-London A380 services which simultaneously increased capacity for its Singapore-Melbourne and Singapore-Perth routes.

As a result of the expanded air links, traffic to Europe grew by a strong double-digit growth of 10%. As a premier transfer hub between Europe and Southwest Pacific, CAG continues to work with various travel trade and business partners to further strengthen existing links and grow new city links for the future.





# Flourishing

PLANET

CAG is committed to ensure a sustainable future – a flourishing planet of wonders for generations of travellers to explore. Considering the environmental impact from its operations, CAG focuses on three aspects – energy and emissions management, water and effluents management and waste management.





# Environmental Footprint

CHANGI AIRPORT GROUP

CAG recognises that the very nature of its business leaves an impact on the environment. It is therefore important to create a place where global travellers can experience Changi Airport in comfort, knowing that CAG is doing all it can to reduce its environmental footprint from electricity, fuel and water consumption and disposal of waste, water and air impurities.

Beyond regulatory compliance and standards, CAG looks at ways to work with its airport partners on resource efficiency and conservation, minimise its greenhouse gas emissions and foster more sustainable waste disposal methods.

“Sustaining adventures of a lifetime to generations beyond ours”



† FY2017/18 energy and GHG emissions data is subject to validation, and excludes Terminal 4, as this newest terminal started operations in October 2017  
# Average air quality indicators across Terminals 1, 2 and 3 from the Industrial Hygiene Monitoring study in FY2017/18

CAG establishes its environmental objectives and plans based on its current context, conditions, risks and opportunities.

PLANNING

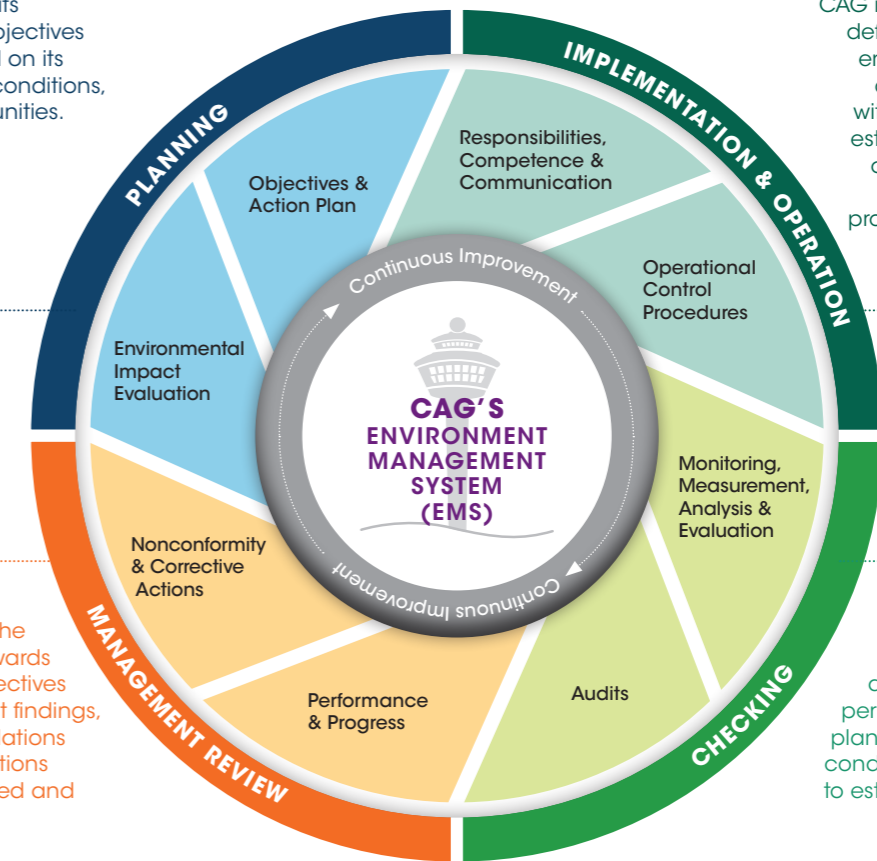
MANAGEMENT REVIEW

CAG reviews the performance of the EMS, progress towards achieving its objectives and targets, audit findings, etc. Recommendations and follow-up actions are communicated and performed.

CAG'S ENVIRONMENT POLICY

CAG is responsible for sustainable development and strives to continually improve its environmental performance. In operating and developing Singapore Changi Airport, CAG commits to:

- Carry out activities in an environmentally responsible manner and minimise pollution to the local community, to maintain a sustainable environment



CAG implements plans by defining responsibilities, ensuring competence and communicating with stakeholders. CAG establishes, implement, control and maintain operational control procedures to manage its environmental aspects.

IMPLEMENTATION & OPERATION

CHECKING

CAG monitors, measures, analyses and evaluates its actual environmental performance against its planned objectives. CAG conducts audits annually to establish conformance and effectiveness of the EMS.

- Continual improvement of environmental performance by setting environmental targets and implementing action plans to address significant environmental aspects
- Comply with all applicable legal and other requirements to which it contributes; which relate to its environmental aspects
- Provide senior management support and resources to enable policy objectives to be met

CAG'S ENVIRONMENTAL MANAGEMENT SYSTEM<sup>11</sup>

CAG believes that every employee plays an important role in minimising Changi Airport's environmental impact and achieving its environmental objectives. In providing opportunities for learning and cross-functional involvement, it helps build a culture of environmental stewardship amongst its employees. In FY2017/18, 33 CAG employees participated in an ISO 14001:2015 Internal Auditor certification course.

<sup>11</sup> The scope of CAG's Environmental Management System covers the airport terminal buildings, facilities, operations and maintenance of Changi Airport within CAG's control and sphere of influence



## ENERGY & EMISSIONS MANAGEMENT

103-1 103-2 103-3

### WHY

is this important to CAG?

### HOW

does CAG manage this?

### WHAT

are CAG's targets?

### WHO

manages this at CAG?

### WHICH

SDG does CAG contribute to?

Emissions management at CAG includes maintaining the highest standards of air quality levels at the airport and delivering effective climate protection. These aspects directly impacts human health and poses a risk to both the airport community and the global ecosystem.



#### POLICIES

- CAG's Environment Policy
- CAG's Environmental Management System



#### PRACTICES

- CAG's Carbon Management Plan
- Airport Carbon Accreditation (ACA)
- Annual energy reporting
- Carbon reduction initiatives
- Self-assessment and auditing
- Training and awareness



#### TARGETS



ON TRACK

Reduce carbon emissions intensity by 20% by FY2029/30 (based on 2017/18 levels)



ACHIEVED

Maintain ACA Level 3 certification

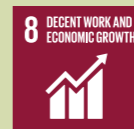


ACHIEVED

Maintain ISO 14001:2015 certification



#### ENVIRONMENT STEERING COMMITTEE



**KOH MING SUE**  
Managing Director, Engineering and Development  
Chairman, Environment Steering Committee

“CAG strives to shape a healthier world for all”

CAG supports global and national goals on climate action through a range of sustainability initiatives.

Underpinned by a robust Carbon Management Plan, CAG ensures that environmental considerations are factored in for all the airport's activities, and leverages technologies and new processes to reduce its climate change impact.

**CAG'S CARBON MANAGEMENT PLAN**

CAG's Carbon Management Plan presents the drivers for Changi Airport to take action on managing climate change through a four-pronged action plan - (1) measurement, (2) reduction, (3) self-assessment and auditing, and (4) awareness and training.

**CAG'S CARBON MANAGEMENT INITIATIVES**



**MEASUREMENT**



- Collect data from emission sources
- Develop emissions inventory using monitoring and reporting methods that satisfy the conditions of a Reasonable Level assurance of ISO14064-3:2006 standard, the GHG Protocol and ACI ACA
- Develop processes for measuring and recording data for other GHG emission sources (e.g. refrigeration and air-conditioning systems, fire suppression systems, high tension systems, etc.)



**REDUCTION**



- Improve energy efficiency levels of operations through a series of equipment replacement and system improvement projects throughout the airport. Recently completed initiatives include modernisation of existing lifts, installation of airfield LED lighting, overhaul of chillers, replacement of lighting system to more efficient lightings such as LED at terminal buildings etc.
- Install solar photovoltaic (PV) systems to increase share of renewable energy consumption



**SELF ASSESSMENT & AUDITING**



- Monitor Scope 1, 2 and 3 GHG emissions at the airport and implement sustainability initiatives to reduce the airport's GHG emissions
- Certified under the ISO 14001:2015 standard and as part of the certification process, is subject to external surveillance and re-certification audits as part of its EMS, annually
- Carbon footprint report updated annually and subject to external verification as per the requirements of the ACI ACA scheme
- Collect and report data annually on energy usage and GHG emissions in accordance with Singapore's Energy Conservation Act 2012



**AWARENESS & TRAINING**



- Improve environmental awareness amongst stakeholders through engagement activities (e.g. Changi Airport Community Environmental Forum, ACI Asia-Pacific Regional Environmental Committee to share and adopt industry best practices, etc.)
- Invest in training programmes for employees to broaden their understanding and skills on the subject matter (e.g. ISO 14001:2015 Internal Auditor programme, BCA Green Mark Managers and Green Mark Professionals programme, Singapore Certified Energy Manager programme, etc.)

**AIRPORT CARBON ACCREDITATION**

CAG began its journey towards Airport Carbon Accreditation (ACA) Level 3 certification by including third-party emissions in the mapping of its carbon footprint. CAG actively engages with the airport community, encouraging their partnership on various carbon reduction initiatives.

In 2017, CAG was accredited at ACA Level 3 for the first time and is undergoing third-party validation for the airport's FY2017/18 carbon footprint.

**Inaugural Changi Airport Community Environmental Forum**

In October 2017, CAG held its inaugural Changi Airport Community Environmental Forum (CACEF). Involving over 100 participants from CAG's business partners, contractors, employees, governmental and regulatory bodies, the forum discussed the latest sustainability advances in the industry and how the airport community can adapt these best practices to the Changi context.

The second environmental forum which was held in September 2018 had a turnout of more than 150 participants and exhibitors, across 47 companies and agencies. Participants were updated on the nation's plans towards a low carbon future, updates on sustainability reporting and new initiatives at Changi Airport which could be adopted by the airport partners. The intent of the forum is action-oriented and geared towards encouraging the airport community to actively collaborate for a greener Changi Airport. The forum will be a yearly event for the airport community.



Q&A Panel session



Team driving environmental sustainability in CAG

## “Reducing our carbon footprint”

Every journey begins with a step in the right direction with the destination in mind. For Changi, this begins with reducing its footprint for future generations of travellers to make their mark.

# Carbon Footprint

CHANGI AIRPORT GROUP

# 1,337,256 tCO<sub>2</sub>e

TOTAL GHG EMISSIONS

**898 tCO<sub>2</sub>e**  
SCOPE 1  
Direct

**159,954 tCO<sub>2</sub>e**  
SCOPE 2  
Indirect

**1,176,404 tCO<sub>2</sub>e**  
SCOPE 3  
Other Indirect  
(upstream/downstream activities)

### CAG'S CARBON FOOTPRINT<sup>12</sup>

Greenhouse gases (GHG) in the atmosphere are largely responsible for the greenhouse effect – which is one of the leading causes of global warming. Carbon footprinting enables CAG to quantify the amount of carbon dioxide equivalents (CO<sub>2</sub>e) emitted across the upstream and downstream activities in its value chain.

305-1 305-2 305-3



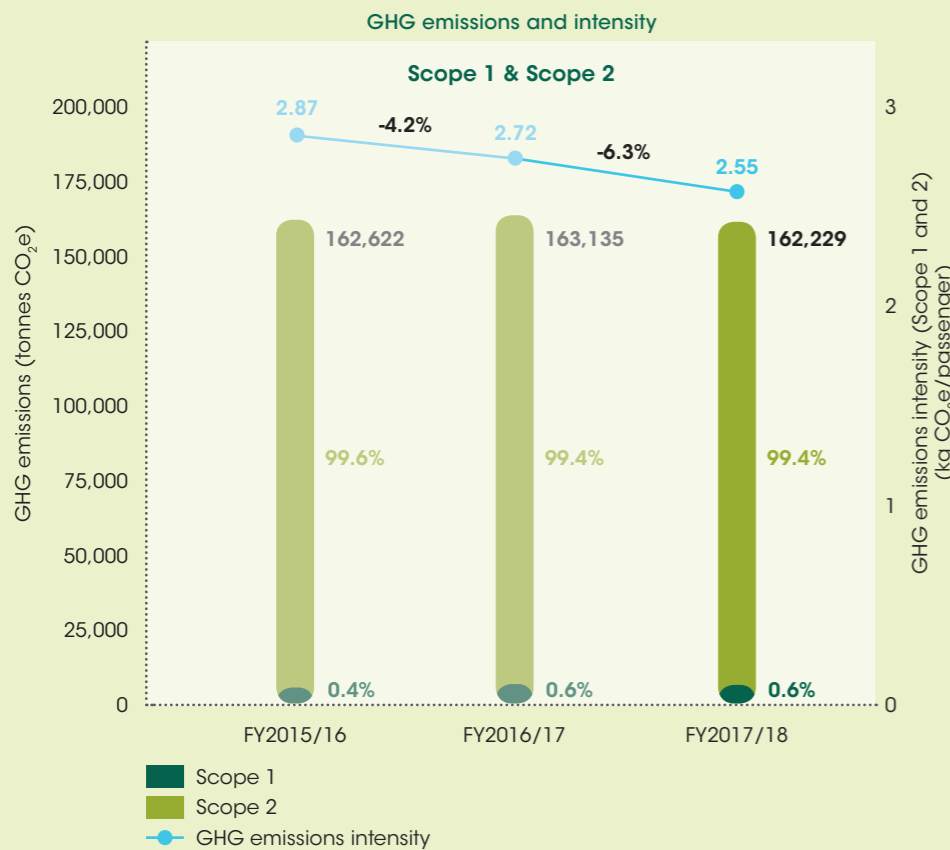
<sup>12</sup> The GHG emissions sources are categorised in accordance with the GHG Protocol. Only the significant GHG emissions, CO<sub>2</sub> and SF<sub>6</sub> ("CO<sub>2</sub>e"), are included in CAG's overall carbon footprint calculation. FY2017/18 energy and GHG emissions data is subject to validation, and excludes Terminal 4, as this newest terminal started operations in October 2017. The full methodological approach can be found in Appendix A (Pg 104-106)

**GHG EMISSIONS**

A total of 1,337,256 tonnes CO<sub>2</sub>e of GHG emissions<sup>13</sup> was recorded in FY2017/18, with Scope 3 GHG emissions forming the largest percentage at 88%, while Scope 2 and Scope 1 accounted for 12% and 0.1% respectively.

305-1 305-2 305-3 305-4

**In FY2017/18, CAG achieved a reduction of 6.3% GHG emissions intensity (Scope 1 and 2) compared to FY2016/17. In alignment with Singapore's pledge on the Paris Agreement, CAG targets 20% reduction in GHG emissions intensity by FY2029/30 (based on 2017/18 levels\*)**



**GHG emissions (Scope 1 and 2)**

**162,229**  
tCO<sub>2</sub>e GHG emissions

**2.55**  
emissions intensity (kgCO<sub>2</sub>e/passenger)

**↓6.3%**  
reduction in GHG emissions intensity (kgCO<sub>2</sub>e/passenger) from FY2016/17 levels

<sup>13</sup> GHG emissions values have been prepared in accordance with ISO 14064, GHG Protocol and ACA guidelines and verified by an independent, third-party accredited verifier. The full methodological approach can be found in Appendix A (Pg 104-106). FY2017/18 data is subject to validation and excludes Terminal 4, as it started operations in October 2017.

\*T4 emissions will be based on 12 months of verified actual data



LIM CHOON SIONG

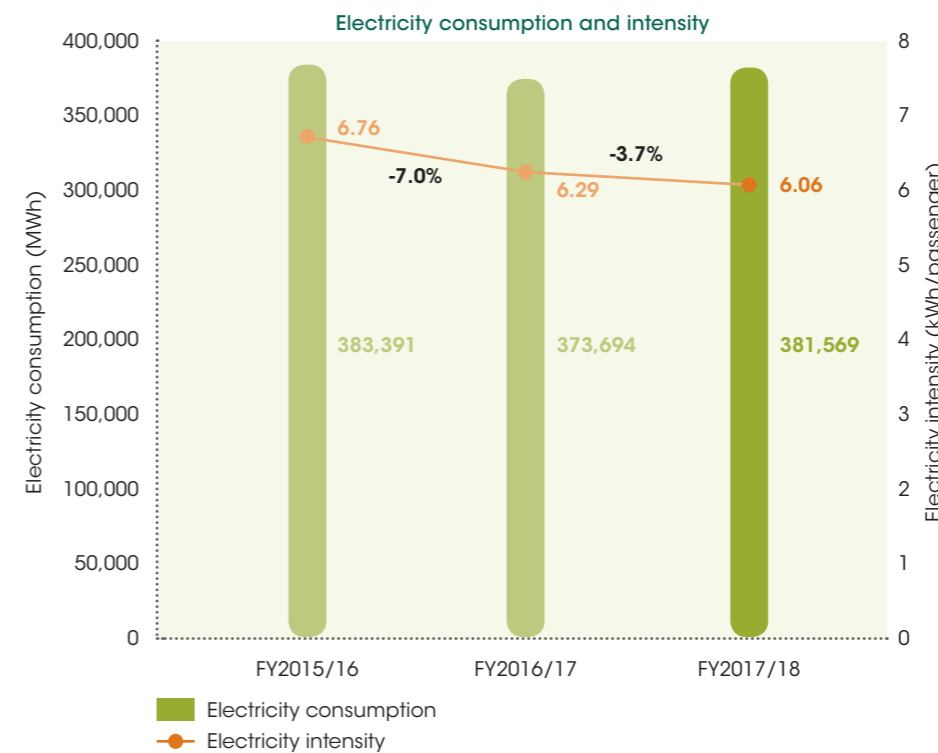
Meet Choon Siong, the face of CAG's Engineering Environmental Sustainability unit! The unit works with industry players and start-ups to conduct engineering technology trials at Changi Airport.

**E**lectricity consumption is the main contributor of GHG emissions for CAG – accounting for 99.4% of combined Scope 1 and Scope 2 GHG emissions. While Changi expands its reach and grows from year to year, electricity consumption also increases. In spite of this, CAG strives to reduce its greenhouse gas emissions intensity.

**ELECTRICITY CONSUMPTION**

Consumption of purchased electricity attributes to CAG's Scope 2 GHG emissions. In FY2017/18, total electricity consumption<sup>14</sup> across the three terminal buildings was 381,569 MWh. Through energy efficient initiatives and measures to reduce greenhouse gas emissions intensity, Changi Airport achieved a 3.7% decrease in electricity intensity.

302-1 302-3



**381,569**  
total electricity consumption (MWh)

**6.06**  
electricity intensity (kWh/passenger)

**↓3.7%**  
reduction in electricity intensity (kWh/passenger) from FY2016/17 levels

<sup>14</sup> Estimation of the net electricity usage is achieved by deducting electricity supplied out to tenants, private developers (i.e. companies who have leased their own piece of land on the airport property) and T4, from the total electricity imported.

**CARBON REDUCTION AT CHANGI AIRPORT**

Since FY2014/15, CAG has completed over several key carbon reduction initiatives around Changi Airport – enabling significant energy savings.

These include replacing conventional lighting with LED lights, upgrading to energy-efficient chillers and modernisation of existing lifts.

CAG trials and implements carbon reduction projects that are most well-suited to Changi Airport. These include improvements to the cooling efficiencies of terminal buildings and the upgrading of mechanical and electrical systems to more energy-efficient models.

To better explore alternative energy sources, feasibility studies on the installation of additional solar photovoltaic systems on passenger terminal buildings’ rooftops have been conducted in partnership with the Civil Aviation Authority of Singapore and the National University of Singapore’s Solar Energy Research Institute of Singapore.

**Electric Baggage Handling Tractors**

In October 2017, CAG installed 26 common-use charging points to encourage the adoption of electric baggage tractors. There are 80 electric baggage tractors operating in the Airside today, actively used by CAG’s ground handling partners.

Baggage tractors are conventionally diesel-powered and emit fumes which are a source of occupational health hazard for baggage handling staff when transporting bags between aircraft and the terminal buildings. With the support of ground handling partners, CAG mandated the use of clean-energy baggage tractors within the baggage handling areas starting with T4 in Nov 2017.



As a result, CAG received positive feedback from its baggage handling community on the improvement in the work environment. Since CAG embarked on this journey, we have saved 627 tonnes of CO<sub>2</sub>e emissions.

The 100% usage of clean-energy baggage tractors will soon also be the case in other terminals, as CAG continues to work closely with its ground handling partners to roll out more charging points for electric vehicles.

**Changi’s Climate Change Adaptions**

Climate change is a global threat with far reaching impact on the environment, society and business. The need to design safeguards and enhance business resilience to withstand the adverse effects of climate change is becoming more pressing each day.

A comprehensive approach targeted at individual airport assets as well as broader district-level protections – such as levees, tidal gates, holding ponds and pumping stations – was established. One example is to raise the road level surrounding the airport to act as a levee for district level flood protection, as well as a de-facto fixed flood barrier. The 1km stretch of Nicoll Drive, which hugs the shoreline near Changi Beach, was raised by 0.8m in 2016, which is above the Singapore Government’s 0.76m sea level rise projection for 2100.

Furthermore, to ensure that the Changi East site is resilient to future climate change conditions, it has been designed with a higher platform level 5.5m above the mean sea level. In addition, 4 new drains will be built to prevent flooding from happening within the new airport site, with a total of around 10km of drains built, and the longest being around 3km long and 40m wide.



## Airport Collaboration Decision Making

In a dynamic airport environment, a flight may arrive or depart earlier or later than its scheduled time, which will affect the chain of operations that takes place after. With growing traffic, there is a stronger need to optimise the airport's infrastructure and operational efficiency – through A-CDM or Airport Collaboration Decision Making.

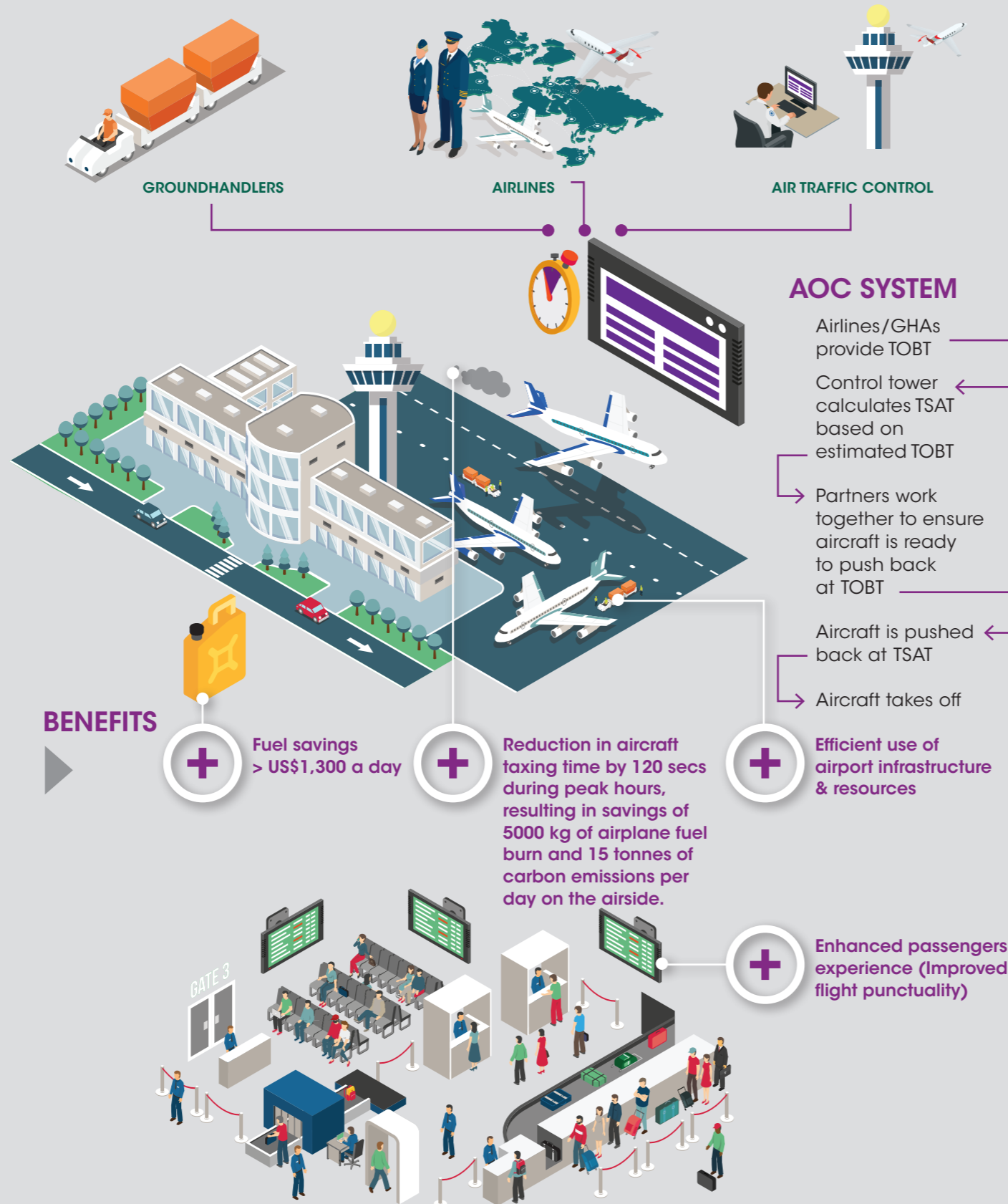
The A-CDM concept involves two key components – Target Off-Block Time (TOBT) and Target Start-up Approval Time (TSAT). TOBT refers to the predicted time that all the ground-handling activities will be completed, while TSAT refers to the time an aircraft can expect to push back.

The airline or its ground handling representative is responsible for providing the TOBT for its departing flights while Air Traffic Control (ATC) provides the TSAT. These operational information is shared amongst airport partners through the Airport Operations Centre System (AOCs) to facilitate collaboration.

## CHANGI AIRPORT COLLABORATIVE DECISION MAKING (A-CDM)

A-CDM is guided by the 'Best planned, Best served' philosophy, where airport partners collaborate to share operational information to achieve high operational efficiency.

Airport partners share airport operational information



## “Always a breath of fresh air”

A high standard of indoor air quality is equally important for airport staff and passengers. CAG minimises the potential for indoor air contamination, by monitoring ambient pollutant levels at Changi Airport to ensure that the air remains clean and safe for all.

### INDOOR AIR QUALITY MANAGEMENT

CAG adopts best practices in indoor air quality management, drawing reference from standards such as the SS 554:2016 (Singapore Standard: Code of practice for indoor air quality for air-conditioned buildings) to refine its approach.

An annual monitoring exercise is conducted to assess occupational exposure to organic and inorganic compounds in accordance with national regulations.<sup>15</sup> The pollutants covered include Sulphur dioxide (SO<sub>2</sub>), Carbon monoxide (CO), Nitrogen dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>) and Particulate Matter (PM) 2.5 and 10. Since CAG begun its operations, the indoor air quality within its terminal buildings has fully complied with, and exceeded, national regulations.

G4-A05

<sup>15</sup> Ministry of Manpower (MOM) – Workplace Safety and Health Act 2006, Workplace Safety and Health (General Provisions) Regulations 2006, Permissible Exposure Limits of the Toxic Substances (PELTS)



## WATER & EFFLUENTS MANAGEMENT

103-1 103-2 103-3

### WHY

is this important to CAG?

### HOW

does CAG manage this?

### WHAT

are CAG's targets?

### WHO

manages this at CAG?

### WHICH

SDG does CAG contribute to?

The World Resources Institute (WRI) ranked Singapore as the country with potentially the highest water-stress ranking in 2040. CAG is aligning with Singapore's plans for water security in shifting its reliance to national taps that are more weather-resilient, such as NEWater. CAG's foremost priority is to conserve water through prudent management and water technologies.



#### POLICIES

- CAG's Environment Policy
- CAG's Environmental Management System



#### PRACTICES

- CAG's Water Optimisation Strategy



#### TARGETS

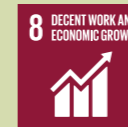


Looking to trial various water optimisation strategies



#### ENVIRONMENT STEERING COMMITTEE

#### FACILITIES MANAGEMENT



“Towards a water-resilient future”

By 2060, Singapore's water use is expected to double from the current 430 million gallons a day. CAG works with the Public Utilities Board (PUB), Singapore's national water agency, to explore sustainable ways in managing this valuable resource.



## “Where every drop counts”

**C**AG'S WATER OPTIMISATION STRATEGY  
Through its Water Optimisation Strategy, CAG takes early action towards contributing to a water-resilient future for Changi Airport.

### 1. Reduce potable water usage intensity by:

- Installing more water-efficient fittings
- Leakage and repair management
- Effective water-saving messaging
- Switching to non-potable water sources where possible – for water features, recharging sprinklers and general cleaning

### 2. Reduce non-potable water usage by:

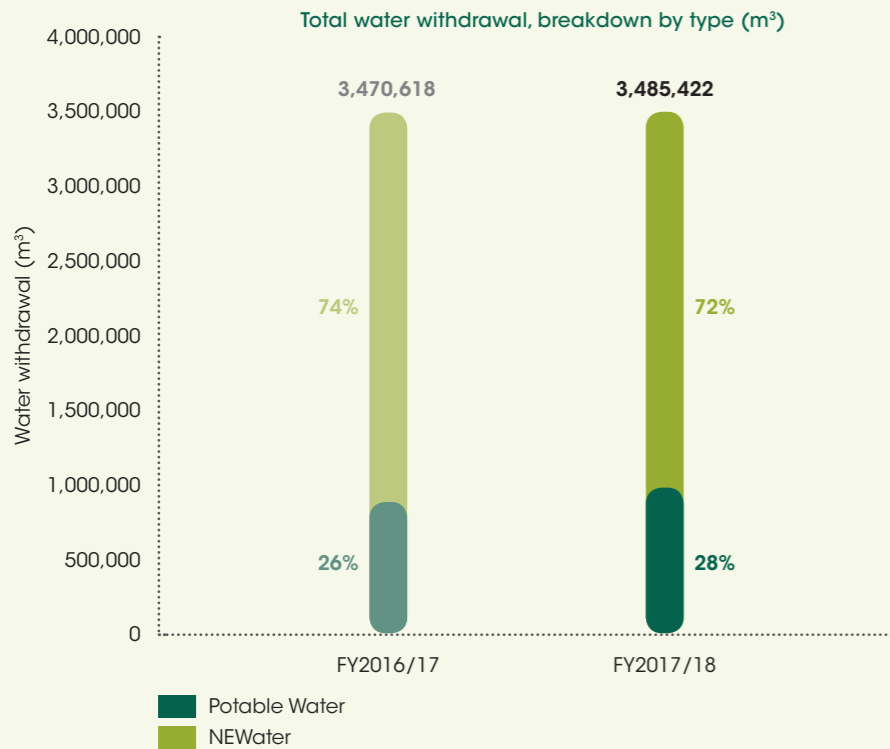
- Exploring technologies to reduce water needed in air-conditioning
- Recycling water for irrigation

#### WATER WITHDRAWAL

In FY2017/18, CAG withdrew<sup>16</sup> a total of 3,485,422 m<sup>3</sup> of water at the 4 terminal buildings<sup>17</sup>. This is comparable with FY2016/17 levels, with a slight increase of 0.43 %, which is attributable to the opening of T4 in end-October 2017.

In support of Singapore's movement towards water sustainability, 72% of CAG's total water withdrawal comes from Singapore's 3rd National Tap – NEWater. For Changi Airport, NEWater is used for non-potable activities, including cooling tower infills, toilets, irrigation and cleaning.

303-1



The total water usage at the terminal buildings relates to Food and Beverage, Irrigation and Cleaning, Cooling Towers and Toilets and Pantries.

**3,485,422**  
m<sup>3</sup>

total water withdrawal at the Terminal buildings

**72%**

of which comes from NEWater

<sup>16</sup> "Water withdrawal" is defined by the GRI as the sum of all water drawn for any use over the course of the reporting period.

<sup>17</sup> This report discloses the total water withdrawal at the 4 terminal buildings. All other water withdrawal outside this scope is excluded from this report.

#### WATER DISCHARGE

Aside from evaporation and drift losses, water output at Changi Airport is through Singapore's sewerage system, which is maintained by PUB.

In FY2017/18, the total estimated water discharged is 971,953 m<sup>3</sup>, a 20% increase from 808,730 m<sup>3</sup> in FY2016/17 mainly to growing passenger traffic and T4 construction.

306-1

**971,953**  
m<sup>3</sup>  
total water discharged

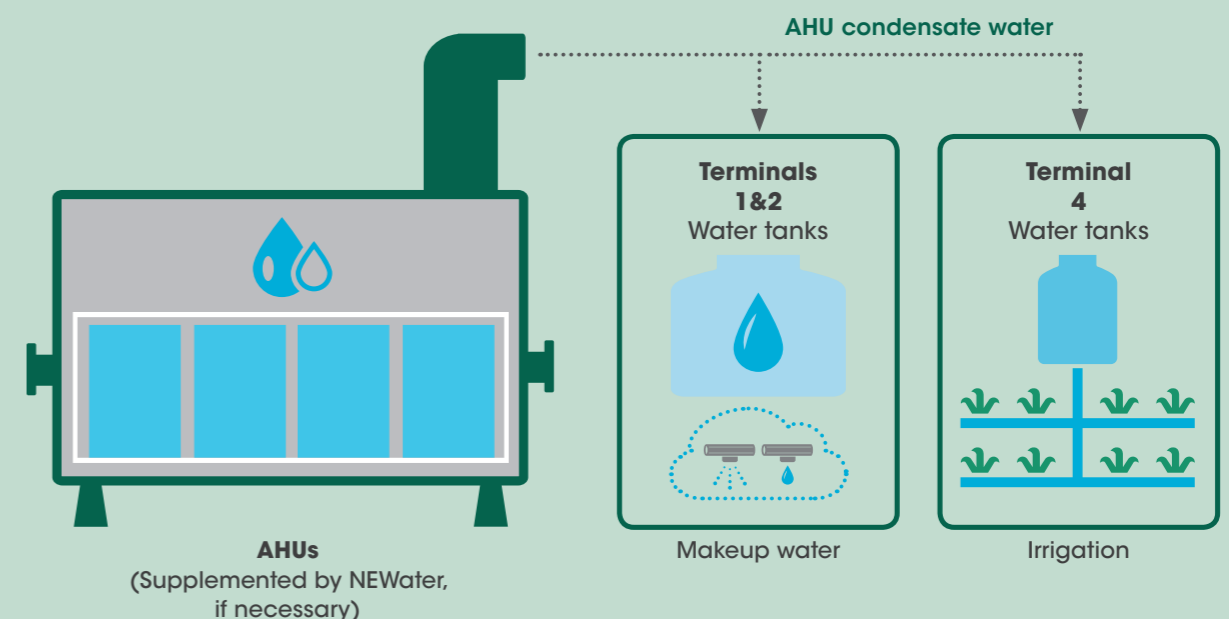


CAG's Facilities Management team leads the test-bedding of water-saving technologies in T4

### Recycling Condensate Water for Irrigation

A significant amount of water condensates from the air handling units (AHU) in air-conditioning systems. Generally, condensation produced is drained into the sewerage system, and the water is lost. The T4 Engineering team explored a way to put this water to

good use. By collecting this condensate water in tanks, CAG is able to use the water to irrigate the plants in T4. At Terminal 1 and 2, water condensates are also recycled and stored as makeup water to compensate for any water loss through evaporation or leakage.





## WASTE MANAGEMENT

103-1 103-2 103-3

### WHY

is this important to CAG?

### HOW

does CAG manage this?

### WHAT

are CAG's targets?

### WHO

manages this at CAG?

### WHICH

SDG does CAG contribute to?

Good waste management is key for public health and prevents the contamination of air, water and food sources. This is critical in Singapore, where land scarcity and high population density calls for adoption of more sustainable waste treatment and disposal methods. Reducing, reusing and recycling can help reduce CAG's environmental impact by cutting down on the quantity of primary raw material used and divert waste from incineration and landfill.



#### POLICIES

- CAG's Environment Policy
- CAG's Environmental Management System



#### PRACTICES

- Operational control procedures for waste disposal
- Building stakeholder awareness
- Food waste digesters



#### TARGETS



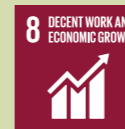
Achieve waste-recycling rate of 8.5% for passenger terminals in FY2019/20



ENVIRONMENT STEERING COMMITTEE

LICENSED WASTE CONTRACTORS

FACILITIES MANAGEMENT UNITS



“Sifting through the throwaway paradigm”

At Changi Airport, there are opportunities to go beyond the “take-make-dispose” linear model towards circularity. Through innovation and technology, CAG adopts sustainable waste management practices to reduce the impact that the airport has on human health and the environment.

**OPERATIONAL CONTROL PROCEDURES FOR WASTE DISPOSAL**

CAG has instituted rigorous procedures for managing the disposal of general and hazardous waste generated at the airport and ensures that waste undergoes proper segregation and disposal through licensed waste contractors.

**BUILDING STAKEHOLDER AWARENESS**

CAG actively engages stakeholders on waste management. CAG introduced creatively designed recycling bins - depicting an enlarged bottle, a can and a newspaper - throughout the passenger terminals and encourages airport users to play their part in reducing their environmental impact.



**Reducing Food Waste at Changi Airport**

In 2015, Changi Airport introduced a food waste digester system at T3. It is a self-contained and continual feed disposal system designed to convert food waste into liquid using microbes that speed up the natural decomposition process.

This initiative started with 1 digester system and 2 tenants - Kopitiam and NTUC Fairprice. It has now been adopted by 19 F&B operators. Today, the 11 digester systems available across T1 to T4 process an average of 1,100 kg of food waste at the airport daily. In effectively diverting these waste from incineration, Changi has reduced its environmental footprint as an airport.

**290 tonnes**  
food waste diverted from incineration

1

At the F&B outlet, the cleaner will sort food waste from utensils. Other waste such as corn cobs, clam shells and bones are excluded as these items will slow down the digestion process of the system.



2

Food waste are then placed in the bin and wheeled to the food waste digester system once it is almost full.



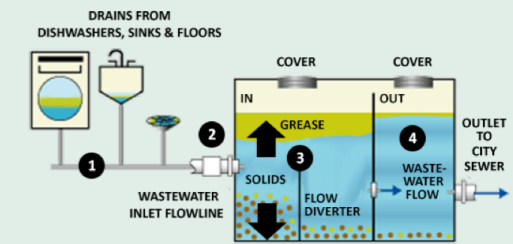
3

The bin is then placed on a bin lifter of the system and the cleaner presses a button for the bin to be lifted, and dumped of its food waste into the system. During this process, the weight of the waste is being measured with a weighing mechanism built into the system and is digitally recorded.



6

At the grease interceptor, the grease is extracted before the waste water is released into the sewer.



5

Using this bioconversion method, food waste in the system is eventually broken down into wastewater and discharged into a grease interceptor.

4

The Food waste digester system will then shred the waste into smaller pieces. They are further broken down by a microbial cocktail (a mixture of different microbial strains) in the system. (Note: the microbes are mostly self-sustaining in the system and are replenished only once a year to ensure that the efficiency of the system is maintained)

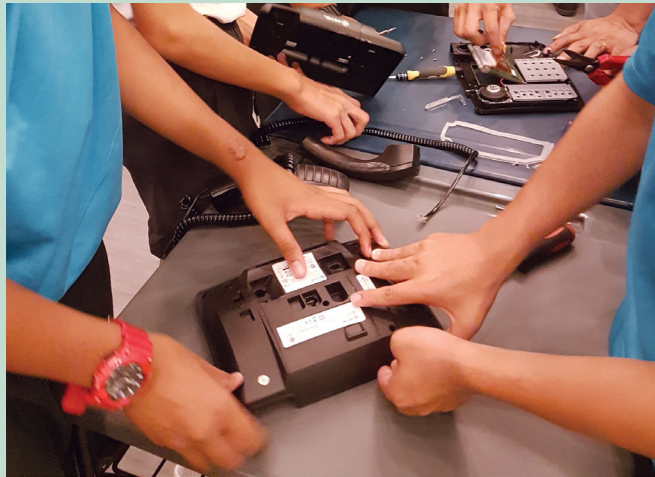
## e-liminating Waste

In 2017, CAG infused an element of environmentalism into its CSR programmes. NorthLight School students underwent an interactive learning facilitated by CAG's appointed e-waste collection partner, Seah Yong Heng Trading Pte Ltd. After learning about what constituted e-waste and the harmful effects of improper disposal, CAG staff volunteers led the NorthLight School youths in engaging the Changi Airport community in collecting electronic waste (e-waste) and increasing awareness on the importance of e-waste recycling.

The programme was a resounding success where over 200 units of electronic equipment amounting to 2,384kg were collected. The e-waste items included printers, monitors, routers, laptops and more; of which 90% of the material were recycled and no e-waste were sent for incineration or to landfills.

**2,384**  
kg

e-waste collected from the airport community



Dismantling an IP phone

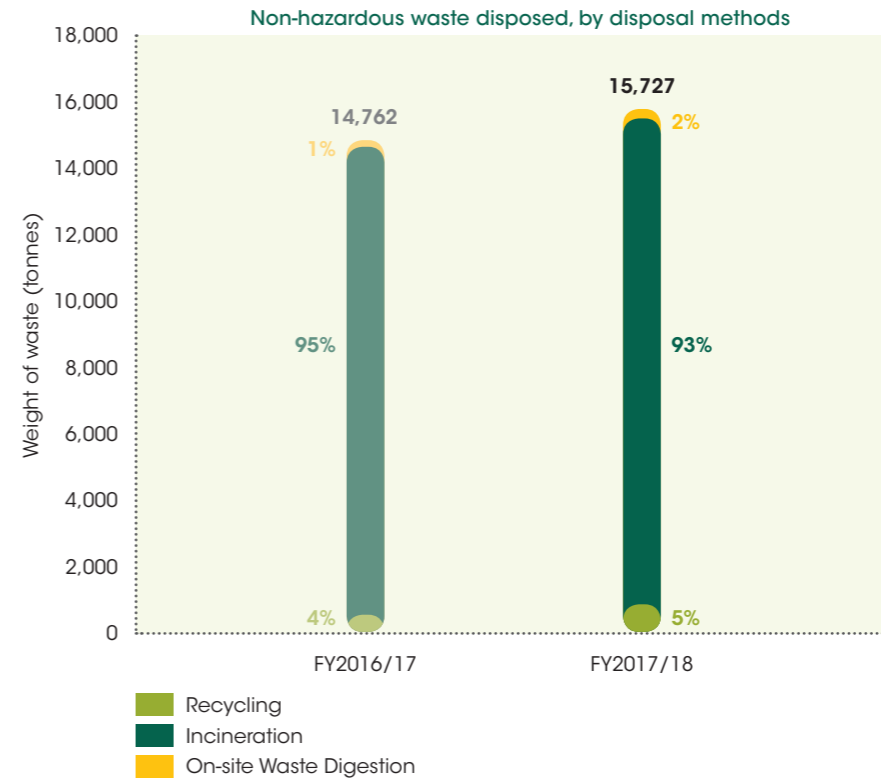


Students playing a small game with CAG staff to raise awareness on what is e-waste and the importance of proper e-waste disposal

## WASTE DISPOSAL

In FY2017/18, 15,727 tonnes of waste was disposed at the four terminal buildings<sup>18</sup>. This comprises general waste, recyclables (e.g. papers, glass, metals, plastics, etc.), e-waste and food waste. The slight increase from FY2016/17 levels is mainly due to the opening of T4 in end-October 2017. The total weight of waste generated, collected and disposed is projected to increase in the coming years, with increasing number of passengers and flights at Changi Airport, and as T4 marks its first full-year of operations.

306-2



**15,727**  
tonnes

total waste disposed at the terminal buildings

**7.0%**

total waste diverted from incineration and landfill

While CAG aims to adopt more sustainable waste disposal methods, the bulk of the waste mix at the terminal buildings is general waste. In FY2017/18, 93% of the waste generated at the terminal buildings are collected and sent for incineration. Nonetheless, with CAG's efforts to raise awareness about recycling and promoting the use of its food waste digesters, recycling has increased by 44% and on-site waste digestion by 80% over the year.

<sup>18</sup> This report discloses the municipal solid waste disposed at the four terminal buildings. All other waste outside this scope is excluded from this report.

# A Traveller's Environmental Journey

THROUGH CHANGI AIRPORT

**T**ravellers visiting Changi Airport can enjoy the unique Changi Experience knowing that behind-the-scenes, CAG and its airport partners work closely to create a more environmentally-friendly airport experience for travellers and locals alike. By holistically approaching environmental sustainability, the environmental footprint of each Changi traveller has been progressively reduced.

## Shopping

### ENCOURAGE CONSUMERS TO REDUCE PLASTIC USE

- Since Aug 2018, 41 F&B brands have joined CAG to encourage consumers to re-consider using plastic straws
- Advert displays have been placed at point-of-purchase as a gentle prompt
- 90,000 straws saved per month since launch of initiative
- CAG is also working with tenants to reduce the use of single-use plastic bags and packaging

## Ambience

- Cooling and lighting equipment are continuously renewed with more energy-efficient ones
- 8,500 tonnes of carbon emissions saved since 2014

## Water

- Condensate water is being re-used to water its green landscapes in T4
- Water-efficient fittings are selected for restrooms

## Dining

### FOOD WASTE IS BEING DIVERTED FROM INCINERATION

- On a daily basis, a small army of digester machines convert food waste into waste water
- Since 2015, over 600 tonnes of food waste have been processed, equivalent to the weight of over 16 Airbus A320 aircraft

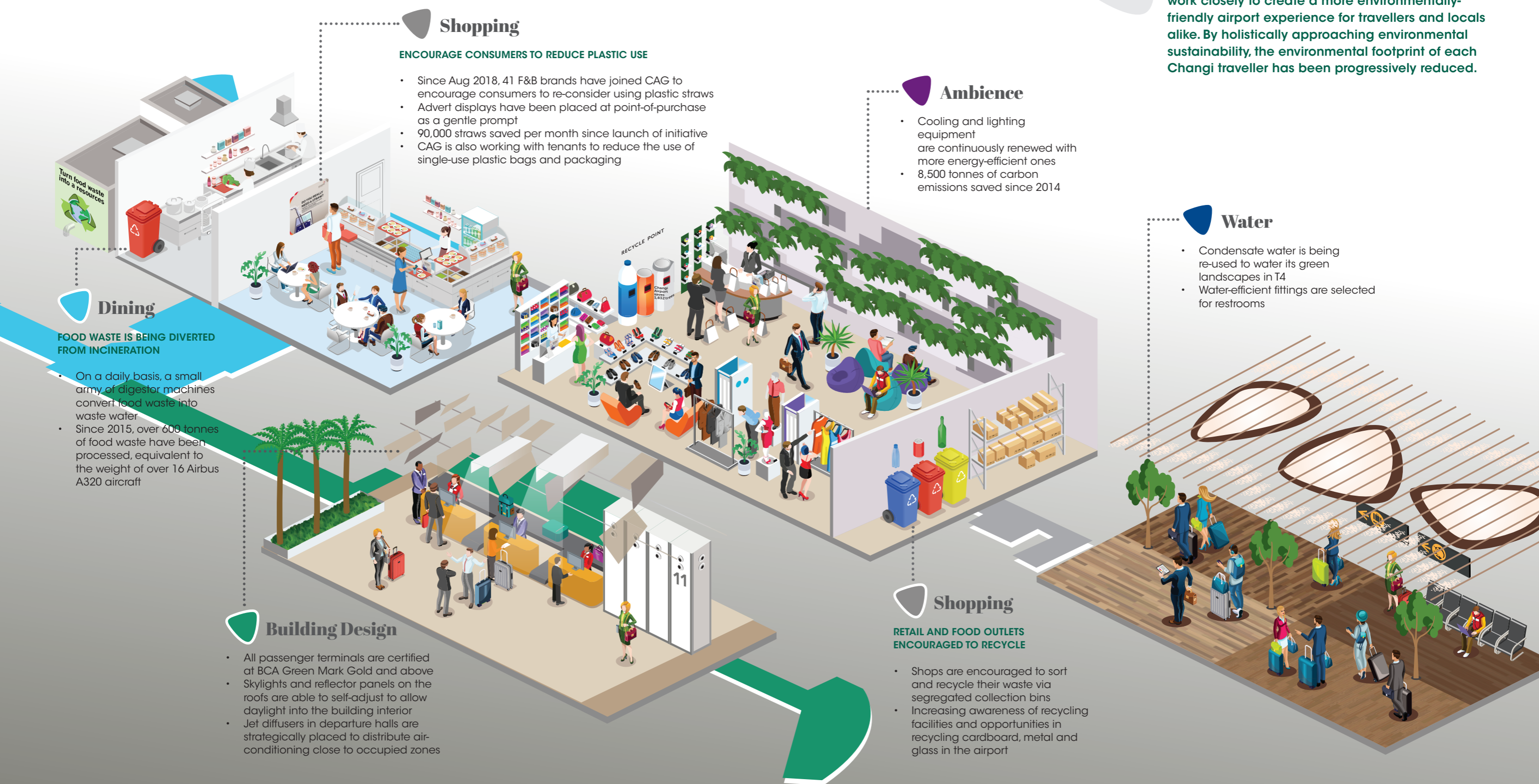
## Building Design

- All passenger terminals are certified at BCA Green Mark Gold and above
- Skylights and reflector panels on the roofs are able to self-adjust to allow daylight into the building interior
- Jet diffusers in departure halls are strategically placed to distribute air-conditioning close to occupied zones

## Shopping

### RETAIL AND FOOD OUTLETS ENCOURAGED TO RECYCLE

- Shops are encouraged to sort and recycle their waste via segregated collection bins
- Increasing awareness of recycling facilities and opportunities in recycling cardboard, metal and glass in the airport



# Appendix A: GHG Emissions Quantification Methodology

**This section explains the calculation boundaries, methodologies and assumptions used in the preparation of CAG's Scope 1, 2 and 3 emissions for CAG. The carbon footprint is prepared in accordance with ISO 14064-1, Greenhouse Gas (GHG) Protocol and the Airport Carbon Accreditation (ACA) guidelines.**

## REPORTING SCOPE AND PERIOD

CAG uses an adaptation of the Operational Control Approach, under which the company accounts for 100% of the GHG emissions from operations over which it has control. Following requirements for Level 3 'Optimisation' Airport Carbon Accreditation, this carbon footprint takes into account the sources and activities that are controlled by CAG, namely, Scope 1 and Scope 2 GHG emissions, as well as the sources that the airport can guide or influence through effective partnership (Scope 3 GHG emissions). CAG focuses on calculation of carbon dioxide (CO<sub>2</sub>) emissions for all three scopes.

Data for GHG emission calculations includes T1, T2 and T3. It excludes T4 as its operations only started in October 2017. Electricity usage of T4 was therefore registered separately and subtracted from CAG's total electricity consumption.

Data from the following reporting periods have been included in Sustainability Report FY2017/18:

- FY2015/16 – 1 April 2015 until 31 March 2016, for Scope 1 and 2 GHG emissions only;
- FY2016/17 – 1 April 2016 until 31 March 2017, for Scope 1, 2 and 3 GHG emissions;
- FY2017/18 – 1 April 2017 until 31 March 2018, for Scope 1, 2 and 3 GHG emissions.

CAG's energy and emissions data will be published when they have been externally verified on an annual basis. In this report, CAG's energy and emissions data for FY2017/18 have been disclosed with verified FY 2016/17 data for comparability. Verified FY2017/18 energy and emissions data will be published in CAG's subsequent Sustainability Report FY2018/19.

## CALCULATION METHODOLOGIES

Methodologies are consistent with the ACI Guidance Manual on Airport Greenhouse Gas Emissions Management and the GHG Protocol. Emissions are divided according to ownership and control of the source:

### Scope 1

Scope 1 emissions are direct GHG emissions which occur from sources that are owned or controlled by CAG. This includes emissions from both stationary sources (power generators, dynamic-uninterruptible power supply (D-UPS), water pumps, electrical switchgears and other stationary equipment) and mobile sources (company-owned cars, trucks, motorcycles and heavy-duty equipment). Activities and process emissions (i.e. from firefighting exercises) contributes to less than 0.01% of total emissions and therefore excluded.

Quantity of Scope 1 GHG emissions is calculated by multiplying the fuel usage (activity data) by their respective emissions factor. The data for fuel usage is accumulated based on invoices of procured and/or topped up fuel.

### Scope 2

Scope 2 emissions are indirect GHG emissions which occur from the generation of purchased or acquired electricity, heating, cooling and steam consumed by CAG. At CAG, Scope 2 emissions only relate to purchased electricity from the grid.

Quantity of Scope 2 GHG emissions is calculated by multiplying electricity usage (in kWh) by the grid emission factor. Data for electricity usage is derived from receipts issued by the electricity supplier. The grid emission factors used in calculation is based on the grid emission released annually by the Energy Market Authority (EMA) in accordance with the United Nations Framework Convention on Climate Change (UNFCCC) guidelines.

### Scope 3

Scope 3 emissions are other indirect GHG emissions that are a consequence of CAG's activities, but occur at sources not owned or controlled by CAG. Due to the variety Scope 3 GHG emission sources within the scope, a range of methodology has been used.

For emissions resulting from activities involving aircrafts (landing and take-off cycle, engine test-run and aircraft auxiliary power unit), the ACERT is used. For emissions resulting from ground activities that are carried out by our partners (ground support equipment, surface access, electricity resold, waste management), a similar calculation approach used for quantifying Scope 1 and Scope 2 emissions was used. Emissions from the shuttle bus operations was calculated with the use of the GHG Emissions Calculation Tool. Finally, for business travel, the International Civil Aviation Organization (ICAO) Carbon Emissions Calculator was used. For every calculation tool/model used, CAG has applied suitable assumptions to the input data. Refer to the table below for the respective emission factors used.

Emission Sources	Emission Factors	Unit
<b>Scope 1 emissions</b>		
<b>Stationary source</b>		
Diesel stationary	2.6850	kgCO <sub>2</sub> e/litre
Jet A-1 stationary	2.4995	kgCO <sub>2</sub> e/litre
<b>Mobile source</b>		
Diesel mobile	2.6760	kgCO <sub>2</sub> e/litre
Gasoline mobile	2.2720	kgCO <sub>2</sub> e/litre
<b>Scope 2 emissions</b>		
<b>Electricity consumption</b>		
FY2017 National grid (Location base)	0.4192	kgCO <sub>2</sub> e/kWh
FY2016 National grid (Location base)	0.4244	kgCO <sub>2</sub> e/kWh
FY2015 National grid (Location base)	0.4224	kgCO <sub>2</sub> e/kWh
<b>Scope 3 emissions</b>		
<b>Ground support equipment</b>		
Diesel mobile	2.6760	kgCO <sub>2</sub> e/litre
Gasoline mobile	2.2720	kgCO <sub>2</sub> e/litre
<b>Surface access</b>		
Coach	0.0342	kgCO <sub>2</sub> e/vehicle-km
Minibus/van	0.3014	kgCO <sub>2</sub> e/vehicle-km
Motorcycle	0.1187	kgCO <sub>2</sub> e/vehicle-km
Private charter	0.2206	kgCO <sub>2</sub> e/vehicle-km
Private hire car	0.2206	kgCO <sub>2</sub> e/vehicle-km
Private hire shared ride	0.2206	kgCO <sub>2</sub> e/vehicle-km
Privately owned car	0.2206	kgCO <sub>2</sub> e/vehicle-km
Taxi (Grab taxi)	0.2206	kgCO <sub>2</sub> e/vehicle-km
Taxi (Phone booking)	0.2206	kgCO <sub>2</sub> e/vehicle-km
Taxi (Street hail)	0.2206	kgCO <sub>2</sub> e/vehicle-km
Mass Rapid Transit (MRT)	0.0746	kgCO <sub>2</sub> e/passenger-km
Public bus	0.0342	kgCO <sub>2</sub> e/passenger-km
<b>Electricity re-sold</b>		
FY2016 National grid (Location base)	0.4244	kgCO <sub>2</sub> e/kWh
FY2015 National grid (Location base)	0.4224	kgCO <sub>2</sub> e/kWh
<b>Waste management</b>		
0% load	0.6627	kgCO <sub>2</sub> e/km
50% load	0.2476	kgCO <sub>2</sub> e/tkm
100% load	0.1459	kgCO <sub>2</sub> e/tkm

**REFERENCES FOR EMISSION FACTORS**

- Airports Council International (ACI), Airport Carbon and Emissions Reporting Tool (ACERT) version 4.0
- World Resources Institute (2015), GHG Protocol Tool for Stationary Combustion version 4.1
- World Resources Institute (2015), GHG Protocol Tool for Mobile Combustion version 2.6
- Intergovernmental Panel on Climate Change (IPCC) (2007), Fourth Assessment
- Energy Market Authority of Singapore (EMA) (2018), Singapore Energy Statistics
- Energy Market Authority of Singapore (EMA) (2017), Singapore Energy Statistics
- Energy Market Authority of Singapore (EMA) (2016), Singapore Energy Statistics
- International Civil Aviation Organization (ICAO), Carbon Emissions Calculator version 10,
- United States Environmental Protection Agency (US EPA) (2015), Emission factor for greenhouse gas inventories
- UK Government Conversion Factors for Greenhouse Gas (GHG) Reporting (2016)
- GHG Protocol, GHG Emissions Calculation Tool version 2.6

# Appendix B: UN SDG Index

In 2018, CAG mapped each of its material sustainability matters to the SDGs targets. This exercise enables CAG to identify areas where its activities have a direct or indirect impact on the SDGs, and CAG's creation of value in the short, medium and long-term.

CAG's Material Sustainability Matter	The United Nations Sustainable Development Goals (UN SDGs)																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Fair Employment Practices					●			●		●							
Talent Management				●				●	●								
Good Corporate Governance												●				●	
Airport Safety and Security			●		●			●	●		●	●				●	●
Airport Experience and Passenger Satisfaction						●		●	●	●	●						
Community Investment	●			●				●		●							●
Contribution to Economic Development of Singapore	●							●	●	●	●						●
Energy and Emissions Management			●				●	●	●		●	●	●				
Water and Effluents Management			●			●		●	●		●	●					
Waste Management			●			●		●	●		●	●					

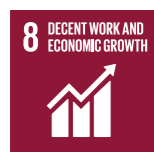
## Key Priority and Impact Areas

**Take urgent action to combat climate change and its impacts**

- Engaging in GHG emissions disclosure initiatives (e.g. Airport Carbon Accreditation, Sustainability Reporting, etc.)
- Aligning environmental targets with national and international Climate Action goals through reduction of CAG's GHG emissions intensity by 20% from FY2017/18 levels by FY2029/30

**Strengthen the means of implementation and revitalise the global partnership for sustainable development**

- Partnering with government, civil society and stakeholders (e.g. Singapore's Committee on the Future Economy, Air Transport Industry Tripartite Committee, Airport Council International, etc.)
- Collaborating with innovation-driven companies through CAG's Living Lab Programme

**Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all**

- Generating sustainable economic value through the value chain as a leading global air hub and community
- Fostering full and productive employment through integrating fair employment practices in CAG's Employment Philosophy, conducting regular performance reviews and people development programmes

**Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation**

- Adopting a life-cycle approach in investing, developing, managing and retrofitting airport infrastructure (e.g. upgrading of existing terminals, development of Changi East, etc.)

**Make cities and human settlements inclusive, safe, resilient and sustainable**

- Providing a safe, secure and green airport environment for the airport community and all passengers
- Increasing accessibility and connectivity, locally and globally such as developing a new focus on becoming a trusted and reliable pharmaceutical air cargo hub

## High Priority and Impact Areas

**End poverty in all its forms everywhere**

- Community investment and corporate social responsibility programmes (e.g. outreach to disadvantaged youths through Changi Foundation)

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

- Enhancing airport and CAG's workplace facilities to continually support the well-being of airport users and CAG employees
- Maintaining high standards of ambient air quality at the airport through adopting leading practices and conducting annual monitoring exercises

**Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**

- Providing equal opportunities in training and development of all CAG employees
- Supporting the vocational development of youths (e.g. internship opportunities at CAG, partnerships with NorthLight School and Metta School, etc.)

**Achieve gender equality and empower all women and girls**

- Respecting women's rights and ensuring no discrimination and harassment at the airport and CAG's workplace
- Supporting women's leadership and their empowerment across CAG

**Ensure availability and sustainable management of water and sanitation for all**

- Providing access to clean water and sanitation at the airport (e.g. availability of drinking fountains and amenities)
- Ensuring sustainable water withdrawal and water efficiency at the airport (e.g. growing share of NEWater)

**Ensure access to affordable, reliable, sustainable and modern energy for all**

- Growing share of renewable energy consumption at the airport (e.g. use of solar energy, biogas, electric baggage handling tractors, etc.)
- Ensuring sustainable energy consumption and energy efficiency at the airport achieved through various carbon reduction initiatives

**Reduce inequality within and among countries**

- Promoting the socioeconomic inclusion of all people at the airport and in the community through engagement with airport partners and offer job attachments to disadvantaged youths

**Ensure sustainable consumption and production patterns**

- Establishing and maintaining a proactive Environmental Management System
- Measuring, monitoring and reporting sustainability indicators internally and externally (e.g. voluntary sustainability reporting)
- Implementing circular systems at the airport (e.g. food waste digester, recycling programmes)

**Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels**

- Working closely with stakeholders at the airport in combating terrorism, illicit arms flows, human trafficking, etc. such as enhancing total emergency preparedness through Exercise Bobcat, Northstar
- Adopting a zero tolerance stance towards corruption of all forms



# Appendix C:

## GRI CONTENT INDEX

CAG's Sustainability Report FY2017/18 has been prepared in accordance with the GRI Standards: Core option. This GRI Content Index is a navigation tool that provides an overview of which GRI Standards have been used, which disclosures have been made, and where these disclosures can be found. The full content of the GRI Standards is publicly available on the GRI portal (<https://www.globalreporting.org/standards>).

### ABBREVIATIONS

SR: CAG Sustainability Report FY2017/18

AR: CAG Annual Report FY2017/18

### GENERAL DISCLOSURES

Disclosures	Reference(s) or Reasons for Omission (if applicable)
<b>GRI 102: General Disclosures (2016)</b>	
102-1	Name of the organisation SR: p1
102-2	Activities, brands, products, and services SR: p1 AR: p13, 87-88
102-3	Location of headquarters CAG is headquartered in Singapore.
102-4	Location of operations AR: p13, 87-88
102-5	Ownership and legal form SR: p1
102-6	Markets served SR: p70-75 AR: p38-39, 87-88
102-7	Scale of the organisation SR: p1, 21 AR: p27-30, 81-88
102-8	Information on employees and other workers SR: 21
102-9	Supply chain CAG procures services and products from various suppliers and seeks to implement sustainable procurement practices throughout its supply chain.
102-10	Significant changes to the organisation and its supply chain AR: p14-17, 28-30
102-11	Precautionary principle or approach SR: p36 AR: p33-35
102-12	External initiatives SR: p16, 24, 44-45, 51, 69, 107-109
102-13	Membership of associations SR: p10-11, 24, 69, 71
102-14	Statement from senior decision-maker SR: p4-7
102-16	Values, principles, standards, and norms of behaviour SR: p24, 37 AR: p12
102-17	Mechanisms for advice and concerns about ethics SR: p24, 37
102-18	Governance structure SR: p8-9 AR: p24-25, 31-34
102-19	Delegating authority SR: p8-9 AR: p31-34

### GENERAL DISCLOSURES

Disclosures	Reference(s) or Reasons for Omission (if applicable)
<b>GRI 102: General Disclosures (2016)</b>	
102-22	Composition of the highest governance body and its committees AR: p18-23, 31-34
102-23	Chair of the highest governance body AR: p31
102-29	Identifying and managing economic, environmental, and social impacts SR: p8-9
102-30	Effectiveness of risk management process SR: p35 AR: p33, 35
102-31	Review of economic, environmental, and social topics SR: p8-9 AR: p31-34
102-32	Highest governance body's role in sustainability reporting SR: p8-9
102-40	List of stakeholder groups SR: p10-11
102-41	Collective bargaining agreements SR: p24
102-42	Identifying and selecting stakeholders SR: p10-11
102-43	Approach to stakeholder engagement SR: p10-11
102-44	Key topics and concerns raised SR: p10-11
102-45	Entities included in the consolidated financial statements AR: p87-88
102-46	Defining report content and topic boundaries SR: p10-13
102-47	List of material topics SR: p14-15
102-48	Restatement of information This is CAG's Inaugural Sustainability Report.
102-49	Changes in reporting This is CAG's Inaugural Sustainability Report.
102-50	Reporting period SR: p7
102-51	Date of most recent report This is CAG's Inaugural Sustainability Report.
102-52	Reporting cycle SR: p7
102-53	Contact point for questions regarding the report SR: p1
102-54	Claims of reporting in accordance with the GRI Standards SR: p7
102-55	GRI content index SR: p110-117
102-56	External assurance External assurance will be sought for future reports.



**MATERIAL TOPIC: FAIR EMPLOYMENT PRACTICES**

Disclosures		Reference(s) or Reasons for Omission (if applicable)
<b>GRI 103: Management Approach (2016)</b>		
<b>103-1</b>	Explanation of the material topic and its Boundaries	SR: p22-23
<b>103-2</b>	The management approach and its components	SR: p22-27 AR: p71-72
<b>103-3</b>	Evaluation of the management approach	SR: p24-27
<b>GRI 401: Employment (2016)</b>		
<b>401-1</b>	New employee hires and employee turnover	SR: p26-27
<b>GRI 405: Diversity and Equal Opportunity (2016)</b>		
<b>405-1</b>	Diversity of governance bodies and employees	SR: p21 AR: p18-25
<b>GRI 406: Non-discrimination (2016)</b>		
<b>406-1</b>	Incidents of discrimination and corrective actions taken	SR: p24



**MATERIAL TOPIC: PEOPLE DEVELOPMENT**

Disclosures		Reference(s) or Reasons for Omission (if applicable)
<b>GRI 103: Management Approach (2016)</b>		
<b>103-1</b>	Explanation of the material topic and its Boundaries	SR: p28-29
<b>103-2</b>	The management approach and its components	SR: p28-31 AR: p71-72
<b>103-3</b>	Evaluation of the management approach	SR: p30-31
<b>GRI 404: Training and Education (2016)</b>		
<b>404-1</b>	Average hours of training per year per employee	SR: p30
<b>404-2</b>	Programmes for upgrading employee skills and transition assistance programmes	SR: p30
<b>404-3</b>	Percentage of employees receiving regular performance and career development reviews	SR: p31



**MATERIAL TOPIC: GOOD CORPORATE GOVERNANCE**

Disclosures		Reference(s) or Reasons for Omission (if applicable)
<b>GRI 103: Management Approach (2016)</b>		
<b>103-1</b>	Explanation of the material topic and its Boundaries	SR: p34-35
<b>103-2</b>	The management approach and its components	SR: p34-37 AR: p31-35
<b>103-3</b>	Evaluation of the management approach	SR: p36-37
<b>GRI 205: Anti-corruption (2016)</b>		
<b>205-3</b>	Confirmed incidents of corruption and actions taken	SR: p37
<b>GRI 307: Environmental Compliance (2016)</b>		
<b>307-1</b>	Non-compliance with environmental laws and regulations	SR: p37
<b>GRI 419: Socioeconomic Compliance (2016)</b>		
<b>419-1</b>	Non-compliance with laws and regulations in the social and economic area	SR: p37



**MATERIAL TOPIC: AIRPORT SAFETY**

Disclosures		Reference(s) or Reasons for Omission (if applicable)
<b>GRI 103: Management Approach (2016)</b>		
<b>103-1</b>	Explanation of the material topic and its Boundaries	SR: p38-39
<b>103-2</b>	The management approach and its components	SR: p38-45 AR: p58-60
<b>103-3</b>	Evaluation of the management approach	SR: p40-45
<b>GRI 403: Occupational Health and Safety (2016)</b>		
<b>403-2</b>	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	SR: p41
<b>GRI 416: Customer Health and Safety (2016)</b>		
<b>416-2</b>	Incidents of non-compliance concerning the health and safety impacts of products and services	SR: p37



**MATERIAL TOPIC: AIRPORT EXPERIENCE AND PASSENGER SATISFACTION**

Disclosures		Reference(s) or Reasons for Omission (if applicable)
<b>GRI 103: Management Approach (2016)</b>		
<b>103-1</b>	Explanation of the material topic and its Boundaries	SR: p48-49
<b>103-2</b>	The management approach and its components	SR: p48-53 AR: p26, 42-57, 61-67
<b>103-3</b>	Evaluation of the management approach	SR: p50-53



**MATERIAL TOPIC: COMMUNITY INVESTMENT**

Disclosures		Reference(s) or Reasons for Omission (if applicable)
<b>GRI 103: Management Approach (2016)</b>		
<b>103-1</b>	Explanation of the material topic and its Boundaries	SR: p56-57
<b>103-2</b>	The management approach and its components	SR: p56-63 AR: p73-74
<b>103-3</b>	Evaluation of the management approach	SR: p58-63
<b>GRI 413: Local Communities (2016)</b>		
<b>413-1</b>	Operations with local community engagement, impact assessments, and development programmes	SR: p44-45, 58-63, 68, 83, 89



**MATERIAL TOPIC: CONTRIBUTION TO THE ECONOMIC DEVELOPMENT OF SINGAPORE**

Disclosures		Reference(s) or Reasons for Omission (if applicable)
<b>GRI 103: Management Approach (2016)</b>		
<b>103-1</b>	Explanation of the material topic and its Boundaries	SR: p66-67
<b>103-2</b>	The management approach and its components	SR: p66-75 AR: p48-50, 68-70
<b>103-3</b>	Evaluation of the management approach	SR: p68-75
<b>GRI 201: Economic Performance (2016)</b>		
<b>201-1</b>	Direct economic value generated and distributed	SR: p68 AR: p27-30, 81-86
<b>GRI 203: Indirect Economic Impacts (2016)</b>		
<b>203-1</b>	Infrastructure investments and services supported	SR: p68-75
<b>203-2</b>	Significant indirect economic impacts	SR: p68-69, 107-109
<b>GRI-G4 Airport Operators Sector Disclosures: Market Presence (2011)</b>		
<b>AO1</b>	Total number of passengers annually	SR: p70
<b>AO2</b>	Total number of aircraft movements	SR: p70
<b>AO3</b>	Total amount of cargo tonnage	SR: p71



**MATERIAL TOPIC: ENERGY AND EMISSIONS MANAGEMENT**

Disclosures		Reference(s) or Reasons for Omission (if applicable)
<b>GRI 103: Management Approach (2016)</b>		
<b>103-1</b>	Explanation of the material topic and its Boundaries	SR: p80-81
<b>103-2</b>	The management approach and its components	SR: p79-91
<b>103-3</b>	Evaluation of the management approach	SR: p82-91
<b>GRI 302: Energy (2016)</b>		
<b>302-1</b>	Energy consumption within the organisation	SR: p87, 104-106
<b>302-3</b>	Energy intensity	SR: p87, 104-106
<b>302-4</b>	Reduction of energy consumption	SR: p87-88, 90, 104-106
<b>GRI 305: Emissions (2016)</b>		
<b>305-1</b>	Direct (Scope 1) GHG emissions	SR: p84-86, 104-106
<b>305-2</b>	Energy indirect (Scope 2) GHG emissions	SR: p84-86, 104-106
<b>305-3</b>	Other indirect (Scope 3) GHG emissions	SR: p84-86, 104-106
<b>305-4</b>	GHG emissions intensity	SR: p86, 104-106
<b>305-5</b>	Reduction of GHG emissions	SR: p87-88, 90, 104-106
<b>GRI-G4 Airport Operators Sector Disclosures: Emissions (2011)</b>		
<b>AO5</b>	Ambient air quality levels	SR: p93



**MATERIAL TOPIC: WATER AND EFFLUENTS MANAGEMENT**

Disclosures		Reference(s) or Reasons for Omission (if applicable)
<b>GRI 103: Management Approach (2016)</b>		
<b>103-1</b>	Explanation of the material topic and its Boundaries	SR: p92-93
<b>103-2</b>	The management approach and its components	SR: p79, 92-95, 102-103
<b>103-3</b>	Evaluation of the management approach	SR: p94-95
<b>GRI 303: Water (2016)</b>		
<b>303-1</b>	Water withdrawal by source	SR: p94
<b>GRI 306: Effluents and Waste (2016)</b>		
<b>306-1</b>	Water discharge by quality and destination	SR: p95



**MATERIAL TOPIC: WASTE MANAGEMENT**

Disclosures		Reference(s) or Reasons for Omission (if applicable)
<b>GRI 103: Management Approach (2016)</b>		
<b>103-1</b>	Explanation of the material topic and its Boundaries	SR: p96-97
<b>103-2</b>	The management approach and its components	SR: p79, 96-101, 102-103
<b>103-3</b>	Evaluation of the management approach	SR: p98-101
<b>GRI 306: Effluents and Waste (2016)</b>		
<b>306-2</b>	Waste by type and disposal methods	SR: p101

# Corporate Information

**CHANGI AIRPORT GROUP (SINGAPORE) PTE. LTD.**

60 Airport Boulevard  
 #046-037-01  
 Changi Airport Terminal 2  
 Singapore 819643

**MAILING ADDRESS**

PO Box 168  
 Singapore Changi Airport  
 Singapore 918146

Tel: +65 6595 6868

Email: [sustainability@changiairport.com](mailto:sustainability@changiairport.com)  
[www.changiairportgroup.com](http://www.changiairportgroup.com)

Company Registration No. 20091087N

Download this sustainability report online at  
[www.changiairportgroup.com](http://www.changiairportgroup.com)

