airport carbon accreditation

MAPPING | REDUCTION | OPTIMISATION | NEUTRALITY









Annual Report 2016-2017

AIRPORTS COUNCIL INTERNATIONAL

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Amsterdam Schiphol Airport

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Highlights

This Annual Report of **Airport Carbon Accreditation** covers Year 8 of the programme: 16th May 2016 - 15th May 2017.

This has been another positive year for the programme, with participation continuing to build year-on-year. At the beginning of this reporting year there were 156 airports in the programme. Since then, a further 36 airports have joined and 3 have withdrawn, bringing the total number of airports at the end of this reporting year to 189. The following developments should be highlighted:

1. Sustained programme growth in all world regions – including at Level 3+

In programme Year 8, for the first time airports outside Europe achieved the highest accreditation status: 1 airport in North America, 5 in Asia-Pacific and 1 in Africa have been recognised as carbon neutral. Carbon neutrality in **Airport Carbon Accreditation** means that all the emissions under direct control of these airports have been offset, on top of the reductions that have been made. This milestone shows that carbon neutrality is an objective shared by airports worldwide, and that **Airport Carbon Accreditation** effectively supports airports in working towards it, and reaching it. In total, 34 airports worldwide have achieved carbon neutrality in Year 8. These airports account for some 18% of all airports in the programme.

Most of the new carbon neutral airports were certified at a lower level in the previous year. Their achievement of Level 3+ thus points to another important programme development, which is the significant progression through the different levels of certification of airports that were already part of **Airport Carbon Accreditation** last year – signalling real progress in the way in which airports are managing their carbon footprints and improving the carbon efficiency of their operations. Thus, compared to the previous programme years, the highest number of upgrades to Levels 3 and 3+ has been observed this year: worldwide, 13 airports have upgraded to Level 3, and 11 to Level 3+, compared to 10 upgrades to both levels in the previous year. This trend clearly shows that **Airport Carbon Accreditation** helps already certified airports achieve continuous improvement in their carbon management.

These trends, as well as general growth the programme participation, are reflected in the following ways in each region:

The strongest participation increase has been observed in **Africa**, with 6 airports joining the programme compared to 3 participants from the region in the previous year. Amongst them, there are 3 out of the top 5 busiest African airports (Johannesburg - the busiest African airport, Cape Town and Casablanca), which brought the coverage of air passenger traffic by the accredited airports from 2.5% last year to 28.6% in Year 8. Furthermore, with Abidjan Airport, the first African airport became carbon neutral.

Very strong growth has continued in **North America**, with a 41% increase in participation from 14 airports last year to 22 in Year 8. Dallas Fort Worth International Airport – as the first North American airport and the first airport outside Europe – became carbon neutral.



2. Continued emissions' reductions

While the collective carbon footprint of the accredited airports has increased from 4,708,606 tonnes CO_2 in Year 7 to 5,996,379 tonnes CO_2 in Year 8, reflecting the growth in programme participation and thus the amount of emissions covered, the accredited airports worldwide have demonstrated a reduction of 202,184 tonnes of CO_2 against the average emissions of the three previous years. This is slightly below the reduction achieved last year (205,381 tonnes CO_2).

This result can be attributed to a stable European performance compared to last year and changes in the performance of Asia-Pacific and North America. The European performance can be explained by the increasing difficulty for airports to demonstrate emissions' reductions, once they have participated in the programme for several years and thus exhausted a certain range of emissions' reduction options. In addition, most of the new programme entrants in Europe are airports at Level 1, which are not required to demonstrate reduction of CO_2 emissions. In Asia-Pacific, improvements were achieved in relative terms (CO_2/passenger), but absolute emissions at the aggregate level have increased. At the global level, this trend was however compensated by the strong performance improvement in North America, reflecting the programme entry of several airports demonstrating absolute emissions' reductions.

3. New ACI EUROPE carbon neutrality commitment

Some 18 months after the 21st Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC), ACI EUROPE members have now agreed to double the number of carbon neutral airports in Europe from their initial target of 50 airports by 2030 to 100. This upgrade of the commitment reflects progress in achieving the original goal which was stronger than initially projected, with 5 upgrades to carbon neutrality in one year and a new total of 27 European airports at that level. This target was also supported by individual commitments from further 26 airports to become carbon neutral.

This report was prepared by the **Airport Carbon Accreditation** Administrator, WSP, and ACI EUROPE, and was reviewed and approved by the **Airport Carbon Accreditation** Advisory Board.



Los Angeles International Airport



1

Programme Overview

1 Programme Overview

Airport Carbon Accreditation is the only voluntary and independent carbon management and reduction programme designed specifically for airports. It supports the global airport community in reducing its carbon footprint, showcasing its carbon reduction achievements and sharing its knowledge and best practice.

The certification process is one of a continuous improvement through a harmonised and structured framework with recognised goals.

The entry point to the programme – Level 1 Mapping – confirms that an airport is quantifying and independently verifying its carbon footprint, and that through the establishment of appropriate policies and goals, its top management has engaged in a process of reducing carbon emissions under their direct control year-on-year.

The next step – Level 2 Reduction – confirms that an airport has developed and implemented a carbon management plan and timelines to achieve its chosen goals and has reduced the carbon emissions that it directly controls, in alignment with the overall policies of the airport.

Achieving Level 3 Optimisation means, that an airport has engaged its stakeholders operating at the airport in the process of mapping and encouraging them to reduce their emissions, thereby promoting wider airport-based emissions' reductions.

The highest level of participation – Level 3+ Neutrality – is designed for airports that have reduced their direct emissions as far as possible and offset residual emissions that cannot be reduced by other means.

The programme's carbon footprint definition and calculation requirements are based on the Greenhouse Gas Protocol (GHG Protocol) published by the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI).[1] The programme thus utilises the GHG Protocol concept of Scope 1, 2 and 3 for defining sources of emissions, as adapted to the activities that an airport can control, those that it can guide through effective partnerships and those that it can only influence.

1 http://www.ghgprotocol.org/

Key Features

The programme is built according to the following 3 key features:

Ambitious reduction obligation

As of Level 2, all accredited airports are required to demonstrate reductions in the emissions under their direct control. To maintain their accreditation at one of these levels, airports need to demonstrate emissions' reductions every year, as they renew their accreditation. Reductions have to be shown against the average emissions of the 3 previous years, according to a rolling average principle, which means that the baseline is shifting every year, making new reductions increasingly challenging. Hence, **Airport Carbon Accreditation** requires airports to embed carbon management in their company strategy and set up a continuous improvement logic.

Stakeholder engagement

Emissions under direct control of airport operators typically account for 2-5% of the total aviation emissions. Therefore, as of Level 3, all accredited airports must demonstrate that they engage with third parties at the airport – including airlines, air navigation service providers, but also ground handlers, retailers, etc. – to support them in reducing their emissions.

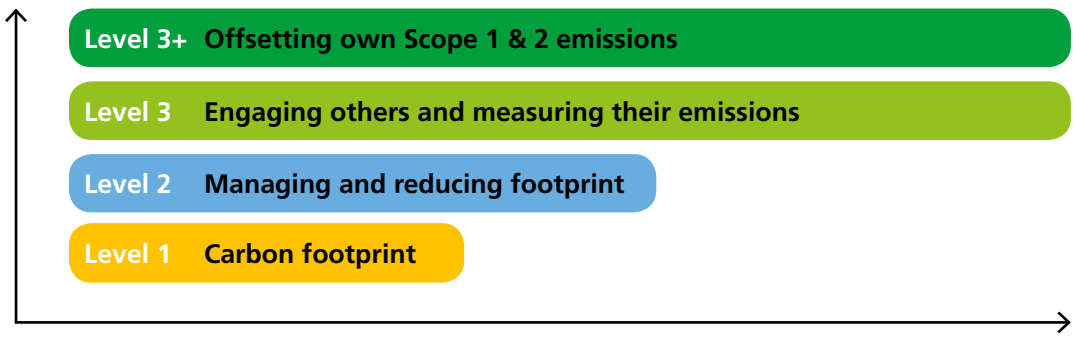
Independence

A distinguishing feature of **Airport Carbon Accreditation** is that the award of certification is independent of the airport community and of the programme ownership and is determined by the Programme Administrator who grants formal accreditation approval and manages the application process, ensuring compliance with the programme requirements. In addition, all applications must also be assessed by an independent third party verifier.

Accreditation requirements

Airports may enter the programme at any level, provided they meet the requirements of that level. They may progress through the programme at their own pace. Certification is valid for one calendar year from the date of entry in the programme, after which period it must be renewed. Airports at Level 3 and above may opt for a 3-year renewal process, under certain conditions. An airport may upgrade to a higher level at any point in a calendar year.

As illustrated below, the requirements at each level are progressively difficult to achieve. The requirements at each stage build on the requirements of the previous level.



Scope 1 & 2 - Emissions from activities which the airport company are directly responsible for

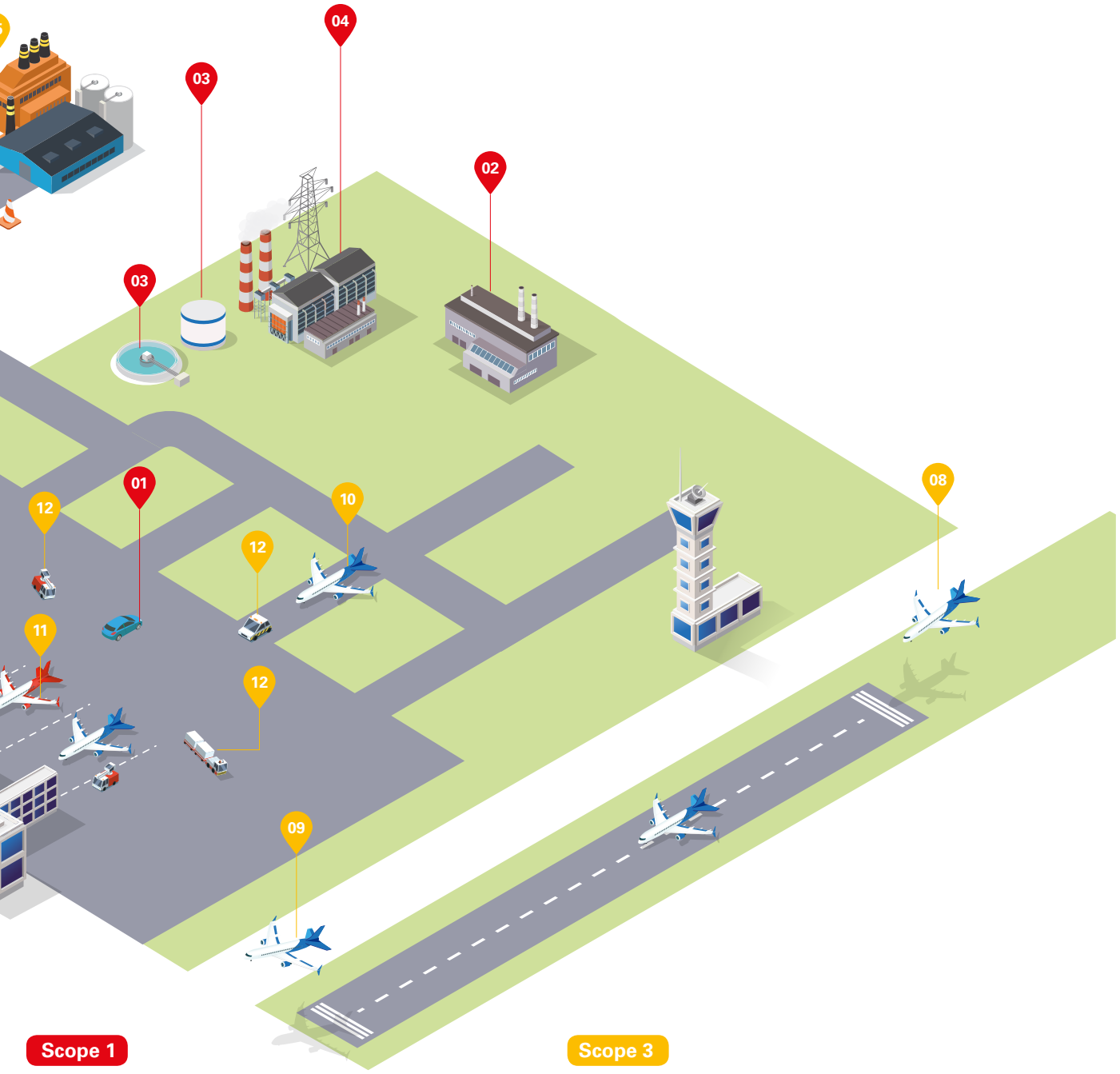
Scope 3 - Emissions from activities which the airport does not directly manage but can guide and influence

Which emissions can occur at an airport?



Note: The presented list of possible emissions sources at the airport is not exhaustive. Furthermore, the operational structure of every airport is different. Therefore, not all of the depicted emissions sources are present at every airport.

Design: inextremis.be - Illustrations: fotolia.com



Scope 1

Emissions from airport controlled sources

- 01 Vehicles/ground support equipment belonging to the airport
- 02 On-site waste management
- 03 On-site waste water management
- 04 On-site power generation
- 05 Firefighting exercises
- 06 Boilers, furnaces

Scope 2

Emissions from purchased electricity

- 07 Off-site electricity generation
  - A Heating
  - B Cooling
  - C Lighting

Scope 3

Emissions from other sources related to the activities of an airport

- 08 Aircraft landing
- 09 Aircraft taking off
- 10 Aircraft ground movements
- 11 Auxiliary Power Unit
- 12 3rd party vehicles/ground support equipment
- 13 Passenger travel to the airport
- 14 Staff commute
- 15 Off-site waste management
- 16 Off-site water management
- 17 Staff business travel

Level 1	Level 2	Level 3	Level 3+
• Scope 1 & 2 Carbon Footprint • Externally verify footprint • Publicly available policy indicating commitment to energy/ carbon reduction	• Scope 1 & 2 Carbon Footprint • Externally verify footprint • Publicly available policy indicating commitment to energy/ carbon reduction	• Scope 1 & 2 Carbon Footprint • Externally verify footprint • Publicly available policy indicating commitment to energy/ carbon reduction	• Scope 1 & 2 Carbon Footprint • Externally verify footprint • Publicly available policy indicating commitment to energy/ carbon reduction
	• Develop and submit verified carbon management plan covering Scope 1 & 2 emissions • Set target for reduction • Demonstrate improvement against chosen emissions metric	• Develop and submit verified carbon management plan covering Scope 1 & 2 emissions • Set target for reduction • Demonstrate improvement against chosen emissions metric	• Develop and submit verified carbon management plan covering Scope 1 & 2 emissions • Set target for reduction • Demonstrate improvement against chosen emissions metric
		• Include minimum required Scope 3 emissions in verified footprint • Provide verified evidence of stakeholder engagement plan	• Include minimum required Scope 3 emissions in verified footprint • Provide verified evidence of stakeholder engagement plan
			• Provide evidence that residual Scope 1 & 2 emissions have been offset



Why airports have joined

Direct benefits

Airports voluntarily participate in the programme for many reasons. As stated by the participating airports over time, these include the following direct benefits from the programme:

- Helps an airport achieve real emissions' reductions, thus contributing to progress towards national, global and industry climate targets.
- Facilitates a better understanding of an airport's emissions through its data collection and verification processes, allowing the airport to identify priority areas for emissions' reductions.
- Promotes improved emissions' performance and operational/cost efficiencies for the airport and also for third parties responsible for emissions' sources at the airport.
- Enhances dialogue between airport personnel and different departments on issues relating to CO_2 emissions.
- Facilitates Information sharing and exchange of best practices between airports.
- Gives public credibility to the airport industry's and individual airports' sustainability agendas.
- Increases shareholder value, brand reputation and stakeholder support.

Independence of accreditation, governance and management

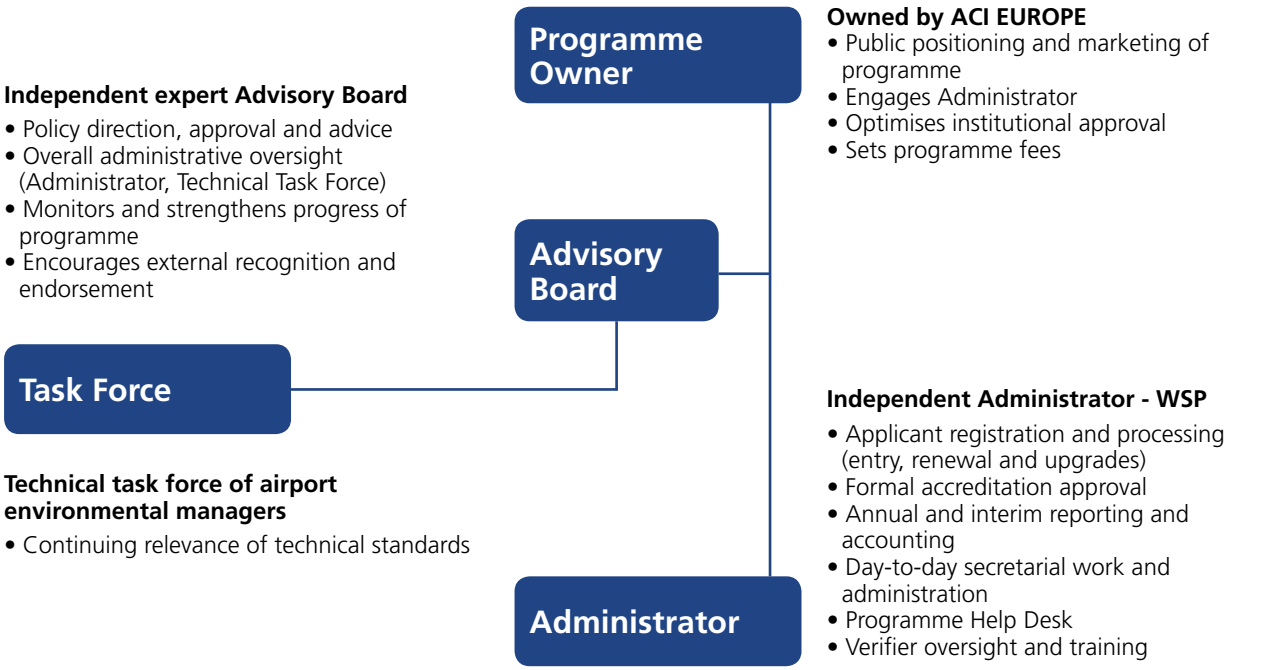
The governance and management structure of the programme is both independent and interactive. **Airport Carbon Accreditation** is owned by ACI EUROPE and managed jointly by all ACI regions. An independent Advisory Board determines policy direction, oversees the programme Administrator and encourages external recognition and support. The Advisory Board is comprised of experts from the fields of aviation and the environment, including those from the institutions that have formally endorsed or supported the programme. Its members are:

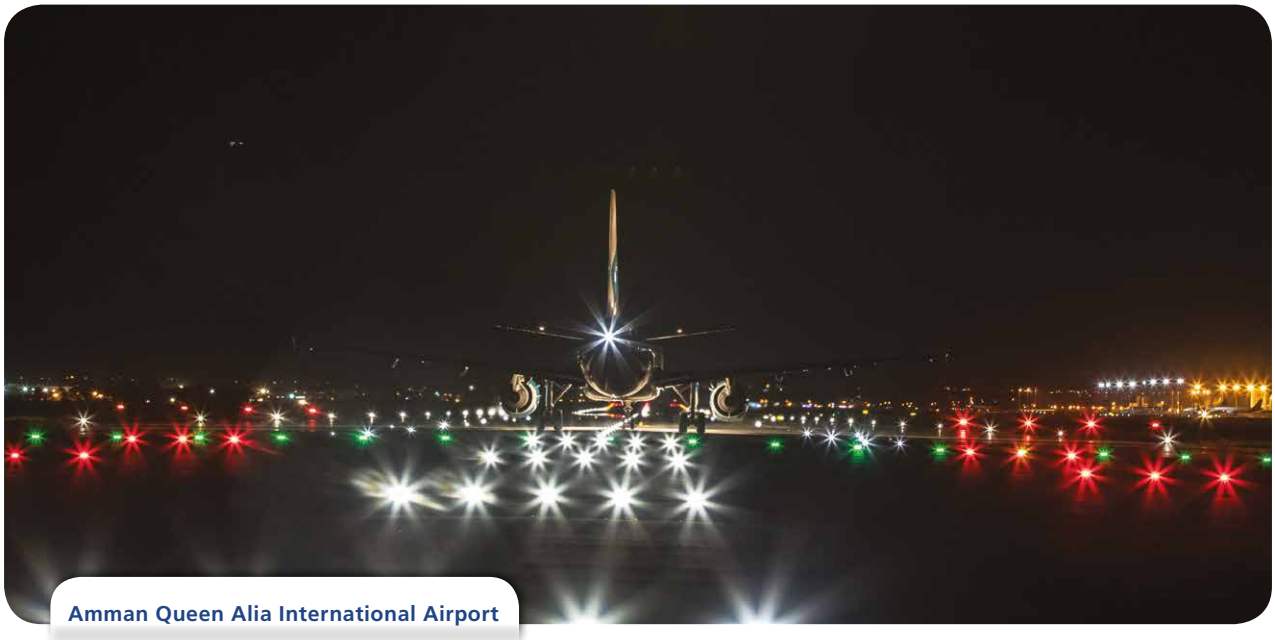
- Mr Frank Brenner, Director General of EUROCONTROL
- Mr Damien Meadows, Advisor on European and International Carbon Markets, DG Climate Action, European Commission
- Mr Filip Cornelis, Acting Director Aviation and International Transport Affairs, DG MOVE Directorate E, European Commission
- Mr Niclas Svenningsen, Manager, Strategy and Relationship Management, UNFCCC
- Ms Jane Hupe, Deputy Director, Environment, ICAO
- Prof. Callum Thomas, Chair of Sustainable Aviation, Centre for Aviation, Transport and the Environment, Manchester Metropolitan University (MMU)
- Mr Tim Johnson, Director, Aviation Environment Federation, UK (in his personal capacity)
- Mr Patrick Gandil, Director, Direction Générale de l'Aviation Civile (DGAC)
- US FAA Technical Liaison: Dr Thomas Cuddy, Environmental Specialist, Federal Aviation Administration of the United States (FAA)
- N. N., UNEP

WSP is the independent Programme Administrator appointed by ACI EUROPE. The Administrator grants formal accreditation approval and manages the application process. It guides and supports airports through this process, helps develop and enforce the accreditation criteria and keep them updated, as well as provides supporting administrative and secretariat services, reports, records, guidance, webinars and training. The Administrator also oversees the appointment and training of the third party verifiers.

A technical Task Force has the role of ensuring that the programme's technical standards continue to be relevant and aligned with the underlying cross-industry standards such as the GHG Protocol. The Task Force is comprised of airport environmental managers from a selection of certified airports and meets twice a year to review the technical issues arising during the accreditation process and suggest further developments of the programme guidance as relevant.

The governance and management structure of the programme is illustrated below.





Amman Queen Alia International Airport

Historical milestones

Y1 **Airport Carbon Accreditation** was launched in Europe in June 2009 and by the end of its inaugural year (2009-2010), 17 airports had entered the programme.

Y2 Year 2 (2010-2011) saw airport participation in the programme grow to 43, including some of the busiest airports in Europe. The bottom line message was that ambitious carbon and energy management was essential to delivering efficient and sustainable airport operations.

Y3 In Year 3 (2011-2012), **Airport Carbon Accreditation** extended to Asia-Pacific and 59 airports were participating in the programme.

Y4 In Year 4 (2012-2013), an entire national airport group, Swedavia, became carbon neutral and a total of 84 airports were accredited.

Y5 Year 5 (2013-2014), marked the extension of the programme to Africa and saw it gain recognition from the EU as a flagship climate change initiative, under its the "A World You Like" campaign. A total of 102 airports were accredited from the then three ACI regions participating in the programme (Europe, Asia-Pacific and Africa).

Y6 In Year 6 (2014-2015), **Airport Carbon Accreditation** reached global status with the extension of the programme to North America and to Latin America and the Caribbean. 125 airports were accredited.

Y7 In Year 7 (2015-2016), ACI entered into a cooperation agreement with the UNFCCC to promote their respective climate neutrality initiatives. 156 airports, covering nearly one-third of global passenger traffic, had joined the programme, of which 22 were carbon neutral. European airports launched their pledge for 50 airports to become carbon neutral by 2030.

Y8 In Year 8 (2016-2017), carbon neutrality went live across the world with 5 airports in Asia-Pacific, 1 in North America and 1 in Africa becoming carbon neutral. European airports doubled their pledge and set the bar at 100 European airports becoming carbon neutral by 2030. 34 airports were carbon neutral.

Y9 There were 189 airports in the programme which is poised to attain a global participation of 200 airports in Year 9.



TAG Farnborough Airport



Port Elizabeth International Airport



2 Participation Trends

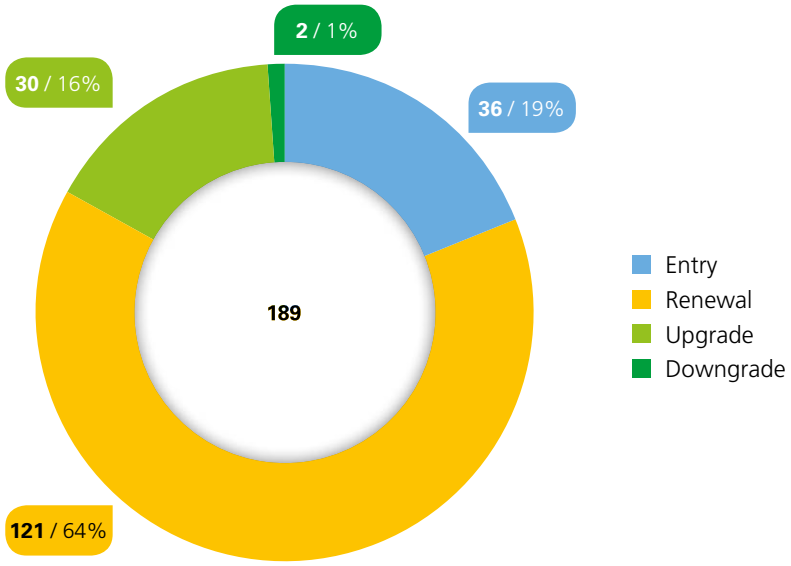
2 Participation Trends

Global

Highlights

Participation worldwide now stands at 189 airports covering 38.1% of global air passenger traffic, compared to 156 airports last year. A net increase in programme participation of 21% has thus been observed. 3 airports have withdrawn (compared to 4 last year), which points to a very low drop-out rate.

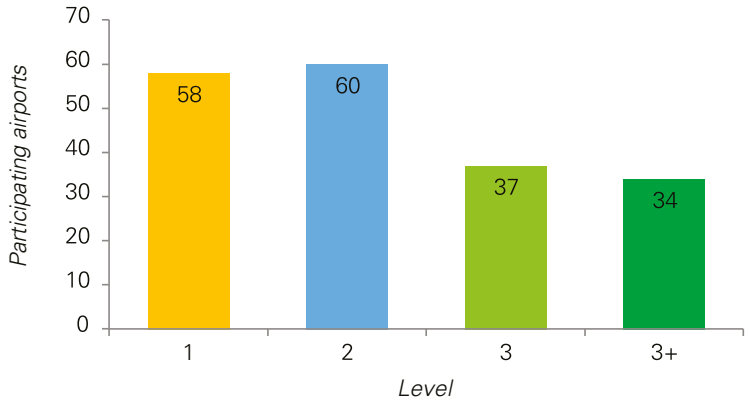
Of the 189 accredited airports, 64% have renewed their certification at the same level as the previous year, with 19% having joined the programme for the first time and 16% having upgraded. The proportion of new entries and upgrades points to a strong growth in programme participation and also the commitment of already certified airports to progress towards the higher levels of accreditation:



At the end of this reporting year, 58 airports had identified and mapped their carbon emissions sources (Level 1) and a further 60 airports had set carbon emissions reduction targets and put in place a carbon management plan to reduce their carbon footprints (Level 2).

Another 37 airports had engaged their third party partners to reduce carbon emissions on a wider airport basis (Level 3) and some 34 airports had reduced their direct emissions as much as possible and had offset their residual emissions which they could not reduce by other means, thereby becoming carbon neutral (Level 3+).

Global participation



A closer look – participation over time

Coverage of air passenger traffic[2] – global:

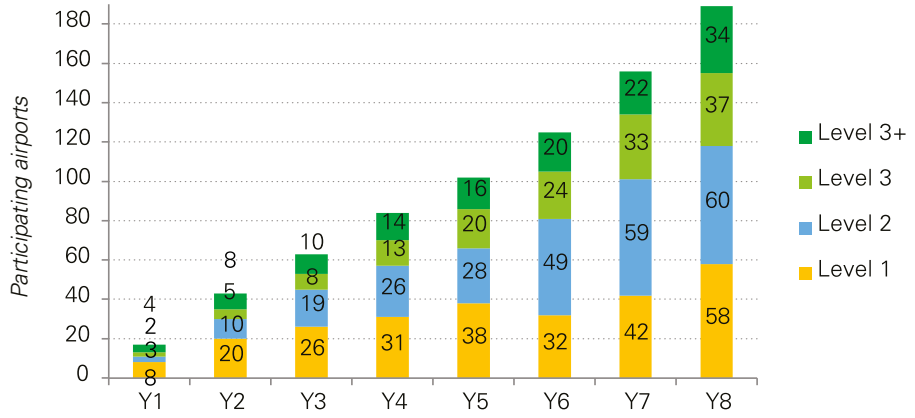
The coverage of global air passenger traffic by the accredited airports has steadily increased throughout the programme years:

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8
Percentage of Global Air Traffic	6.3%	12.7%	16.7%	21.5%	22.5%	27.5%	31.3%	38.1%

Participation over time per level:

Owing to new entries and airports upgrading, there has been an increase of participating airports at each level. But, just as importantly, most airports in the programme renew their certification each year, maintaining their commitment. For historical reasons European airports continue to form the largest regional grouping with participation in all other regions also growing in momentum, with the strongest growth rates being observed in Africa and North America.

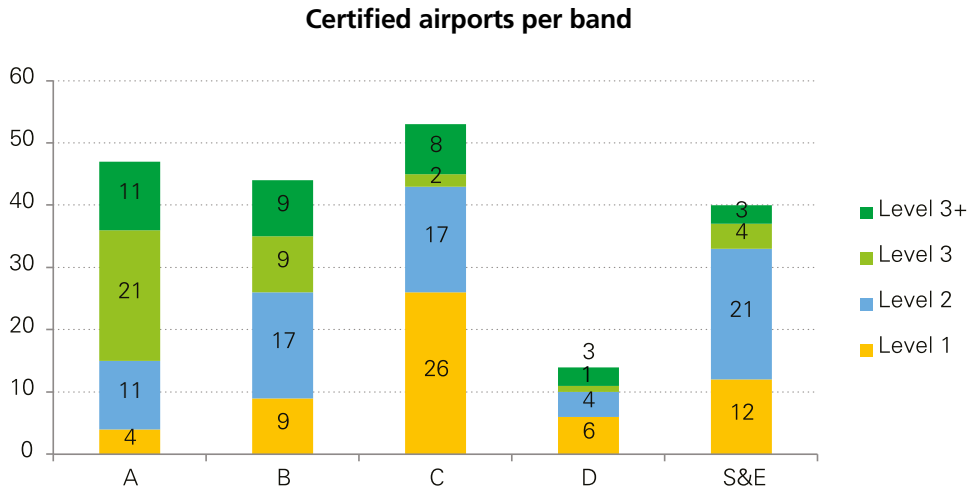
Accredited airports - global



2 This metric is based on the annual number of passengers recorded by the accredited airports in 2015.

A closer look – participation by band[3] and level

The programme continues to empower airports of all locations and sizes to manage, reduce and ultimately neutralise their carbon footprint. Thus, at each accreditation level, airports of all sizes are represented, with the highest number of accredited airports falling under Bands A to C (> 20 to 1 million passengers per year). It is noteworthy however, that the highest proportion of accreditations at levels 3 and 3+ falls within the Band A category and thus airports with more than 20 million passengers.



A closer look – airports joining the programme

The programme is demonstrating continued development with airports entering at all levels, in all size Bands and in all regions, with most doing so at Level 1 as is shown below.

Level 1:

- Beijing Capital
- Bern
- Bogotá El Dorado
- Brest Bretagne
- Cagliari
- Cape Town
- Casablanca
- Detroit
- Durban King Shaka
- Gold Coast
- Guayaquil José Joaquín de Olmedo
- Halifax Stanfield
- Hobart
- Indianapolis
- Johannesburg O.R. Tambo
- Kansai
- Prishtina Adem Jashari
- Larnaka
- Malta
- Marrakesh Menara
- Minneapolis St Paul
- Muscat
- Nadi
- Osaka
- Ottawa Macdonald-Cartier
- Pafos
- Toulon
- Port Elizabeth

Level 2:

- Phoenix Sky Harbor
- San Diego
- Vancouver
- Verona
- Los Angeles International

Level 3:

- Golfe de Saint Tropez
- Adelaide Parafield

Level 3+:

- Hyderabad Rajiv Gandhi

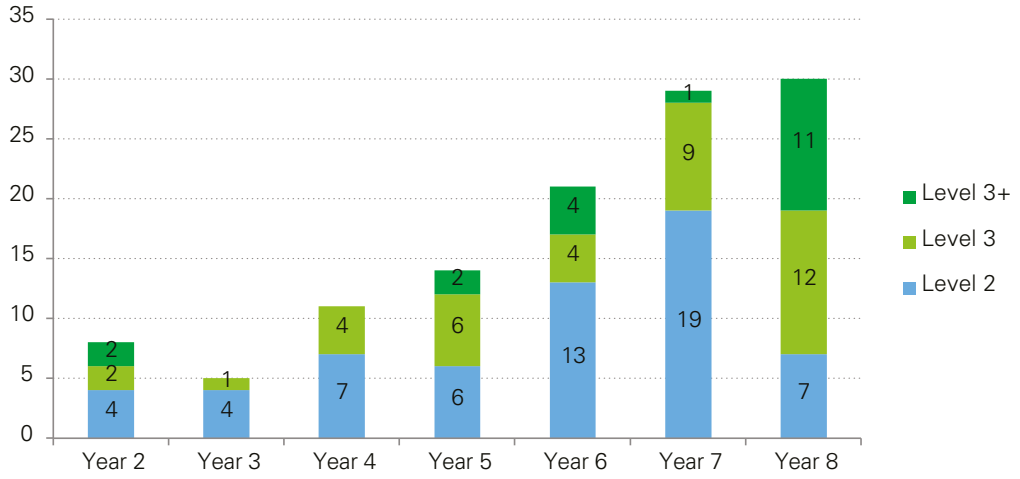
3 **Airport Carbon Accreditation** differentiates between 6 size categories of airports, defined as Bands: Band A (>20m pax/yr), Band B (6 - 20m pax/yr), Band C (1 - 6m pax/yr), Band D (0.5 - 1m pax/yr), Bands S and E (<0.5m pax/yr, with Band E representing airport groups with airports of this size).

A closer look – moving through the programme levels

Globally, 30 airports upgraded their certification level in the course of this year. 7 airports upgraded to Level 2, 12 to Level 3 and another 11 to the highest level of the programme - Level 3+.

The graph below compares these upgrades to those of the previous years. While the total number of upgrades has almost remained stable compared to Year 7, it becomes evident that this year, there has been a strong increase in upgrades to Levels 3 and 3+, showing that many airports are reaching a new stage in the maturity of their carbon management. These upgrades were driven by Europe, Asia-Pacific, North America and Africa, with Latin America contributing to upgrades to Level 2.

Upgraded airports



7 airports have upgraded to Level 2:

- Galapagos Seymour
- Libreville Leon M'ba
- Madeira
- Porto Santo
- Marseille
- Palma de Mallorca
- Tel Aviv Ben Gurion

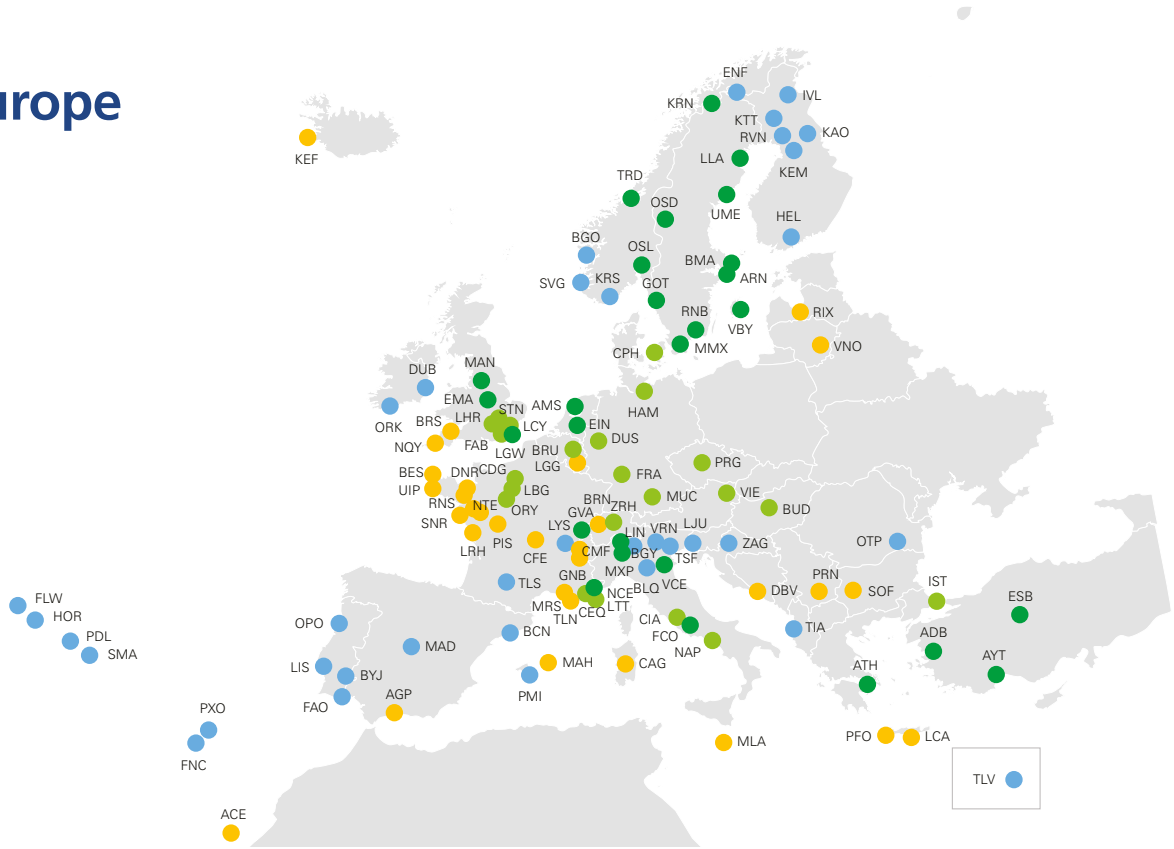
12 airports have upgraded to Level 3:

- Bangkok Suvarnabhumi
- Cannes Mandelieu
- Doha Hamad
- Düsseldorf
- London Stansted
- Montréal-Pierre Elliott Trudeau
- Naples
- Prague Václav Havel
- Seattle-Tacoma
- Sydney
- Toronto Pearson
- Vienna

11 airports have upgraded to Level 3+:

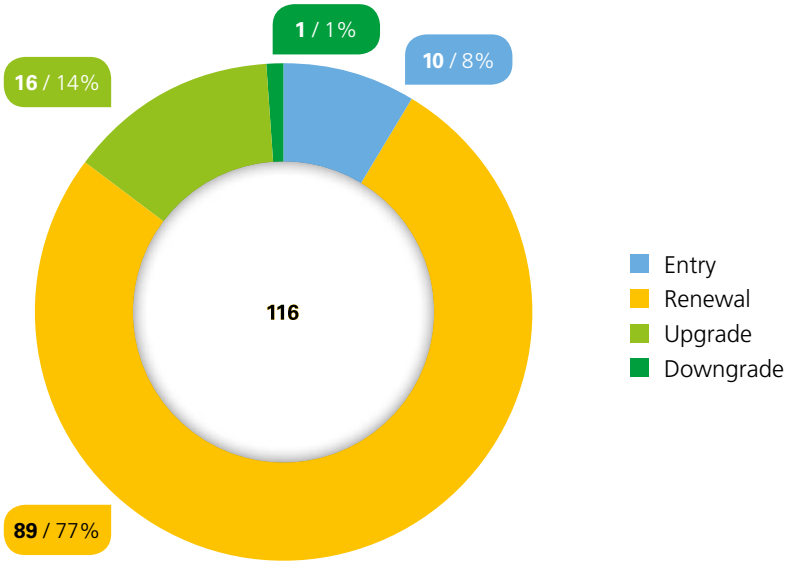
- Abidjan Félix Houphouët Boigny
- Athens Eleftherios Venizelos
- Bangalore Kempegowda
- Dallas Fort Worth
- Delhi Indira Gandhi
- London Gatwick
- Lyon Saint-Exupéry
- Manchester
- Mumbai Chhatrapati Shivaji
- Nice Côte d'Azur
- Sunshine Coast

Europe



Highlights

For historical reasons European airports remain at the forefront of airport actions to voluntarily mitigate and reduce their impact on climate change. The strong growth momentum was retained and the reporting year ended with 116 airports in the programme. These airports account for 64.8% of European passenger traffic and 61% of all accredited airports in the programme this year.



77% of accredited airports in Europe have renewed their certification at the same level as in the previous year. The proportion of renewals in Europe is thus higher compared to the global average (77% vs. 64% global), while the share of new entries is smaller (8% vs. 19% global). This trend reflects the fact that the programme has been launched in Europe and thus in particular already gained the participation of the major European airports. The proportion of upgrades is slightly below the global average (14% vs. 16%), however, as shown

in the following sections, these upgrades concerned mainly the higher accreditation levels, signalling progress of airports towards increasingly mature carbon management. 1 airport decided to downgrade its accreditation level this year.

A closer look – participation expansion

Coverage of air passenger traffic – Europe

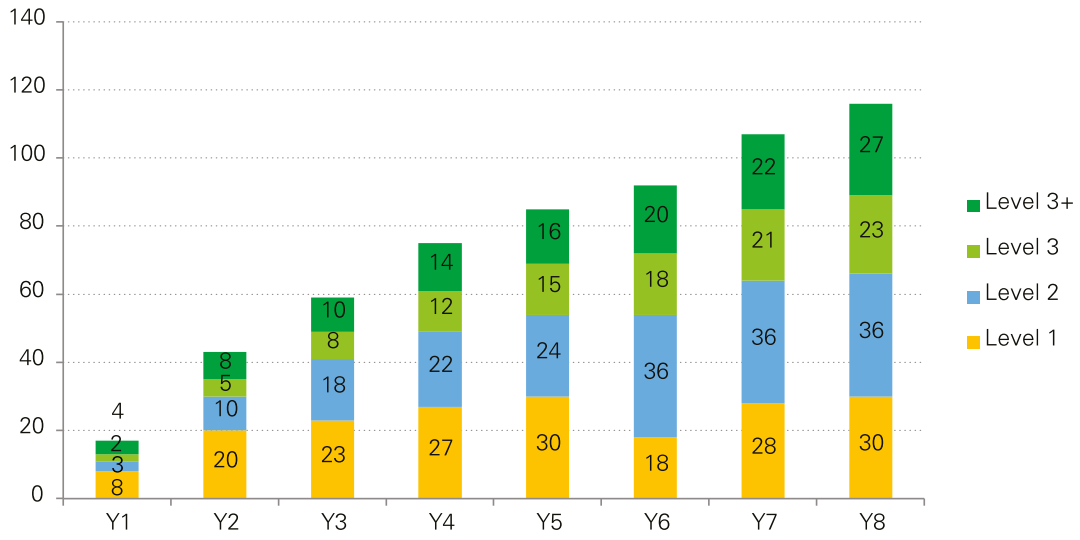
The coverage of air passenger traffic by the accredited airports, continues to grow, but at a slower pace than in the first programme years. This reflects the fact that the major European airports are already certified, with new entrants being smaller airports.

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8
% of European Air Traffic	20.5%	41.0%	53.3%	59.1%	62.3%	63.9%	63.7%	64.8%

Participation over time per level - Europe

As shown below, due to new entries to the programme and the airports upgrading, there has been an increase of participating airports at each level. Overall, participation increased by 8% compared to the previous year.

Accredited airports in Europe

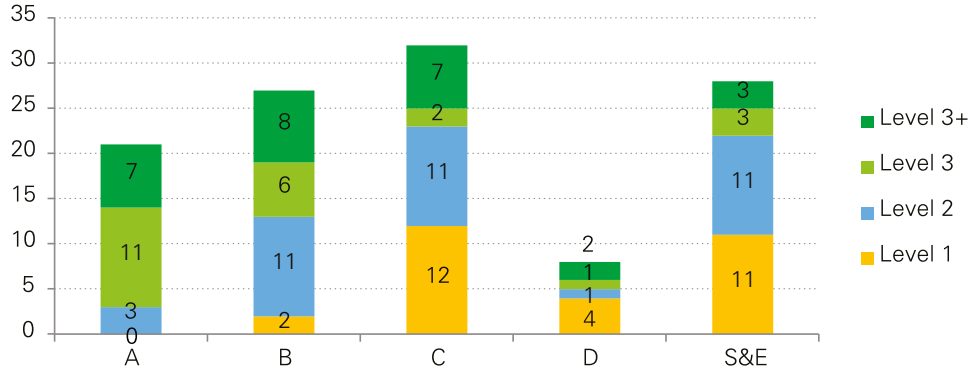


A closer look – participation by band[4] and level

Participating airports range in size from those with more than 20 million passengers per year (Band A) to airports with less than 0.5 million passengers per year (Band S and E).

Most certified airports are in Band C, followed by Band B and Band A respectively. Whilst the largest airports, making up most of the European air traffic, represent the majority of accredited airports, regional and smaller airports are also participating at all levels of the programme, confirming its relevance for airports of all locations and sizes. Thus, 36 of accredited European airports (31%) have less than 1 million passengers. Compared to the 45 airports worldwide in this size category, this result shows that the smaller airports participating in **Airport Carbon Accreditation** come in a large majority from Europe. It is also worth noting that accredited airports with more than 20 million passengers are all certified at Level 2 and above, which means that all of them are making reductions in Scope 1 and 2 emissions. Furthermore, in this category the share of accreditations at Levels 3 and 3+ is also the highest compared to other Bands.

Certified airports per band



A closer look – airports joining the programme

In Europe, 10 new airports joined the programme and 1 airport, Tallinn, decided not to renew its Level 1 accreditation this year, which resulted in a net total increase of 9 airports.

Most of the European airports entering the programme did so at Level 1 as is shown below. The new entries were from airports in Band C, D and S. This reflects the fact that large European airports are mostly already part of **Airport Carbon Accreditation**. Hence, it is also expected that future programme growth in Europe will be mainly driven by smaller airports.

Level 1:
- Bern
- Brest Bretagne
- Cagliari
- Larnaka
- Malta
- Pafos
- Prishtina Adem Jashari
- Toulon

Level 2:
- Verona

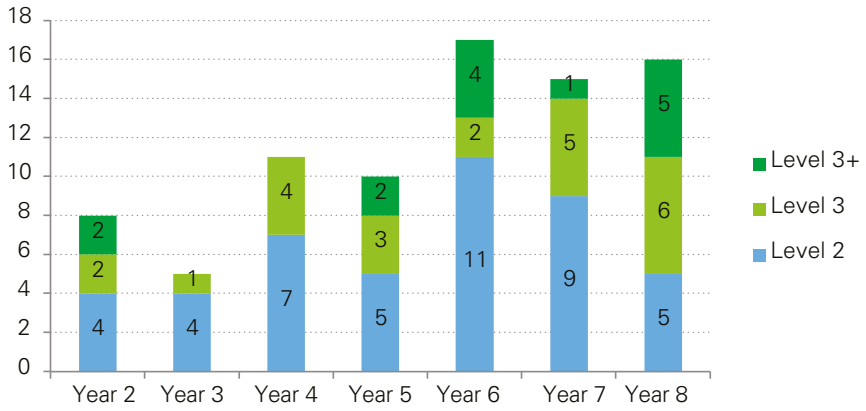
Level 3:
- Golfe de Saint Tropez

4 **Airport Carbon Accreditation** differentiates between 6 size categories of airports, defined as Bands: Band A (>20m pax/yr), Band B (6 - 20m pax/yr), Band C (1 - 6m pax/yr), Band D (0.5 - 1m pax/yr), Bands S and E (<0.5m pax/yr, with Band E representing airport groups with airports of this size).

A closer look – airports moving through the programme

16 European airports upgraded their certification level in the course of this year. 5 airports upgraded to Level 2 and another 6 to Level 3. An additional 5 airports achieved Level 3+. This is the highest number of upgrades towards levels 3 and 3+ in Europe since the programme launch.

Upgraded airports



5 airports have upgraded to Level 2:

- Marseille
- Porto Santo
- Palma de Mallorca
- Madeira
- Tel Aviv Ben Gurion

6 airports have upgraded to Level 3:

- Cannes Mandelieu
- Düsseldorf
- London Stansted
- Naples
- Prague Václav Havel
- Vienna

5 airports have upgraded to Level 3+:

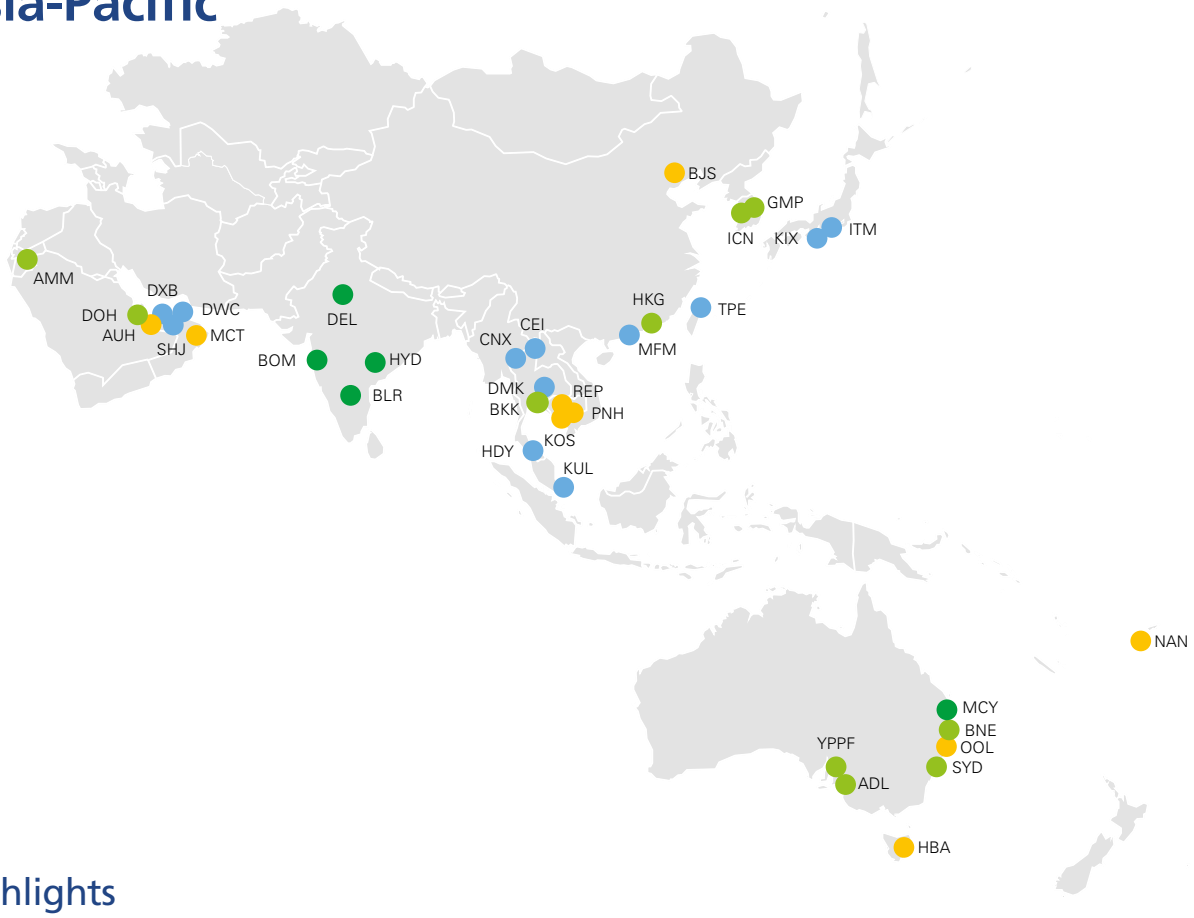
- Athens Eleftherios Venizelos
- London Gatwick
- Lyon Saint-Exupéry
- Manchester
- Nice Côte d'Azur

Newquay Cornwall downgraded from Level 2 to Level 1.



Lyon Saint-Exupéry Airport

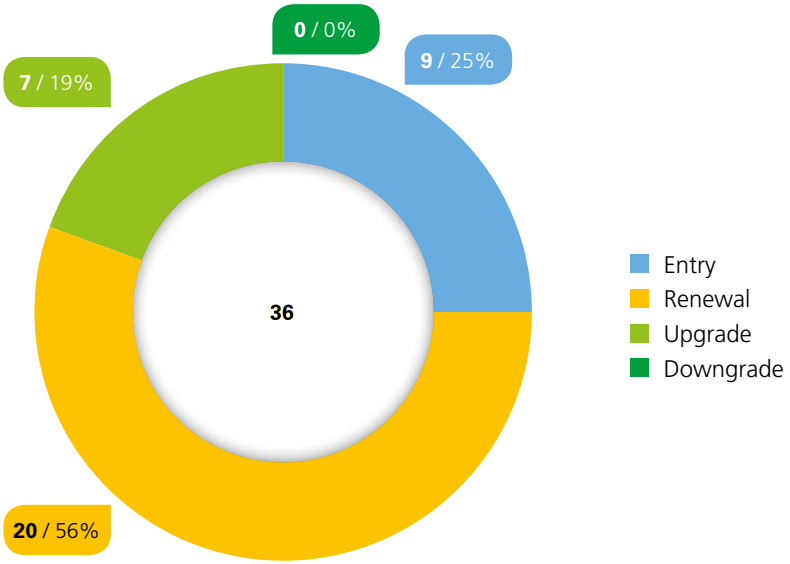
Asia-Pacific



Highlights

In the Asia-Pacific region, participation growth was stronger than in the previous year, with now 36 airports in the programme. These airports account for 29.7% of Asia-Pacific passenger traffic and 19% of all accredited airports in the programme this year.

20 out of 36 airports, i.e. 56%, have renewed their accreditation, while 9 have joined the programme. The proportion of new entries is thus higher than the global average (25% vs. 19%), reflecting the more recent launch of the programme in Asia-Pacific compared to Europe and hence a remaining strong potential for participation growth. At the same time, the share of upgrades is slightly higher than the global average (19% vs. 16%), and as shown in the following sections, all of these upgrades concerned Levels 3 and 3+. This points to a strong and swift progress of airports in Asia-Pacific towards a higher maturity of carbon management.



A closer look – participation over time

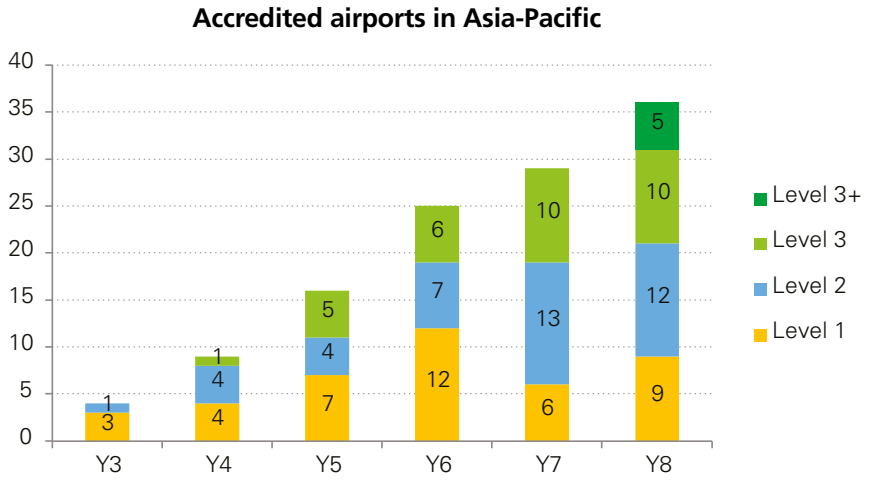
Coverage of air passenger traffic – Asia-Pacific:

The coverage of passenger traffic by the accredited airports has gained 5.6% compared to Year 7, reflecting the programme entry of several larger airports.

	Y3	Y4	Y5	Y6	Y7	Y8
% of Asia-Pacific Air Traffic	6.1%	14.1%	16.3%	23.6%	24.1%	29.7%

Participation over time per level – Asia-Pacific:

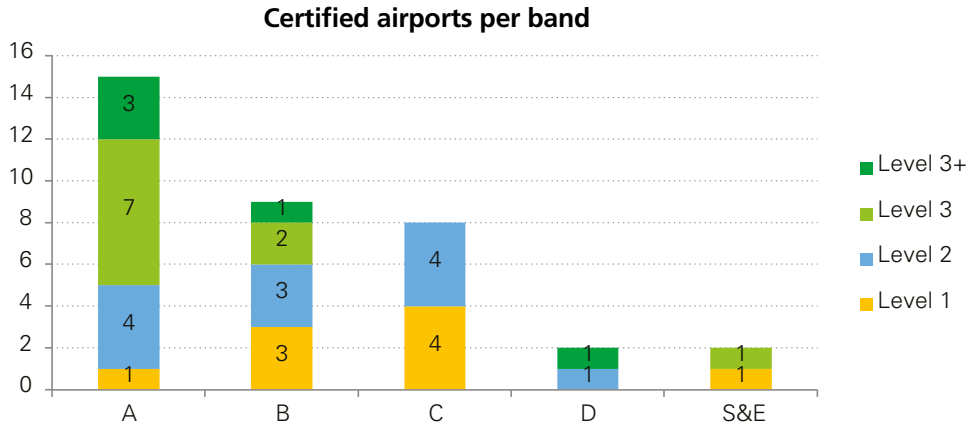
As shown below, due to new entries to the programme and the airports upgrading, there has been an increase of participating airports and progress to the higher levels of the programme, particularly Level 3+, as 5 airports reached this highest accreditation level in Asia-Pacific for the first time. Overall, participation increased by 24% compared to Year 7.



A closer look – participation by band[5] and level

Participating airports range in size from those with more than 20 million passengers per year (Band A) to airports with less than 0.5 million passengers per year (Band S).

Most certified airports are in Band A, followed by Band B and Band C respectively. Whilst the largest airports, making up most of the Asia-Pacific air traffic, represent the majority of accredited airports, regional and smaller airports are also participating, most notably, through Level 3 and Level 3+ accreditations achieved by a Band D and Band S airport.



5 **Airport Carbon Accreditation** differentiates between 6 size categories of airports, defined as Bands: Band A (>20m pax/yr), Band B (6 - 20m pax/yr), Band C (1 - 6m pax/yr), Band D (0.5 - 1m pax/yr), Bands S and E (<0.5m pax/yr, with Band E representing airport groups with airports of this size).

A closer look – airports joining the programme

In Asia-Pacific, 9 new airports joined the programme and 2 airports, Kaohsiung and Bahrain, decided not to renew their accreditation this year, which resulted in a net total increase of 7 airports in the region.

Airports entered at all levels of the programme, with the majority doing so at Level 1 as is shown below. The new entries were from airports in Band A, B, C and S.

Level 1:
- Beijing Capital
- Gold Coast
- Hobart
- Muscat
- Nadi

Level 2:
- Kansai
- Osaka

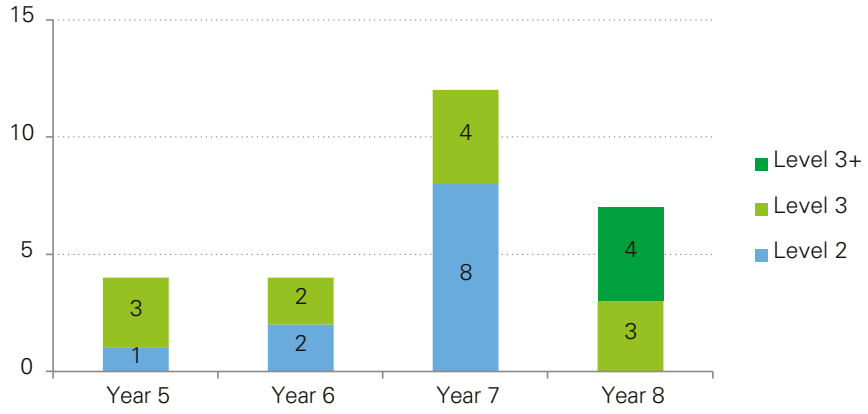
Level 3:
- Adelaide Parafield

Level 3+:
- Hyderabad Rajiv Gandhi

A closer look – airports moving through the programme

7 Asia-Pacific airports upgraded their certification level in the course of this year. 3 airports upgraded to Level 3 and another 4 did so to achieve Level 3+, demonstrating the commitment from the airports in the region to reach the highest levels of the programme. The enhanced trend towards upgrades to Levels 3 and 3+ is similar to the one observed in Europe.

Upgraded airports



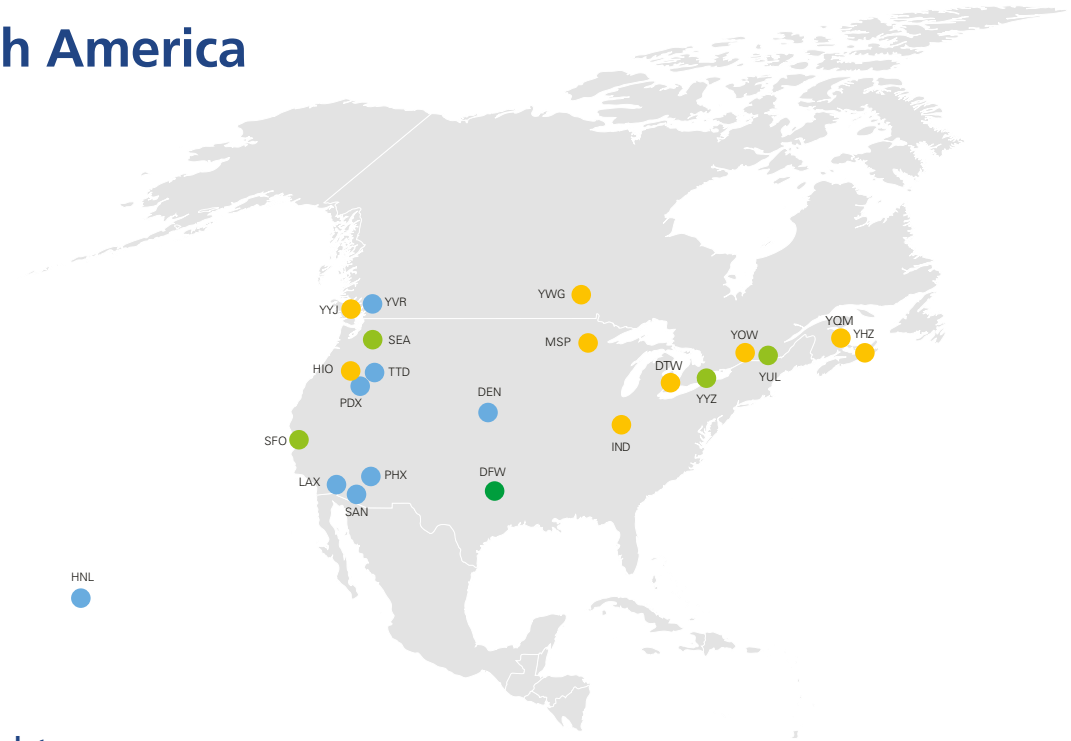
3 airports have upgraded to Level 3:
- Bangkok Suvarnabhumi
- Doha Hamad
- Sydney

4 airports have upgraded to Level 3+:
- Bangalore Kempegowda
- Delhi Indira Gandhi
- Mumbai Chhatrapati Shivaji
- Sunshine Coast



Doha Hamad International Airport

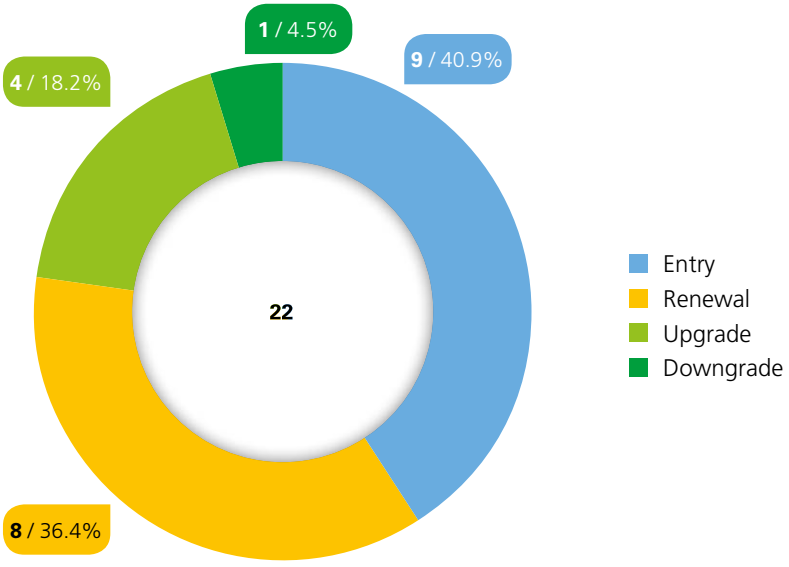
North America



Highlights

In the North-American region, continued strong growth momentum was maintained and the reporting year ended with 22 airports in the programme. These airports account for 32.3% of North America passenger traffic and 12% of all accredited airports in the programme this year.

With 9 entries to the programme, the North American region is largely above the global average in terms of participation growth (41% vs. 19%). The share of upgrades is slightly higher than the global average (18% vs. 16%). Both show strong programme growth in the region as well as a high commitment of already participating airports to progress towards the higher accreditation levels. 1 airport decided to downgrade its accreditation level this year.



Coverage of air passenger traffic:

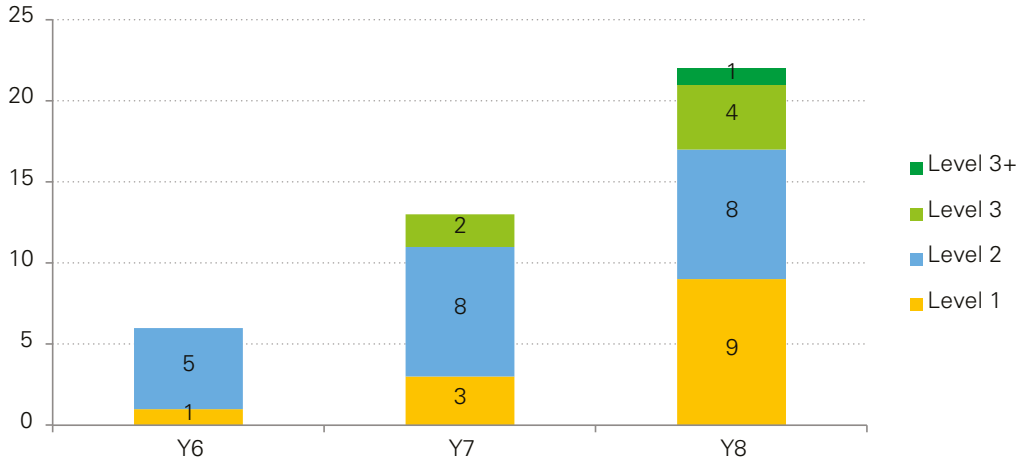
The coverage of air passenger traffic by the accredited airports has increased in the same rate as between Year 6 and Year 7, with 14% additional coverage gained.

	Y6	Y7	Y8
% of North American Air Traffic	4.2%	18.2%	32.3%

Participation over time per level:

As shown below, there has been threefold increase of participating airports at Level 1, with progress to the higher levels of the programme, including the first carbon neutral certification. Overall, participation increased by 69% compared to the previous year.

Accredited airports in North America

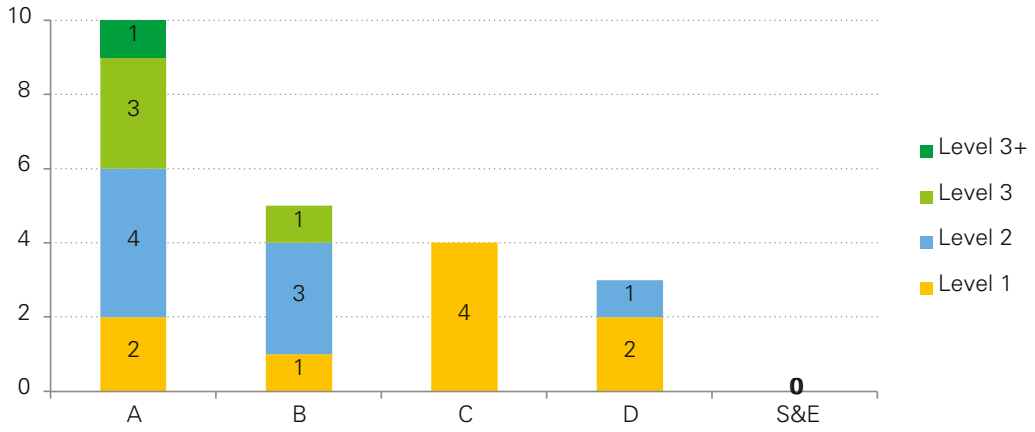


A closer look – participation by band[6] and level

Participating airports range in size from those with more than 20 million passengers per year (Band A) to airports with between 0.5 and 1 million passengers per year (Band D).

Most certified airports are in Band A, followed by Band B, C and D respectively. This distribution is similar to the one observed in Asia-Pacific, whilst the largest airports, making up most of the North American air traffic, represent the majority of accredited airports, regional and smaller airports are also participating, even though no airports with less than 0.5 million passengers have joined the programme yet.

Certified airports per band



6 **Airport Carbon Accreditation** differentiates between 6 size categories of airports, defined as Bands: Band A (>20m pax/yr), Band B (6 - 20m pax/yr), Band C (1 - 6m pax/yr), Band D (0.5 - 1m pax/yr), Bands S and E (<0.5m pax/yr, with Band E representing airport groups with airports of this size).

A closer look – airports joining the programme

In North America, 9 airports have joined the programme this year.

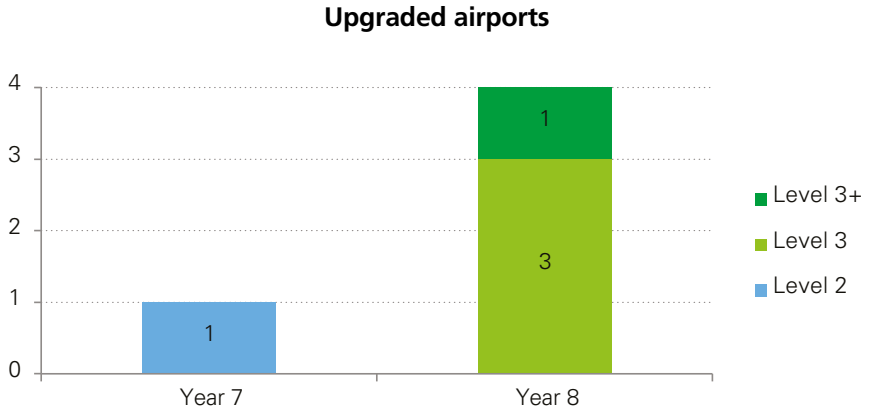
Airports entered at Levels 1 and 2 of the programme, as is shown below. The new entries were from airports in Band A, B and C.

Level 1:
- Detroit
- Halifax Stanfield
- Indianapolis
- Minneapolis St Paul
- Ottawa Macdonald-Cartier

Level 2:
- Los Angeles International
- Phoenix Sky Harbor
- San Diego
- Vancouver

A closer look – airports moving through the programme

4 North American airports upgraded their certification level in the course of this year. 3 airports upgraded to Level 3 and another 1 airport upgraded to achieve Level 3+, demonstrating the commitment from the airports in the region to achieve the highest levels of the programme, and clear progress compared to last year. The dynamic of upgrades towards Levels 3 and 3+ is similar to the one observed in Europe and Asia-Pacific.



3 airports have upgraded to Level 3:
- Montréal-Pierre Elliott Trudeau Airport
- Seattle-Tacoma
- Toronto Pearson

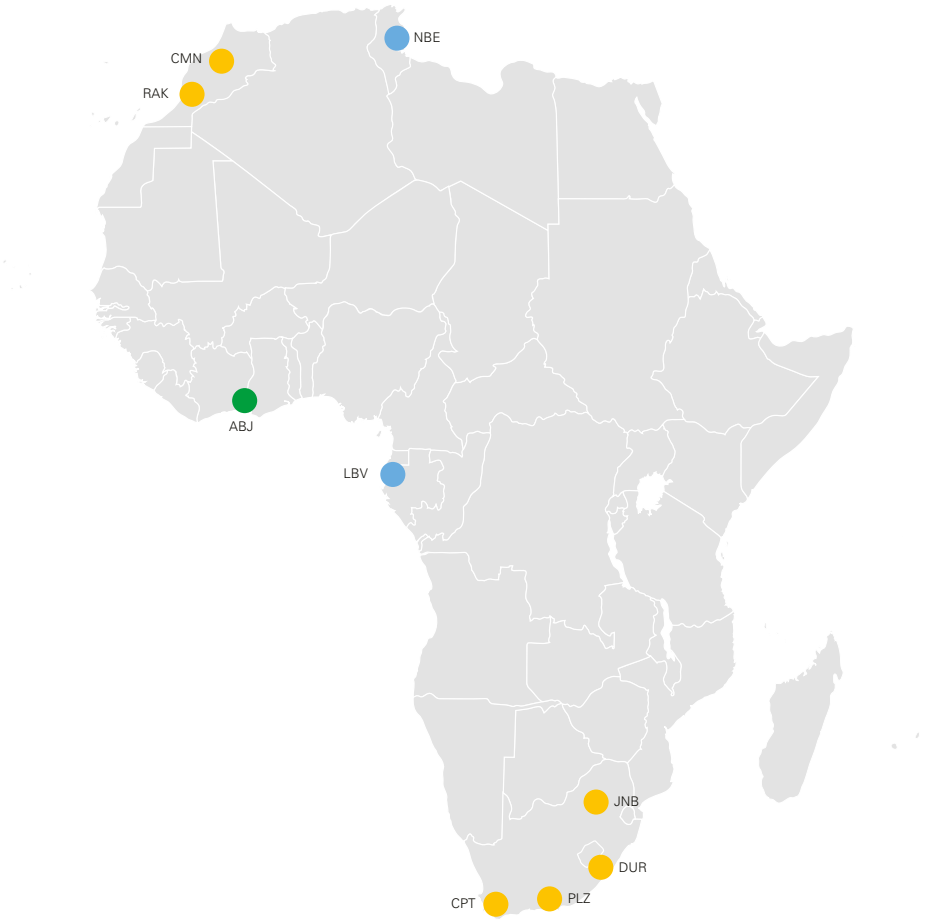
1 airport has upgraded to Level 3+:
- Dallas Fort Worth

Portland-Hillsboro downgraded from Level 2 to Level 1.



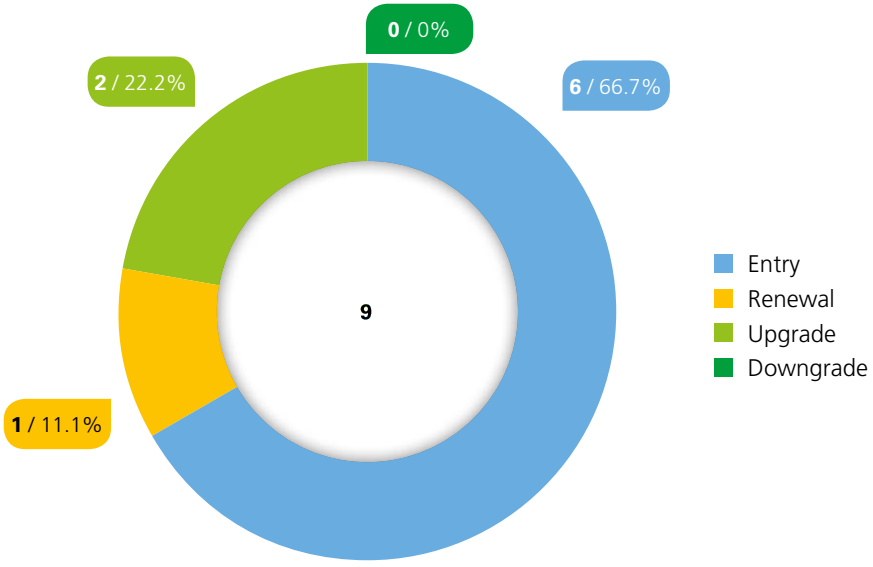
Montréal-Pierre Elliott Trudeau Airport

Africa



Highlights

In the African region, the programme year was mainly marked by new entries and upgrades, demonstrating a strong growth dynamic and commitment to progress towards the higher accreditation levels in the region. The reporting year ended with 9 airports in the programme, with 3 out of the top 5 busiest African airports amongst them, leading to a coverage of African air passenger traffic by accredited airports of 28.6%, compared to 2.5% last year. These airports represent 5% of all accredited airports in the programme this year.



A closer look – participation over time

Coverage of air passenger traffic:

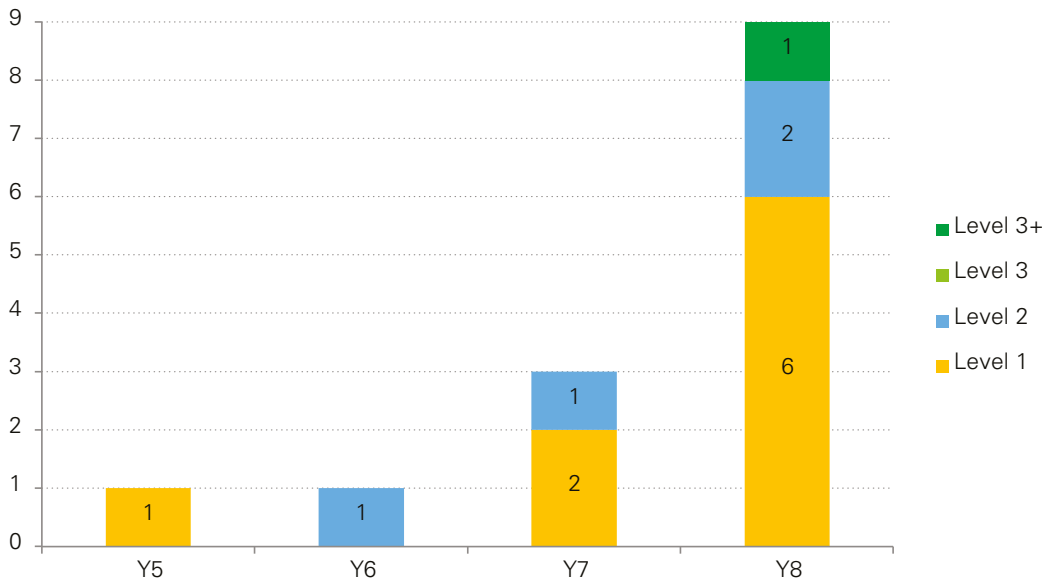
The coverage of African air passenger traffic by the accredited airports has seen a more than tenfold increase compared to last year, which is due to the entry into the programme of Johannesburg O.R. Tambo, the busiest African airport, Cape Town, the fourth busiest, and Casablanca, the fifth busiest airport. Consequently, almost every third air passenger in the region travels through an *Airport Carbon Accredited* airport, similar to the situation in Asia-Pacific (30% of air passenger traffic) and North America (32.3% of air passenger traffic).

	Y5	Y6	Y7	Y8
% of African Air Traffic	1.3%	1.4%	2.5%	28.6%

Participation per level over time:

As shown below, there has been a significant increase in participating airports but also progress towards the higher levels of the programme, in particular with the first accreditation at Level 3+ Neutrality in the region. Compared to the previous year, participation has tripled.

Accredited airports in Africa



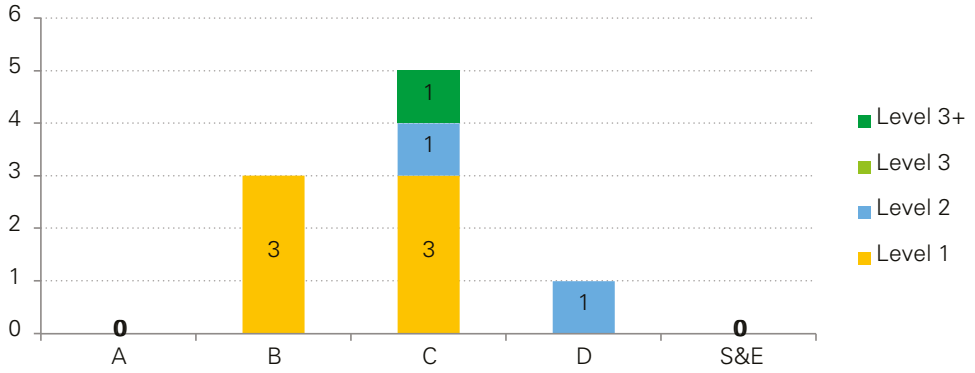
A closer look – participation by band[7] and level

Participating airports range in size from those with up to 20 million passengers per year (Band B) to airports with between 0.5 and 1 million passengers per year (Band D).

Most certified airports are in Band C, followed by Band B and Band D respectively. There are not yet any certified airports in Band A, S and E.

7 **Airport Carbon Accreditation** differentiates between 6 size categories of airports, defined as Bands: Band A (>20m pax/yr), Band B (6 - 20m pax/yr), Band C (1 - 6m pax/yr), Band D (0.5 - 1m pax/yr), Bands S and E (<0.5m pax/yr, with Band E representing airport groups with airports of this size).

Certified airports per band



A closer look – airports joining the programme

In Africa, 6 new airports joined the programme this year.

All of the new entries joined at Level 1 of the programme, as is shown below, and are from Band B and C.

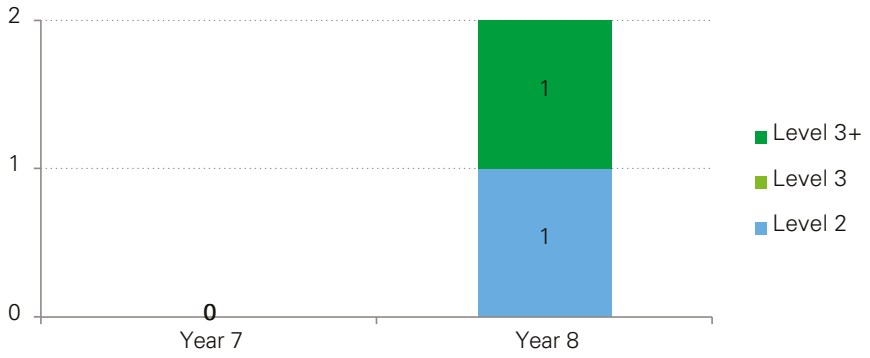
Level 1:

- Cape Town
- Casablanca
- Durban King Shaka
- Johannesburg O.R. Tambo
- Marrakesh Menara
- Port Elizabeth

A closer look – airports moving through the programme

2 African airports upgraded their certification level in the course of this year. 1 airport upgraded to Level 2 and another 1 airport upgraded to achieve Level 3+. This demonstrates the commitment from the airports in the region to continue to improve the performance and achieve higher levels of the programme.

Upgraded airports



1 airport has upgraded to Level 2:

- Libreville Leon M'ba

1 airport has upgraded to Level 3+:

- Abidjan Félix Houphouët Boigny

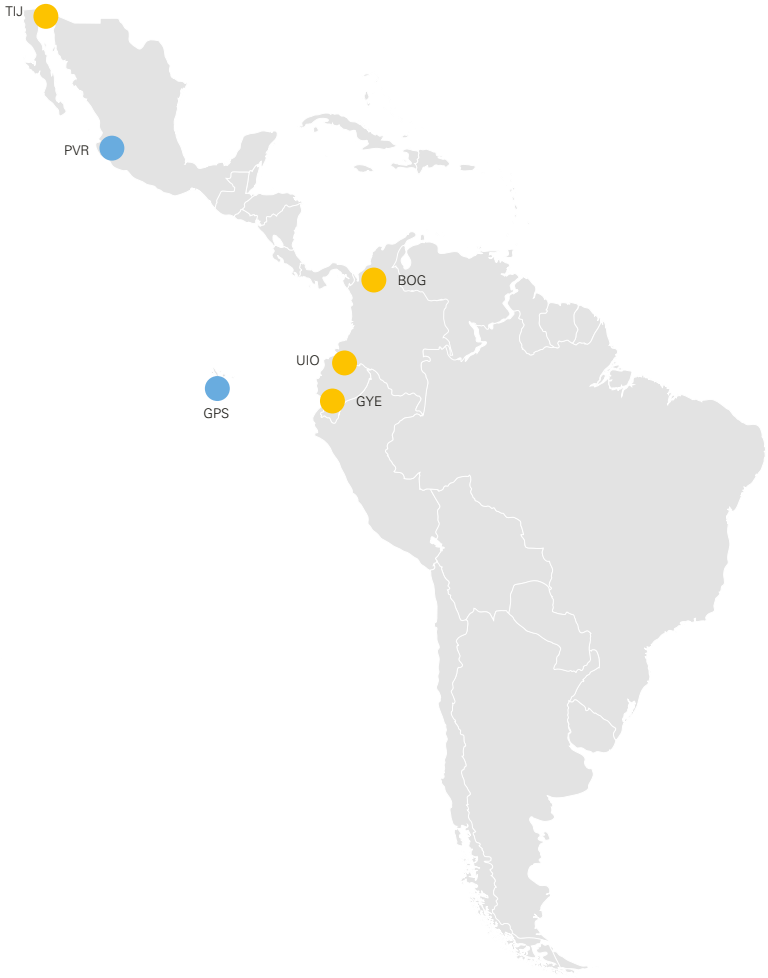


Cape Town International Airport



Abidjan Airport receives an Airport Carbon Accreditation certificate at the ACI Africa Annual Assembly in Maputo, 2016

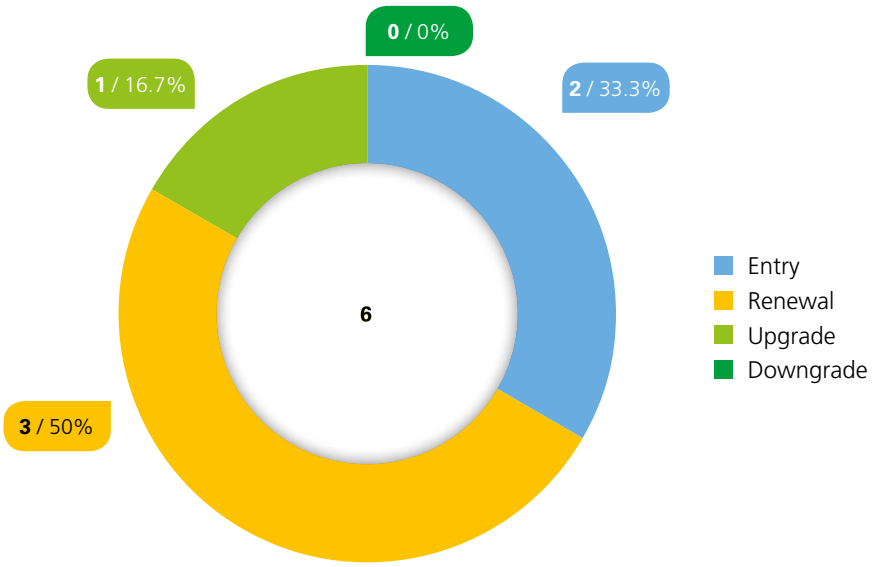
Latin America & the Caribbean



Highlights

In the Latin American region, participation continued to grow and the reporting year ended with 6 airports in the programme. These airports account for 8.3% of Latin American passenger traffic and 3% of all accredited airports in the programme this year.

Renewals are evenly matched by entries and upgrades, pointing to stable growth and airports working to move to the higher levels of the programme.



A closer look – participation over time

Coverage of air passenger traffic:

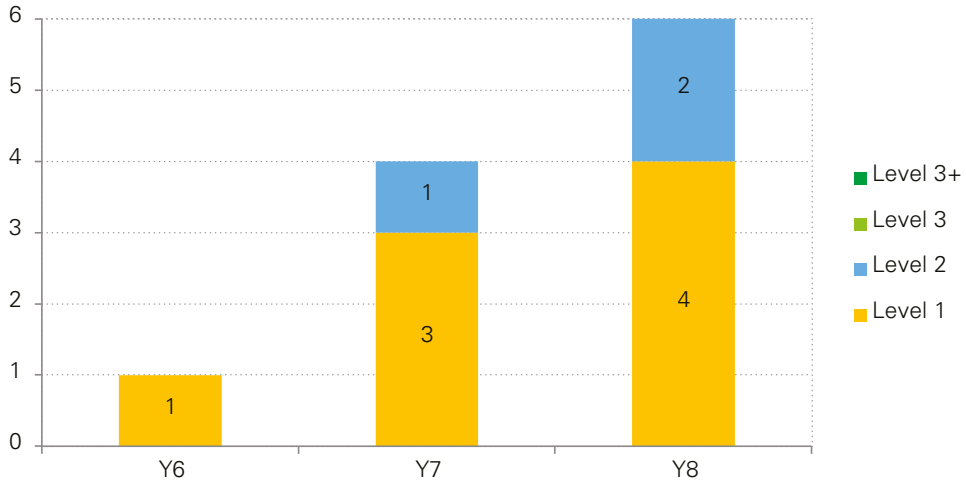
With the programme entry of a Band A and C airport, the coverage of regional air passenger traffic has seen a more than threefold increase.

	Y6	Y7	Y8
% of Latin American Air Traffic	0.5%	2.5%	8.3%

Participation per level over time:

Overall, participation increased by 50% compared to the previous year, with airports being accredited at Levels 1 and 2.

Accredited airports in Latin America



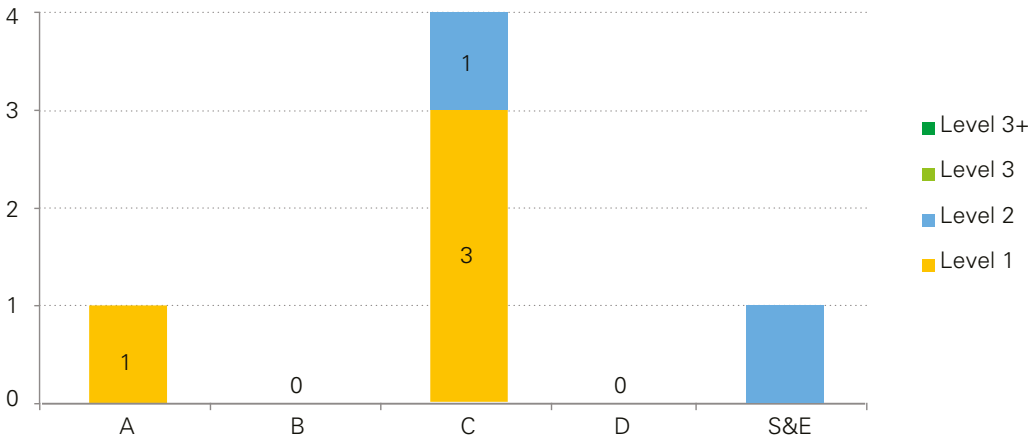
A closer look – participation by band[8] and level

Participating airports range in size from those with above 20 million passengers per year (Band A) to airports with under 0.5 million passengers per year (Band S).

Most certified airports are in Band C, followed by Band A and Band S equally. There are not yet any certified airports in Band B, D or E. This distribution shows a similar trend to the one in Africa, where the size category with the biggest number of airports is Band C.

8 **Airport Carbon Accreditation** differentiates between 6 size categories of airports, defined as Bands: Band A (>20m pax/yr), Band B (6 - 20m pax/yr), Band C (1 - 6m pax/yr), Band D (0.5 - 1m pax/yr), Bands S and E (<0.5m pax/yr, with Band E representing airport groups with airports of this size).

Certified airports per band



A closer look – airports joining the programme

In Latin America, 2 new airports joined the programme this year.

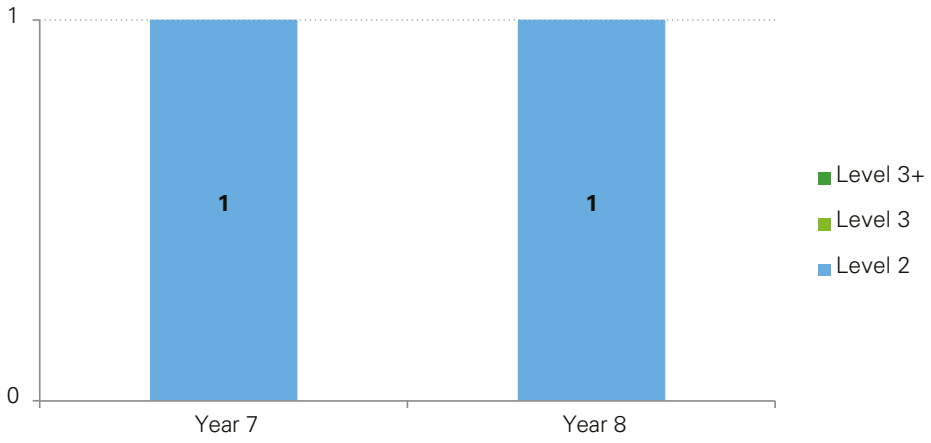
As in Africa, all new entries joined at Level 1 of the programme, as is shown below. They are from Band A and C.

Level 1:
- Bogotá El Dorado
- Guayaquil José Joaquín de Olmedo

A closer look – airports moving through the programme

1 Latin American airport upgraded its certification to Level 2, as in the previous year. This demonstrates the stable trend of progress in the region towards the higher accreditation levels in the programme.

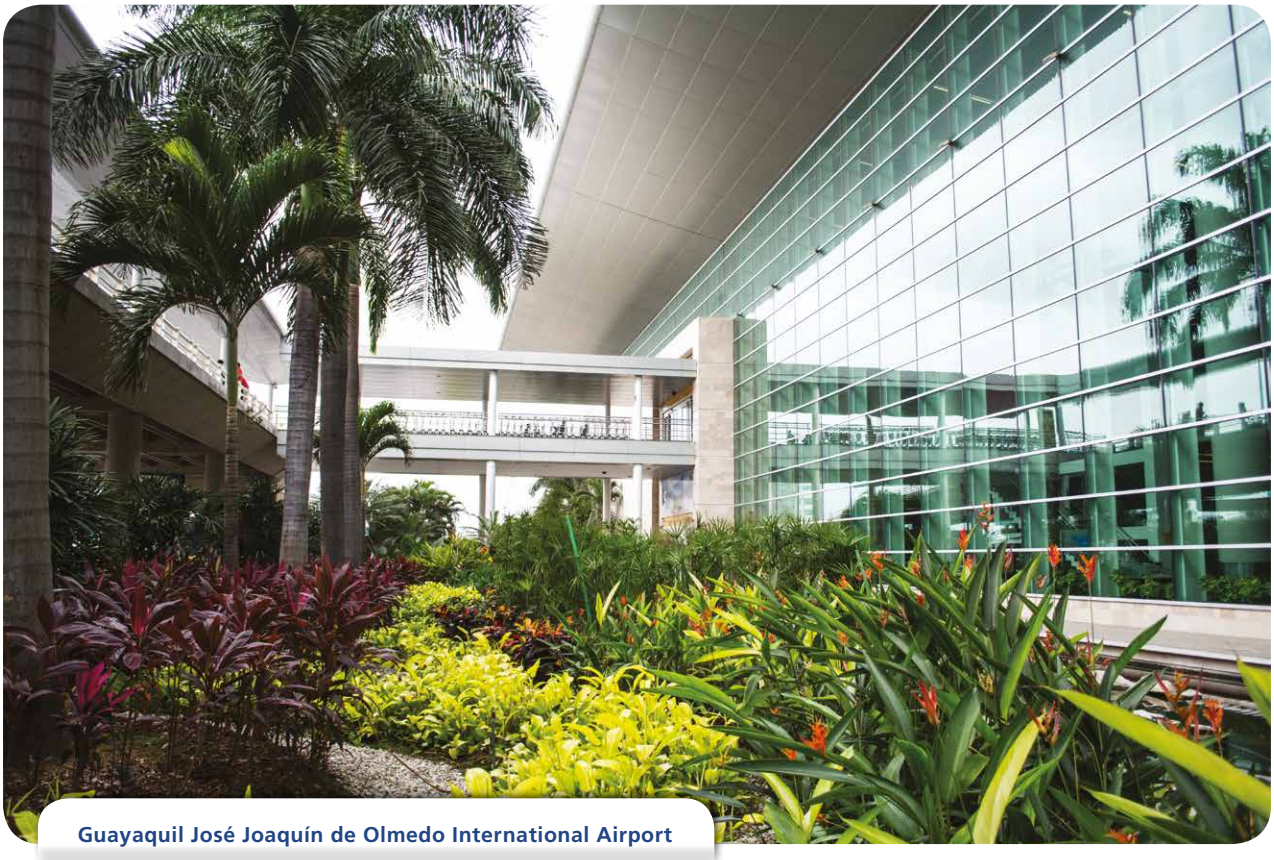
Upgraded airports



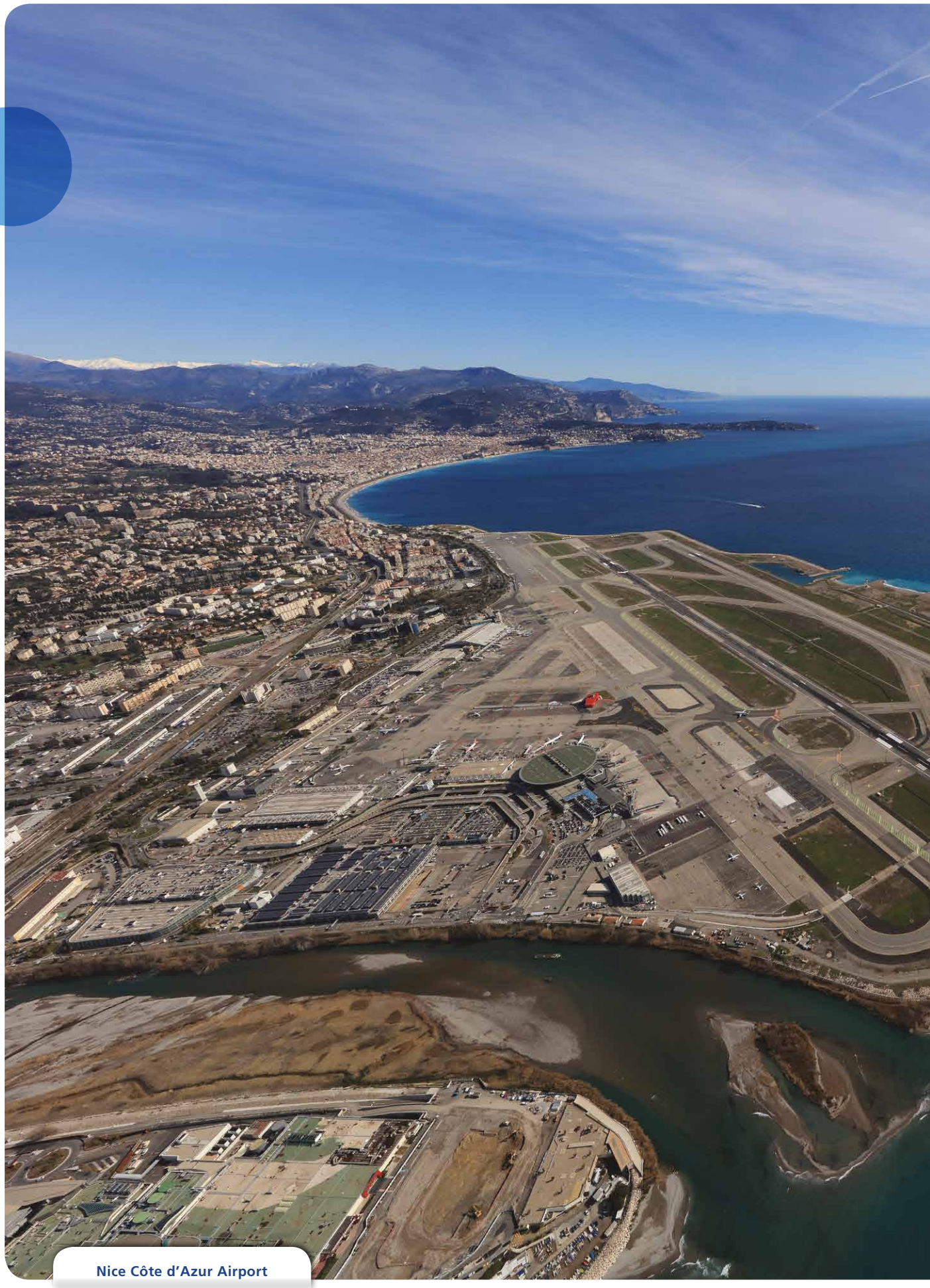
1 airport has upgraded to Level 2:
- Galápagos Seymour



Galápagos Seymour Airport



Guayaquil José Joaquín de Olmedo International Airport



Nice Côte d'Azur Airport

3 Case Studies

3 Case Studies

This year, this increasingly popular section will illustrate case studies from a selection of airports at different certification levels and from all regions.
A specific focus is put on carbon neutral airports.

The following airports are featured in this section:

Level 3+

- Sunshine Coast Airport
- Nice Côte d'Azur Airport
- Delhi Airport
- Abidjan Airport

Level 3:

- Vienna Airport
- Montréal-Pierre Elliott Trudeau International Airport

Level 2:

- San Diego International Airport
- Marseille Provence Airport
- Galápagos Airport

Level 1:

- Nadi International Airport

A historical set of case studies is available on the website of the programme at www.airportcarbonaccredited.org supporting the process of information exchange between airports and with interested stakeholders that has been established already.

Sunshine Coast Airport

1. One/two lines about your airport:

Sunshine Coast Airport (SCA) is located in the heart of the Sunshine Coast, Queensland, Australia. SCA is owned and operated by Sunshine Coast Council. In recent years, the activity at the airport has grown substantially with 13% passenger and capacity growth in the 12 months to December 2016, making SCA Australia's fastest growing airport.

2. Why did you decide to go for carbon neutrality and what were the business drivers?

In March 2017, Sunshine Coast Airport in Queensland became the first Australian airport to achieve Level 3+ Neutrality under the Airports Council International's **Airport Carbon Accreditation** programme.

Joining the programme in 2012, the airport's journey to neutrality was inspired by Sunshine Coast Council's vision to be Australia's most sustainable region. The challenge was embraced by the entire Sunshine Coast Airport team and the airport is now recognised around the globe for leading the way in managing carbon emissions and reducing its carbon footprint.

3. What actions/steps did you take to achieve carbon neutrality?

The journey to the top level of the programme was undertaken with an innovative and holistic approach including the implementation of initiatives that touched all parts of the business; from planning and built form, to energy reduction initiatives, waste management and recycling, to working with airline and commercial partners.

In 2013, the airport achieved Level 1 Mapping, followed by Level 2 Reduction in 2014 and Level 3 Optimisation in 2016. Since first mapping its carbon usage in 2013, Sunshine Coast Airport's efforts to reduce its overall carbon footprint have delivered a 24% reduction in Scope 1 and 2 carbon emissions, a 9% reduction in electricity consumption per passenger, an 11% reduction in waste to landfill per passenger, and a 15% reduction in water consumption.

The airport implemented energy management systems that allowed the business to respond in a more timely manner to customer demand including automation of the air conditioning system to be responsive to flight schedules, installation of large-scale energy efficient fans to create air movement and assist in reducing air conditioning requirements, and examining the built environment to maximise the use of natural light and recyclable materials.

To significantly reduce the amount of airport waste being sent to landfill the airport installed Australia's first solar powered On-Site Composting Apparatus (OSCA), fitted three-way bin systems inside the terminal, including compartments for general waste, recyclables and compostable items, and worked with tenants and customers to reduce waste via compostable packaging, plates, cups and wooden cutlery.

Water consumption was reduced through a combination of rainwater harvesting and efficiency upgrades including the implementation of urban sensitive land design to substantially reduce the use of irrigation within the airport's precinct, and the installation of rainwater tanks to harvest water from the terminal roof for use in amenities and landscaping.

Sunshine Coast Airport also purchased Australian Gold Standard Carbon Offsets to negate residual emissions.

4. How did you engage with your internal and external stakeholders (e.g. management, employees, shareholders, customers, etc.)?

Clear and consistent messaging on the social, environmental and business benefits of a reduced carbon footprint have been instrumental in ensuring participation by airline and commercial partners, as well as passengers, on the journey to carbon neutrality.

Airline and commercial partners were directly engaged in relation to the airport's capital improvement program and required to invest in technology and process improvements including the reduction of energy consumption and water use.

Passengers were encouraged to be part of the journey by using new three-way bin systems to increase the percentage of recycling and reduce the amount of waste going to landfill. Signage throughout the terminal informs passengers about carbon reduction initiatives undertaken by Sunshine Coast Airport, including the harvesting of rainwater for use in facilities.

Sunshine Coast Airport has also proudly included the **Airport Carbon Accreditation** programme logos on corporate stationery, email signatures, business cards and on the website since joining the programme in 2012.



Sunshine Coast International Airport



Nice Côte D'Azur Airport

1. One /two lines about your airport:

Nice Côte d'Azur airport is the 3rd busiest airport in France with 12 million passengers a year connecting directly to 100 destinations. Located on the French Riviera, the airport has a unique location, as it is situated between the Mediterranean and the Alps and is very close to the city of Nice.

2. Why did you decide to go for carbon neutrality and what were the business drivers?

Nice Côte d'Azur was first accredited under **Airport Carbon Accreditation** at Level 1 in 2011. Since then, we have progressed through the levels of certification to achieve the highest level of accreditation – Level 3+ Neutrality in 2016, two years ahead of our target, thus becoming the 25th carbon neutral airport in the world.

Since 2010, a key aim has been to reduce the CO_2 emissions from the airport and increase the use of renewable energy. While increasing our passengers by 30%, we have cut our kilograms of CO_2 per passenger by 75%, in particular thanks to a successful partnership with Electricité de France and the signature of a contract for the purchase of 100% French hydroelectric power. We have also tested the first fully electric airport shuttle bus with boost charging and introduced an autonomous power and air conditioning supply system for business travel. We have operated on 100% renewable energy since January 2015.

All these initiatives, aimed at being more energy efficient and reduce our GHG emissions, led us to move to carbon neutrality. Our decision was also in line with the COP21 target of the European airport industry to reach 50 carbon neutral airports by 2030.

3. What actions / steps did you take to achieve carbon neutrality?

We chose to gradually move through the levels of **Airport Carbon Accreditation**, improving our energy performance over time and learning from our experience. We made our decisions based on facts and future projects to go to the final step toward carbon neutrality.

To reach neutrality we have chosen offset projects corresponding to our activities, which still need effort in terms of GHG reductions (energy, waste and water). These projects were located in Africa, Asia and France, all recognized by UNFCCC standards.

4. How did you engage with your internal and external stakeholders (e.g. management, employees, shareholders, customers, etc.)?

We created a "Club des Partenaires Environnement", gathering all the companies involved in **Airport Carbon Accreditation**. Within this club of 38 companies all the different activities that are present at the airport are represented: airlines, ground handling, car rental, shops, administration, freight, security. We share with them our targets, our actions and our expectations.

We tried to make our employees proud of our commitment to become the first French airport to become carbon neutral.

We developed communications supporting ecological attitude and featuring key facts about the airport's actions in order to involve a maximum number of employees.

Now we feel like a high level sportsman, it's a team adventure and the biggest challenge ahead is to maintain our **Airport Carbon Accreditation** level.

Delhi Airport

1. One /two lines about your airport:

Located in India's capital city, Delhi Airport is being operated, managed and developed by Delhi International Airport Ltd (DIAL), a joint venture consortium of GMR Group, Airports Authority of India (AAI) and Fraport AG. Delhi Airport was ranked the 21st largest airport in the world in 2016, serving over 57 million passengers, and is the busiest airport in India. The airport is consistently recognized as one of the world's top facilities, having been recently rated as the second best airport in customer experience by Airports Council International (ACI). In 2016, Delhi became the first airport in the Asia-Pacific region to reach the carbon neutral status of **Airport Carbon Accreditation**.

2. Why did you decide to go for carbon neutrality and what were the business drivers?

While representing the International Aviation Community in Lima to Paris Action Agenda (LPAA) at COP21 in Paris, Mr Indana Prabhakara Rao, CEO of DIAL, voiced his intention to develop sustainable solutions to the impact aviation has on climate, by pursuing Level 3+ Neutrality of **Airport Carbon Accreditation**. The main drivers of Delhi being a carbon neutral airport are:

- Meeting the expectations of Government of India towards meeting its Intended Nationally Determined Contribution (INDC) commitments
- Creating a leadership role and awareness on climate change and "carbon neutrality"
- Creating a sustainable airport operation model
- Significant cost savings related to operating expenses
- Overall airport system and process efficiency improvement through effective monitoring and GHG management program

3. What actions / steps did you take to achieve carbon neutrality?

DIAL embarked on the journey of GHG management in the year 2010, by setting up a mission of GHG management, strategic objectives and initiatives, well defined Key Performance Indicators (KPI) for each function, followed by continuous monitoring, periodic review and benchmarking process. DIAL has continuously adopted the global best practices in terms of process optimization, enhanced operational efficiency and resource conservation to reduce GHG emissions without compromising on the quality of service delivered as an airport operator. The GHG mitigation initiatives of Delhi Airport are:

Renewable Energy Program

- Renewable Energy Capacity: 7.84 MW Solar Power
- Planing to reach 20 MW renewable energy generation capacity by 2020

Energy Management and Green Infrastructure

- Environment Management System – Certified under ISO 14001 & ISO 14064
- Energy Management System for Energy Conservation - Certified under ISO 50001:2011
- Green Infrastructure Program- LEED Gold and IGBC Platinum for Terminal 3 as "New Construction" and as "Existing Building" respectively
- Adoption of "Arc" by USGBC/GBCI for live building perfromance monitoring and scoring platform
- UNFCCC registered Clean Development Mechanism Project (CDM) for Energy Efficient Electro Mechanical Units
- Building Management System

Low Emission Initiatives

- Multimodal Connectivity through metro rail and public transport facility to reduce vehicle congestion and traffic emission
- Bridge Mounted Equipments- use of Fixed Electrical Ground Power Unit (FEGPU) and Pre Conditioned Air (PCA) supply
- Fuel Hydrant Systems throughout Terminal 3
- Use of battery operated vehicle

Stakeholder Engagement

- Implementation of Airport Collaborative Decision Making (A-CDM) for reducing stakeholders GHG emissions
- Renewable energy development program with stakeholders- 2 MW solar PV plant by cargo terminal operator Celebi and kW scale rooftop Solar PV and Solar Water Heating System (SWHS) by flight catering units
- Regular training and knowledge sharing sessions

Results

The effective GHG management program has resulted in significant reduction of emissions, both in terms of specific and absolute emissions. Delhi Airport has reduced more than 60% specific GHG emissions (kg CO_2/pax) since 2010-11 as compared to 2016-17. This is a significant achievement considering passenger, ATM and cargo volumes have increased significantly during this period, which impacts the "variable energy" consumption of the airport which is "throughput" dependent. Besides, new infrastructure has also been put in place during this period.



Delhi Indira Gandhi International Airport

Future road map

Airport Carbon Accreditation is a highly systematic and action-oriented approach, provided by Airports Council International (ACI). It has enabled Delhi Airport to effectively measure, monitor and improve its GHG management performance. DIAL is committed to continue its journey towards becoming a green and sustainable airport, through deployment of long-term strategy and actions. The long-term "neutrality" ambition of DIAL is based on the following six pillars:

1. Renewable Energy

- Capacity enhancement of solar power plant
- Use of bioenergy –Waste to Energy
- Use of electricity from hydro power

2. Energy Conservation

- Energy audit
- Energy Monitoring
- Energy score card
- O&M activities

3. Energy Efficiency

- Technology adoption and integration
- Adopt ECBC
- Passive Architecture
- Life cycle costing approach

4. Fuel Switch

- Use of Cleaner fuels such as CNG
- More use of electrical vehicles in airside
- Use of alternative fuels

5. Increased Sink

- Increased tree cover
- Inclusion of offsite tree plantation

6. Sourcing of Carbon Credits

- Any residual emission by acquiring credible carbon credits (CERs)

4. How did you engage with your internal and external stakeholders (e.g. management, employees, shareholders, customers, etc.)?

As described above, the airport has involved a wide range of stakeholders in its carbon management activities, including airlines in relation to FEGPU and PCA, as well as through A-CDM, but also providers of surface access service, by supporting public transport connections with the airport. These projects are underpinned by training and awareness-raising initiatives.

AERIA
Aéroport International Félix Houphouët Boigny d'Abidjan

Abidjan Airport

1. One /two lines about your airport:

AERIA (Abidjan International Félix Houphouët-Boigny Airport), with 1,800,000 passengers in 2016, is a principal actor in the development and modernization of the Abidjan Airport.

AERIA is exemplary and ambitious concerning the environment protection. The objective of carbon neutrality was achieved through the vision and strategy of the Directorate at its highest level.

2. Why did you decide to go for carbon neutrality and what were the business drivers?

Abidjan Airport is committed to meeting environmental requirements, while maintaining operational excellence. In that respect, AERIA's participation in **Airport Carbon Accreditation** was the platform to launch a new energy management strategy to reduce emissions and, more broadly, engage in a new way of thinking about the environment. Strategic management actions were carried out to achieve the following objectives:

- Initial audit (Environment benchmarking)
- Declaration of an environmental policy
- Determination of carbon reduction targets
- Establishment of an internal unit to combat climate change
- Establishment of a committee dealing with GHG issues, integrating external stakeholders (airline, ATC services, catering, ground handing ...)
- Implementation of the carbon reduction plan by AERIA and its stakeholders

3. What actions / steps did you take to achieve carbon neutrality?

The critical factor in attaining Level 3+ accreditation for Abidjan Airport was fully understanding, documenting and reducing the airport's comprehensive carbon footprint, also by involving stakeholders. The following measures have been taken:

- Communication on environmental policy and carbon / energy objectives
- Sensitization of the occupants of the offices (switching off lighting, air conditioning and some appliances during their absence)
- Installation of presence detectors in toilets for optimal electricity management
- Conditioning of the air curtain, a means of maintaining the temperature in the public hall of the international terminal
- Replacement of incandescent lamps with LED bulbs in terminals and VIP lounge
- Determination of tenants who do not have electricity under meters
- Install a tracer device on AERIA vehicles
- Maintenance of automatic controls on other equipment, such as escalators during periods of low activity

Residual emissions are offset through the purchase of carbon credits approved by the United Nations Framework Convention on Climate Change (UNFCCC).

4. How did you engage with your internal and external stakeholders (e.g. management, employees, shareholders, customers, etc.)?

As described above, awareness-raising and education of employees with regard to energy savings play an important role in the airport's carbon management plan.

Vienna International Airport

1. One / two lines about your airport:

Vienna International Airport is located 18 km southeast of central Vienna and 57 km west of Bratislava and is handling some 22.5 million passengers a year. It is one of the most important hubs for the growing number of destinations in Central and Eastern Europe. Its growth strategy is also based on the positive development of demand for flights to destinations in Asia and the Middle East and the above average expansion of low cost carriers.

2. Why did you want to participate in the programme?

Sustainability and energy efficiency are important corporate goals of Vienna Airport. **Airport Carbon Accreditation** is a programme exclusively for airports to account for and reduce controllable CO_2 emissions at the airport site. It is the only global CO_2 reduction programme for airports, that provides recognition of airports' efforts to control and reduce their carbon emissions.

3. How long has your airport been in the programme? If several years, what was your original accreditation level, and have you moved through the levels since then?

Vienna Airport was certified at Level 1 in 2013. We gained Level 2 certification in 2014 and attained Level 3 in 2016.

4. What CO_2, energy reduction targets / objectives have you set?

By 2022, we want to have reduced CO_2 emissions by 30% compared to 2012. In the longer term, we want to become a carbon neutral business. For this purpose, investments of up to €30 million in energy efficiency and other carbon reduction measures are planned.

5. What key actions have you taken / intend to take to improve energy efficiency / introduce renewable energy technologies?

Vienna Airport has reduced its CO_2 emissions by more than 27% since 2012 and its specific energy consumption per traffic unit by 14.2%. In the period between 2012 to 2016, fuel consumption for airport vehicles was cut by 10.3% and total energy needs fell by 6.6%, despite a 5.7% rise in traffic.

These outcomes were achieved by first carrying out comprehensive surveys of emissions, including flight and landside traffic and developing company-wide measures to reduce overall CO_2 emissions. These surveys were carried out on a wider airport basis, and included compilation of CO_2 emissions in the LTO cycle, CO_2 emissions from aircraft engine test runs and third party ground handling, as well as the entire electricity procurement of the airport (including lease holders and other on-site companies, as well as the entire landside traffic). Also, improvements in energy efficiency were achieved by converting lighting and air conditioning systems, optimizing the transmission grids and investing in the vehicle fleet, so that it will be electric powered and natural gas driven by 2020. The changeover from diesel driven to 30 electric powered catering forklift trucks will enable us to save about 275,000 litres of diesel each year.

6. Do you have a flagship CO_2 emissions reduction project?

In 2016, two photovoltaic plants with more than 2,000 solar modules on a total area of 3,200 square metres were put into operations, generating more than 500,000 kWh of solar electricity each year. Another photovoltaic plant will come on stream in 2017 on the roof of the cargo centre on an area of around 5,000 square metres, making it one of the largest photovoltaic facilities in Austria.

7. What benefits does accreditation bring you?

Airport Carbon Accreditation has helped us to extensively reduce our CO_2 emissions and to demonstrate that it is possible for an airport to be economically successful and simultaneously cut costs and energy consumption. It has pushed us to set a goal of becoming a completely CO_2 neutral flight hub.



Vienna International Airport

Montréal-Pierre Elliott Trudeau International Airport

1. One / two lines about your airport:

Montréal-Pierre Elliott Trudeau International Airport is the main passenger airport in Quebec and third in Canada. With 16.6 million passengers in 2016, Montréal-Trudeau Airport connects directly to nearly 140 destinations offered by 32 carriers. Since 2008, the terminal building is accredited BOMA BEST, attesting to the excellence in energy and environmental performance of the building.

2. Why did you want to participate in the programme?

As part of its ISO 14001 certification, Aéroports de Montréal (ADM) has been performing annual inventories of GHG emissions since 2007. We had set a reduction objective and we already had implemented several measures to reduce the airport's carbon footprint. Our participation in the **Airport Carbon Accreditation** programme was thus a natural next step to what was already implemented at the airport. The programme shows our Management Committee's willingness and commitment to protect the environment. We are honoured to be the first Canadian airport accredited and to challenge other airports to join the programme. Through this programme, we demonstrate our environmental leadership among North American airports and the community.

3. How long has your airport been in the programme? If several years, what was your original accreditation level, and have you moved through the levels since then?

In December 2014, Montréal-Trudeau has become the first Canadian airport and the second one in North America to be certified Level 2 under the **Airport Carbon Accreditation** standard.

In December 2016, ADM has been recognized for its commitment to reducing greenhouse gases in collaboration with its various partners at Montréal-Trudeau Airport with a certificate at Level 3 (Optimisation).

4. What CO_2, energy reduction targets / objectives have you set?

ADM has set a GHG emissions target to reach by 2020: to produce 5% lower emissions, than in 2013.

5. What key actions have you taken / intend to take to improve energy efficiency / introduce renewable energy technologies?

The many initiatives targeting CO_2 emissions' reductions include the airport's ultra-high-performance thermal plant, designed for energy recovery. This one-of-a-kind facility, powered mainly by electricity and natural gas, has driven significant gains in energy efficiency and reduction of emissions since 2003. ADM also developed, in collaboration with Concordia University and the company Somfy, an ingenious automated window-shade system, that keeps natural light at optimum levels in the terminal. Other systems targeting similar energy efficiency goals include LED lighting on runways, taxiways and airport roads, as well as variable-speed escalators and moving sidewalks. In addition, all boarding bridges are equipped with electric power units and cool- or hot-air conduits to supply parked aircraft, avoiding use of on-board power units, which burn fossil fuels.

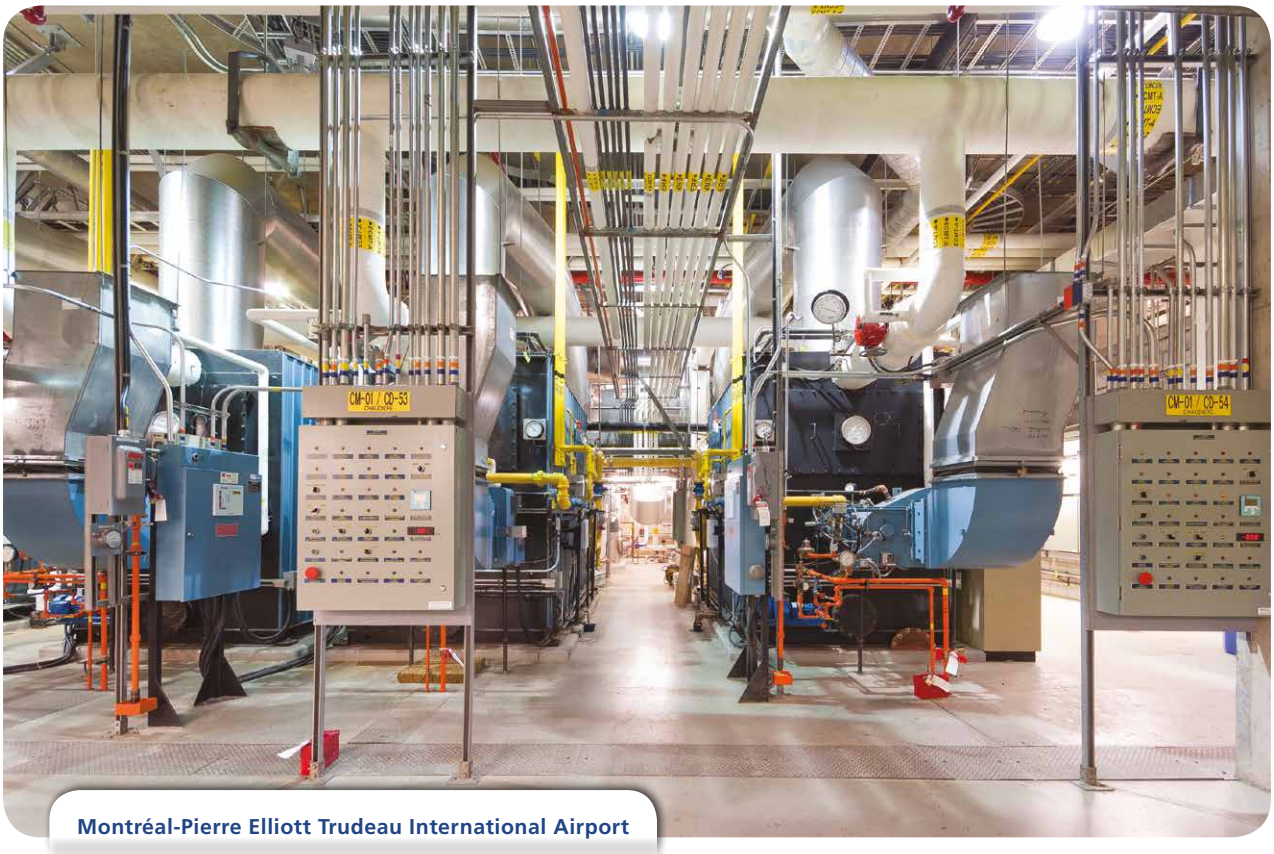
Many initiatives at Montréal–Trudeau measure the commitment of third parties to reducing GHG emissions. These include the use of more energy efficient equipment by airlines, such as preconditioned-air (PCA) and ground power units (GPU), the "greening" of half the taxi fleet, the addition of charging stations for electric vehicles, the introduction of the Téo electric-taxi service, and the setting up of CellParc, a waiting area for motorists with cell phones, coming to the airport to pick up passengers. Environmental awareness campaigns with airport employees, and the Écono-Écolo-Pratique program, designed to increase the use of public transport, are other initiatives that were taken into account. A green roof and a living wall have embellished the terminal and contributed to the environmental performance of the building.

6. Do you have a flagship CO_2 emissions reduction project?

High performance thermal plant and unique HVAC system that is especially designed to recover energy and redistribute the hot or cold air in the air flows inside the terminal.

7. What benefits does accreditation bring you?

This accreditation is a key element for our employees' mobilization toward the implementation and development of energy efficiency initiatives and projects. We are proud to join an international initiative and be recognized by the industry among the best.



Montréal-Pierre Elliott Trudeau International Airport

San Diego International Airport

1. One / two lines about your airport:

San Diego International Airport (SAN), located in southern California, is the busiest single-runway airport in the United States, serving over 20 million passengers annually. SAN is committed to building an enduring and resilient airport that is business driven, passenger-centred, and community-minded.

2. Why did you want to participate in the programme?

As one of the first US airports to adopt a formal sustainability policy, the San Diego International Airport has been widely recognized for successfully managing its financial, social, and environmental sustainability. As such, SAN has been implementing a variety of policies and projects over the last eight years to proactively reduce its carbon emissions. The **Airport Carbon Accreditation** program provided a valuable framework to track this progress, while benchmarking our carbon management efforts against other leading airports.

3. How long has your airport been in the programme? If several years, what was your original accreditation level, and have you moved through the levels since then?

SAN officially joined the **Airport Carbon Accreditation** programme in 2016, when it was certified at Level 2 for successfully managing and reducing its airport-controlled emissions.

4. What CO_2, energy reduction targets / objectives have you set?

The San Diego International Airport has been using the State of California's greenhouse gas reduction milestones of a 15% reduction by 2020 and a 49% reduction by 2035 (compared to 2010), as a guidepost for all airport development projects and other carbon management initiatives. For energy, SAN is also striving to achieve 100% renewable energy and a 30% reduction in energy use intensity by 2035.

5. What key actions have you taken / intend to take to improve energy efficiency / introduce renewable energy technologies?

Since electricity use represents one of the largest contributors of airport-controlled carbon emissions, SAN has invested significant time and resources into transitioning to cleaner energy sources and more efficient technology and operations. Currently, over 44% of SAN's electricity portfolio is from renewable resources, including 5.5 MW of solar photovoltaic systems across the airport campus connected through a micro-grid. All new facilities are built to surpass state energy efficiency codes, while most existing facilities have been upgraded with energy-saving technologies, such as LEDs with sophisticated lighting controls and variable-frequency drives on pumps and motors.

6. Do you have a flagship CO_2 emissions reduction project?

One of SAN's most successful carbon management initiatives was the creation of a "Ground Transportation Vehicle Conversion Incentive Program". Launched in 2012, the program provides incentives, through reduced annual permit and trip fees, to commercial ground transportation providers that switch their fleet vehicles to alternate fuel technologies. The program has led to approximately 97% of taxis transitioning to hybrid vehicles and 93% of off-airport parking shuttles using compressed natural gas or propane instead of diesel. Recently, the San Diego International Airport expanded the successful program to include transportation network companies (e.g. Uber), making SAN one of the first airports to begin regulating these ridesharing services' carbon intensities.

7. What benefits does accreditation bring you?

The San Diego International Airport has received numerous benefits from its participation in the **Airport Carbon Accreditation** program. First, the programme has created an incredible opportunity to share ideas and lessons learned with other airports, thus helping to improve the effectiveness and efficiency of SAN's carbon management activities. The programme's third-party review and verification process also adds credibility to annual emission inventories and reduction reports. Finally, since first joining the **Airport Carbon Accreditation** programme, the San Diego International Airport has developed a roadmap to eventually achieve carbon neutrality (Level 3+).



San Diego International Airport

Marseille Provence Airport

1. One / two lines about your airport:

Marseille Provence Airport is the fifth biggest airport in France with 8.5 million passengers. We are aware that our activity has an impact on climate change. That's why we are aiming to develop our activity, while reducing our environmental impact.

2. Why did you want to participate in the programme?

To be proactive and show that we don't wait for legislation to engage actions.

Marseille Provence Airport started to reduce its energy consumption before joining **Airport Carbon Accreditation**. For instance, with 36GWh in 2013, the airport managed to reduce its electricity consumption to the same level as 2005, while there was an increase of 3 million passengers.

However, we wanted to participate in the programme in order to promote our actions, and translate them in term of CO_2 emissions and not only KWh.

3. How long has your airport been in the programme? If several years, what was your original accreditation level, and have you moved through the levels since then?

- How long: 4 years
- Original accreditation level: Level 1 in 2014
- 2016: Level 2
- Objective for 2018: Level 3

4. What CO_2, energy reduction targets / objectives have you set?

Reduce our GHG emissions by 10% and 20% by 2020 and 2025 respectively compared to 2010.

5. What key actions have you taken / intend to take to improve energy efficiency / introduce renewable energy technologies?

- Reduce our generator usage (generators are only used in case of problems)
- Substitute the original indoor lights by LED
- Install meters on equipment in order to better know our energy consumption usages
- Refurbishment of our Air Handling Units
- Develop 400Hz on the platform
- Develop buses and train connections from/to the airport
- Communication and staff awareness
- Subscribe by 2018 to a contract where 100% of our electricity consumption is provided by renewable sources

6. Do you have a flagship CO_2 emissions reduction project?

Development of 400Hz on Terminal 2.

7. What benefits does accreditation bring you?

It allows us to support the development of more energy efficient projects and it allows us to show the numerous benefits of our actions and to promote them.

Galápagos Ecological Airport

1. One or two lines about your airport:

The Galápagos Ecological Airport ECOGAL S.A., the concessionaire company responsible for the administration and operation of the Seymour Airport of Baltra Island, offers a level of service and comfort to benefit its users, prioritising in their operations the care for the environment and the island's ecosystem.

2. Why did you want to participate in the programme?

ECOGAL, being the first ecological airport in the world, is always looking to improve environmental efficiency in its daily operations, which is why **Airport Carbon Accreditation** is an opportunity to achieve carbon neutrality and thus to reaffirm our commitment as Ecological Airport in one of the most important natural heritage sites in the world.

3. How long has your airport been in the program? If several years, what was your original accreditation level, and have you moved through the levels since then?

ECOGAL has been part of **Airport Carbon Accreditation** since 2015, originally joining at Level 1 Mapping, using 2014 as a baseline year. Since then, it has adopted a policy of greater commitment to the environment, achieving Level 2 Reduction in 2016. We are currently working to achieve Level 3 Optimisation.

4. What CO_2, energy reduction targets / objectives have you set?

Reduce greenhouse gas emissions from stationary sources by 30% by 2017, compared to 2014 levels. Reduce greenhouse gas emissions from mobile sources by 0.5% per year.

5. What key actions have you taken / intend to take to improve energy efficiency / introduce renewable energy technologies?

ECOGAL has taken several actions to improve its energy efficiency:

- At the moment the Baltra Airport Terminal has solar panels that are connected to the public network, helping to produce a small percentage of clean energy.
- ECOGAL is in the process of introducing electric vehicles to carry out works at the airport terminal.
- ECOGAL operates an intelligent lighting system in all of its areas, regulating the amount of lighting based on the use and level of natural light.
- ECOGAL does not have air conditioning in its public areas.

6. Do you have a flagship CO_2 emissions reduction project?

In 2015, the Baltra Airport Terminal carried out a project that allowed connecting wind energy to the public grid, helping to reduce the consumption of fuel, by no longer depending on electric generators to supply the daily operations of the terminal. This allowed the reduction of CO_2 emissions by more than 30%, compared to 2014.

7. What benefits does accreditation bring you?

- Better control of the use of airport resources, such as petrol, diesel and electricity.
- Increased environmental awareness of staff working in ECOGAL, as well as by concessionaires who provide their services within the airport terminal.

Nadi International Airport

1. One or two lines about your airport:

Airports Fiji Limited owns and operates Nadi International Airport and manages Nausori Airport and 13 other domestic, outer island airports on behalf of the Fiji Government. AFL also provides Air Traffic Management services in the Nadi Flight Information Region, that includes the air space of Fiji, Tuvalu, New Caledonia, Kiribati and Vanuatu, covering an area of 6.0 million square kilometres.

Nadi International Airport is Fiji's main international airport and an important regional hub for the South Pacific Islands. It facilitates 38 scheduled international flights on a daily basis and handles 97% of international passengers to Fiji annually, 86% of which are tourists. Nadi International Airport has become the first airport in the Pacific Island States to receive **Airport Carbon Accreditation** Level 1 Certification by the Airports Council International.

2. Why did you want to participate in the programme?

Fiji is the first country in the world to formally approve the UN Climate deal agreed by 195 nations in Paris in December 2015. Under its national climate action plan, Fiji has pledged to generate 100% of its electricity from renewable sources by 2030. It has also promised to cut overall emissions from its energy sector (fossil fuels) by 30% by 2030 compared to business as usual, conditional on it receiving climate finance from industrialised nations.

Our participation in the **Airport Carbon Accreditation** Programme is of national and international significance, seeing that Fiji assumes the Presidency of COP23 at the headquarters of the UNFCCC Secretariat in Bonn, Germany in order to maintain the momentum of the 2015 Paris Agreement to reduce carbon emissions.

3. How long has your airport been in the program? If several years, what was your original accreditation level, and have you moved through the levels since then?

We have just been in the programme for just over a year and it has been a very exciting and rewarding journey.

4. What CO_2, energy reduction targets / objectives have you set?

Airports Fiji Limited has a Carbon Management Policy, that outlines company direction towards reducing carbon emissions. We are working on Level 2 requirements, hence, still in the process of defining specific reduction targets.

5. What key actions have you taken / intend to take to improve energy efficiency / introduce renewable energy technologies?

Airports Fiji Limited (AFL) is the biggest user of electricity in Fiji, spending an average of 2.7 million dollars per year on electricity costs. AFL commenced a terminal modernization project at the Nadi International Airport in July 2013. The Nadi Airport Terminal Modernization Project has resulted in more natural light filtering into our terminal due to structural re-designs. All terminal lighting has been replaced with energy saving LED lights along with sensor activated lights and a new energy efficient chilled water air conditioning system installed. A Building Management System has been implemented to optimally use energy resources within the terminal.

Additionally, halogen taxiway lighting at taxiways Alpha, Golf and Hotel have been recently replaced by new and approved ICAO LED fixtures. Consideration is in place to install other Airfield lightings to LED fixtures in the near future. Projects that aim to maintain a power factor above 0.90 in order to reduce energy usage and replacement of standard transformers with highly energy efficient transformers are on-going with a target date of end 2017. There are also plans to change all mercury and high pressure sodium streetlights to LED as well. There is a fleet modernization project underway, that is replacing company vehicles with newer fuel efficient vehicles including the aviation fire tenders over the next 5 years.

The Aurora ATM System in the Nadi ATM Centre is able to process User Preferred Routes (UPR) and Dynamic Airborne Route Planning (DARP), which allows airlines to fly and change to more efficient flight path in-flight, depending on the updated weather models. This allows reduction in overall fuel burn. On the local front, we are partnering with our national airline, Fiji Airways, to develop more efficient arrival and departure procedures with lower track miles and lower fuel burn.

ADS-B (Automatic Dependant Surveillance - Broadcast) is a ground and satellite-based technology, that enables aircraft to be accurately tracked in real time by air traffic controllers without the need for conventional Secondary Surveillance Radar (SSR). The introduction of ADS-B will benefit both Airports Fiji Limited and aircraft operators due to improved surveillance coverage, improved traffic flow, reduced fuel costs and reduced infrastructure costs. Airports Fiji Limited has installed eleven ground stations with plans to implement the surveillance control service in 2018. Fiji has mandated fitment of ADS-B equipment on board Fiji registered aircrafts to take advantage of the many benefits that flow from this versatile technology.

6. Do you have a flagship CO_2 emissions reduction project?

No, we have a range of projects as described above.

7. What benefits does accreditation bring you?

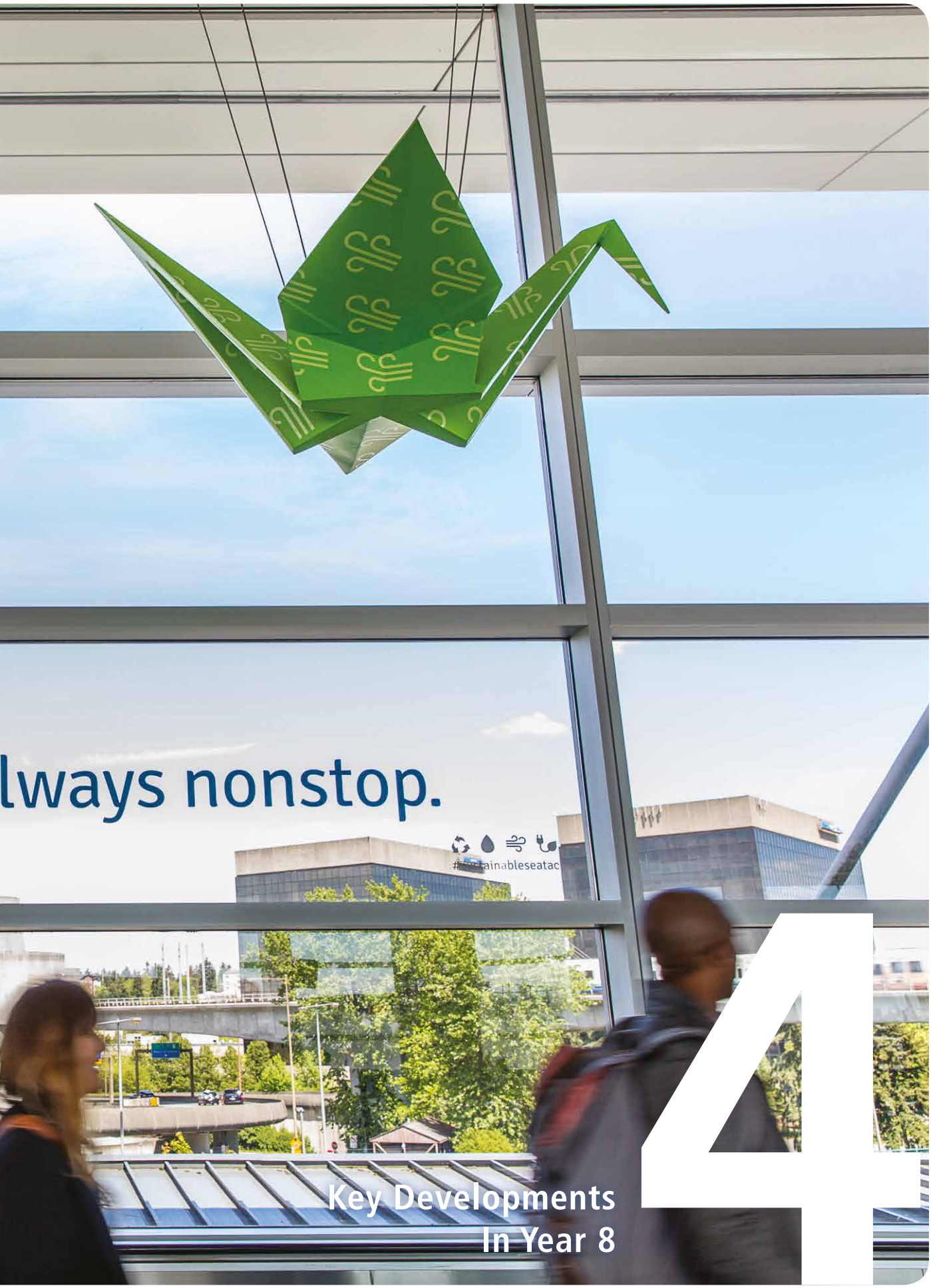
Carbon accreditation has raised our airport profile. We are proud to be the first airport in the Pacific Island States to be carbon accredited and to be recognised at an international level. It demonstrates to the Pacific and to the world our determination to operate in an environmentally sustainable manner. With our Prime Minister leading the charge as the incoming President of the COP23, we believe that organizations must lead by example and be committed to reducing carbon emissions. Pacific Island nations face the harsh reality of rising sea levels and the impact of climate change is evident with the increasing frequency and ferocity of natural disasters experienced by our own country.



Nadi International Airport



Seattle-Tacoma International Airport



4 Key Developments In Year 8

4 Key Developments In Year 8

Leading the way – carbon neutral airports

Year 8 of **Airport Carbon Accreditation** was marked by a new stage of programme expansion, with the first airports outside Europe reaching the highest accreditation level of carbon neutrality. Under **Airport Carbon Accreditation**, carbon neutrality is defined as zero net CO_2 emissions under direct control of the airport operator. Therefore, to achieve this status, an airport is required to reduce its Scope 1 and Scope 2 emissions as much as possible, and to offset the residual share, which cannot be reduced, alongside Scope 3 emissions from staff business travel. Carbon neutrality thus requires continuous efforts from an airport operator to find new ways to address its carbon footprint.

Stockholm – Arlanda Airport became the first carbon neutral airport in the world in November 2009 and set a new benchmark for other airports to follow. This achievement recognised that the airport had reduced its carbon emissions as much as possible – specifically reaching a 50% reduction in its carbon emissions over the previous 3 years; that it had actively engaged its stakeholders to lower their respective emissions and that it was offsetting the remaining CO_2 emissions that were under its direct control. Its parent group, Swedavia, went on to become the world's first carbon neutral national airport group in 2012, a major achievement within **Airport Carbon Accreditation** and the airport industry.

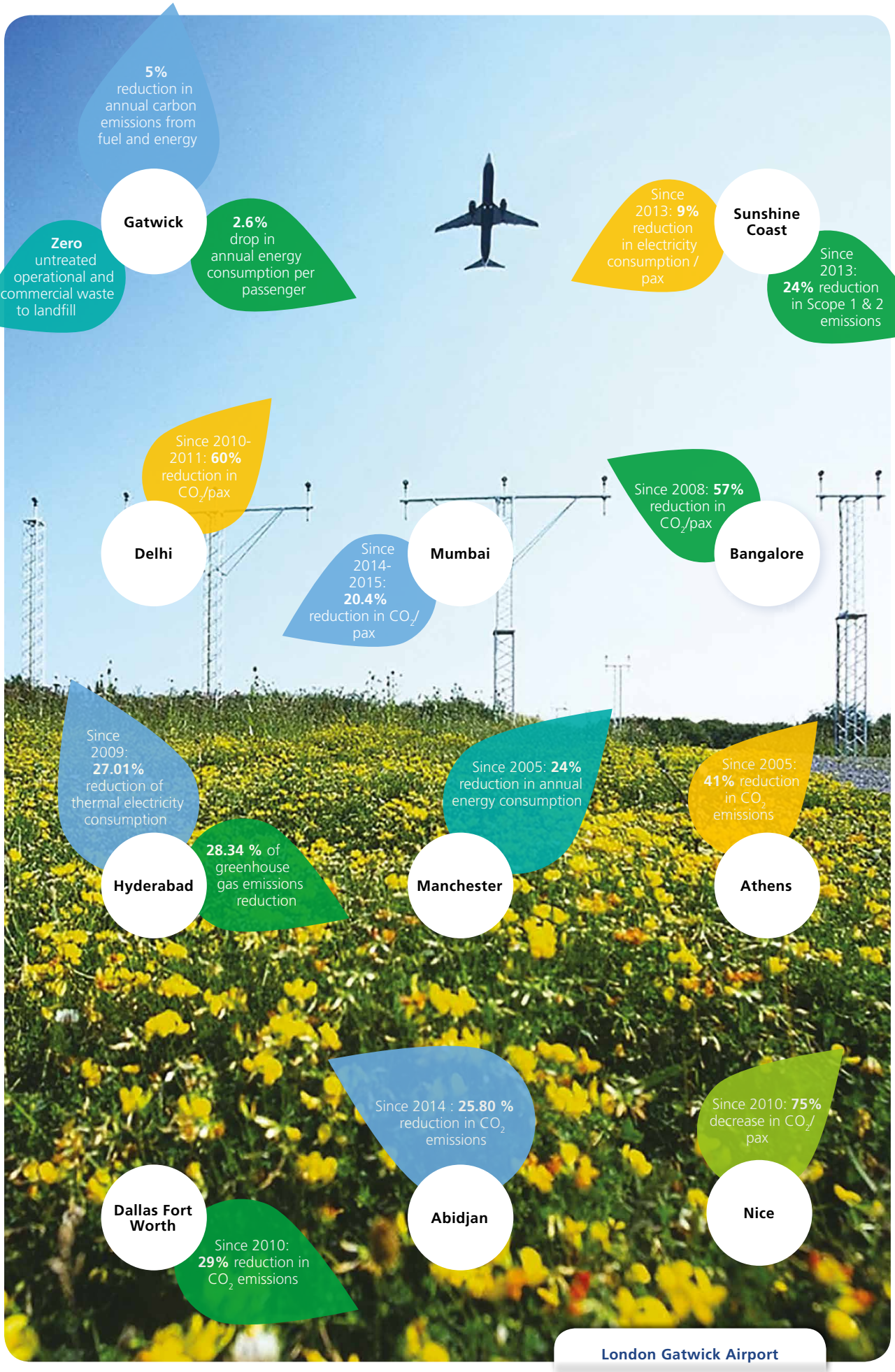
New carbon neutral airports continued to be accredited so that by 2014, when the programme became global, 22 European airports were carbon neutral.

Dallas Fort Worth became the first airport in North America and the first outside Europe to achieve carbon neutral status in year 8. It was followed by Delhi, Hyderabad, Mumbai and Bangalore Airports in India, Sunshine Coast in Australia and Abidjan Airport in Africa. Carbon neutrality also continued to gain traction in Europe, with Nice, Manchester, Athens, Lyon and London Gatwick airports becoming accredited at this level in Year 8.

In spite of the differences in their size, location and operational conditions, these airports have in common a **holistic approach to emissions management**, **addressing both the supply and consumption of energy:**

- Thus, all carbon neutral airports have been implementing more energy efficient air conditioning, heating or lighting systems. The latter concern in particular the installation of LED lights, including airside. For instance, Manchester Airport, the first carbon neutral airport in the UK, was also the first one to implement LED runway lights in the country. Another popular measure is demand-side management, for example through the adjustment of air conditioning power and/or lighting to the number of passengers present in the terminal, as implemented by Sunshine Coast, Abidjan, Dallas Fort Worth and Nice Airports.
- The use of renewable/ low carbon energy on-site is another type of initiative that many airports have in common, be it through the use of sustainable alternative fuels or electricity for ground vehicles, or the generation of renewable electricity on-site. The latter is a flagship project of Athens International Airport, which covers approx. 25% of its electricity needs through a large photovoltaic park on the airport site. Solar power also plays a significant role in the carbon management strategies of all the carbon neutral airports in India.
- Finally, several airports complement these measures by procuring electricity from renewable sources, such as Nice, Gatwick and Dallas Fort Worth Airports, which cover 100% of their electricity needs in this way.

There are currently 34 carbon neutral airports in the programme, accounting for 18% of the 189 airports in the programme at the end of this reporting year, 7.6% of global passenger traffic. Some of the key emission reduction results by newly accredited, carbon neutral airports are presented on the following page.



London Gatwick Airport

Updated pledge for Carbon Neutrality

European airports have doubled their initial pledge made at COP21 by agreeing to increase the number of carbon neutral airports from 50 to 100 by 2030. This new target was announced at the 27th ACI EUROPE Annual Congress in Paris, in June 2017. At that occasion, the outgoing ACI EUROPE President, Augustin de Romanet, stated: *"Europe's airports are fully behind the objective of keeping global warming well below 2°C and aiming to reach 1.5°C. For its part, the airport industry has already moved from words to action a while ago, through the independent carbon management programme,* **Airport Carbon Accreditation***"*.

Giving substance to this new pledge a further 26 European airports as shown below announced their intention to become carbon neutral by 2030.



GROUPE ADP · aena · AEROPORTS DE LA COTE D'AZUR · Aeroporto di Bologna · brussels airport the heart of Europe · Munich Airport · FINAVIA · Bristol Airport Amazing journeys start here · Heathrow Making every journey better · London City Airport Get closer. · Schiphol Group · AEROPORTO INTERNAZIONALE di NAPOLI · Aéroport Quimper Bretagne · Aéroport Brest Bretagne · GENEVE AÉROPORT · ZURICH AIRPORT

Review of the programme guidance on offsetting

ACI EUROPE commissioned a review of the offsetting instruments and projects, with the aim of providing airports with a more detailed guidance document in this area. The study, carried out by the consultancy Ecofys, is reviewing the quality criteria that offset credits should comply with under the current Programme Guidance (verification, additionality, permanency, no double accounting and avoidance of leakages) as well as the compliance of offsetting standards and project types with these and possibly additional criteria.

When completed, the study will be reviewed by the **Airport Carbon Accreditation** Advisory Board which will then decide on how best to use its findings in the programme guidance. This work is expected to be completed by the end of Year 9 of the programme.

Keeping the programme tools and processes fit for purpose

Over the years, **Airport Carbon Accreditation** has grown in size and complexity. Attention has focused this year on continuing to ensure that the technical requirements of the programme are modified as needed in the light of issues raised by airports during the certification process and on ensuring that the programme tools and processes are kept fit for purpose.

Because of the lack of approved verifiers in Africa and Latin America and to keep down the cost of verification, which can be a barrier for entry into the programme, an offsite verification trial has been launched for airports in these regions at Levels 1 and 2 and with less than 6 million passengers per year. 5 airports were successfully verified offsite under this trial– 4 of which were in Africa and 1 in Latin America.

To minimise the administrative overhead during the application process, there is an ongoing trial for airport multi-site certification to test possible efficiencies if an airport group makes a simultaneous application for several of its airports. Currently, one airport group is trialling this possibility.

A simplified and revised Programme Guidance (10th edition) has been issued and an in-depth revision of the **Airport Carbon Accreditation** on-line application tool has been launched to make it more user-friendly and efficient. It will be completed later in 2017.

Furthermore, a 5th edition of the ACI World Airport Carbon Emissions Reporting Tool (ACERT) has been issued. While this tool can be used for different purposes and not only **Airport Carbon Accreditation**, its new version helps an airport better identify the carbon footprinting requirements for the programme and transfer the relevant data into the **Airport Carbon Accreditation** on-line application tool.

At a more strategic level, **Airport Carbon Accreditation** is increasingly facing the challenge of dealing with airports of different carbon management maturity levels in the programme. Airports that have already implemented a wide range of carbon management initiatives encounter the difficulty of finding new options for emissions' reductions. Consequently, consideration is being given to ways in which airport investments in energy efficiency and renewables can be optimised, so as to support the realisation of ongoing emissions' reductions over time.

Mindful that the programme aims and objectives should continue to be consistent with the overall global climate policy framework, consideration has begun as to how the programme should evolve over the longer term. This work is ongoing and will largely be carried out in Year 9 of the programme in consultation with the programme participants and external stakeholders.

Approving and training verifiers

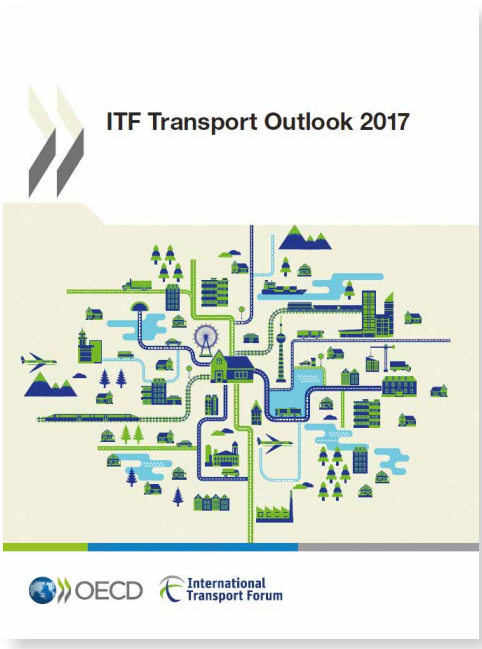
There are currently 116 approved verifiers of which 54 are in Europe, 41 in Asia-Pacific, 18 in North America, 2 in Latin America and none in Africa, where verification has been done by European based verifiers. 21 new verifiers were approved in the course of the year.

18 verifiers left the programme last year due to inactivity. Approved verifiers retain their status individually for a period of 2 calendar years following their acceptance as an approved verifier. If, during this period, they have not undertaken any airport verification under the programme they must take a refresher training if they wish to remain as an approved verifier under the programme. All new verifiers must provide their credentials for having previously carried out greenhouse gas assurance work.

Details of the requirements to become an approved verifier and the list of currently approved verifiers are posted on the **Airport Carbon Accreditation** website at www.airportcarbonaccreditation.org.

Communication and recognition

In this reporting year, the regular programme communication activities, such as the biannual publication of the e-newsletter AirportCO_2 News, have continued. A revised version of the programme brochure has been published as well. The programme also provided communications support to individual airports, for instance through the preparation of dedicated animations and banners for display in airport terminals.



Following the successful presence of **Airport Carbon Accreditation** at the COP21, the programme was also involved in the COP22 in Marrakesh. In particular, it was discussed at a dedicated event on sustainable airports organized by the French Directorate General for Civil Aviation (DGCA) and sessions of the Marrakech Partnership for Global Climate Action (MPGCA), the successor of the Lima-Paris Action Agenda, involving a selected set of climate initiatives in the area of transport, amongst which **Airport Carbon Accreditation** was included. A particular highlight was a certification ceremony for the airports of Marrakech and Casablanca, which entered the programme at Level 1 just before the start of COP22. This ceremony was organised with very strong support by the UNFCCC.

It is also noteworthy that **Airport Carbon Accreditation** has been featured in the ITF Transport Outlook 2017, an authoritative publication by the International Transport Forum of the Organisation for Economic Cooperation and Development (OCDE). In particular, this publication recognized the progress achieved by accredited airports in terms of an improving efficiency of airport operations, with CO_2 emissions per passenger showing an overall decrease at the global level from programme Year 2 through 7.



Adelaide Airport



Palma de Mallorca Airport



5

Munich Airport

5 Looking Ahead To Year 9

The programme has been operative since July 2009 and participation numbers continue to increase. But growth is not everything and there is a need to examine what the future of the programme should look like, especially in the context of the overall climate change policy framework. Although consideration of this matter has already begun, this will be a focus of work in Year 9.

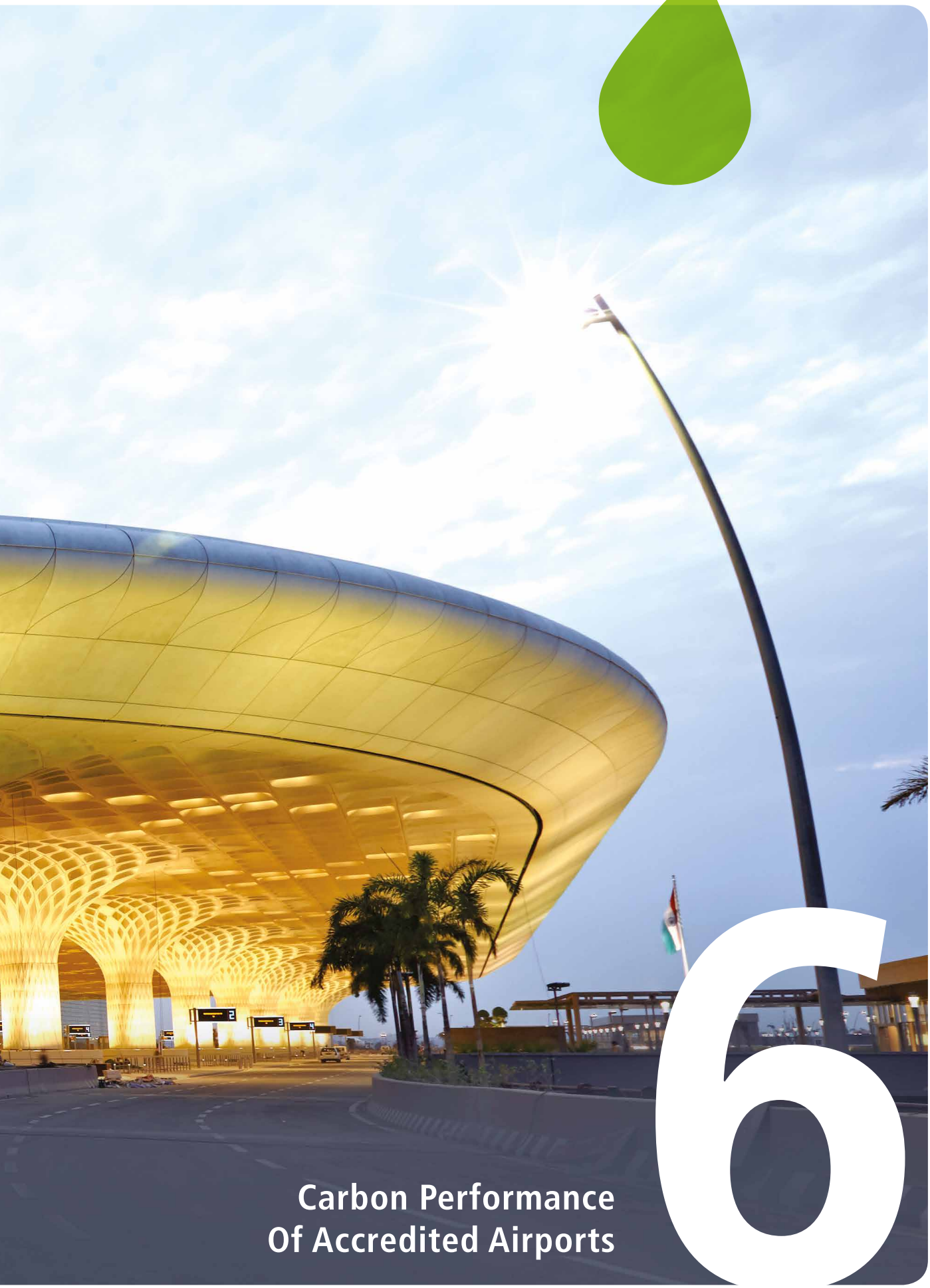
Other key aims for Year 9 include:

- Support achievement of carbon neutrality through appropriate tools, studies and processes as well as continued collaboration with the UNFCCC
- Analyse existing airport carbon reduction initiatives and identify best practices
- Review and adjust the offset procurement requirements of the programme in view of the study commissioned by ACI EUROPE
- Continue to work with EUROCONTROL to support the use of Collaborative Environmental Management (CEM) by airports in order to demonstrate compliance with stakeholder engagement requirements at Levels 3 and 3+
- Continue to ensure the robustness of verification by revising the verifier training programme and, as needed, verifier requirements
- Complete revision of the on-line application tool





Mumbai Chhatrapati Shivaji International Airport



6

Carbon Performance Of Accredited Airports

6 Carbon Performance Of Accredited Airports

This chapter presents the carbon performance data of accredited airports of the programme using several metrics, which are set out and described in each section below.

Highlights

The main carbon performance results of Year 8 can be summarized as follows:

1. Reflecting the growth in programme participation compared to the previous year, the total aggregate carbon footprint of the accredited airports has increased from 4,708,606 tCO_2 to 5,996,379 tCO_2. The accredited airports have nevertheless collectively demonstrated reductions in their Scope 1 and 2 emissions, both in absolute and relative terms, compared to the three-year-rolling average of their historical emissions. Thus, they have shown a reduction of **202,184 tCO_2**, and the emissions per passenger have decreased by 13%, from 2.50 $kgCO_2$/passenger to 2.16 $kgCO_2$/passenger.
2. At the regional level, airports in Europe and North America have shown reductions both in their absolute and relative emissions. Asia-Pacific and Latin America & the Caribbean have seen their absolute emissions increase, but reductions have been achieved in relative terms. In Africa, absolute emissions have decreased but an increase in relative emissions has been reported.

Region	Absolute emissions reductions (Scope 1&2, in tCO_2)	Relative emissions reductions (Scope 1&2, in $kgCO_2$/ passenger)
Europe	155,259	15%
Asia-Pacific	-8,604	14%
North America	55,397	13%
Africa	650	-19%
Latin America & the Caribbean	-519	8%

3. There has been a global and regional increase in Scope 3 emissions which can be attributed to growth in both air traffic (passenger numbers) and the number of airports certified at Levels 3 and 3+, showing more airports committing to manage and thus reporting on the Scope 3 emissions.

Explanatory notes

The following caveats must be taken into account when analysing the carbon performance of accredited airports:

1. Operating conditions of each airport differ significantly due to the varying ownership structures, activity scopes, traffic volume but also geographic and climatic conditions. Consequently, comparisons between individual airport carbon footprints can be misleading. **Airport Carbon Accreditation** therefore does not disclose individual airport emissions data, but only aggregated data.

2. This also means that, when in a region, the number of accredited airports is limited (or has been limited in the past), the related airports' footprints and emissions' reductions are not included in some of the metrics. When this is the case, the region in question is also not taken into account for the global results calculated with those metrics.

3. The reporting year 2016-2017 relates to the emissions reported in year 0 by the airports, i.e. the year defined as reference for comparison with historical emissions. This does not necessarily cover the emissions released or reductions achieved in 2016-2017, as this data may not yet be available for the airport to report on. Airports do endeavour to report the most up to date data available.

4. Emissions' reductions have to be demonstrated against the average historical emissions of the three years before year 0. As year 0 changes every year upon an airport's renewal/upgrade, the three years selected for the average calculation do so as well. Consequently, airports have to show emissions reductions against a **three-year-rolling average**.

   The use of the three-year-rolling average means that it is not possible to aggregate the total emissions reductions between reporting years, as this would lead to the double counting of some emissions' reductions.

5. Newly accredited airports may not have three years of historical data available. The programme therefore recognises, that until such data is available, airports can measure reductions against either one or two years of historical data.

6. Reduction of emissions can be demonstrated either against an absolute benchmark (i.e. showing a reduction in the absolute emissions of an airport) or a relative benchmark (i.e. showing a reduction in emissions per passenger or traffic unit).

7. Most of the metrics relying on relative emissions presented in this report are based on passenger numbers of the airports. This reflects the fact that the main type of traffic covered by the accredited airports is passenger traffic. Nevertheless, cargo activities play an important role at several certified airports. Overall, air transport carries around 35% of world trade by value, even though it represents less than 1% by volume.[9] Therefore, a dedicated albeit less detailed section demonstrating the airports' performance based on traffic units (accounting for both passenger and cargo traffic) is included in this report.

8. All airports in the programme have to calculate the emissions associated with the consumption of purchased electricity (Scope 2) according to both the location-based and the market-based methodology, except if they operate in a market with no choice of electricity products. For the location-based methodology, the grid emissions factor is used, which includes all (renewable and non-renewable) sources in a country or region. The market-based methodology enables the use of emissions factors directly related to the electricity product an airport purchases. However, only airports which are already certified at Level 3 or 3+ are allowed to demonstrate reductions using the market-based approach, to ensure that airports at lower levels of accreditation focus their emissions' reduction efforts on on-site emissions. Therefore, the figures shown on this report relate to the location-based methodology. Consequently, **emission reductions achieved through the purchase of lower or zero carbon electricity products, reflected in market-based reporting, are not shown in this report**.

9. The carbon performance results reflect solely the carbon footprints of accredited airports, and **must thus not be used to extrapolate the performance of the whole airport industry at the global or regional level**.

9 Air Transport Action Group, Aviation Benefits Beyond Borders, 2016, page 9

Aggregate reduction of emissions

This section shows the aggregate emissions' reductions of the participating airports globally and split by region.

The following metrics are used:

- **Aggregate Scope 1 & 2 Reductions (all levels)**
- **Aggregate Scope 1 & 2 Reductions (Level 2 and above)**
- **Aggregate Scope 3 Reductions**

Aggregate Scope 1 & 2 Reductions (all levels)

The table below shows aggregate Scope 1 & 2 emissions' reductions achieved by airports that are part of the programme, at all levels. It thus also includes airports at Level 1 which have provided sufficient historical data, and airports at higher levels that have used a relative (per passenger) emissions benchmark instead of an absolute benchmark to demonstrate reductions. The negative figures represent an increase in absolute emissions, which can be attributed to a high number and size of airports at Level 1 and airports demonstrating carbon reductions on a relative basis.

After having reduced Scope 1 & 2 emissions by 205,381 tCO_2 in 2015-2016, participating airports were able to reduce their emissions by 202,184 tCO_2 in 2016-2017 against the three-year-rolling average.

Region	Aggregate Scope 1 and 2 reductions, all levels (tCO_2)	
	2015-2016	2016-2017
Global ***	**205,381****	**202,184**
Europe	157,837	155,259
Asia-Pacific	41,038	-8,604
North America	6,506	55,397
Africa	*	650
Latin America & The Caribbean	*	-519

** For confidentiality reasons, the 2015-2016 data for Africa and Latin America & the Caribbean have not been included.*

*** The global figure for 2015-2016 is different to the one reported in the Year 7 Annual Report, because the latter had included data from Latin America & the Caribbean.*

**** Global figures include all available data that can be disclosed in the year due to confidentiality reasons.*

Globally, a slightly decreased but overall stable and continuous reduction has been achieved in Scope 1 & 2 emissions this year compared to Year 7. This result is mainly due to an overall stable European performance compared to last year and changes in the performance of Asia-Pacific and North America. The former can be explained by the fact that it becomes increasingly difficult for airports to demonstrate reductions of emissions once they have participated in the programme for several years and thus exhausted a certain range of emissions' reduction options. In addition, most of the new programme entrants in Europe are airports at Level 1, which are not required to demonstrate reductions.

In Asia-Pacific, absolute emissions at the aggregate level have increased. This was mostly due to several airports shifting from showing reductions last year into showing increases this year due to the growing traffic, with several airports demonstrating reductions against a relative benchmark.

This trend was however compensated by the strong performance improvement in North America, the last region to join **Airport Carbon Accreditation**, reflecting the programme entry of several airports demonstrating absolute emissions' reductions. Furthermore, several already certified airports have moved from showing an increase in emissions in Year 7 into decreasing their emissions this year. In addition, airports that had already demonstrated large reductions last year could further improve their performance in 2016-2017.

Due to the programme growth in Africa and Latin America & the Caribbean, we are able to show carbon performance results for these regions for the first time this year. African airports have been able to demonstrate a reduction, while airports from Latin America & the Caribbean have shown an increase in emissions. The latter can be explained by the fact that 4 out of the 6 accredited airports in the region are at Level 1, which thus do not have to show reduction of emissions. In Africa, the breakdown between airports at Level 1 and the higher accreditation levels is similar to the one in Latin America, but the reductions achieved reflect solely the performance of the 3 airports certified at Levels 2 and 3+. Airports at Level 1 did not provide historical data for the inclusion in this metric.

Aggregate Scope 1 & 2 Reductions (Level 2 and above)

The table below presents the aggregate Scope 1 & 2 emissions' reductions of accredited airports at Level 2 or above. Airports accredited at these levels are required to show a continuous reduction in emissions each year. These figures include Level 2 applications that have seen increase in absolute (total) emissions at the airports while using a relative (per passenger) emissions benchmark in order to demonstrate a reduction.

Region	Aggregate Scope 1 and 2 reductions, Levels 2 and above (tCO_2)	
	2015-2016	2016-2017
Global**	**187,880**	**173,019**
Europe	156,012	155,205
Asia-Pacific	25,347	-29,044
North America	6,521	46,207
Africa	*	650

** For confidentiality reasons, the 2015-2016 data for Africa and data for Latin America & the Caribbean has not been included.*

*** Global figures include all available data that can be disclosed in the year due to confidentiality reasons.*

This metric shows very similar trends to the previous one, with absolute emissions' reductions being demonstrated globally, as well as by Europe, North America and Africa, and with Asia-Pacific seeing its absolute emissions increase.

The reasons for these trends are similar to those explained under the previous metric. Africa displays the same decrease in absolute emissions, as no Level 1 airport has been included under the previous metric, due to the lack of historical data. In Asia-Pacific, the increase in absolute emissions is even larger when looking only at airports at Level 2 and above, which means that some airports at Level 1 have demonstrated reductions in this region.



Brussels Airport

Aggregate Scope 3 Reductions

As described in the programme overview section, airports accredited at Levels 1 or 2 only have to map their Scope 1 and 2 emissions – those over which they have direct control. Airports do however have a responsibility in trying to influence the third party stakeholders operating at the airport to support them in reducing their emissions. Therefore, airports accredited at Levels 3 and 3+ have to include Scope 3 emissions into their carbon footprint and engage with stakeholders to encourage the improvement of their carbon management practices and performance. They are not required to demonstrate a reduction in Scope 3 emissions. But should an airport be able to show a reduction on at least one Scope 3 source, it can benefit from a three-year-renewal cycle instead of a yearly one, under certain conditions.

The table below presents the aggregate Scope 3 emissions of accredited airports at Level 3 or 3+. Some airports at Levels 1 and 2 voluntarily provide Scope 3 emissions in their application but these figures are not included in the aggregate results as they are not verified.

All of the figures in the table are negative as the emissions have increased globally and in all regions. This increase is expected as more airports upgrade and join the programme at Level 3 and 3+ (which brings more Scope 3 emissions to the programme) and as airports continue to grow while not having control over these emissions.

Region	Aggregate Scope 3 reductions, Levels 3 / 3+ (tCO_2)	
	2015-2016	2016-2017
Global***	**-476,684**	**-2,186,818**
Europe	-141,723	-898,624
Asia-Pacific	-334,960	-531,053
North America	*	-757,141

** For confidentiality reasons, the 2015-2016 data for North America and all data for Latin America & the Caribbean and Africa has not been included.*

**** Global figures include all available data that can be disclosed in the year due to confidentiality reasons.*

Scope 3 emissions increased more during 2016-2017, than they did during 2015-2016 in Europe and in Asia-Pacific. In Europe, this is due to a combination of the following factors:

- Some airports reported a reduction in Scope 3 emissions in Year 7, but an increase in Year 8,
- Some airports were already experiencing an increase in their Scope 3 emissions in Year 7, but saw them increase at a higher level this year. In particular, three single airports contributed by more than 400,000 tCO_2 to the increase in Scope 3 emissions from last year into this year.

In Asia-Pacific, the main reason for the increase in Scope 3 emissions is a number of airports that were certified for the first time at Levels 3 or 3+. In particular, four airports that were new at these levels together brought over 270,000 tCO_2 of Scope 3 emissions.

Notwithstanding the absolute Scope 3 emissions increase in the programme, 7 airports on a three-yearly renewal cycle have achieved reductions on at least one Scope 3 emissions source. Collectively, they achieved the reductions below. However, no regional data can be provided due to confidentiality reasons.

Global aggregate absolute Scope 3 reductions for 3-yearly renewal applications (tCO_2)		
Emissions before active stakeholder engagement initiative	Emissions after active stakeholder engagement initiative	Reductions achieved
68,708	**40,880**	**27,828**

Aggregate emissions released

This section shows the aggregate emissions released by the participating airports globally and split by region. The following metrics are used:

- **Aggregate Scope 1 and 2 emissions (all levels)**
- **Aggregate Scope 3 emissions (Levels 3 / 3+)**
- **Emissions offset**

Aggregate Scope 1 and 2 emissions (all levels)

The table below presents the aggregate Scope 1 & 2 emissions released by all accredited airports this year (2016-2017) and last year (2015-2016) for context. Aggregate emissions released account for all levels of the programme.

Region	Aggregate Scope 1 and 2 emissions, all levels (tCO_2e)	
	2015-2016	2016-2017
Global**	**4,708,606**	**5,996,379**
Europe	2,013,021	2,025,467
Asia-Pacific	2,061,976	2,540,226
North America	633,610	1,174,567
Africa	*	216,599
Latin America & The Caribbean	*	39,520

** For confidentiality reasons, the 2015-2016 data for Africa and Latin America & the Caribbean has not been included.*

*** Global figures include all available data that can be disclosed in the year due to confidentiality reasons.*

Aggregate Scope 1 and 2 emissions have increased globally and across all regions, due to an overall increase in participating airports. Aggregate emissions in Europe have not increased significantly, due to the fact that the majority of airports joining the programme in this region were rather small (all under 6 million passengers). In North America, aggregate Scope 1 and 2 emissions have almost doubled when compared to the previous year. This reflects the entry of nine new airports from this region to the programme now accounting their emissions, representing a 69% increase in participation compared to the previous year.

Aggregate Scope 3 emissions (Levels 3 / 3+)

The table below presents the aggregate Scope 3 emissions released by third party emissions sources of airports that have been accredited at Level 3 and 3+ of the programme. Airports below these levels are not required to provide a verified Scope 3 carbon footprint. Some airports voluntarily provide Scope 3 emissions in their application but these figures are not included in the metrics below as they are not verified.

Region	Aggregate Scope 3 emissions, Levels 3 / 3+ (tCO_2e)	
	2015-2016	2016-2017
Global**	**19,793,823**	**45,414,963**
Europe	14,992,153	18,011,016
Asia-Pacific	4,801,670	8,792,025
North America	*	18,611,922

** For confidentiality reasons, the 2015-2016 data for North America and all data for Africa and Latin & the Caribbean has not been included.*

*** Global figures include all available data that can be disclosed in the year due to confidentiality reasons.*

An increase in Scope 3 emissions is observed globally, in Europe and in Asia-Pacific. In these two regions, it can be explained by a higher number of airports certified at Levels 3 and 3+ (which either upgraded from lower levels, or in some cases, joined the programme directly at Level 3 or 3+). At the global level, emissions at North American airports play an important role: aggregate Scope 3 emissions in that region were not reported for 2015-2016, as there were not enough airports at Levels 3 and 3+ as to preserve the confidentiality of their data. This situation changed in 2016-2017, which significantly increased the reported Scope 3 emissions globally.

Emissions Offset

The table below presents the aggregate emissions offset by airports accredited at Level 3+ of the programme. The programme requires airports at Level 3+ to offset their residual Scope 1 & 2 emissions as well as Scope 3 emissions from staff business travel. Airports below this level are not required to do so.

As there is only one carbon neutral airport in Africa and North America respectively, information is not disclosed for these regions. Europe and the Asia-Pacific regions have the critical mass (i.e. certified airports) to be included in this section.

Region	Aggregate emissions offset, Level 3+ (tCO_2e)	
	2015-2016	2016-2017
Global**	**222,339**	**537,635**
Europe	222,339	252,218
Asia-Pacific	*	285,417

** For confidentiality reasons, the 2015-2016 data for Asia-Pacific has not been included.*

*** Global figures include all available data that can be disclosed in the year due to confidentiality reasons.*

The large increase in emissions offset between the two reporting years reflects the increase in the amount of carbon neutral airports certified under the programme.



Taiwan Taoyuan International Airport

Aggregate relative emissions

The following metrics have been used to display aggregate relative Scope 1 and 2 emissions released and reductions achieved by the accredited airports globally and split by region:

- **Relative (per passenger) Scope 1 & 2 emissions released (all levels) - Year 1 to 8**
- **Percentage (per passenger) relative Scope 1 & 2 emissions reductions (all levels)**
- **Percentage (per passenger) relative Scope 1 & 2 emissions reductions (Level 2 and above)**
- **Aggregate relative emissions per Traffic Unit**

Relative (per passenger) Scope 1 & 2 emissions released (all levels)

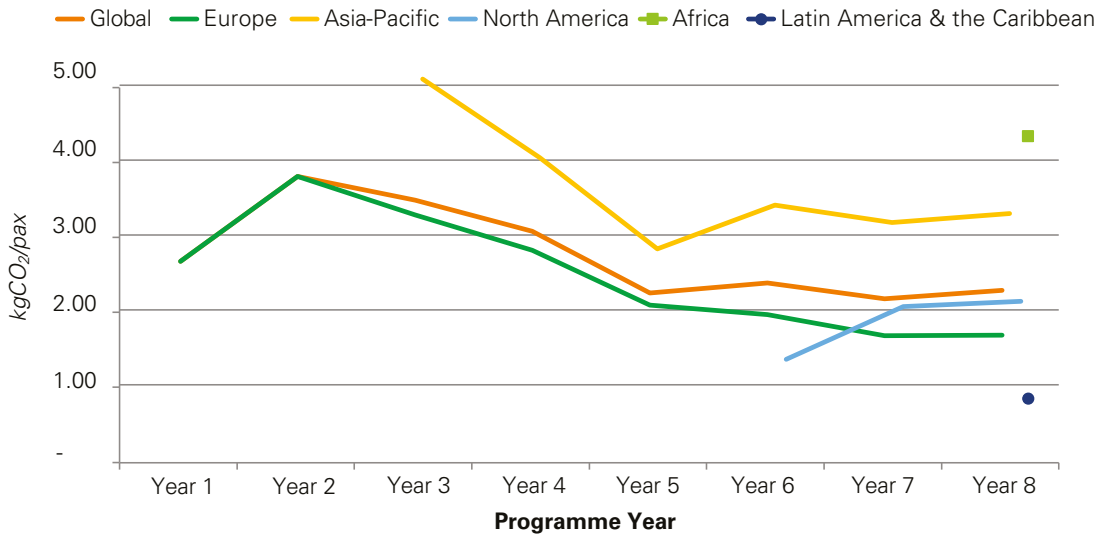
The table and graph below present the aggregate relative (per passenger) Scope 1 & 2 emissions released by airports accredited at all levels of the programme from the beginning (Year 1 - 2009-2010) to the current year of the programme. This also includes data from airports at Level 2 and above, that have chosen an absolute benchmark to demonstrate reductions. This metric best reflects the performance of certified airports, as it allows the comparison of emissions over the life time of the programme on a like-for-like basis, accounting for the emissions released in relation to the number of passengers covered by the accredited airports, through the years.

As the programme originated in Europe before expanding to other regions, the European and global figures are the same for the first two years. Consequently, there are some gaps in the data for other regions in the earlier years and Year 8 is the first programme year in which a sufficient number of airports have been certified in each region to allow the disclosure of data for all regions.

This metric shows that globally participating airports have been reducing their relative emissions over the time of the programme, although there are some exceptions. In Europe and Asia-Pacific, after dropping significantly between Year 3 and 5, emissions per passenger have been showing a trend towards stabilisation since year 6, which is also reflected in the global results. For other regions, sufficient data is not yet available to interpret the changes in emissions.

Region	Scope 1 and 2 emissions released per passenger, all levels ($kgCO_2e$/pax)							
	Year 1 (2009-2010)	Year 2 (2010-2011)	Year 3 (2011-2012)	Year 4 (2012-2013)	Year 5 (2013-2014)	Year 6 (2014-2015)	Year 7 (2015-2016)	Year 8 (2016-2017)
Global	**2.60**	**3.73**	**3.42**	**3.00**	**2.17**	**2.31**	**2.10**	**2.21**
Europe	2.60	3.73	3.22	2.75	2.01	1.89	1.61	1.61
Asia-Pacific			4.95	3.91	2.69	3.28	3.04	3.16
North America						1.33	2.04	2.11
Africa								4.22
Latin America & The Caribbean								0.83

Relative Scope 1 & 2 emissions released (all levels - Year 1 to Year 8)



Percentage relative (per passenger) Scope 1 & 2 emissions reductions (all levels)

This section presents the comparison between this year's aggregate relative (per passenger) Scope 1 & 2 emissions and the three year rolling average of aggregate relative (per passenger) Scope 1 & 2 emissions of all airports certified by the programme. Due to the use of the three-year-rolling average, reductions shown with this metric will not be equal to those demonstrated when comparing the Year 8 aggregate relative emissions with those of Year 7 as presented in the previous section.

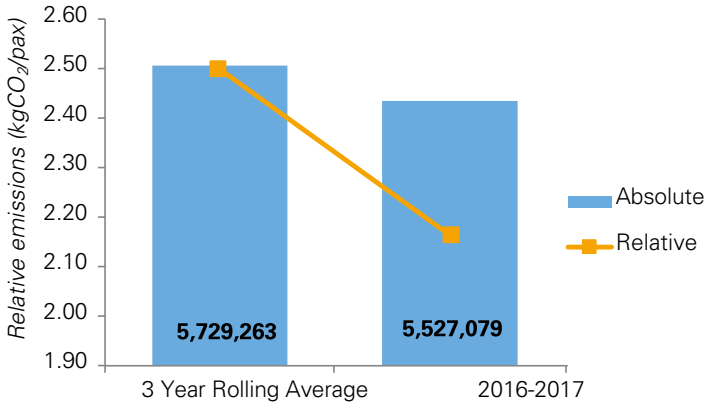
The relative reductions account for all levels of the programme, including airports at Level 1, as long as they have provided sufficient historical data.

Region	Scope 1 and 2 relative emissions reductions per passenger (all levels)		
	3-year-rolling average ($kgCO_2e$/pax)	2016-2017 ($kgCO_2e$/pax)	Percentage change (%)
Global	2.50	2.16	13%
Europe	1.90	1.61	15%
Asia-Pacific	3.70	3.19	14%
North America	2.22	1.93	13%
Africa	2.65	3.14	-19%
Latin America & the Caribbean	1.28	1.18	8%

All regions except Africa are showing a reduction in emissions per passenger, with Europe, Asia-Pacific and North America also displaying very similar reduction rates. To explain these results, it is necessary to combine them with the absolute emissions' results from the first section: the graphs below show the three-year-rolling average and Year 8 aggregate absolute and per passenger emissions released by airports that have been certified at all levels of the programme.

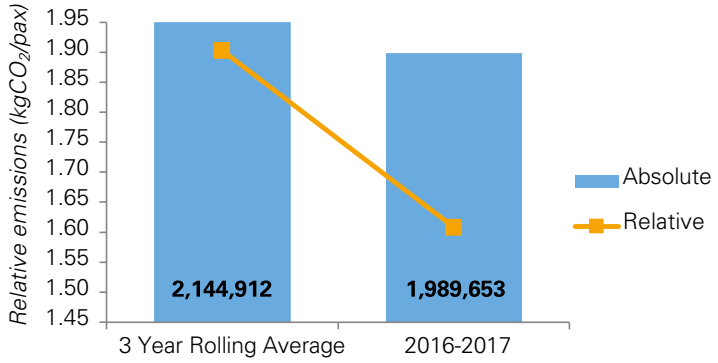
Globally, absolute and relative emissions' reductions have been achieved. This points to an increased efficiency of operations of the accredited airports, as an increase in passenger numbers alone cannot explain both absolute and relative improvements:

Global - Emissions released (all levels)

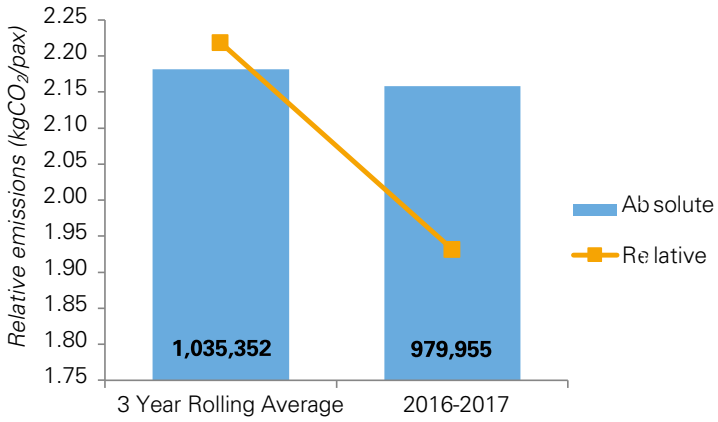


In Europe and North America, a similar trend is observed:

Europe - Emissions released (all levels)

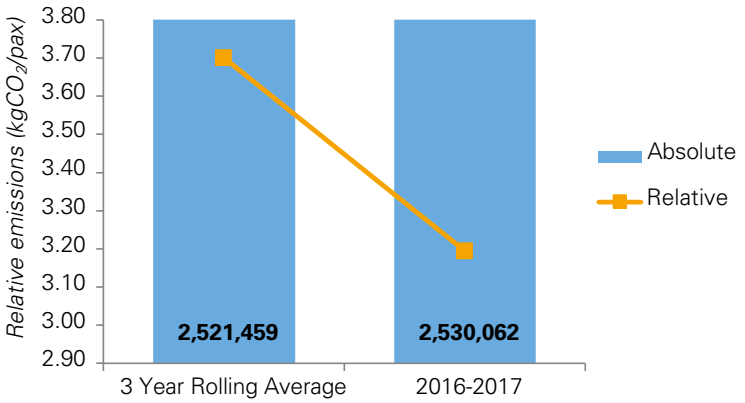


North America - Emissions released (all levels)



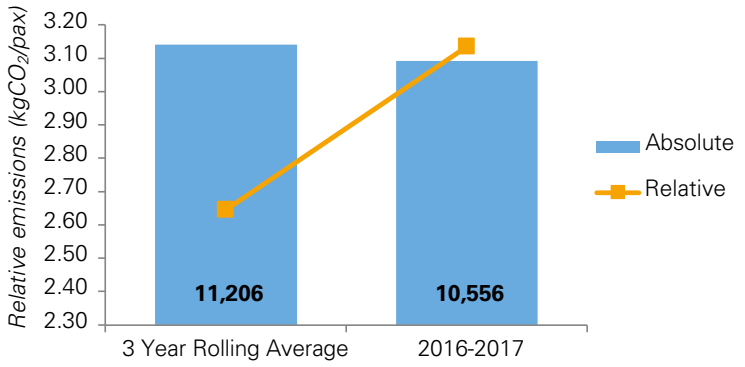
In Asia-Pacific, there has been a significant relative reduction, but a slight increase in absolute emissions. This is due to the number and size of airports choosing to use a relative benchmark to demonstrate a reduction and the increase in the number of passengers covered by certified airports in the region:

Asia-Pacific - Emissions released (all levels)



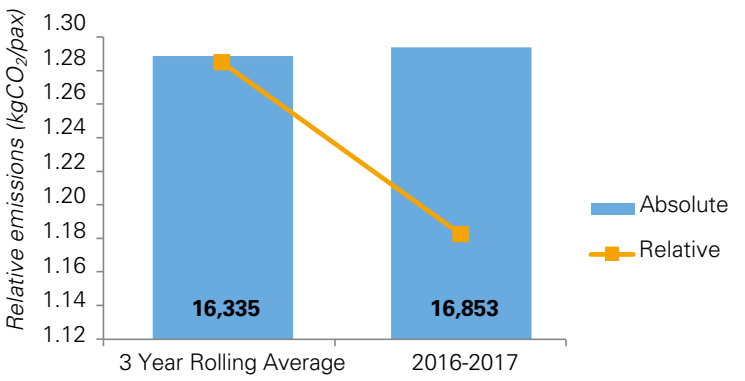
In Africa, there has been a reduction in absolute emissions but an increase in relative emissions. The latter is due to a decrease in passenger numbers covered by certified airports within the region, when compared to the three-year-rolling average:

Africa - Emissions released (all levels)



In Latin America & the Caribbean, a relative reduction has been achieved but it came along with an increase in absolute emissions. This is due to the majority of the airports in the region being at Level 1, with only two at Level 2. They are thus currently mapping their emissions and are not required to show reductions in absolute or relative terms. Given the increased absolute emissions, the reduction in emissions per passenger points to an increase in passenger traffic covered by the certified airports, when compared to the three-year-rolling average:

Latin America & the Caribbean - Emissions released (all levels)



Percentage relative (per passenger) Scope 1 & 2 emissions reductions (Level 2 and above)

This section compares this year's aggregate relative (per passenger) Scope 1 & 2 emissions to the three-year-rolling average of aggregate relative (per passenger) Scope 1 & 2 emissions of airports certified by the programme at Level 2 or above - demonstrated in the table below.

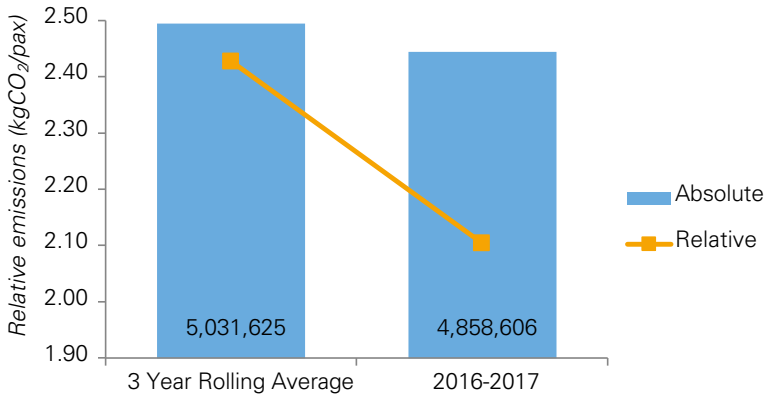
To preserve the confidentiality of data provided by individual airports, information will not be disclosed for Latin America & the Caribbean as there are not enough certified airports at Level 2 and above.

Region	Scope 1 and 2 relative emissions reductions per passenger (Level 2 and above)		
	3-year-rolling average ($kgCO_2e$/pax)	2016-2017 ($kgCO_2e$/pax)	Percentage change (%)
Global	**2.43**	**2.10**	**13%**
Europe	1.93	1.63	16%
Asia-Pacific	3.69	3.20	13%
North America	2.01	1.74	13%
Africa	2.65	3.14	-19%

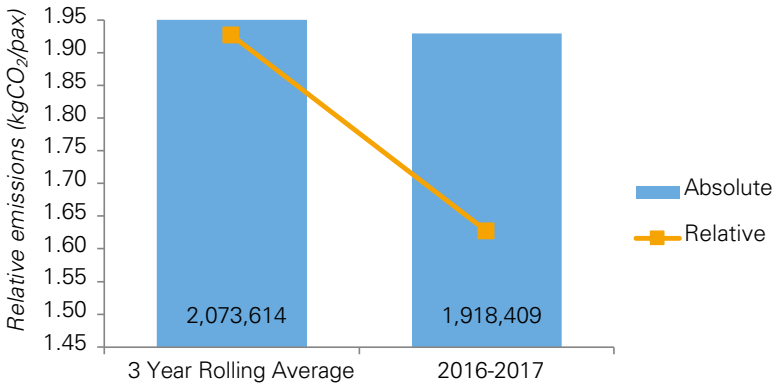
The results are very similar when comparing them to those presented in the previous section. The discounting of Level 1 airports does thus not change significantly the relative emission performance of the airports. In some cases, such as Africa, this is related to the absence of historical data for Level 1 airports, which were thus already excluded from the previous metric. In other cases, such as Asia-Pacific, this is due to emissions' reductions being achieved by Level 1 airports, even if it is not a programme requirement at that level.

Consequently, the performance is also very similar to the one presented in the previous section when combining the absolute and relative performance metrics, as done in the graphs below. Hence, the same explanations apply to these results:

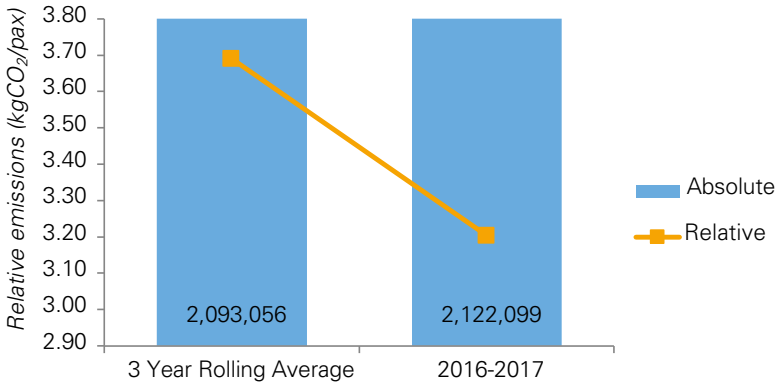
Global - Emissions released (Level 2 and above)



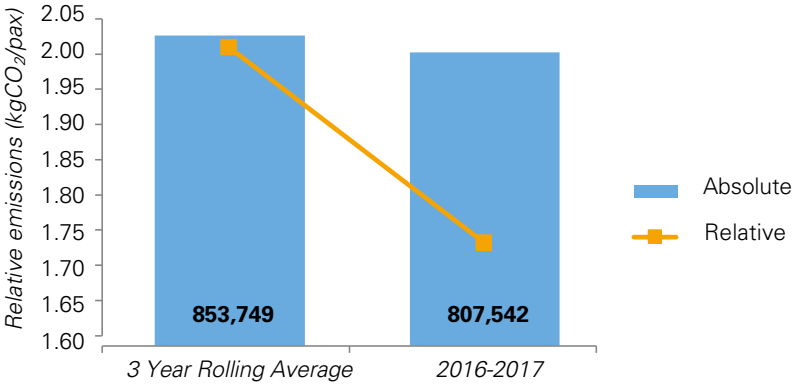
Europe - Emissions released (Level 2 and above)



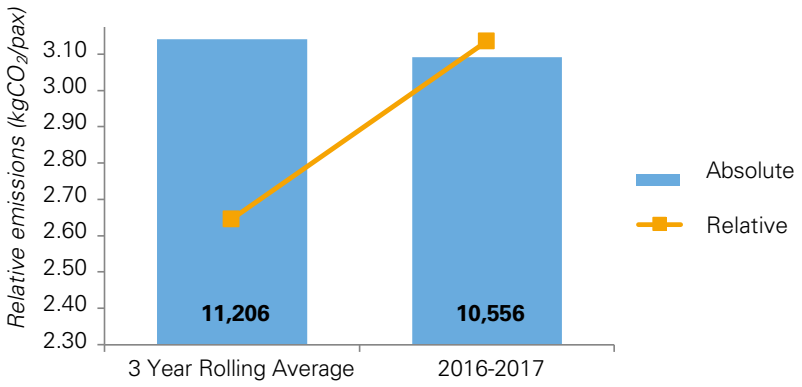
Asia-Pacific - Emissions released (Level 2 and above)



North America - Emissions released (Levels 2 and above)



Africa - Emissions released (Levels 2 and above)



Aggregate relative emissions per traffic unit

As well as passenger numbers, airports participating in the programme are able to use traffic units (TU) to demonstrate a relative reduction. A TU is defined as either a passenger or 100 kg of cargo (so for example an airport that handled 1,000 passengers and 100,000 kg of cargo over a year would have 2,000 TU – 1,000 TU from the 1,000 passengers and 1,000 TU from the 100,000 kg of cargo). This enables airports with significant cargo activities to report in a comprehensive way on their carbon performance.

The following metrics are used in this section. Results are presented at the global level only:

- **Relative Scope 1 & 2 emissions released (all levels) - Year 5 to 8**
- **Percentage relative Scope 1 & 2 emissions reductions (all levels)**
- **Percentage relative Scope 1 & 2 emissions reductions (Level 2 and above)**

Relative Scope 1 & 2 emissions per TU (all levels) - Years 5 to 8

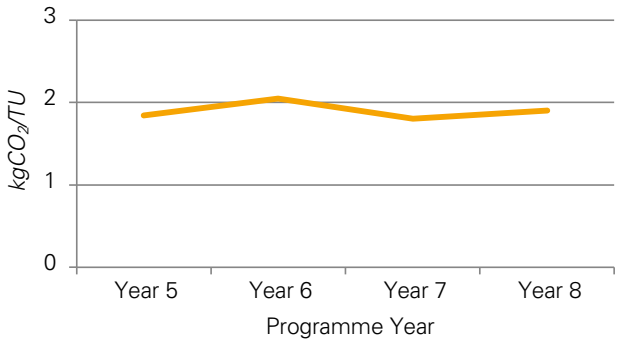
The table and graph below present the relative Scope 1 & 2 emissions per TU, released by airports accredited at all levels of the programme, from Year 5 to Year 8. Due to the availability of data, the metric does not go back to earlier years.

In order to preserve the confidentiality of data submitted by individual airports, the global historic data shown in the table and graph below includes the following regions:

- Year 5: Europe, Asia-Pacific
- Years 6 and 7: Europe, Asia-Pacific, North America
- Year 8: all regions

Region	Scope 1 and 2 emissions released per traffic unit (all levels) ($kgCO_2e/TU$)			
	Year 5 (2013-2014)	Year 6 (2014-2015)	Year 7 (2015-2016)	Year 8 (2016-2017)
Global	**1.85**	**2.05**	**1.80**	**1.90**

Relative Scope 1 & 2 emissions released (all levels - Year 5 to Year 8)



The carbon emissions per TU of participating airports has been fairly stable over the past four years of the programme, there being only slight increases and decreases in emissions, in line with the trend seen on the airports' relative emissions per passenger.

It must be noted that the slight increase in emissions per TU during Year 8 in comparison to Year 7 does not mean that airports haven't achieved a reduction during this year. In fact, as it is shown in the other two graphs of this section (further below), certified airports have achieved absolute and relative reductions, when comparing their emissions reported during 2016-2017 to their three-year-rolling averages.

The reason why emissions per TU have increased during Year 8, is the adherence to the programme of new airports with higher emissions per TU, than those that were already certified in Year 7.

Relative emissions per TU are slightly lower than relative emissions per passenger, due to the fact that TUs cover both passenger numbers and cargo – therefore, an airport will always have the same or more Tus, than it has passengers.

Percentage relative Scope 1 & 2 emissions reductions (all levels)

This metric compares this year's global aggregate relative Scope 1 & 2 emissions per TU with the three-year-rolling average of all airports certified by the programme. It covers airports accredited at all levels of the programme, including those at Level 1, as long as they have provided sufficient historical data.

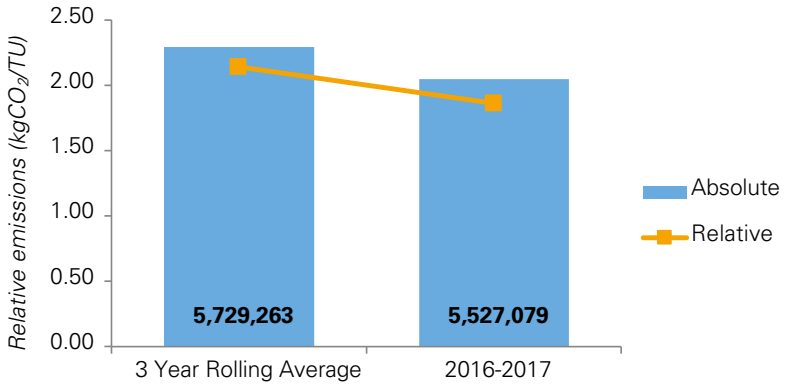
Region	Scope 1 and 2 relative emissions' reductions per passenger (all levels)		
	3-year-rolling average ($kgCO_2e$/TU)	2016-2017 ($kgCO_2e$/TU)	Percentage change (%)
Global	2.14	1.86	13%

These results indicate the same improvement rate of 13% as the one reported on relative emissions per passenger.

The graph below combines the aggregate absolute and relative emissions per TU released by airports certified at all levels of the programme, compared to the three-year-rolling average.

This demonstrates that reductions have been achieved globally, in terms of absolute emissions and relative emissions per TU, showing an overall increased efficiency in operations of airports participating in the programme.

Global - Emissions released (all levels)



Percentage relative Scope 1 & 2 emissions reductions (Level 2 and above)

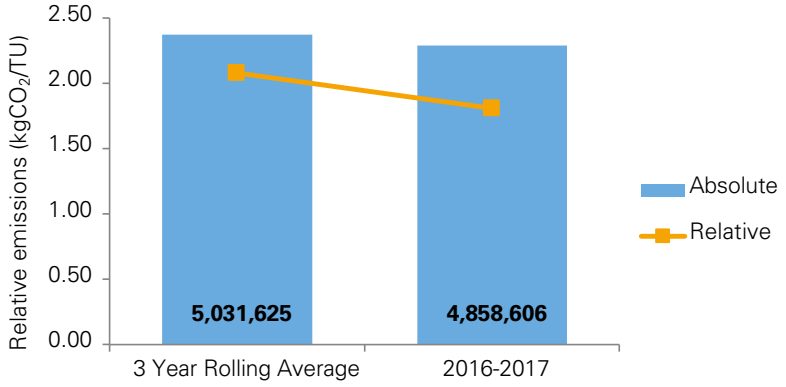
This metric compares this year's global aggregate relative Scope 1 & 2 emissions per TU with the three-year-rolling average of airports accredited at Level 2 and above.

It shows the same improvement rate of 13% as the previous metric. This means that not only those airports that have to demonstrate a reduction have managed to do so, but that also airports at Level 1 are achieving carbon reductions.

Region	Scope 1 and 2 relative emissions' reductions per passenger (Level 2 and above)		
	3-year-rolling average ($kgCO_2e$/TU)	2016-2017 ($kgCO_2e$/TU)	Percentage change (%)
Global	2.08	1.81	13%

The graph below shows that reductions have been achieved globally, in terms of both absolute and relative emissions per TU.

Global - Emissions released (Level 2 and above)





Guayaquil José Joaquín de Olmedo International Airport



7

Participation List

7 Participation List

Europe

Level	Airport	Airport Operator	Type
1	Lanzarote	Aena	Renewal
1	Málaga-Costa del Sol	Aena	Renewal
1	Menorca	Aena	Renewal
1	Bern	Bern Airport	Entry
1	Bristol	Bristol Airport	Renewal
1	Cagliari	Cagliari Airport	Entry
1	Brest Bretagne	CCI	Entry
1	Quimper Bretagne	CCI	Renewal
1	Dubrovnik	Dubrovnik Airport	Renewal
1	Larnaka	Hermes Airports	Entry
1	Pafos	Hermes Airports	Entry
1	Keflavík	Keflavik Airport	Renewal
1	La Rochelle	La Rochelle Airport	Renewal
1	Liège	Liège Airport	Renewal
1	Malta	Malta Airport	Entry
1	Newquay Cornwall	Newquay Cornwall Airport	Downgrade
1	Prishtina Adem Jashari	Prishtina Limak Kosovo Airport	Entry
1	Riga	Riga Airport	Renewal
1	Sofia	Sofia Airport	Renewal
1	Vilnius	Vilnius Airport	Renewal
1	Ancenis	Vinci Airports	Renewal
1	Chambéry Savoie	Vinci Airports	Renewal
1	Clermont-Ferrand Auvergne	Vinci Airports	Renewal
1	Dinard Bretagne	Vinci Airports	Renewal
1	Grenoble Isère	Vinci Airports	Renewal
1	Nantes Atlantique	Vinci Airports	Renewal
1	Poitiers Biard	Vinci Airports	Renewal
1	Rennes Bretagne	Vinci Airports	Renewal
1	Saint-Nazaire Montoir	Vinci Airports	Renewal
1	Toulon	Vinci Airports	Entry
2	Barcelona-El Prat	Aena	Renewal
2	Madrid-Barajas Adolfo Suárez	Aena	Renewal
2	Palma de Mallorca	Aena	Upgrade
2	Horta	ANA	Renewal
2	Santa Maria	ANA	Renewal
2	Flores	ANA	Renewal

Level	Airport	Airport Operator	Type
2	Beja	ANA	Renewal
2	Faro	ANA	Renewal
2	Lisbon	ANA	Renewal
2	Madeira	ANA	Upgrade
2	Madeira Porto Santo	ANA	Upgrade
2	Porto Fransisco Sá Carneiro	ANA	Renewal
2	São Miguel Ponta Delgada João Paulo II	ANA	Renewal
2	Bergen Airport	Avinor	Renewal
2	Kristiansand	Avinor	Renewal
2	Stavanger	Avinor	Renewal
2	Bergamo Orio al Serio	Bergamo Orio al Serio Airport	Renewal
2	Bologna	Bologna Airport	Renewal
2	Bucharest Henri Coandă	Bucharest Airports	Renewal
2	Cork	DAA	Renewal
2	Dublin	DAA	Renewal
2	Enontekiö	Finavia	Renewal
2	Ivalo	Finavia	Renewal
2	Kemi-Tornio	Finavia	Renewal
2	Kittilä	Finavia	Renewal
2	Kuusamo	Finavia	Renewal
2	Rovaniemi	Finavia	Renewal
2	Helsinki-Vantaa	Finavia	Renewal
2	Ljubljana	Fraport	Renewal
2	Marseille	Marseille Airport	Upgrade
2	Treviso	SAVE Group	Renewal
2	Verona	SAVE Group	Entry
2	Tel Aviv Ben Gurion	Tel Aviv Ben Gurion Airport	Upgrade
2	Tirana	Tirana Airport	Renewal
2	Toulouse	Toulouse Airport	Renewal
2	Zagreb	Zagreb Airport	Renewal
3	Paris - Charles de Gaulle	Groupe ADP	Renewal
3	Paris - Le Bourget	Groupe ADP	Renewal
3	Paris - Orly	Groupe ADP	Renewal
3	Brussels	Brussels Airport	Renewal
3	Budapest	Budapest Airport	Renewal
3	Copenhagen	Copenhagen Airport	Renewal
3	Cannes Mandelieu	Côte d'Azur	Upgrade
3	Golfe de Saint Tropez	Côte d'Azur	Entry
3	Düsseldorf	Düsseldorf Airport	Upgrade
3	TAG Farnborough	Farnborough Airport	Renewal
3	Frankfurt	Fraport	Renewal
3	Geneva	Geneva Airport	Renewal
3	Hamburg	Hamburg Airport	Renewal
3	London Heathrow	London Heathrow Airport	Renewal
3	London City	London City Airport	Renewal

Level	Airport	Airport Operator	Type
3	London Stansted	Manchester Airports Group	Upgrade
3	Munich	Munich Airport	Renewal
3	Naples	Naples Airport	Upgrade
3	Prague Václav Havel	Prague Airport	Upgrade
3	Rome Pastine Ciampino	Rome Airports	Renewal
3	Istanbul Atatürk	TAV	Renewal
3	Vienna	Vienna Airport	Upgrade
3	Zürich	Zürich Airport	Renewal
3+	Athens Eleftherios Venizelos	Athens International Airport	Upgrade
3+	Oslo	Avinor	Renewal
3+	Trondheim	Avinor	Renewal
3+	Nice Côte d'Azur	Côte d'Azur	Upgrade
3+	Antalya	Fraport	Renewal
3+	London Gatwick	London Gatwick Airport	Upgrade
3+	Lyon Saint-Exupéry	Lyon Airport	Upgrade
3+	East Midlands	Manchester Airports Group	Renewal
3+	Manchester	Manchester Airports Group	Upgrade
3+	Rome Fiumicino	Rome Airports	Renewal
3+	Venice Marco Polo	SAVE Group	Renewal
3+	Amsterdam Schiphol	Schiphol Group	Renewal
3+	Eindhoven	Schiphol Group	Renewal
3+	Milan Linate	SEA	Renewal
3+	Milan Malpensa	SEA	Renewal
3+	Åre Östersund	Swedavia	Renewal
3+	Gothenburg	Swedavia	Renewal
3+	Kiruna	Swedavia	Renewal
3+	Luleå	Swedavia	Renewal
3+	Malmö	Swedavia	Renewal
3+	Ronneby	Swedavia	Renewal
3+	Stockholm Arlanda	Swedavia	Renewal
3+	Stockholm Bromma	Swedavia	Renewal
3+	Umeå	Swedavia	Renewal
3+	Visby	Swedavia	Renewal
3+	Ankara Esenboğa	TAV	Renewal
3+	İzmir Adnan Menderes	TAV	Renewal

Asia-Pacific

Level	Airport	Airport Group	Type
1	Siem Reap	Vinci Airports	Renewal
1	Phnom Penh	Vinci Airports	Renewal
1	Sihanoukville	Vinci Airports	Renewal
1	Abu Dhabi	Abu Dhabi Airports Company	Renewal
1	Beijing Capital	Beijing International Airport	Entry
1	Gold Coast	Gold Coast Airport	Entry
1	Hobart	Hobart Airport	Entry
1	Nadi	Airports Fiji Limited	Entry
1	Muscat	Oman Airports Management Company	Entry
2	Bangkok Don Mueang	AOT	Renewal
2	Chiang Mai	AOT	Renewal
2	Mae Fah Luang	AOT	Renewal
2	Hat Yai	AOT	Renewal
2	Dubai International	Dubai Airports	Renewal
2	Dubai World Central	Dubai Airports	Renewal
2	Kuala Lumpur	Malaysia Airports Holdings Berhad	Renewal
2	Osaka	Vinci Airports	Entry
2	Kansai	Vinci Airports	Entry
2	Taiwan Taoyuan	Taoyuan International Airport Corp.	Renewal
2	Sharjah	Sharjah Airport Authority	Renewal
2	Macau	Macau Airport	Renewal
3	Adelaide	Adelaide Airport	Renewal
3	Adelaide Parafield	Adelaide Airport	Entry
3	Bangkok Suvarnabhumi	AOT	Upgrade
3	Seoul Gimpo	Korea Airports Corporation	Renewal
3	Doha Hamad	Hamad International Airport	Upgrade
3	Brisbane	Brisbane Airport	Renewal
3	Hong Kong	Airport Authority Hong Kong	Renewal
3	Incheon	Incheon International Airport Corp	Renewal
3	Amman Queen Alia	Amman – Airport International Group	Renewal
3	Sydney	Sydney Airport	Upgrade
3+	Delhi Indira Gandhi	GMR	Upgrade
3+	Hyderabad Rajiv Gandhi	GMR	Entry
3+	Bangalore Kempegowda	GVK	Upgrade
3+	Mumbai Chhatrapati Shivaji	GVK	Upgrade
3+	Sunshine Coast	Sunshine Coast Airport	Upgrade

North America

Level	Airport	Airport Group	Type
1	Detroit	Detroit Airport	Entry
1	Greater Moncton	Greater Moncton Airport	Renewal
1	Halifax Stanfield	Halifax Airport	Entry
1	Indianapolis	Indianapolis Airport	Entry
1	Minneapolis St Paul	Minneapolis St Paul Airport	Entry
1	Ottawa Macdonald-Cartier	Ottawa Airport	Entry
1	Portland-Hillsboro	Port of Portland	Downgrade
1	Victoria	Victoria International Airport	Renewal
1	Winnipeg Richardson	Winnipeg Richardson Airport	Renewal
2	Denver	Denver Airport	Renewal
2	Honolulu	Honolulu Airport	Renewal
2	Los Angeles International	Los Angeles World Airports	Entry
2	Phoenix Sky Harbor	Phoenix Sky Harbor Airport	Entry
2	Portland	Port of Portland	Renewal
2	Portland-Troutdale	Port of Portland	Renewal
2	San Diego	San Diego Airport	Entry
2	Vancouver	Vancouver Airport	Entry
3	Montréal-Pierre Elliott Trudeau	Montréal-Pierre Elliott Trudeau Airport	Upgrade
3	San Francisco	San Francisco Airport	Renewal
3	Seattle-Tacoma	Seattle-Tacoma Airport	Upgrade
3	Toronto Pearson	Toronto Pearson Airport	Upgrade
3+	Dallas Fort Worth	Dallas Fort Worth Airport	Upgrade



Siem Reap International Airport

Africa

Level	Airport	Airport Group	Type
1	Cape Town	ACSA	Entry
1	Durban King Shaka	ACSA	Entry
1	Johannesburg O.R. Tambo	ACSA	Entry
1	Port Elizabeth	ACSA	Entry
1	Marrakesh Menara	ONDA - Moroccan Airports	Entry
1	Casablanca	ONDA - Moroccan Airports	Entry
2	Libreville Leon M'ba	Libreville Airport	Upgrade
2	Enfidha-Hammamet	TAV	Renewal
3+	Abidjan Félix Houphouët Boigny	Abidjan Airport	Upgrade

Latin America & the Caribbean

Level	Airport	Airport Group	Type
1	Bogotá El Dorado	Bogotá El Dorado Airport	Entry
1	Tijuana General Abelardo L. Rodríguez	Grupo Aeroportuario del Pacífico	Renewal
1	Guayaquil José Joaquín de Olmedo	Guayaquil Airport	Entry
1	Quito Mariscal Sucre	Quito - Mariscal Sucre Airport	Renewal
2	Galápagos Seymour	Galápagos Seymour Airport	Upgrade
2	Puerto Vallarta Licenciado Gustavo Díaz Ordaz	Grupo Aeroportuario del Pacífico	Renewal



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