

A scenic landscape featuring a range of mountains on the left side, with a body of water in the foreground. The sky is a clear, light blue, and the overall atmosphere is calm and serene. The text is overlaid on the upper left portion of the image.

The Emirates Group

Environmental Report 2010-2011

“ We recognise that preserving our resources will be one of the greatest challenges in our drive towards sustainable development. This, however, will not materialise unless different facets of our society adopt energy conservation principles in their core values. ”

His Highness Sheikh Mohammed bin Rashid Al Maktoum

Vice President and Prime Minister of the United Arab Emirates and Ruler of Dubai



Financial Performance

Emirates Group

Financial Highlights		2010-11	2009-10	% change
Revenue and other operating income ¹	AED m	57,377	45,405	26.4
Operating profit	AED m	5,941	4,124	44.1
Operating margin	%	10.4	9.1	1.3 pts
Profit attributable to the Owner	AED m	5,933	4,151	42.9
Profit margin	%	10.3	9.1	1.2 pts
Cash assets	AED m	16,024	12,493	28.3
Total assets ²	AED m	71,473	60,147	18.8

Emirates

Financial Highlights		2010-11	2009-10	% change
Revenue and results				
Revenue and other operating income	AED m	54,384	43,455	25.2
Operating profit	AED m	5,441	3,565	52.6
Operating margin	%	10.0	8.2	1.8 pts
Profit attributable to the Owner	AED m	5,373	3,538	51.9
Profit margin	%	9.9	8.1	1.8 pts
Return on shareholder's funds	%	28.3	21.6	6.7 pts
Financial position and cash flow				
Total assets	AED m	65,090	55,547	17.2
Cash assets	AED m	13,973	10,511	32.9
Employee data				
Average employee strength	number	38,797	36,652	5.9

2009-10 figures have been re-classified to conform with the current year's presentation.

¹ After eliminating inter company income/expense of AED 1,413 million in 2010-11 (2009-10: 1,210 million).

² After eliminating inter company receivables/payables of AED 88 million in 2010-11 (2009-10: 38 million).

The financial year of the Emirates Group is from 1 April to 31 March.

dnata

Financial Highlights		2010-11	2009-10	% change
Revenue and results				
Revenue and other operating income	AED m	4,406	3,160	39.4
Operating profit	AED m	500	559	(10.6)
Operating margin	%	11.3	17.7	(6.4) pts
Profit attributable to the Owner	AED m	560	613	(8.6)
Profit margin	%	12.7	19.4	(6.7) pts
Financial position				
Total assets	AED m	6,471	4,638	39.5
Cash assets	AED m	2,051	1,982	3.5
Employee data				
Average employee strength	number	17,971	13,298	35.1

Operational Performance

Emirates Operating Statistics

		2010-11	2009-10	% change
Passengers carried	number '000	31,422	27,454	14.5
Cargo carried	tonnes '000	1,767	1,580	11.8
Passenger seat factor	%	80.0	78.1	1.9 pts
Overall capacity	ATKM million	32,057	28,526	12.4
Available seat kilometres	ASKM million	182,757	161,756	13
Aircraft	number	151	145	4.1

dnata Airport Operating Statistics

		2010-11	2009-10	% change
Aircraft handled	number	232,585	192,120	21.1
Cargo handled	tonnes '000	1,494	1,121	33.3

Environmental Performance

Emirates Airline - Environmental Data

Metric ¹	Unit	2010-11	Verified ²
Jet fuel consumption	tonnes	5,619,791	✓
Carbon dioxide (CO ₂) emissions	tonnes	17,702,341	✓
Fuel efficiency	L/100PK	4.12	✓
	L/FTK	0.225	✓
	L/TK	0.30	✓
CO ₂ efficiency	g CO ₂ /PK	101.83	✓
	g CO ₂ /FTK	556	✓
	kg CO ₂ /TK	0.749	✓
Nitrogen oxides (NOx) emissions	tonnes < 3,000ft	7,252	
Unburnt Hydrocarbon (UHC) emissions	tonnes < 3,000ft	445	
Aircraft compliant with ICAO CAEP/6			
Emissions Standards	%	100	
Noise Efficiency Factor – Takeoff (NEF-T)	dBkm ² /TK	1.985	
Noise Efficiency Factor – Landing (NEF-L)	dBkm ² /TK	0.572	
Aircraft compliant with ICAO Chapter 4			
Noise Standards	%	100	
Fuel jettison events	number	11	
Fuel jettisoned	tonnes	216	

Emirates Group - Total CO₂ Emissions

CO ₂ from Flight Operations	tonnes	17,702,341	✓
CO ₂ from Ground Operations	tonnes	698,265	
Total Group CO₂ Emissions	tonnes	18,400,606	

Emirates Group - Ground Operations Environmental Data

Metric ¹	Unit	2010-11
Energy Use	MWh	612,917
Associated CO ₂ Emissions	tonnes of CO ₂	429,042
Energy use per head of staff ³	kWh/head/day	41.7
Water Use	ML	5,267
Associated CO ₂ Emissions	tonnes of CO ₂	79,014
Water use per head of staff ³	litres/head/day	358
Waste to Landfill	tonnes	100,984
Associated CO ₂ Emissions	tonnes of CO ₂	100,984
Waste per head of staff ³	kg/head/day	6.8
Recyclables Collected	tonnes	4,917
Recycling rate (compared to waste to landfill)	%	4.87
Recycling per head of staff ³	kg/head/day	0.3

Emirates Group Ground Transportation - Dubai

Diesel consumption	litres	21,201,855
Petrol consumption	litres	6,515,440
Total fuel consumption (ground)	litres	27,717,295
Fuel consumption per head of staff ³	litres/head/day	1.89
CO ₂ emissions	tonnes	89,225

1 For definitions of the metrics in this table, please see the Reporting Guidelines and Methodology section on page 82.

2 The metrics marked ✓ are covered by PwC's assurance procedures (see PwC assurance report on page 90).

3 Emirates, dnata and EFKC Dubai-based staff only (40,272 as of 31 March 2011) – this excludes subsidiary companies.

efficiency

0.75kg CO₂ per TK - Emirates Airline's emissions efficiency (26% better than the IATA global fleet average)



Highlights

trees

Emirates Wolgan Valley Resort and Spa is the first hotel in the world to be certified carbon neutral by an accredited certification body. The resort is located in a 1,680 hectare conservation area upon which 175,000 trees were planted

Dubai Desert Conservation Reserve (DDCR), funded by the Emirates Group, covers 225 km², 5% of Dubai's land area and has:

400 endangered Arabian Oryx

163 animal species

57 plant species

recycle

3.3 million kg of on board waste is recycled by Emirates Flight Catering and dnata Airport Operations

support

The Emirates Airline Foundation raised AED 3.5 million, redeemed 42 million Skywards Miles for medical and humanitarian airline tickets and supported 37 humanitarian projects in 17 countries

neutral


dnata Freight Gate 5 is inaugurated on 20 April 2010, the first carbon neutral warehouse in the Middle East



metro

The Dubai Metro Station at the Emirates Group Headquarters is opened on 30 April 2010





Emirates is the international airline of the United Arab Emirates. Its main activity is the provision of commercial air transportation services.

dnata is the fourth largest combined air services provider in the world and the largest travel management company in the UAE. Its main activities are the provision of cargo and ground handling, catering, information technology

services and the sale of air tickets on behalf of airlines either as their agent or General Sales Agent.

Emirates and dnata are independent entities and do not form a group as defined by International Financial Reporting Standards. However, these entities are under common management, therefore, they are together referred to as the Emirates Group in this document.



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From the earliest days of Dubai's development, the city's founders understood the delicate balance of survival in an area with harsh climatic conditions, and precious natural resources. Since those early days, Dubai has grown into a bustling modern and successful metropolis. With success come the benefits and associated responsibilities of our rapid development.

The leaders of the United Arab Emirates have recognised the pressures our rapid growth is putting on our environment. They have committed themselves to ensuring that a sustainable future is attainable for all sectors of our community – in economic, social and ecological terms. To that end, significant commitments are being made to renewable energy, cleaner production, public transport and environmental protection.

In the air and on the ground, the Emirates Group is committed to acting sustainably in the interests of our customers, our business, the

natural environment and the over 100 destinations we serve worldwide.

The Group has a long history of being at the forefront of technical innovations and investment in modern equipment. Whether it is Emirates' state-of-the-art A380s or dnata's low-emissions ground-handling equipment, eco-efficiency is a concept that has been at the heart of our operations for many years. The more efficient use of our precious natural resources ensures that we are a more environmentally-responsible company and a more profitable one.

I am also very proud of the volunteers who participate in the community projects supported by the Emirates Airline Foundation and dnata. The Group's support of major conservation projects, such as the Dubai Desert Conservation Reserve and the Wolgan Valley conservancy in Australia, ensures that large tracts of some of the world's most delicate ecosystems are preserved for future generations.

As the Group continues its successful growth in global markets, we recognise the importance of communicating our environmental performance to our customers, partners and staff. In line with our Group Environmental Policy, this report presents some of the remarkable environmental achievements across our business and demonstrates that our environmental performance – like our service and financial success – is truly first class.

There are still many challenges ahead, but I am confident that the Group's environmental performance will continue to improve, and will demonstrate that the Emirates Group is an industry leader in more ways than one.

Ahmed bin Saeed Al Maktoum

Managing Our Environmental Impact

As one of the world's fastest-growing and most modern aviation, logistics and travel companies, the Emirates Group is proud of its many achievements and outstanding success.



With financial success comes a greater focus on environmental responsibility, and our prominent role in the global community. In a year which saw unprecedented disruptions to air travel from natural calamities, economic crises and political unrest, the spotlight also intensified on the environmental responsibilities of the aviation industry. Industry leaders, customers and regulators worldwide recognise the role that key stakeholders must play in monitoring and managing the environmental impact of their operations – and implementing measures to minimise and reduce those impacts.

This report represents a core component of the Group's commitment to environmental responsibility, by taking the initial steps required to collect annual baseline data, and to publically and transparently report its environmental performance.

About This Report

This report was prepared in accordance with the Global Reporting Initiative (GRI) – G3 principles for defining report content (materiality; stakeholder inclusiveness; sustainability context; and completeness), although the GRI framework was not adopted in its entirety. It was considered premature in this inaugural year of reporting to present a full corporate sustainability report and instead the focus has been placed on environmental performance, complemented by additional information on conservation, community and workplace environmental projects.

The report has been prepared by environmental and aviation professionals using established methods for the analysis and reporting of environmental performance data. Supporting details for data analysis and calculations are not presented in this report; however, this information forms part of the Group's auditable records.

Independent Assurance of Key Metrics

To promote transparency and to provide further confidence in the information presented in this report, the Emirates Group engaged the internationally-renowned accounting firm PwC to provide an assurance report on the following key metrics of Emirates Airline:

- total fuel consumption
- total CO₂ emissions
- fuel efficiency
- CO₂ emissions efficiency

The selection of the above metrics was based on their materiality in relation to the Group's overall environmental footprint. We intend to include additional environmental performance parameters in the independent assurance process in subsequent reporting years.

A copy of PwC's assurance report is shown on page 90.





Scope

This report covers the same period as the Emirates Group's financial reporting year, from 1 April 2010 to 31 March 2011.

During the reporting period, the Emirates Group operated in 67 countries, with 56,768 staff (as of 31 March 2011). Taking into account issues regarding materiality, stakeholder interest, sustainability context and availability of information, the scope of this first Emirates Group Environmental Report addressed the major environmental impacts associated with the following activities of the Group:

- All Emirates fleet operations (passenger and cargo – the latter flown under the Emirates SkyCargo brand).
- All dnata operations in Dubai (aircraft ground handling, cargo and travel services).
- All Emirates and dnata commercial buildings in Dubai, including offices, training colleges, flight catering, laundry services, warehouses, IT and engineering services.
- All Emirates Group staff accommodation buildings in Dubai (apartment buildings and houses).

- Emirates and dnata ground vehicle fleets in Dubai, including diesel powered equipment.
- Arabian Adventures, Al Maha Desert Resort and Spa and Dubai Desert Conservation Reserve.

Environmental impacts associated with the following activities of the Emirates Group were not included in this report:

- Emirates Leisure Retail (ELR) and Emirates consumer goods businesses in the UAE and other countries.
- Partly-owned Emirates companies in the UAE and other countries.
- Emirates 'outstations' – the airline's offices and activities outside of the UAE.
- dnata aircraft and cargo handling services, and flight catering companies outside of the UAE (fully or partly-owned).
- Partly-owned dnata travel service companies in the UAE and other countries.
- Partly-owned dnata freight-forwarding and security companies in the UAE.

It is intended to progressively include the environmental impacts of these activities in subsequent reporting years.



Comparison with the Emirates Group Annual Report 2010-11

It should also be noted that the Emirates Airline activities covered by the scope of this report are based on actual passenger numbers, and actual cargo payloads. There may be slight differences between the overall passenger numbers and cargo payloads reported here, compared to the Emirates Group Annual Report 2010-11, as those numbers are based on revenue paying passengers and revenue tonnes of cargo transported. This report considers revenue and non-revenue airline activities to give a more accurate picture of actual environmental performance.

Corporate Governance

As mentioned on page 7 of this report, Emirates and dnata are independent entities and do not form a "group" as defined by International Financial Reporting Standards. However, these entities are under common management and are therefore referred to as "the Emirates Group" or simply "the Group". Emirates and dnata are both wholly-owned by a single shareholder, the

Investment Corporation of Dubai (ICD), which is 100% owned by the Government of Dubai.

Corporate Structure

The Chairman & Chief Executive of Emirates Airline & Group is His Highness Sheikh Ahmed bin Saeed Al Maktoum. The President of Emirates Airline is Mr. Tim Clark and the President of Group Services and dnata is Mr. Gary Chapman. Both presidents are supported by a senior management team, who manage the various business units of the Group.

Corporate Values

The Emirates Group is founded on five corporate group values to support the organisation's essential purpose and to provide guidance on how staff should conduct themselves, and our business. These values are as follows:

Service Excellence

We deliver products and services of consistently high quality so as to secure the enthusiasm and loyalty of our customers.

Innovation

We will continue to be a market leader, providing products and services which successfully and profitably integrate the most advanced technological developments.

People

We will recruit people of high calibre and train existing staff to enable them to continuously improve the business in an environment which encourages teamwork, loyalty and commitment to our ongoing development and success.

Financial Strength

We will provide service and products of high quality which offer good value for money and will advance the Group's profitability through both creative savings and determined selling.

Safety

We will protect our customers, staff and assets through a ceaseless commitment to international and all other appropriate safety standards, and the adoption of practices which emphasise safety as a paramount personal responsibility.

Eco-efficiency

As stated in the Emirates Group's Environmental Policy, "sustainability and eco-efficiency are the cornerstones of all Group operations – both in the air, and on the ground."

The term "eco-efficiency" was first used by the World Business Council for Sustainable Development (WBCSD) in its 1992 publication "Changing Course."

It is based on the concept of creating more goods and services, while using fewer resources and creating less waste and pollution.

In the simplest of terms:

resource savings = cost savings = environmental benefits

The concept of eco-efficiency is being ingrained into all of our Group operations – from fleet operations to ground transport, from energy and water consumption to catering and engineering operations. It makes good business sense to do more with less, and reduce waste.



Environmental Policy

The Emirates Group's Environmental Policy ensures that environmental responsibility underpins our core values. It includes the following statement:

"As the senior managers of the Emirates Group, we are committed to ensuring that environmental responsibility underpins our core values as an organisation. Our vision is to make the Group an environmental leader in the aviation and travel industries. Our goals are to make sustainability and eco-efficiency the cornerstones of all Group operations – both in the air, and on the ground."

The Environmental Policy forms the backbone of environmental initiatives across the Group. The policy includes:

- Investment in the most modern, eco-efficient technology available – in aircraft, engines and ground equipment.
- Operating our assets in the most

environmentally-responsible manner, and in compliance with all applicable environmental regulations and standards.

- Annual baseline monitoring of the Group's environmental impact.
- Annual corporate environmental reporting, including setting of improvement targets and analysis of environmental performance against these goals.
- Development and implementation of specific policies relating to sustainable procurement, energy and water efficiency, waste management and minimisation, and sustainable ground transport.
- Internal and external communication of this policy, through the 'Environment' programme.
- Environmental training and awareness for new and existing staff, using the 'Environment Champions' programme, to engage staff in environmental initiatives.
- Support of environmental charities and conservation projects.



'Environment' Programme

The various environmental initiatives across the Group are implemented and communicated to staff and external stakeholders through the 'Environment' programme. The programme aims to focus all environmental activities under a clearly recognisable brand, with the associated sustainability message:

"We are all passengers on this planet."

One of the key features of the 'Environment' programme is the creation of a team of environmentally-passionate 'Environment Champions' – for further information on the activities of this group see page 76.

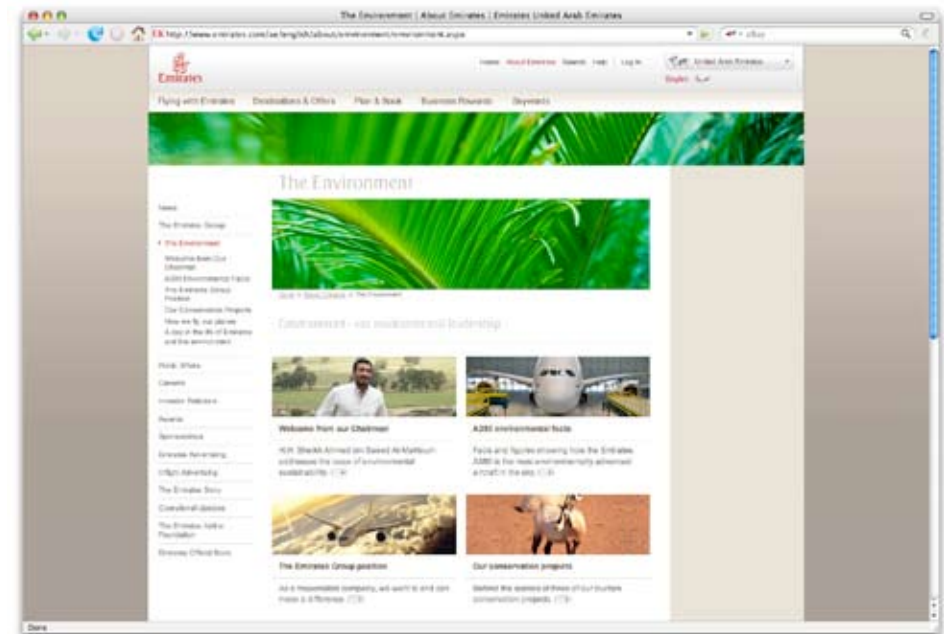
'Environment' external communications activities include:

- A dedicated 'Environment' page on www.emirates.com, www.emiratesgroup.com and www.emiratesgroupcareers.com

- A dedicated 'Environment' page in Emirates' Open Skies magazine.
- An 'Environment' video on ice - Emirates' award-winning inflight entertainment system.
- Submitting articles outlining Group environmental achievements to industry journals.
- Press releases on Group environmental achievements and initiatives.
- Advertising in online and print media.
- Publication of an Emirates Group Environmental Report and presentation of the report (and its main results) on the Emirates Group websites.

Internal communications activities include:

- A dedicated 'Environment' page on the internal Group intranet 'groupworld'.
- Regular publication of environmental initiatives, news and events in the Group's staff newspaper 'Safar'.
- Events and competitions to celebrate various environmental dates, such as UAE Environment Day, World Environment Day, and Earth Day.





Emirates Airline (Dubai)

Aircraft Operations (Passenger)

Aircraft Operations (SkyCargo)

Emirates Engineering (EKE)

Emirates Airport Services (EKAS)

Emirates Flight Catering (EKFC)

Emirates Destination & Leisure Management (DLM)

Emirates Hotels

Emirates Global Call Centre

dnata (Dubai)

dnata Airport Operations

dnata Cargo

dnata Travel Services

Emirates Group Services (Dubai)

Facilities (Commercial Buildings)

Facilities (Staff Accommodation)

Central Services (Ground Transport)

Linencraft (Laundry Services)

Foodpoint (EKFC)

Emirates Group Information Technology (EGIT)

Emirates Group Security

Emirates Group Services (Other)

Where We Operate



EKF¹ Solar Powered Water Supply and LED Lighting Project, Floriano, North East Brazil

- Emirates destination
 - Emirates presence
 - dnata presence
- 1 EKF (Emirates Airline Foundation)
2 EKFC (Emirates Flight Catering)



● St. Petersburg

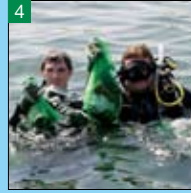
● Moscow



Dubai Desert Conservation Reserve, Dubai, UAE

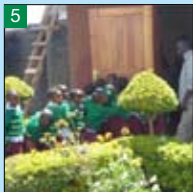


EKF2 Recycling Programme, Dubai, UAE



dnata Clean-up Dubai Creek initiative, UAE

Dubai



EKF1 Clean Water Project, Arusha, Tanzania



EKF1 Solar Powered Water Supply Project, Tambacounda, Senegal



EKF1 Biogas Digester Project, Karagwe, Tanzania



Wolgan Valley Resort and Spa, Australia

An illustration of an airport terminal building with a curved facade and many windows. In the foreground, there are two white ground support vehicles, one of which has the Emirates logo and the word 'Emirates' on its side. The background shows a runway and some airport infrastructure under a cloudy sky.

dnata

Open Skies To Success

dnata

dnata began operating in 1959 with a staff of five providing ground handling services at the 'new' Dubai International Airport. Today dnata employs nearly 18,000 people across five continents.

From these humble beginnings, dnata built on its reputation as a provider of quality air and travel services in the region, and has grown and diversified to form over 30 separate divisions covering every aspect of travel, airport and cargo solutions. Today, it is now recognised as the world's leading travel management company (World Travel Association, 2010).

Emirates

Emirates' first flight departed Dubai International Airport for Karachi on 25 October 1985. Since that first day the growth of the airline has been nothing short of phenomenal.

Emirates now operates more than 2,400 passenger flights per week to 111 destinations in 67 countries. The Emirates team of 38,797 people served more than 31 million passengers and transported 1,767,000 tonnes of cargo during the

reporting period. The Emirates fleet comprised 151 aircraft (as of 31 March 2011), and is scheduled to double in the next decade.

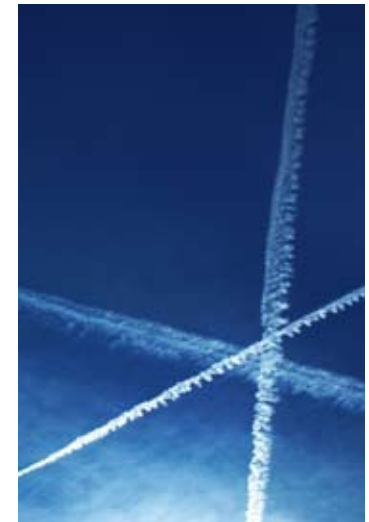
Corporate Strategy

At the heart of Emirates' business model is a commitment to true international competition and open skies. Emirates believes that an open global economy is vital to free and fair trade, economic growth and fuller employment.

Liberalised economies with open market access also tend to be the strongest. Dubai, with over 120 scheduled international airlines flying in and out of Dubai International Airport, is a long-term proponent of unambiguously open skies. Similarly, Emirates does not belong to an alliance. Emirates chooses to chart its own future and has concerns about the anti-competitiveness of some alliance arrangements.

Likewise, dnata continually strives to provide innovative products and excellent service to all of our customers. We are the largest supplier of ground handling, cargo, travel services, IT solutions and flight catering in the Middle East, and our industry-acclaimed expertise has seen our portfolio grow rapidly into international markets.

With over 50 years' experience in the industry, dnata offers solutions within one of five foundational divisions: travel services, cargo, ground handling, IT solutions and flight catering. Within these divisions are many specialist brands and business systems, including online booking for travel products and online e-freight services. There are now almost 30 subsidiary companies trading under the dnata brand.





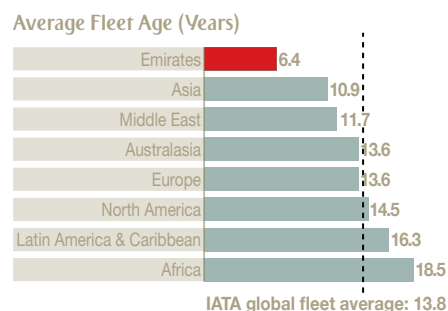
Emirates Airline Operations

At the heart of Emirates' ongoing drive towards optimum environmental performance is our substantial investment in the most fuel-efficient aircraft available. Reduced fuel consumption directly translates to reductions in carbon dioxide and other atmospheric emissions.

In June 2010, Emirates placed an AED 42 billion order with Airbus for another 32 A380-800s – bringing the total number of Emirates A380s to 90. Of these, currently 15 are in service. This was followed in July with an AED 33 billion investment in 30 Boeing 777-300ERs, with 53 currently in service. This makes Emirates by far the largest operator of both the Airbus A380 and the Boeing 777 family of aircraft – two of the most fuel efficient commercial aircraft in the world.

The average age of aircraft in the Emirates fleet is just 6.4 years, less than half the industry average of 13.8 years (IATA, February 2011).

The average fleet age in many regions where we operate ranges from 10 to 15 years, as shown in the graph below. Our significant investment in modern fuel efficient aircraft shows that we are seriously committed to maximising our environmental performance.



As well as the benefits of younger aircraft, the outstanding efficiency of Emirates operations is the result of a combined effort involving experienced flight crew, exacting aircraft maintenance engineers, and a flight operations team that is continuously developing advanced operational procedures and improved routes.

Emirates Fleet (as of 31 March 2011)

Aircraft	Current Fleet	On Order
A330-200	27	
A340-300	8	
A340-500	10	
A350-900		50
A350-1000		20
A380-800	15	75
B777-200	3	
B777-200ER	6	
B777-200LR	10	
B777-300	12	
B777-300ER	53	48
Total Passenger Aircraft	144	193
B777F	2	
B747-400F ¹	3	
B747-400ERF ¹	2	
Total Freighter Aircraft	7	
Total Aircraft	151	193

¹ Wet-leased aircraft

**Boeing 777-300ER**

Number of Aircraft: 53
 Cargo Capacity: 23 tonnes
 Passenger Capacity: 354-442
 Engine Type: GE90-115B
 Range: 14,594 km

Wingspan: 64.8 m
 Length: 73.9 m
 Height: 18.6 m
 Max Take-Off Weight: 349.2 tonnes
 Average Cruising Speed: 896 km/h

**Boeing 777-300**

Number of Aircraft: 12
 Cargo Capacity: 23 tonnes
 Passenger Capacity: 364
 Engine Type: RR Trent 892
 Range: 11,029 km

Wingspan: 60.9 m
 Length: 73.9 m
 Height: 18.6 m
 Max Take-Off Weight: 299.3 tonnes
 Average Cruising Speed: 896 km/h

**Boeing 777-200LR**

Number of Aircraft: 10
 Cargo Capacity: 15 tonnes
 Passenger Capacity: 266
 Engine Type: GE90-110B
 Range: 17,446 km

Wingspan: 64.8 m
 Length: 63.7 m
 Height: 18.6 m
 Max Take-Off Weight: 343.4 tonnes
 Average Cruising Speed: 896 km/h

**Boeing 777-200**

Number of Aircraft: 9
 Cargo Capacity: 18 tonnes
 Passenger Capacity: 274-346
 Engine Type: RR Trent 877
 Range: 9,649 km

Wingspan: 60.9 m
 Length: 63.7 m
 Height: 18.6 m
 Max Take-Off Weight: 247.2 tonnes
 Average Cruising Speed: 896 km/h

**Boeing 777F**

Number of Aircraft: 2
 Cargo Capacity: 103 tonnes
 Engine Type: GE90-110B
 Range: 9,260 km
 Wingspan: 64.8 m

Length: 63.7 m
 Height: 18.6 m
 Max Take-Off Weight: 347.5 tonnes
 Average Cruising Speed: 896 km/h



Airbus A380-800

Number of Aircraft: 15
Cargo Capacity: 8 tonnes
Passenger Capacity: 489-517
Engine Type: GP7272
Range: 15,000 km

Wingspan: 79.8 m
Length: 72.7 m
Height: 24.1 m
Max Take-Off Weight: 569.0 tonnes
Average Cruising Speed: 907 km/h



Airbus A340-500

Number of Aircraft: 10
Cargo Capacity: 15 tonnes
Passenger Capacity: 258
Engine Type: RR Trent 553
Range: 16,050 km

Wingspan: 63.4 m
Length: 67.9 m
Height: 17.1 m
Max Take-Off Weight: 372.0 tonnes
Average Cruising Speed: 874 km/h



Airbus A340-300

Number of Aircraft: 8
Cargo Capacity: 13 tonnes
Passenger Capacity: 267
Engine Type: CFM56-5C4
Range: 13,350 km

Wingspan: 60.3 m
Length: 63.6 m
Height: 16.8 m
Max Take-Off Weight: 275.0 tonnes
Average Cruising Speed: 874 km/h



Airbus A330-200

Number of Aircraft: 27
Cargo Capacity: 17 tonnes
Passenger Capacity: 237-278
Engine Type: RR Trent 772
Range: 12,200 km

Wingspan: 60.3 m
Length: 58.8 m
Height: 17.8 m
Max Take-Off Weight: 230.0 tonnes
Average Cruising Speed: 874 km/h



Boeing 747-400F/747-400ERF

Number of Aircraft: 3/2
Cargo Capacity: 117 tonnes
Engine Type: GE80C2B1F
Range: 8,232 km/9,204 km
Wingspan: 64.4 m

Length: 70.6 m
Height: 19.5 m
Max Take-Off Weight: 395.9 tonnes
Average Cruising Speed: 896 km/h



On the Ground

The Emirates Group carries out its business from some 38 commercial premises in Dubai, and numerous retail outlets across the UAE. Added to this is the residential portfolio of more than 11,000 apartments and nearly 2,000 houses which are either owned or leased by the Group to accommodate Dubai staff.

A selection of our main commercial and residential assets is described below to provide an appreciation of their activities and the associated environmental considerations.

Emirates Engineering (EKE) supports the expansive fleet of Airbus and Boeing aircraft operated by Emirates, as well as the aircraft of 30 other airlines operating at Dubai International Airport. The division can manage and implement all aspects of aircraft engineering support, such as maintenance, safety and logistics. EKE occupies the state-of-the-art Emirates Engineering Centre, including eight hangars – all of which are A380 capable, and one new paint hangar, which opened in 2010. The centre opened

in late 2006 on a 55 hectare site at Dubai International Airport.

Emirates SkyCargo's fleet includes seven freighters (3 Boeing 747-400Fs, 2 B747-400ERFs and 2 B777Fs) and serves 111 destinations in 65 countries on six continents.

In 2010-11, Emirates SkyCargo carried 1.77 million tonnes of cargo, an improvement of 11.8% over the previous year's 1.58 million tonnes. Cargo revenue, at AED 8.8 billion (US\$2.4 billion), including mail and courier, contributed 17.4 percent of the airline's total transport revenue.

SkyCargo's modern fleet is supported by the finest facilities on the ground. Much of our success is attributable to the systems and equipment at the Cargo Mega Terminal (CMT), acknowledged by many in the industry as one of the most modern and efficient cargo terminals in the world. Since opening its doors to the world in 2008, the CMT, built on a 43,600-square-metre site, has increased ground-handling



capacity by 1.2 million tonnes per year. Fully integrated computer systems link airlines, customs and freight forwarding agencies so that consignments can be traced and retrieved in minutes, while dedicated facilities for courier shipments and express cargo provide fast-track, priority channels.

Emirates Flight Catering (EKFC) provides inflight catering and support services for more than 100 airlines flying in and out of Dubai International Airport, with the capacity of more than 175,000 meals per day from its two technologically advanced catering facilities – EKFC1 and EKFC2. EKFC1 prepares meals for passengers travelling on Emirates, and is the largest and most modern catering facility of its kind in the world. EKFC2 serves all other carriers, including Air France, Singapore Airlines, Swiss and Virgin Atlantic.

EKFC has also expanded into the events market, providing catering services for high profile exhibitions and sports tournaments such as the biennial Dubai

International Aerospace Exhibition, the Dubai Tennis Championships and the Dubai Rugby Sevens tournament. EKFC's facilities at Dubai International Airport cover a built-up area of over 56,000 m².

Linencraft (LC) is an ultra modern industrial laundry facility – the largest of its kind in the Middle East. It is spread over 12,500 m² at Dubai Investments Park. Linencraft has a capacity of 92 tonnes or 220,000 pieces of airline and hospitality linen per day.

Foodpoint (FP) is the only food production facility of its kind between Europe and the Far East and has a capacity of some 20 million meal equivalents per year. The 10,000 m² facility is situated at Dubai Investments Park, and has the flexibility to meet all customer needs, from a small batch of 300 kg of sauce for hotels and contract caterers, to large batch orders of 15,000 centrally produced meals for airlines.

Emirates Airport Services (EKAS) manages the check-in, boarding, special

services and lost baggage for all Emirates flights and has over 2,200 staff in Dubai – most of whom are based at Dubai International Airport's Terminal 3, Emirates' new dedicated terminal building.

Emirates Destination and Leisure Management (DLM) manages the Emirates Group's portfolio of hotels, serviced apartments, spas and business conference facilities. DLM also includes Emirates Holidays and Arabian Adventures in Dubai.

Emirates Hotels (EKH) manages Emirates' hotel projects, such as the Wolgan Valley Resort and Spa in Australia, which is located on a 1,680 hectare wildlife conservancy adjacent to the World Heritage-listed Blue Mountains National Park. In 1999, EKH set up the award winning Al Maha Desert Resort and Spa, located in the heart of the Dubai Desert Conservation Reserve (DDCR). On 1 November 2010, Starwood Hotels and Resorts took over the management of Al Maha, while the Emirates Group has retained ownership.



dnata Airport Operations (dAO) is the sole ground handling agent at Dubai International Airport and at the recently opened Al Maktoum International Airport (at Dubai World Central) and has been pivotal in establishing Dubai as a major global aviation hub. The passenger services team ensures travellers have a smooth journey from check-in to boarding and from landing to baggage collection. Ramp services - supported by a fleet of 3,880 vehicles and a sophisticated control centre - can handle any size or type of aircraft and are trained to load, unload and clean planes with speed and efficiency. The baggage services operation has a capacity of 7,000 bags per hour and processes more than 45 million bags per year.

Cargo - dnata offers a broad range of cargo products and services to meet the diverse needs of more than 120

operators flying in and out of Dubai. Its service portfolio boasts six air cargo terminals at Dubai International Airport and one at the new Al Maktoum International Airport. The potential combined throughput capacity of all terminals is over one million tonnes per annum, of which the current utilisation is 650,000 tonnes per annum. One of dnata's Dubai-based cargo freight handling facilities, Freight Gate 5, was launched in April 2010 as the first carbon-neutral warehouse in the Middle East.

dnata Travel Services is the largest travel management organisation in the Middle East with 30 outlets in Dubai alone. Services range from retail, business and airline General Sales Agent Services through to e-commerce development, contact centre services and destination management.



The Emirates Group **Facilities Department** manages a portfolio of 38 commercial buildings in Dubai. These buildings include Emirates and dnata offices and shop fronts, training centres, clinics, pharmacies, warehouses, recreational facilities such as The 7evens rugby, football and cricket grounds, the Emirates Group Technology Centre and Emirates' new Global Call Centre.

The Facilities Department also oversees the management of 11,000 apartments and nearly 2,000 villas across Dubai, providing accommodation for Emirates and dnata staff. The Emirates Group provides housing for over 20,000 of its 40,272 staff based in Dubai.

Consumption of energy and water, generation of waste, and recovery of recyclable materials were identified

as the main indicators for the environmental performance of Emirates and dnata buildings.

The electricity, water and waste management costs of staff accommodation are met by the company. The Group therefore considers the environmental impacts from both the commercial buildings and the staff accommodation as part of our overall environmental impact.

Referred to as **Outstations**, the Emirates Group does business in 104 countries at over 300 individual locations. To support our business activities, the Group operates from offices at airports, city locations, cargo handling facilities, sales outlets, call centres, airport lounges and engineering facilities around the world.

More than 13,360 staff work at outstation premises leased by the Emirates Group. In many locations, information on consumption of energy, water, generation of waste and recycling attributable to the Group's activities is not available. This occurs when Emirates is one tenant amongst many leasing space in a larger building. In some cases, the Group shares facilities with other companies and/or the public, such as at airports or shopping malls, and the resource consumption and waste generation attributable only to the Emirates Group activities are not quantitatively allocated. Nevertheless, the Group recognises the contribution that outstations have to environmental performance and intends to examine options for including information from outstations in years to come.



Case Study

Emirates Group Headquarters (EGHQ)

The focal point of the Emirates Group's operations is the headquarters building in Dubai, located opposite Dubai International Airport's Terminal 3.

Opened in 2008, the building was designed to bring together all Emirates operations in a centralised, efficient way.

EGHQ is the head office for management and Group Services, as well as key departments such as Flight Operations, Inflight Services, Human Resources, Safety, Corporate Communications and Finance. The building also includes a state-of-the-art Network Control Centre, for continuous live monitoring of all Emirates aircraft across the global network. Other key features include a Contingency Centre, Employee Services Centre, auditorium and conference centre.

All flight deck and cabin crew report to EGHQ for duty. Upon arrival, they pass through immigration and clear customs on the building's first floor. Crew then attend flight briefing sessions in 32 purpose-built briefing rooms before being

transported directly airside by bus, to Emirates aircraft awaiting departure, via a 250 metre long tunnel which connects EGHQ to Dubai International Airport. When returning, crew are transported by bus back from the airport to EGHQ, where they clear customs, pick up their luggage and take company provided transport home.

The building is a true transport hub. A Dubai Metro station has been integrated into the building and the ground level is a terminus for buses and chauffeur-driven cars that transfer cabin and flight deck crew between their homes and headquarters 24 hours a day, seven days a week. There are also two multi-storey car parks with walkways connecting to the main headquarters building (and priority parking for car-poolers).

The building also houses a range of services and facilities designed to make the working lives of ground and flight staff easier, including banking facilities, postal services, a telephone/internet service provider outlet, various food outlets, a small grocery store, an immigration office and other shops.

Other amenities promote staff wellbeing, including a medical clinic, gym, health spa, rooftop pool and running track.

With additional capacity to accommodate staff growth, EGHQ is certain to play a pivotal role in the Group's future.



Ground Transportation and Equipment

The Emirates Group operates a large and diverse fleet of ground vehicles and equipment; including light vehicles, commercial vehicles and speciality equipment such as scissor lifts, tractor tows, golf carts, hi-loaders, generators and mobile conveyor belts.

As with aircraft operations, the environmental and economic sustainability of fleet activities are directly linked through fuel consumption – reduced fuel consumption means reduced carbon dioxide emissions.

In this first corporate environmental report, it was decided to report only on

ground transportation in Dubai across the businesses within the report scope, as this information was more readily available, and includes the largest of the ground fleets.

In Dubai, there are nearly 4,500 ground vehicles and items of equipment that consume diesel or petrol, including:

- Mini-buses and coaches for staff transport.
- Cars for flight deck crew transfer and passenger chauffeur-drive vehicles.
- Cargo-handling and transport vehicles.
- Ramp and hi-loader vehicles.
- Tour vehicles for Arabian Adventures.
- General purpose light vehicles (cars, vans, utility pick-ups).
- Company cars provided to senior management.

The type of equipment that consumes fuel includes mobile conveyor belts, generators, passenger stairs, ground power units, sweepers, lower and main deck loaders, tractors and container lifting transporters.

The availability of Euro 4 and 5 diesel fuel in Dubai is presently very limited, with Dubai's Roads and Transport Authority (RTA) given priority supply. The Emirates Group subcontracts its airside passenger transfer services to the RTA, having identified the environmental advantages of the RTA's fleet, however, the emissions of these operations have still been included in this report.

The average age of the commercial ground fleet is maintained at under three years, and under five years for light vehicles.



Investing In Innovative Solutions

International Aviation and Environmental Policy

The aviation industry has a long history of making dramatic improvements in fuel efficiency, safety and flight operations.



In the past 50 years alone, the industry has improved its fuel efficiency by some 80% (ATAG, 2010) meaning that it can fly more passengers and cargo further using less fuel than before. In terms of fuel consumption per passenger-kilometre, modern commercial aircraft rival the fuel efficiency of modern compact cars.

Previously, environmental concerns about aviation focussed mainly on noise impacts. This focus has now shifted to intense scrutiny of the industry's greenhouse gas (GHG) emissions.

The aviation industry recognises that, although it is only responsible for

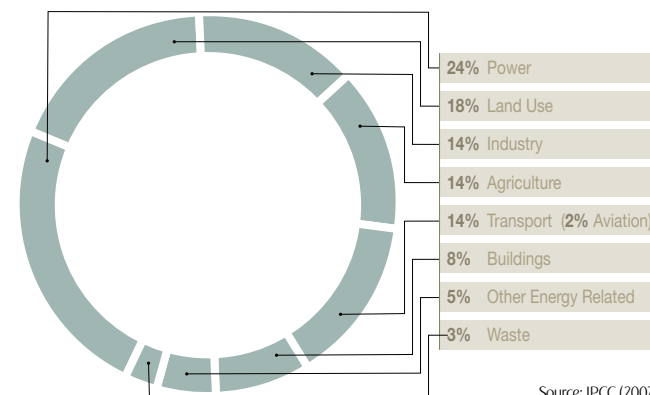
approximately 2% of global greenhouse gas emissions from human activity, it must be committed to growing sustainably and reducing the growth of its emissions. To put aviation's contribution in perspective, all other forms of surface transportation account for almost 12% (IPCC, 2007). At current growth rates, aviation is expected to account for around 3% of global greenhouse gas emissions by 2050.

Aviation is one of the most important contributors to global economic and social development, particularly in the developing world. The aviation industry directly employs over 5.5 million people worldwide and contributes US\$1.1 trillion

per annum to world GDP. It also provides international transportation options to many areas of the globe where no other viable alternatives exist. The true definition of sustainability encompasses economic, social and ecological considerations; however, this is often overshadowed by purely environmental concerns.

Regardless of these debates, the industry recognises that it must be committed to reducing its environmental impacts, and managing its emissions to minimise potential impacts on both local air quality and climate change.

% of Global GHG Emissions by Source



Source: IPCC (2007)



ICAO – International Civil Aviation Organisation

Under the 1997 Kyoto Protocol, the United Nations Framework Convention on Climate Change (UNFCCC) recognised that emissions from international aviation and shipping (from developed countries) should be excluded from the Kyoto Protocol and treated under a separate process. In the case of aviation, this separate process is administered by ICAO. The UNFCCC acknowledges that ICAO is the most appropriate body to devise, implement and manage emissions reduction schemes for international aviation. This was reiterated at the last UNFCCC Conference of the Parties (COP16) in Cancun, Mexico (December 2010).

At the recent ICAO 37th General Assembly in Montreal in October 2010, the Assembly adopted Resolution A37-19: "Consolidated statement of continuing ICAO policies and practices related to environmental protection – climate change." Resolution

A37-19 was adopted by the member states of ICAO with the following key features:

- Noting the scientific view that the increase in global average temperature above pre-industrial levels should not exceed 2°C.
- Acknowledging the principle of Common But Differentiated Responsibility (CBDR), with developed countries taking the lead (for emissions reductions) under the UNFCCC and the Kyoto Protocol.
- Resolving that states and relevant organisations will work through ICAO to achieve a global annual fuel efficiency improvement of 2% until 2020, and an aspirational improvement rate of 2% per annum from 2021 to 2050 (calculated on the basis of volume of fuel used per revenue tonne-kilometre performed).
- Resolving that ICAO and its member states will work together to strive to achieve a collective, medium term, global, aspirational goal of keeping the global net carbon emissions from international aviation from 2020 at the same level (while taking into account various points, such as the special

circumstances of developing countries; that some states may want to take more ambitious actions prior to 2020; and that the aviation industry should be allowed to grow sustainably).

- Encouraging states to submit action plans outlining their respective policies and actions, and annual reporting on international aviation carbon dioxide emissions to ICAO.
- Requesting the ICAO Council to work to develop a framework for market-based (i.e. economic) measures (MBMs) in international aviation (to reduce its greenhouse gas emissions).
- Resolving that a 'de minimis' threshold of 1% (of international RTKs) be applied to the implementation of MBMs on international aviation activity, such that commercial aircraft operators of states below the threshold would qualify for exemptions from MBMs (i.e. economic measures).

This last point effectively excludes all but the top 22 aviation countries from the application of any economic measures.

It should be noted that 66 countries (including Australia, Canada, the Russian Federation, the United States, and the 44 European States) filed reservations against key parts or all of this Resolution. This included most of the major aviation nations – from both the developed and the developing world.

Many countries, including the UAE, do not agree with the 'de minimis' exemption clause (for application of economic measures) – as this could potentially result in airlines from neighbouring countries being subjected to different economic penalties, while operating on similar routes.

This has the potential to create significant market distortions in many aviation regions around the world, and contravenes the key principal of the Chicago Convention (the legal backbone of modern international aviation) – especially in regards to "fair and equal treatment of all operators."

Emirates recognises the role of ICAO in managing and implementing emissions reduction policies for international aviation and applauds the work done to date. More work is needed by ICAO to formulate equitable and workable solutions for the industry, which take a global, sectoral approach – without encouraging market distortions.

MBMs (economic measures) to reduce emissions should be seen as a last resort, especially for an industry that is already heavily-taxed and over-regulated. Emirates supports the following principles in the potential application of MBMs to reduce emissions from international aviation:

- MBMs should not be applied by certain countries or blocs unilaterally (such as in the case of the European Union Emissions Trading Scheme).
- MBMs should be applied equitably across the whole industry, to all carriers, from all countries. It is not acceptable to have 'de minimis' exemptions for carriers from certain countries and not others.

- MBMs should recognise 'early movers', i.e. those operators who have already made significant investments in fuel efficient/low emissions aircraft and who already have fuel efficiencies much lower than the global fleet average.
- MBMs should be based on fuel efficiency performance (in terms of litres of fuel consumed per tonne-kilometre performed), in bands, i.e. those with the lowest efficiencies pay the highest charges, and vice versa. Such models for environmental 'landing' charges are already used at many airports to regulate noise and localised emissions impacts from aviation.
- Monies raised from economic measures must be used by governments and regulators to fund projects to reduce aviation emissions and should not be siphoned into general state revenues.
- The aviation industry should pay for its emissions once only, rather than multiple times through overlapping schemes of taxes, levies and charges.





IATA – The International Air Transport Association

Emirates is a member of IATA, along with 230 other international, domestic and cargo airlines, comprising 93% of scheduled international air traffic.

Emirates recognises the invaluable work carried out by IATA as the airline industry's main representative body, particularly in the areas of safety, operations, ticketing, cargo and travel agency representation, legal advocacy and the development of environmental policy.

At IATA's Annual General Meeting (AGM) in 2007, the following vision was presented to deal with aviation emissions:

- To achieve carbon-neutral growth in the mid-term.
- To build a zero-emissions commercial aircraft within the next 50 years.

This vision is to be achieved through IATA's four-pillar strategy to reduce emissions, which was adopted by the global aviation industry in 2007. The four pillars include:

1. Improved Technology

Aviation has always relied on improvements in technology to improve efficiency and reduce emissions. This continues to be the case, and of the four IATA pillars, improved technology has the highest potential to reduce aviation emissions, through two main avenues:

- Improved engine and airframe technology and the phasing out of older, inefficient aircraft. Some 5,500 aircraft will be replaced globally by 2020 resulting in a 21% reduction in CO₂ emissions compared to a 'business as usual' scenario.
- Sustainable aviation biofuels, which have a far lower overall carbon footprint, compared to conventional aviation fuels. New generation, sustainable biofuels have the potential to reduce aviation emissions by up to 80%, on a full carbon life-cycle basis (IATA, 2009).

Emirates prides itself on having one of the youngest, most fuel-efficient commercial aviation fleets in the world. The company has invested billions of dollars in these

aircraft and has often driven the design and manufacturing process with the major airframe and engine manufacturers to ensure that our aircraft are lighter, more fuel efficient and quieter than the previous generation.

We are closely following the ongoing research and development into biofuels, and encourage governments, fuel companies and engine companies to accelerate their work to provide safe, cost-effective and sustainable biofuels to the aviation sector in the shortest time possible. More details on Emirates' biofuels policy are available on page 80.

2. Effective Operations

It's one thing having highly efficient aircraft, but they must also be flown in an efficient manner. There are numerous operational procedures in commercial aviation which can improve fuel efficiency and reduce emissions. These include more direct flight paths, flexible routing, performance-based navigation and continuous descents on approach. Other procedures on the ground include single engine taxiing and switching from the use

of auxiliary power units (APUs) to ground power units (GPUs).

Improving operational procedures has the potential to reduce aviation emissions by a further 3% by 2020, compared to a 'do nothing approach' (IATA, 2009).

Emirates has led the way in the development of new operational techniques, as described further on page 47.

3. Efficient Infrastructure

One of the main barriers to reducing aviation emissions is over-crowded airspace and inefficient Air Traffic Management (ATM) practices. This includes delayed airport departures and arrivals, long taxiing times and poor coordination of airspace between neighbouring states. Full implementation of more efficient ATM could provide an additional 4% emissions reduction for the aviation industry by 2020 (IATA, 2009). However, improving the efficiency of ATM will require significant government spending and strategic action.

Emirates supports the work done by many governments across the world to

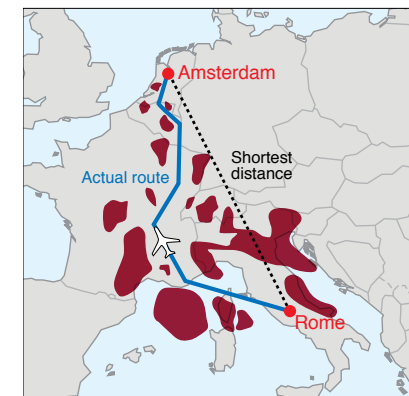
improve the efficiency of their airspace. Implementation of the EU's Single European Sky (SESAR) programme would result in a 70% cut in route extension, while the NextGen ATM system in the United States would lead to a 57% reduction in delays (IATA, 2009). Similar programmes in Southern China's Pearl River Delta system and over Russia would require a total investment from governments of almost US\$60 billion.

4. Positive Economic Measures

IATA and the aviation industry in general acknowledge that the first three pillars will go a long way to reducing aviation emissions in the mid-term; however, further steps will be needed. It is estimated that, due to the industry's continuous growth, some 90 million tonnes of CO₂ will need to be offset in 2025, to maintain emissions at 2020 levels and thus achieve 'carbon-neutral growth' (IATA, 2009).

Emirates sees the use of economic measures as an option, but only if this approach takes into account operators who have already invested significantly in modern, low-emissions aircraft.

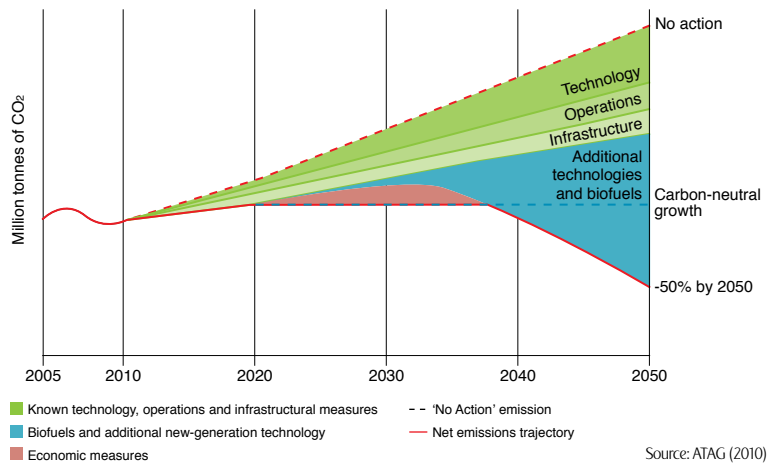
Example of Flying to Avoid Military Airspace and National Borders



■ Military or temporary restricted airspace

Source: ATAG (2010)

Emissions Reduction Roadmap (Schematic, Indicative Diagram)



A summary diagram of the potential contributions of each of the four IATA pillars to overall aviation emissions reductions in the long term is shown above.

In June 2009, the IATA AGM adopted a set of ambitious emissions reduction targets for the industry. These collective goals, for the entire industry, include:

- An average improvement in fuel efficiency of 1.5% per annum from 2009 to 2020.
- A cap on aviation CO₂ emissions from 2020 (carbon-neutral growth) or CNG2020+.
- An aspirational target for an absolute reduction in CO₂ emissions of 50% by 2050, relative to 2005 levels.

Emirates supports these ambitious goals set by IATA for the entire aviation industry. However, these goals must be recognised as collective industry targets. These collective targets must also:

- Recognise 'early movers', i.e. those operators who have already made significant investments in fuel efficient/ low emissions aircraft, and who already have fuel efficiencies much lower than the global fleet average.
- Take into account the collective costs of attaining these goals, and acknowledge how these costs would be equitably distributed among IATA members (based on recognition of efficiency performance).

- Not be forced on individual operators.
- Not limit the sustainable economic growth of airlines from emerging markets.

AACO - Arab Air Carriers Organisation

AACO is the regional industry association for Arab airlines and is very active in the area of developing, debating and implementing environmental policy for aviation.

At its 42nd AGM in October 2009, AACO approved a number of principles as its official policy on aviation and the environment, including the following:

- AACO recognises that climate change is a serious concern and that aviation, though a small contributor to global greenhouse gases, needs to further improve its record as the most efficient mode of transport by taking an even more active approach towards the abatement of greenhouse gases.
- AACO members have been at the forefront of employing efficiencies in

their operations by investing massively in a fleet which is one of the youngest in the world and with one of the smallest carbon footprint, by tonne-kilometre.

- AACO members subscribe to the IATA four pillar strategy and IATA's emissions reductions targets.
- AACO members agree with IATA that the implementation of their three emissions reduction targets must be done in a way that recognises the different levels of development of various airlines in the world and the unique situation of every airline in terms of its fleet replacement cycle so that no airline is unfairly penalised.
- AACO members call upon Arab governments and civil aviation authorities to support IATA's four-pillar strategy, three targets and longer-term aspirational goals.
- AACO members support ICAO as the appropriate UN body for setting and administering aviation specific standards and targets to further address carbon dioxide emissions from aviation.

- AACO members agree that any eventual revenues from economic measures under a global scheme to address aviation emissions should be clearly earmarked for aviation and environmental purposes.

AACO's 43rd AGM in 2010 welcomed the efficiency targets as adopted by ICAO's 37th Assembly Resolution on Climate Change. This includes recognition of different circumstances of states, and the need to provide necessary support to developing countries, including financial support, technology transfer, and capacity building – whilst also taking into account the maturity of the aviation markets. AACO does not support the 'de minimis' exemption concept for Market Based Measures based on a state's share of global international aviation RTKs, because it differentiates the treatment of developing nations.

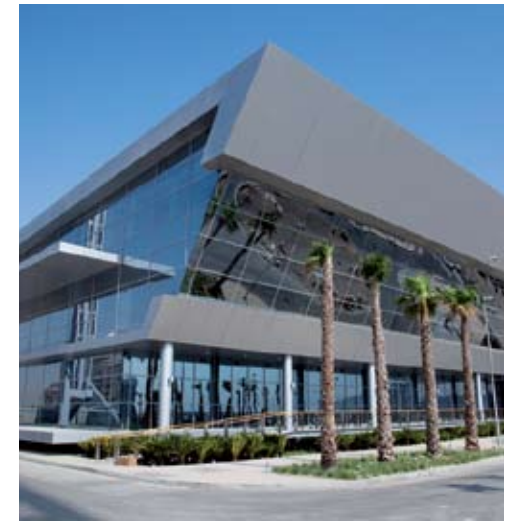
UAE – General Civil Aviation Authority (GCAA)

The United Arab Emirates GCAA is the country's federal regulator for civil aviation and is responsible for formulating

and implementing the UAE's policies on aviation and environmental issues.

The GCAA chairs the UAE Aviation Environmental Working Group (AEWG), which is made up of numerous stakeholders in the UAE aviation industry. The GCAA also currently chairs the Environmental Committee of ACAC (the Arab Civil Aviation Committee), which is made up of representatives of the various civil aviation and aviation regulatory authorities in the Middle East and North Africa region. ACAC membership does not include airline operators.

Emirates congratulates the UAE ICAO delegation, led by the Director General of the GCAA, for being re-elected to the ICAO Council at the 37th ICAO General Assembly. This clearly recognises the increasingly prominent role that the UAE is playing in the international aviation industry. Representatives from Emirates and other UAE aviation stakeholders were part of the UAE delegation at the 37th ICAO General Assembly.





Ground-Handling, Cargo Operations and Environmental Policy

dnata is an accredited member of IATA and also a member of IATA's Ground Handling Council (IGHC). It works under the standards and practices in the IATA Airport Handling Manual developed by the IGHC Working Groups, including the Ramp Ground Support Equipment and Environmental Management Group.

dnata Airport Operations and dnata Cargo both operate under Environmental Management Systems which successfully maintained their ISO14001 certification in 2010-11.

Travel Services and Environmental Policy

The World Tourism and Travel Council (W TTC) has identified the need for a policy framework that is conducive to the sustainable development of the travel industry while decoupling growth from increased greenhouse gas emissions.

The W TTC policy document, 'Climate Change - A Joint Approach to Addressing the Challenge' calls for:

- Industry dialogue and increased private and public partnerships to develop cost-effective mitigation and adaptation strategies.
- A level playing field, free from restrictions on trade and intellectual property rights infringements - essential for green investments to be valued positively and deployed effectively.
- Policies which harness the power of the market and its agents to drive innovation in climate change mitigation and adaptation measures.
- Financing and investment in measures to encourage low-carbon travel and tourism operations.
- Clear messages to consumers communicating the scale of the global threat while at the same time empowering citizens to effect change.

The Emirates Group is a participant in the W TTC and is a member of its Environmental Policy Working Group.

Several business units within the Group operate under WTTC guidelines and policies, including Emirates Holidays, dnata and Arabian Adventures. Some of these operations, such as Emirates Hotels and Resorts, have received global recognition and awards from the WTTC, most recently in the conservation category (as shown on page 93).

Regulatory Framework

The Emirates Group complies with all relevant environmental regulations in all territories in which it operates. This includes compliance with noise curfews, emissions standards and reporting requirements.

ICAO

ICAO sets the regulatory framework for the global operations of international aviation, however, civil aviation regulators in individual countries are ultimately responsible for the implementation and oversight of regulations governing civil aviation.

Emirates operates in compliance with all ICAO safety, operations and environmental standards. All Emirates aircraft meet ICAO Chapter 4 noise limits, and CAEP 6 emissions standards (see more on pages 54-55).

UAE Regulators

Emirates' and dnata's operations in Dubai also comply with UAE environmental law. Emirates regulator in Dubai is the Dubai Civil Aviation Authority (DCAA), while the federal regulator is the UAE General Civil Aviation Authority (GCAA). The GCAA is responsible for formulating environmental policy and issues Airworthiness Operating Certificates (AOCs) to all Emirates aircraft.

Ground operations within the airport precincts in Dubai are regulated by the DCAA, while ground operations outside of the airport zones are regulated by Dubai government agencies such as Dubai Municipality and the Roads and Traffic Authority (RTA).



External Regulations

Emissions-Based Airport Fees

Many airports in Europe charge aircraft operators according to their aircrafts' rated noise levels or emissions standards. Examples of these include London Heathrow, Frankfurt and Zurich Airports, where the airport operators are obliged to charge airlines using these airports to comply with local government regulations. These charges are typically based on emissions efficiency or noise performance. Those aircraft with higher emissions of specific pollutants (such as NOx), or higher noise levels, pay more, and vice versa.

Emirates' modern fleet, with its low noise and low emissions aircraft, allows Emirates to more easily comply with international and local environmental regulations and minimises operating costs in relation to emissions-based airport fees.



European Union Emissions Trading Scheme (EU ETS)

The EU ETS is the world's largest 'cap and trade' emissions reduction scheme, and has been in place in EU member states since 2005. Originally introduced to regulate emissions from 'stationary sources' (installations such as refineries, power stations, smelters, cement kilns and manufacturing facilities), the scheme was extended to include international aviation from 2012 onwards – through EU Directive 2008/101/EC. This covers all major international and domestic airlines operating flights to, from and within the European Union – from their departure point to their arrival point – as long as one of these points is in one of the twenty seven EU member states (or the three non-EU countries currently included in the scheme).

Most airlines are opposed to participating in the EU ETS, due to industry preferences for a global, sectoral scheme to reduce aviation's emissions. There are ongoing questions over the scheme's legality, namely the EU's right to legislate on aviation operations 'extra-territorially' (i.e. outside of its airspace, and over the airspace of other sovereign states). This is alleged to contravene the sovereignty

provisions of the 1944 Chicago Convention – one of the keystone legal instruments of the international aviation industry.

Many states outside of the EU have also questioned the bloc's right to impose economic measures and regulations on their airline operators unilaterally, and without bilateral consent.

Furthermore, the UN, IATA, the airline industry and all aviation states (including the EU bloc of countries) all recognise ICAO (and not the EU) as the international body responsible for implementing and administering a global scheme to manage and reduce emissions from international aviation.

Over 24% of Emirates' passenger and cargo operations fly to, and from the EU. Despite the lingering controversies over the scheme, Emirates has, under protest, fully complied with the EU ETS, by submitting its 2010 emissions and tonne-kilometre monitoring reports to the United Kingdom Environment Agency (UK EA), Emirates' EU ETS regulator.

Non-compliance with the scheme is not an option for airline operators wanting to continue operating to the EU – with

substantial fines, financial penalties, operating bans and even seizure and sale of aircraft for non-compliance.

Emirates estimates that in 2012 alone, it will cost the airline over €40 million to purchase additional emissions allowances to comply with the scheme and well over half a billion Euros in the nine year period to 2020. Unfortunately, this cost will almost certainly have to be passed on to customers.

Emirates main concerns with the EU ETS are two-fold:

- Many EU states, such as the UK, have indicated that all monies raised by the scheme will be allocated to general revenue. This is completely contrary to the intent of the EC Directive, which states that "... revenues should be used to tackle climate change in the EU and third countries... and to fund research and development for mitigation and adaptation, including in particular in the fields of aeronautics and air transport..."
- A number of EU states, including the UK, Germany and Austria have introduced additional 'environmental' taxes and charges, resulting in the aviation industry and its users having to pay for their emissions more than once in the EU.

Despite strong initial support for aviation's inclusion in the EU ETS by some European carriers, a number of them have now begun to criticise the scheme. One of the common allegations against the ETS is that of 'carbon leakage' where customers will supposedly fly longer, more time-consuming indirect routes to avoid European hubs and their ETS charges. Dubai is often used as an example of this by European legacy carriers – these allegations even appear in their annual environmental reports.

Their own regulator, the European Commission (EC), has clearly stated that "the aviation industry is not at risk from carbon leakage" – as is evident in the extensive economic, social and environmental impact reviews that were carried out by the EC when introducing the new law in 2008. It is clear that this is simply an attempt by some European carriers to obtain additional emissions allowances (i.e. subsidies).

It is noted that the US Air Transport Association (ATA) and two of its member airlines (United and American), have launched a legal challenge against the EU ETS in the UK courts, with the support of IATA. The case has been

referred to the European Court of Justice (ECJ), which commenced its hearing of the case on 5 July 2011.

The UK APD and Other EU 'Environmental' Taxes

Emirates believes higher aviation taxes are not consistent with encouraging economic growth and only limit the ability of airlines to continue to be wealth multipliers across national economies. The most recent EU aviation tax came into effect in Germany from 1 January 2011, and charges passengers between €8 and €45, according to distance travelled. The impacts are already being seen in reduced passenger numbers to and from Germany and less than projected tax revenues.

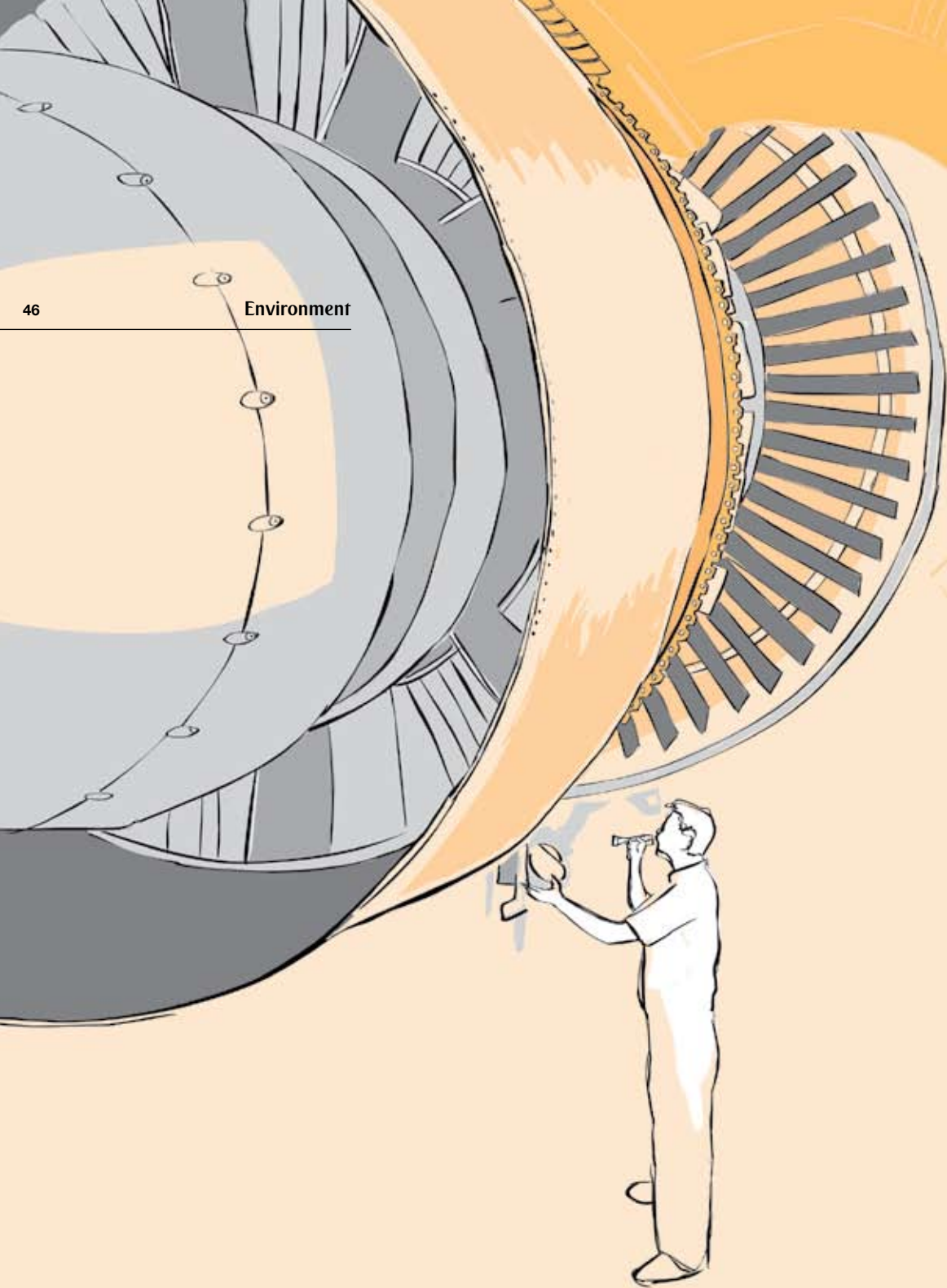
This is not the first time an EU government has sought to raise revenue by targeting airline passengers. Governments often sell air travel taxes to the public as "green" taxes, yet none of the revenue raised is spent on environmental investment. Some environmental groups say air passenger taxes may actually slow investment in greener technologies and deter passengers from further offsetting their emissions.

Germany's tax is based on the UK Air Passenger Duty (APD) which came into

effect in 1994. Since then France, Ireland, Austria, the Netherlands and Belgium have followed and implemented schemes with mixed results. The Belgian and Dutch governments reconsidered departure taxes in 2009, after seeing passenger numbers fall significantly. In the case of the Netherlands, the tax brought in more than €300 million in revenue in a year, but the wider costs to the economy were estimated at more than €1.2 billion - with large numbers of passengers willing to avoid paying it by flying from outside the Netherlands. Growth returned to the Dutch and Belgian aviation sectors once the passenger taxes were scrapped. The Republic of Ireland recently announced a reduction in their taxes in the face of sliding visitor and passenger numbers. These examples show that such aviation taxes defeat their ultimate economic aim and do not have any measurable environmental benefits.

With the introduction of the EU ETS from 2012, airlines will be faced with the ugly prospect of pan-EU double taxation. Unfortunately, this will almost certainly mean that airlines operating in the EU will have to pass these additional costs on to the consumer.





Operational Excellence - Optimal Performance

Emirates Airline Operations Fleet

With an average fleet age of just 6.4 years (as of 31 March 2011), Emirates aircraft are considerably younger than the commercial aviation industry average of 13.8 years (IATA, February 2011). As new aircraft join the fleet, older aircraft are retired from service - these are typically refurbished and leased to other operators by the leasing companies who own them.

Operating such technologically advanced aircraft has substantial environmental benefits, including reduced emissions and noise, plus improved passenger comfort. The environmental performance of the fleet is optimised further through continuous improvements in operational performance, navigational techniques and route planning.



Operational Performance Improvements

One of the keys to Emirates' highly efficient operational performance is the work of the Fuel Optimisation Working Group. This team comprises representatives from a wide range of in-house departments including Flight Operations, Performance Development, Environmental Affairs and Flight Deck Crew Training.

Aspects of Emirates' flight operations are scrutinised by the Fuel Optimisation Working Group for potential fuel savings opportunities. A highly sophisticated, purpose-built IT platform allows the Flight Operations Performance team to carry out flight-level analyses of all Emirates passenger and cargo flights – using real data on fuel consumption, flight times, payloads, passenger numbers, flight distances and emissions. This allows the team to make accurate comparisons of the effectiveness of various standard and novel operational efficiency procedures – with

real data on fuel and emissions savings. Some of the typical operational efficiency procedures that are implemented and continuously analysed by Flight Operations include:

- Idle reverse (minimising use of unnecessary engine reverse thrust upon landing).
- Engine out taxiing (shutting down one engine after landing).
- Continuous Descent Approaches (CDA).

It is estimated that operational procedures implemented by Flight Operations helped Emirates save over 10 million kg of fuel in the 2010-11 financial year, resulting in an associated saving of over 31 million kg of CO₂ emissions.

In addition to the above procedures, Emirates also uses Ground Power Units (GPUs) at Dubai International Airport to reduce the consumption of jet fuel by aircraft Auxiliary Power Units (APUs). The use of Fixed Electrical Ground Supply, as an alternative to GPUs for providing

electricity to parked aircraft, is also being trialled, examining the potential environmental benefits of using a power supply from the local electricity grid.

The Flight Operations team also evaluates a wide range of other operational measures that can improve Emirates' fuel efficiency. These include:

- weight reductions
- optimum fuel uptake
- payload balancing
- quantity of potable water carried
- ultra-long range route analyses
- optimised routing

Some of these procedures are described in detail in the case studies on the following pages.

The team also carries out a wide range of noise performance analyses for Emirates operations and is instrumental in providing data for our EU ETS compliance (as described in detail on pages 44-45).



Case Study

Route Improvement Programmes

Emirates works with air transport authorities around the world to reduce fuel burn, emissions and flight times. Over the last eight years, Emirates has taken a leading role in the negotiation of new flight paths or "flexible tracks" across the airspace over Australia, Asia and Africa.

The continuous analysis of meteorological factors during a flight (using high-tech avionics, navigation and weather forecasting systems) gives Emirates the ability to identify and exploit strong tail winds, or avoid unfavourable conditions. This technical capability provides significant fuel and travel time efficiencies. However, to take advantage of this capability it is necessary to move away from the restrictions of a system of fixed flight paths and implement an approach to route planning that adapts to actual airspace conditions.

Beginning in 2003 with Air Services Australia (ASA), Emirates pioneered a flexible system of flight routing, known as "Flex Tracks", which allowed Emirates' aircraft to chase high altitude tail winds over the Southern Indian

Ocean. The Flex Tracks programme has since been widened to cover the airspace of Indonesia, the Maldives and Sri Lanka. In 2010, Emirates and IATA established the i-Flex programme over continental Africa. Working with representatives of all of the African countries falling within the airspace, Emirates established 22 additional routes offering flexibility and significant savings in travel time and fuel burn. One specific example is the opening of the air space above Sudan, which immediately offered efficiencies for 187 Emirates flights per month with direct savings of 73 tonnes of fuel and 230 tonnes of carbon dioxide (per month).

The greatest environmental benefit of Emirates' success in establishing new efficient flexible tracks is that, once the routes are evaluated and approved by all relevant authorities, they are available for all airlines to use, representing significant ongoing savings in fuel and carbon emissions for the aviation industry.



Fuel Efficiency

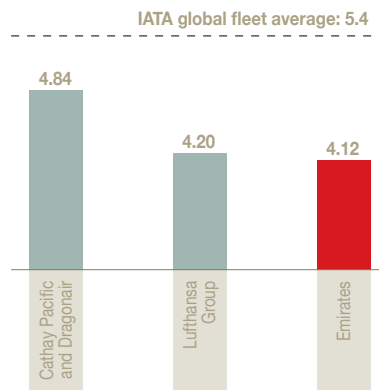
In the 2010-11 reporting period, Emirates consumed 5,619,791 tonnes of Jet A1 grade aviation fuel across all flights (passenger and SkyCargo operations, and scheduled and unscheduled operations).

Emirates' fuel efficiency for the reporting period was 4.12 litres per 100 passenger-kilometres. This efficiency rate is 25% better than IATA's forecast 2010 industry average of 5.4 litres per 100 passenger-kilometres (IATA, 2009), and ahead of other airlines – as shown in the chart to the right.

In 2010-11, Emirates SkyCargo's fuel efficiency for freight transportation was 0.225 litres of aviation fuel per freight tonne-kilometre flown (freighter aircraft only).

Emirates overall fuel efficiency for all freight and passenger flights flown during the reporting period was 0.30 litres per tonne-kilometre flown.

Passenger Fuel Efficiency in 2010
(L per 100PK)



4.12 L

per 100PK
Emirates passenger fuel
efficiency (2010-11)

Metric	Unit	2010-11
Emirates total fuel consumption	tonnes	5,619,791
Emirates total passenger-kilometres flown	PK	155,737,363,711
Emirates passenger fuel efficiency	litres per 100PK	4.12
Emirates SkyCargo freight tonne-kilometres flown (freighters only)	FTK	1,890,817,717
Emirates SkyCargo fuel efficiency (freighters only)	litres per FTK	0.225
Emirates total tonne-kilometres flown	TK	23,639,925,398
Overall Emirates fleet fuel efficiency	litres per TK	0.30

Case Study

Ultra Long Range Flights

On 25 October 2009, an Emirates Boeing 777-300ER started scheduled ultra long range (ULR) flights non-stop from Dubai to San Francisco.

Flight EK225 was spectacular in that the 18,303 kilometre route had only been previously flown by a specialised longer range Boeing 777-200LR. In a three-class seating configuration, the B777-200LR has a capacity of 266 passengers whereas the B777-300ER has a capacity of 354 passengers. Both types of aircraft share the same wing and engine design - the main difference is that the B777-200LR has a smaller fuselage.

At maximum operating weights for the route, the B777-300ER burns approximately 6% more fuel, but offers potentially 88 more seats. Hence, the environmental emissions per passenger are dramatically reduced by around 20% per flight. This achievement was made possible by utilising improved flight optimisation techniques and using the newest model B777-300ERs from Boeing.

In 2010, similar B777-300ER ULR flights were implemented on the Dubai to Los Angeles and Dubai to São Paulo sectors, further reducing the overall environmental impact per passenger of the Emirates network.

101.83 g

CO₂ per PK
Emirates passenger CO₂
efficiency (2010-11)

556 g

CO₂ per FTK
Emirates SkyCargo Freight
CO₂ efficiency (2010-11)
(Boeing 777F and 747-400F
freighters only)

Carbon Dioxide Emissions

Emirates' operations (passenger and SkyCargo) produced 17,702,341 tonnes of carbon dioxide emissions in 2010-11.

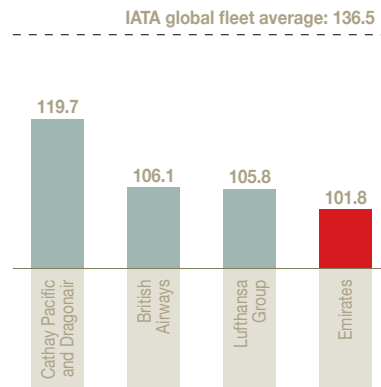
Emirates' passenger carbon dioxide efficiency for 2010-11 was 101.83 grams of carbon dioxide per passenger-kilometre flown (g CO₂ per PK). This is 25% better than IATA's projected 2010 industry average for carbon dioxide efficiency, which was 136.5 grams of carbon dioxide per passenger-kilometre (g CO₂ per PK), and ahead of other airlines - as shown in the chart below.

During the reporting period, Emirates SkyCargo's carbon dioxide efficiency

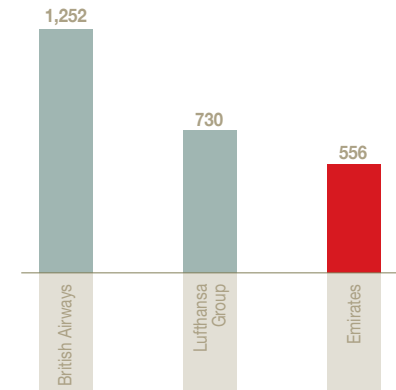
was 556 grams of carbon dioxide per freight tonne-kilometre (g CO₂ per FTK), for freighter operations (Boeing 777F and 747-400F aircraft). Few operators in the industry report these figures, and an industry average figure is not available. However, this result is much lower than those reported by some other airlines - as shown in the chart below.

In 2010-11, Emirates' overall fleet carbon dioxide efficiency was 0.749 kilograms of carbon dioxide per tonne-kilometre flown (kg CO₂ per TK). This result clearly shows the environmental benefits of our significant investment in fuel efficient aircraft, and leading edge operational procedures.

Passenger CO₂ Efficiency in 2010
(g CO₂ per PK)



Cargo CO₂ Efficiency in 2010 (g CO₂ per FTK)



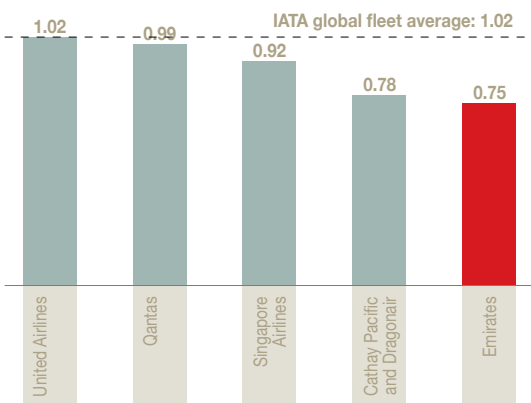


0.749 kg

CO₂ per TK
Emirates' overall CO₂
efficiency (2010-11)

Emirates' overall fleet carbon dioxide efficiency figure is more than 26% lower than the IATA global fleet average figure of 1.02 kg CO₂ per TK (IATA, 2011), and is considerably lower than many other airlines - as shown in the chart below.

Overall CO₂ Efficiency in 2010 (kg CO₂ per TK)



Fuel Jettison Events

In the event that one of Emirates' aircraft is forced to make an unscheduled landing, it is sometimes necessary for the aircraft to be at or below its maximum permissible landing weight. In certain circumstances, this (often urgent) adjustment of the aircraft's weight may require the release of a quantity of jet fuel. This is known as a "fuel jettison" event.

A range of situations may cause an unscheduled landing. A common example is when a passenger urgently requires medical assistance, prompting the pilot to divert the aircraft to the nearest suitable airport (that is able to receive the aircraft). Unscheduled landings may also occur due to technical reasons or inclement weather conditions at the scheduled destination.

Metric	Unit	2010-11
Emirates total CO ₂ Emissions	tonnes	17,702,341
Emirates total passenger-kilometres flown	PK	155,737,363,711
Emirates passenger CO ₂ efficiency	g CO ₂ per PK	101.83
Emirates SkyCargo freight tonne-kilometres flown (freighters only)	FTK	1,890,817,717
Emirates SkyCargo CO ₂ efficiency (freighters only)	g CO ₂ per FTK	556
Emirates total tonne-kilometres flown	TK	23,639,925,398
Overall Emirates fleet CO ₂ efficiency	kg CO ₂ per TK	0.749

The release of fuel is a carefully controlled process that allows for the vaporisation of the fuel at high altitude - typically between 4,000 and 8,000 metres. The vaporised fuel droplets rapidly disperse and degrade in the atmosphere, and no fuel actually reaches the ground.

Emirates Fuel Jettison Events*	2010-11
Medical Reasons	3
Technical Reasons	9
Other Reasons	2
Total Events	14
Jettisoned Fuel (tonnes)	306

*Includes wet-leased freighters

Emissions of Nitrogen Oxides (NOx)

The emissions of nitrogen oxides (or NOx) from an aircraft's engines are higher during high power operations such as the take-off, climb and landing phases of the flight (also known as the 'landing and take-off' or LTO cycle). Carefully regulating engine power during these phases reduces the rate of NOx emissions. The performance of a given aircraft during the take-off, climb and landing phase of flight operations can be measured by the amount of NOx emissions below 3,000 feet altitude.

Although nitrogen oxides are greenhouse gases of concern, they also play an important role in local (ground level) air quality. This is another reason why NOx are typically measured at an altitude of < 3,000 feet.

Total annual NOx emissions below 3,000 feet is one industry metric that measures NOx emissions for an airline's entire fleet during the LTO cycle. It is based on the sum of the NOx performance of each aircraft type multiplied by the number of flights for that aircraft in a year. The NOx emissions of each aircraft type are based on data supplied by the engine manufacturer multiplied by the number of engines on the aircraft.

In 2010-11, Emirates total fleet operations produced 7,252 tonnes of NOx below 3,000 feet.

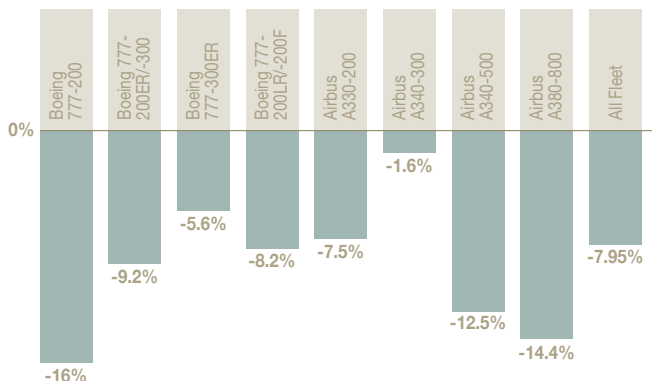
Different airlines use different metrics to report their NOx emissions (including < 1,000 feet, < 3,000 feet and total NOx), and many do not report this metric at all. There are also no available industry

averages for NOx emissions from international aviation.

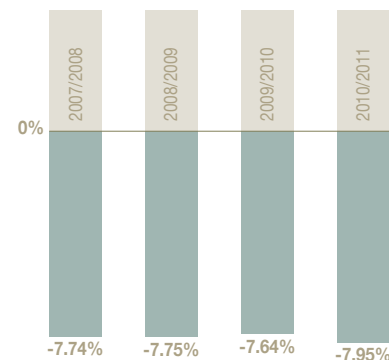
All Emirates passenger aircraft types have NOx emissions that easily meet the stringent CAEP 6 regulatory limits set by ICAO (as shown in the graph below).

The overall NOx emissions performance of Emirates aircraft fleet has also been improving over time, as older aircraft types are phased out of the fleet, and newer types are phased in. The graph below shows how the fleet weighted averages of NOx emissions of the Emirates fleet has been improving over time, in comparison to the CAEP 6 regulatory limit.

NOx Emissions - Percentage Below Regulatory Limits (CAEP 6) for Each Emirates Aircraft Type and Fleet Average (2010-11)



NOx Emissions - Percentage Below Regulatory Limits (CAEP 6), Emirates Fleet Average Over Time





Unburnt Hydrocarbon (UHC) Emissions

As with NOx, emissions of unburnt hydrocarbons (UHCs) are greatest during the landing and take-off (LTO) cycles, as the engines are performing at greater thrust.

Likewise, UHCs are of less concern as a potential greenhouse gas, but more as a potential ground-level pollutant.

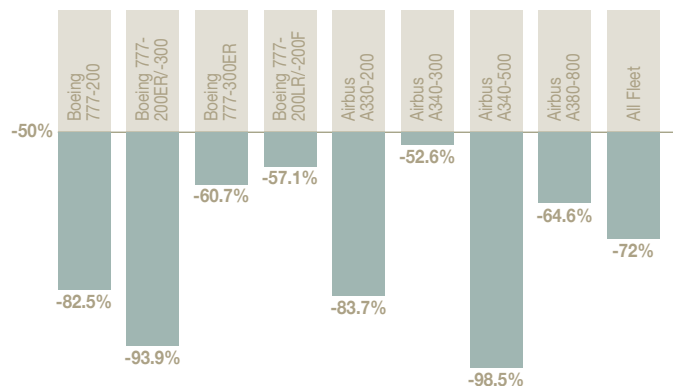
Emissions of UHCs are also reported as being emitted during the LTO cycle, or at 'less than 3,000 feet altitude.' Some airlines also report 'total UHCs' emitted during the reporting period, while many

do not report this metric at all. There are no available industry averages for UHC emissions from international aviation.

During the 2010-11 reporting period, Emirates' total fleet operations produced 445 tonnes of UHCs below 3,000 feet.

As shown in the graph below, all Emirates passenger aircraft types easily meet ICAO's stringent CAEP 6 standards for UHCs.

UHC Emissions - Percentage Below Regulatory Limits (CAEP 6) for Each Emirates Aircraft Type and Fleet Average (2010-11)



Case Study

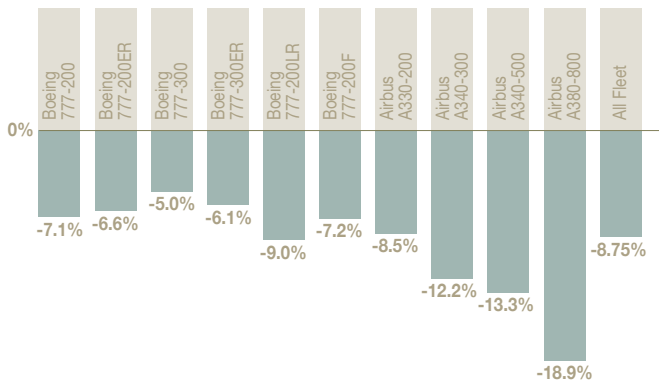
Engine Alliance GP7200 Engine

Emirates' 15 Airbus A380-800s are all powered by the Engine Alliance (EA) GP7200 engine. With a potential fuel efficiency as low as 3.1 litres of fuel per 100 passenger-kilometres, the GP7200 engine can save up to 700,000 litres of jet fuel per aircraft per year (compared to its nearest competitor). Such a fuel saving represents a reduction in carbon dioxide emissions of around 1,700 tonnes annually per aircraft. The greater fuel efficiency of the GP7200 engines on Emirates' A380s results in some of the lowest emissions (per passenger) of any large commercial aircraft.

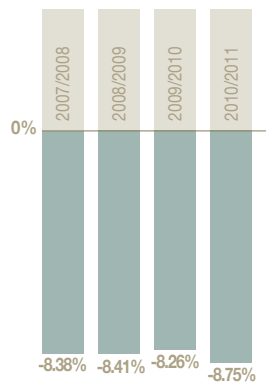
Fitting the Airbus A380-800 with EA GP7200 engines means that the aircraft's noise performance is some 19% better than the strict new ICAO Chapter 4 standard. This results in reduced noise levels for airport neighbours, and for the passengers on board.

The Engine Alliance is a joint venture between Pratt & Whitney and General Electric (USA), and MTU Aero Engines (Germany), SNECMA (France) and Techspace Aero (Belgium).

Noise Emissions - Percentage Below Regulatory Limits (ICAO Annex 16, Ch 4) for Each Emirates Aircraft Type and Fleet Average (2010-11)



Noise Emissions - Percentage Below Regulatory Limits (ICAO Annex 16, Ch 4), Emirates Fleet Average Over Time



Noise Contour Map Showing Take-Off and Landing Noise Footprints of Airbus A380-800 Compared to Boeing 747-400F Aircraft



Noise Performance

The airline industry is continuously working to minimise aircraft noise through improved aircraft design and better management of operational procedures.

Emirates supports ICAO's 'balanced approach' to reducing aircraft noise, in cooperation with all stakeholders (ICAO, 2004).

As an airline, Emirates' aircraft noise management programme is based on two strategies relating to aircraft and their procurement and operation, namely:

- Maintaining an entire fleet of aircraft that are quieter than ICAO's Annex 16 Chapter 4 standards.
- Implementing a system of operational procedures that minimise aircraft noise generation as well as the frequency of noise generating events (take-offs and landings).

With one of the youngest aircraft fleets in the world and an ambitious programme of fleet renewal, Emirates' aircraft noise performance is amongst the best of the

world's major international carriers. 100% of Emirates fleet in the 2010-11 reporting period were compliant with the noise limit of ICAO Chapter 4 (this standard has been compulsory for all new aircraft manufactured since 2006). This is shown in the graph to the left. This compliance margin has improved marginally over the last 4 years as older aircraft types are phased out, and newer aircraft types are phased in.

As described in the case study on the previous page, Emirates' Airbus A380-800 aircraft, fitted with Engine Alliance GP7200 engines, have a noise performance that is 19% better than the ICAO Chapter 4 standard. Emirates has fifteen A380-800s currently in service, and another 75 on order.

The noise contour map to the left clearly shows the significantly smaller noise footprint of an Airbus A380-800 aircraft, compared to a Boeing 747-400F aircraft. The noise contours have been overlain on a map, showing a typical airport used by Emirates, and assuming standard weather and operational conditions.



Noise Efficiency Factors for Take-Off (NEF-T) and Landing (NEF-L)

A by-product of aircraft operation is noise generation, notably during take-off and landing. The noise from take-off is a function of the aircraft and engine design, but also the weight of the aircraft. The take-off weight in turn is a function of the planned distance to be flown due to the fuel burn requirement (and weight of fuel loaded on board).

Longer flights require more fuel, and this extra fuel increases the take-off weight. The greater the take-off weight, the greater the noise generated during take-off. However, less fuel is required with more efficient aircraft, and the take-off weight for a given planned distance is therefore lower. Or, alternatively, the more efficient the aircraft, the further the aircraft can fly for a given fuel load.

The environmental impact of noise at ground level can be measured by calculating the area of land where a given noise level is reached, i.e. a 'noise contour'. This is known as "effective perceived noise level" (EPNdB). The greater the noise emission, the larger the area of land within a given noise contour, and vice versa.

A formula for take-off and landing noise efficiency of aircraft can be written as:

$$1000 \times \text{EPNdB} \times \text{Noise Contour Area (km}^2\text{)} / [\text{ZFW (kg)} \times \text{Planned Distance (km)}]$$

Where:

1000 = Factor to make the numbers usable
 EPNdB = 85 dB
 ZFW = Zero Fuel Weight
 Planned Distance = Equivalent Still Air Distance (ESAD) as recorded on the Flight Plan (in LIDO)

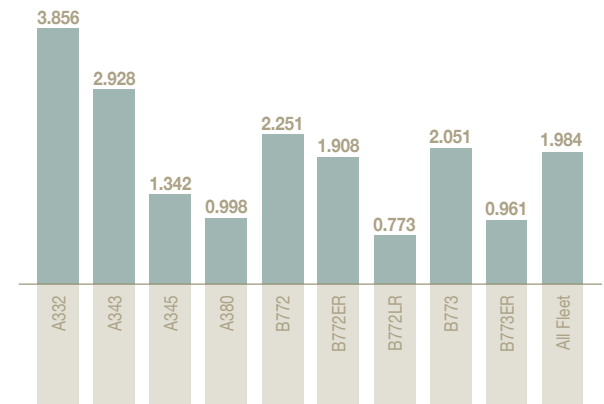
ZFW is used as it encompasses both aircraft and payload, and does not differentiate between passengers and cargo. Using ZFW rather than Take-Off Weight (TOW) also assists in clarifying the fuel burn efficiency. For landings, calculations are assumed with ISA (International Standard Atmosphere) conditions, sea level and maximum landing flaps/slats configuration. However actual TOWs and airport elevations are accounted for.

The data provides noise factors for each aircraft as operated in the Emirates network, as shown in the two graphs to the right. It can be seen that newer aircraft such as

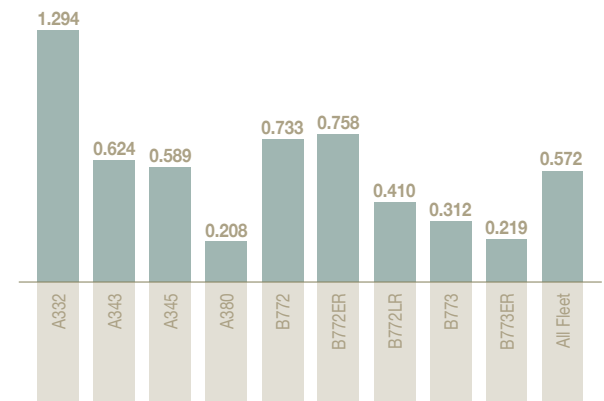
the A380 have the lowest noise factors. A weighted average Noise Factor - Take-Off and Landing is provided for the entire fleet.

Emirates believes that noise efficiency factors, such as the ones presented here, should be adopted as an industry standard. This would clearly show all affected stakeholders which airlines are performing more efficiently than others, in terms of overall landing and take-off events, and based on aircraft types.

Emirates Aircraft Noise Factors - Take-Off in dBkm²/TK (2010-11)



Emirates Aircraft Noise Factors - Landing in dBkm²/TK (2010-11)





On Board Waste Recycling

Emirates is continually investigating ways of minimising the weight of our aircraft in order to improve fuel efficiency, to minimise waste going to landfill, and to reduce operational costs.

In the 2010-11 reporting period, Emirates' Inflight Services (IFS) team worked with Emirates Flight Catering (EKFC) to reduce wastage of consumable items offered to customers during a flight. Some examples include individual milk, preserves and salad dressing servings – where minor changes were implemented to the procedures whereby these items are offered to customers on board, or recovered if not used. Such efforts resulted in savings of tens of millions of individual servings, and over AED 2 million in cost savings.

The IFS team is also working closely with the Emirates Performance Development (PD) department to re-design the economy class meal tray, which will result in a product with less waste, more recyclables

and more biodegradable items - giving a significantly lower overall carbon footprint than the existing economy class meal tray. The new product will come into service in early 2012.

From the meal tray products to the service trolleys, Emirates is working to minimise the weight of the inflight service equipment and to maximise opportunities for materials recycling. Aluminium cans have been recycled on board all Emirates flights for several years, resulting in over 42,420 kilograms of cans being recycled in 2010-11.

In selecting the materials and products that will be used on board, Emirates aims to re-use as much as possible. However, for resources that cannot be reused, a comprehensive recycling programme is carried out by Emirates and dnata ground operations teams.

As described in the case study on the following page, EKFC segregates a

wide range of recyclables from the on board waste streams. During the 2010-11 reporting period, the EKFC segregation team recovered 1,273,777 kilograms of recyclable materials, including PET plastic bottles, aluminium foils and cans, waste paper and cardboard products.

Several on board trials were carried out during 2010-11 to examine how best to maximise the recyclable recovery rates of materials used on board Emirates flights. The results of these trials are being analysed to see if these processes can be implemented into daily operations.

dnata's Aircraft Appearances Team is responsible for the cleaning of aircraft interiors and exteriors at Dubai International Airport. During the 2010-11 reporting period, the cabin-cleaning team recovered over 2 million kilograms of paper and cardboard products from Emirates' (and other airlines') aircraft. This was an average of 170 tonnes per month.



Case Study

Recycling of On Board Waste

Emirates Flight Catering (EKFC) operates the largest flight catering facility of its kind in the world (EKFC1), with a capacity of producing an incredible 115,000 meals per day. Housed in a state-of-the-art building at Dubai International Airport, the facility covers almost 56,000 m².

In early 2010, EKFC1 introduced a dedicated waste segregation team to recover recyclable materials from on board waste, as well as recovering recyclable materials from the meal production process and the numerous airport lounges it provides catering services to at DIA.

During the 2010-11 reporting period, the EKFC Environmental Team recovered the following quantities of

recyclable materials at the EKFC1 and EKFC2 facilities at DIA:

- 1,082,929 kilograms of paper and cardboard.
- 115,444 kilograms of assorted plastics (including plastic meal lids, PET bottles and other items).
- 47,246 kilograms of aluminium cans.
- 27,904 kilograms of aluminium foils.

This resulted in a total quantity of 1,274 tonnes of recyclable materials being diverted from landfill, and a cost recovery of nearly AED 1 million (US\$272,500).

The success of Emirates' on board recycling programme is also boosted by the support of dnata's Aircraft Appearances Team, who clean Emirates (and other airlines) aircraft on arrival at DIA. In 2010-11, the cabin-cleaning team recovered 2,040,000 kilograms of waste paper and cardboard from aircraft using DIA. These materials were then sent for recycling into cardboard fluting and carton products at a Dubai-based paper mill.

Case Study

SkyCargo - World's First Paperless Freighter Flight

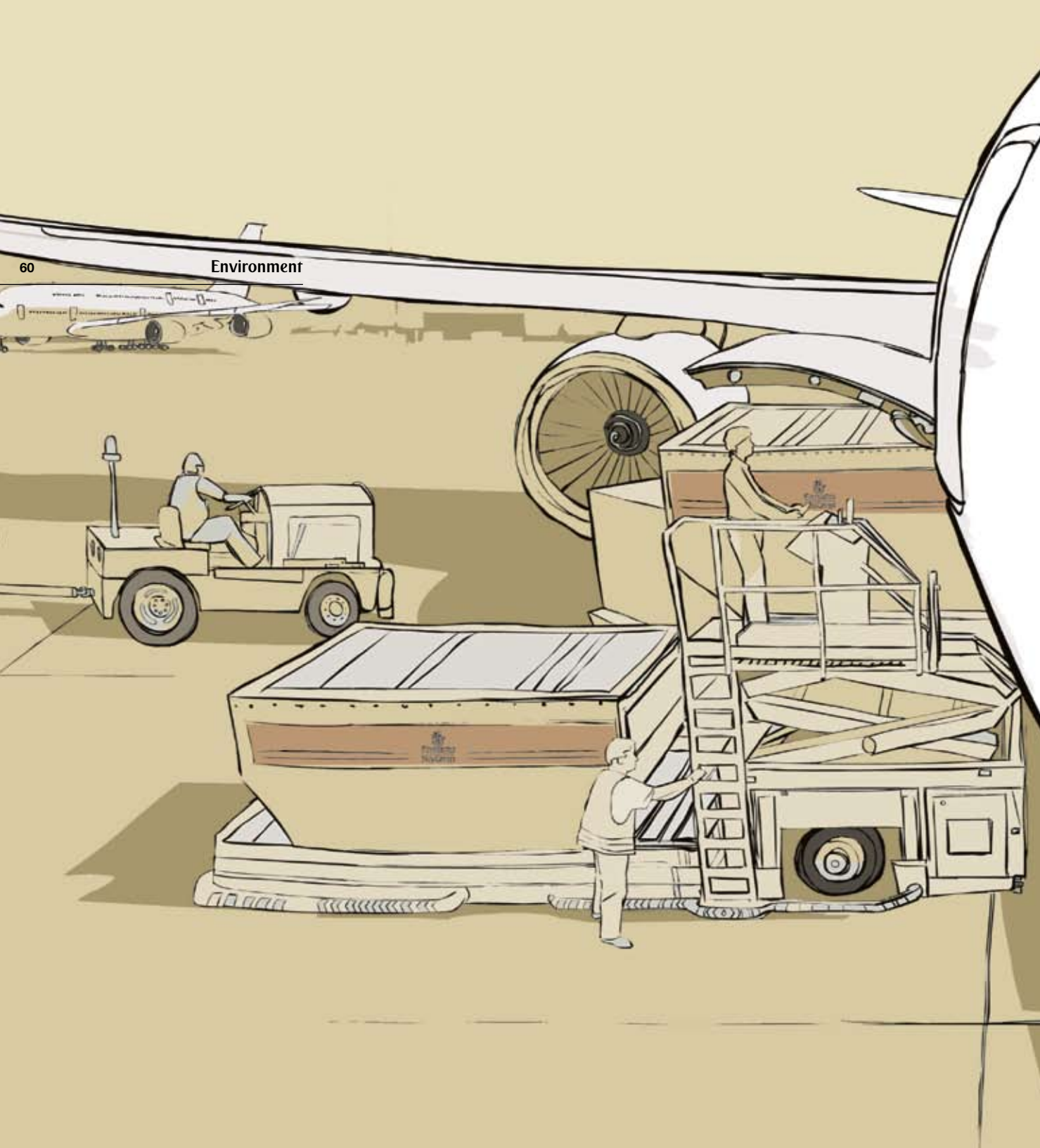
SkyCargo recognises the strong and positive link between operational efficiency and environmental sustainability. On 28 March 2011, flight EK9952 arrived in Amsterdam from Nairobi, completing the world's inaugural 100% paperless freighter flight.

IATA facilitates 'e-freight', the collective air cargo industry initiative that aims to remove all paper air waybills, associated documentation and certificates by 2015, in favour of an electronic system. The Nairobi e-freight flight to Amsterdam followed a successful inaugural paperless cargo flight from Mauritius to Dubai on an Emirates passenger aircraft in December 2010. Both examples indicate how Emirates SkyCargo are not only determined to meet IATA's 2015 target, but are also taking a leadership role in the process.

Elimination of resource consumption is recognised as the first and most effective action in the waste management hierarchy, ahead of measures such as reuse or recycling. SkyCargo's achievement is an important milestone in the effort to eliminate what IATA estimate as 7,800 tonnes of paper consumed annually across the air-cargo industry. Fifty of the 111 cities that SkyCargo serves are e-freight compliant. Backed by the success of this inaugural paperless flight, SkyCargo is well placed to expand its e-freight activities to these other e-freight compliant destinations.

The first paperless cargo flight required close cooperation between SkyCargo and other stakeholders in Nairobi and Amsterdam – freight forwarders, ground handlers, shippers and customs authorities.





Reducing Our Impact On The Ground

Ground Operations

A large part of the Emirates Group's activities take place on the ground, enabling and supporting the airline and cargo businesses, as well as wholly ground-based activities such as Arabian Adventures.

This first-time Emirates Group Environmental Report includes environmental impacts of ground operations in Dubai only. Waste generation, waste recycling, electricity and water consumption, and fuel consumption



from these ground operations have been reported, as well as the associated greenhouse gas emissions.

Electricity, Water and Waste

Buildings covered by this report may be broadly considered as commercial or residential. Commercial buildings include offices, warehouses, training centres, catering facilities, and engineering workshops and hangars. There are 38 Emirates Group commercial buildings in Dubai. Shop front retail outlets, which are typically located in malls or commercial complexes, are outside the scope of the report. The Emirates Group does not receive consumption information for these premises (as retail space is leased from a third-party).

The Group provides accommodation for over 20,000 of its staff in Dubai, as part of their employment packages, taking responsibility for payment of electricity, water utility and waste service charges. This accommodation includes both apartments and houses (or 'villas').

The Group therefore considers that the domestic generation of waste, and consumption of water and electricity by staff living in these buildings falls within the scope of its overall corporate environmental impact (waste – Scope 3, electricity and water consumption – Scope 2). This is important to note when considering the waste, electricity and water consumption data reported here.

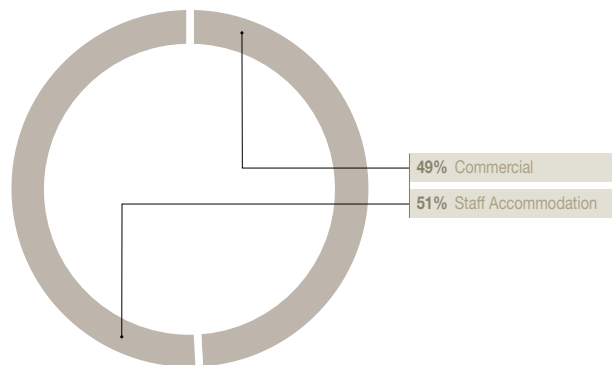
The total water and electricity consumption figures for ground operations in Dubai during the reporting period are shown in the table below, as well as waste generation data.

The relative contributions of commercial and staff accommodation buildings to the above totals are shown in the charts below. These show the relative environmental impacts associated with accommodating staff in Dubai.

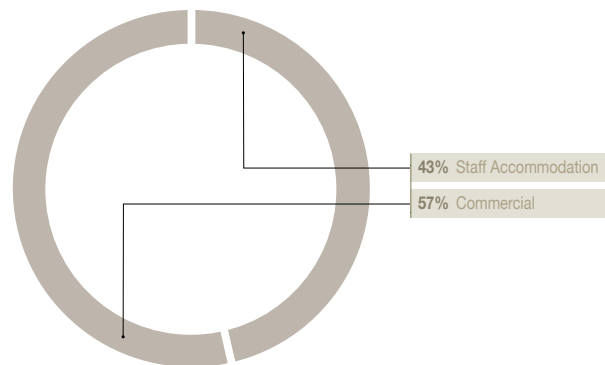
The Emirates Group Buildings (2010-11)	Water consumption (ML)	Electricity consumption (MWh)	Waste Generation (tonnes)
Commercial	2,571	350,635	88,612
Staff Accommodation ¹	2,696	262,282	12,372
Total	5,267	612,917	100,984

¹ Emirates, dnata and EKFC staff based in Dubai – excludes subsidiary companies

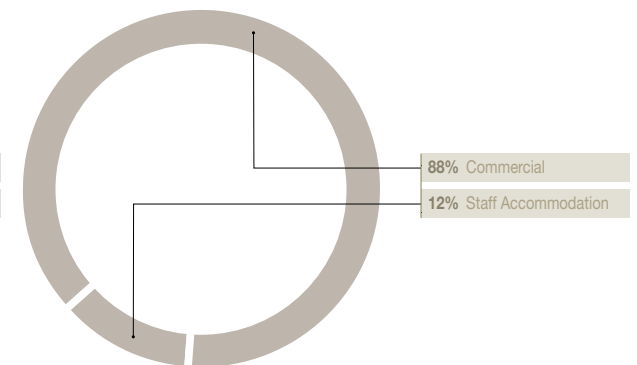
Water Consumption in 2010-11 (ML)



Electricity Consumption in 2010-11 (MWh)



Waste Generation in 2010-11 (tonnes)





Waste Recycling

The Emirates Group has initiated various recycling programmes targeting a diverse range of waste streams across its activities. In 2010-11, over 4,917 tonnes of waste were recycled by the Emirates Group's Dubai activities.

The Emirates Group Headquarters (EGHQ) is the single largest work location for the Group, and as such represents one of the best locations for collecting recyclable office waste. Recognising this, recycling of paper, cardboard, plastic bottles, aluminium drink cans, steel cans and printer cartridges is carried out at EGHQ and at a large number of other Group office buildings, such as Emirates Aviation College (EAC), Emirates Group Technology Centre (EGTC), dnata Travel Centre (dTC), Emirates Holidays (EKH) and Group Security (GS). In the 2010-11 reporting period, over 336,400 kg of recyclable materials were collected from the Emirates Group office locations alone.

Emirates Flight Catering (EKFC) has an extensive recycling programme that

diverts a wide range of materials from landfill, including paper and cardboard, aluminium foil and cans, steel and tin cans, plastic bottles and containers, and cooking oil. During the reporting period, over 1.4 million kg of materials were recycled by EKFC.

Emirates Engineering (EKE) has incorporated waste recycling initiatives into its general waste stream and its aircraft interior refurbishment project. In its first 6 months, the EKE recycling programme diverted some 117,000 kg of materials from landfill, including 25,450 kg of aviation grade A2017A aluminium (see case study on following pages).

A range of other business areas incorporate recycling of waste, with over 2,042 tonnes of paper and cardboard recovered by dnata from aircraft cabin cleaning at Dubai International Airport.

Linenkraft's coat hanger return and reuse programme has saved 6.4 tonnes of metal over the past year, an impressive result when the average weight of coat hangers is just 80 grams.

The Emirates Group has arranged for clothing recycling bins to be placed near its premises in several locations. The clothing is collected by a third-party, for re-use and resale – resulting in the recycling of over 24,000 kg of used clothing in 2010-11.

Key Performance Indicators – Ground Operations

Part of this reporting process also involved identifying key performance indicators (KPIs) to analyse the overall environmental performance of the Group, in relation to known, published data for the UAE. The following KPIs have been selected to track the Group's environmental performance over time:

- Electricity use per head of staff (in kWh per head per day).
- Water use per head of staff (in litres per head per day).
- Waste generation per head of staff (in kilograms per head per day).
- Recycling rate (compared to waste to landfill), as a percentage.
- Recycling quantity per head of staff (in kilograms per head per day).

The methodology used to calculate these KPIs is described in detail in the Reporting Guidelines and Methodology section of this report.

As a result of its harsh climatic conditions, limited natural resources and rapid development, it is widely acknowledged that the UAE has one of the largest per capita ecological footprints of any country in the world (WWF Living Planet Report, 2010). As such, great efforts are being made to reduce the country's overall environmental impacts - these include major investments in public transport, infrastructure, technology and renewable energies. The KPIs selected above are compared to published data for the UAE in the table to the right. The results show that, apart from per head waste generation, the Emirates Group's results are well below the UAE published figures for these metrics.

Waste Material Recycled by The Emirates Group	Quantity Recycled in 2010-11 (tonnes)
Paper and cardboard	3,601.0
Plastic – all types including plastic bottles and polycarbonate	697.8
Aluminium – foil, cans, aviation grade 2017A alloy	108.1
Steel	30.2
Textiles and leather	24.2
Carpet	2.5
Cables	1.1
Electric Motors	0.8
Cooking Oil	115.1
Timber	336.6
Total (tonnes)	4,917.4
Printer Cartridges (units) ¹	1,242

¹ The quantity of printer cartridges recycled is measured in units (i.e. number of cartridges).

Key Performance Indicators - Ground Operations	The Emirates Group (2010-11)	UAE (2010)¹
Electricity use (kWh/head/day)	41.7	54
Water use (litres/head/day)	358	970
Waste generation (kg/head/day)	6.8	4.2
Recycling quantity (kg/head/day)	0.3	NA

¹ See references section



Case Study

Emirates Engineering (EKE) Aircraft Interiors Recycling Programme

Emirates prides itself on offering a consistently excellent flight experience to passengers. Part of this experience is the quality of cabin interiors.

Refurbishment of an aircraft's interior at Emirates Engineering (EKE) involves complete stripping of all fixtures and furniture within the aircraft's cabin space. This includes aluminium seat frames, seat mouldings, cables and electronics, carpets, toilets, and seat coverings.

A few of these components are stored, to be refitted at a later date prior to retiring the aircraft, however, the vast majority of the items stripped from the aircraft would ordinarily be waste headed for landfill disposal.

In mid 2010, Emirates engaged a local recycling company to strip down the aircraft interiors' components, fittings and fixtures into several streams of saleable, recyclable materials. In doing so, Emirates has created the opportunity

for these materials to enter the recyclables market.

The quantities of materials separated and sent for recycling tell of the programme's success: over 64,000 kilograms of materials have been diverted from landfill since the start of the programme in August 2010 to the end of the financial year. This includes:

- 25,450 kg of 2017A aviation grade aluminium.
- 8,898 kg of polycarbonate plastic.
- 24,156 kg of textiles and leather.
- 2,506 kg of carpet.
- 525 kg of cables.
- 430 kg of electric motors/actuators.

In addition to this, EKE recycled a further 53,097 kilograms of recyclable materials from its general waste stream, including:

- 3,055 kg of scrap metal.
- 3,562 kg of plastic containers.
- 43,420 kg of cardboard and paper.
- 2,995 kg of steel and tin cans.

Arabian Adventures CEMARS Certification

Arabian Adventures carried out a carbon footprint assessment project of its entire operation in 2010, including the emissions associated with its vehicle fleet. This was part of its overall Carbon Emissions Management and Reduction Scheme (CEMARS) certification, carried out by carboNZero.



Ground Vehicles and Equipment

The Emirates Group operates several extensive fleets of ground vehicles in Dubai, plus other types of equipment that run on diesel or petrol. Collectively, the Group manages 4,470 vehicles and items of equipment that consume petrol or diesel in Dubai alone.

During the 2010-11 reporting period, these vehicles consumed over 6.6 million litres of petrol, and over 21.2 million litres of diesel, as shown in the table below.

Ground Vehicles	Quantity of fuel consumption in 2010 (litres)
Petrol	6,515,440
Diesel	21,201,855
TOTAL	27,717,295

Operation of these vehicles and equipment in Dubai resulted in the emission of 89,225 tonnes of CO₂ during the reporting period. These are considered to be Scope 1 emissions.

These emissions were calculated principally from direct fuel consumption (diesel and petrol) and standard emissions conversion rates for petrol and diesel combustion engines. For a subset of vehicles (879 vehicles, or 19.7% of the total), fuel consumption information was not available and instead emissions were calculated using engine manufacturers' standard emissions rates for specific engine types – based on known engine drive cycles, and the kilometres travelled for each vehicle type.

As such, the quantity of fuel reported here represents consumption from around 3,591 (or 80%) of the 4,470 petrol/diesel consuming vehicles and equipment assessed in this report. The fuel consumed by these vehicles will be reported in the next reporting period, as part of the overall total.

It should also be noted that a number of vehicle fleets were considered out

of scope of this first Emirates Group Environmental Report, including:

- Vehicle fleets operated in outstations.
- Vehicle fleets operated by Emirates and dnata subsidiary companies (in the UAE and overseas).
- SkyCargo trucking services.

Several ground transport efficiency initiatives were implemented during the reporting period, including a trial of hybrid airside support vehicles by dnata's Airport Operations, and a crew transport optimisation project by the Emirates Group's Central Services department. For more information on these specific initiatives, see the following case studies.

Other projects that contributed to vehicle emissions reductions in Dubai included the opening of the new Emirates Metro station at EGHQ, and the introduction of priority parking at EGHQ for staff who car-pool.



Case Study dnata Baggage Tractor Hybrid Trials

dnata is exploring greener ground support equipment options, and is currently trialling both electric and hybrid baggage tow tractors, as well as other potential alternatives to conventional diesel engines.

Between August 2010 and January 2011, dnata conducted trials on two models of electric baggage tractor and one hybrid baggage tractor. dnata is currently considering the use of these vehicles at their operations at Dubai International Airport.

By using electric and hybrid baggage tractor units, there are no emissions generated at the point of use. For vehicles operating within enclosed environments there are significant improvements in air quality for airport workers and other airport users.



Case Study

Emirates Metro Station

The Gulf region's first rapid urban rail system opened for business in Dubai at 9.09pm on 9 September 2009. Known as the "Dubai Metro", this landmark public infrastructure project was the result of years of planning and engineering works. For the Emirates Group, it also presented a strategic opportunity to provide a reliable and environmentally preferred option for its sizeable workforce to commute to and from the Emirates Group Headquarters (EGHQ).

The Emirates Group worked in cooperation with the Dubai Roads and Traffic Authority (RTA) to ensure that a Metro station was built as an integral component of the Group's new headquarters building. The Group made a substantial financial contribution to assist with the construction of this Metro station, which is used by both the Emirates Group staff and the general public.

The Emirates Metro Station is also complemented by the RTA's dedicated Dubai Metro stations at Dubai International Airport's Terminal 1 and Terminal 3 buildings. This allows Emirates passengers and staff to commute to and from the airport using the new Metro system – a direct benefit for the millions of people passing through the airport annually.

Case Study

dnata Freight Gate 5

Freight Gate 5, dnata's automated freight handling facility at Dubai Airport Freezone, was launched in April 2010 as the first carbon neutral warehouse in the Middle East. This programme was initiated by dnata's employees and continues to involve the participation of the entire team.

Following an assessment of the energy consumption of the original facility, a building management system was installed along with the introduction of solar panels and an energy efficient lighting system. In addition to the modifications to the building, a number of day-to-day practices were reviewed to improve Freight Gate 5's operational energy efficiency. Essential to the success of the programme was the training of the team in how to operate their new carbon neutral facility.

The new approach to the management and operation of the Freight Gate 5 facility represents a 25% reduction in annual energy consumption per tonne of cargo handled. The remaining carbon dioxide emitted through the operation of the building is offset through a biomass electricity plant based in a farming community in Sri Balaji, India. The project is certified under the United Nations Clean Development Mechanism programme.

Lessons in energy conservation learnt through the Freight Gate 5 project are now being rolled out across some of dnata's other facilities around the world.



Case Study

Optimising Ground Transfer of Flight Staff

Whilst the majority of fuel-related emissions are from flights, the Emirates Group strives for environmental excellence in all areas of activity, including the operation of its ground fleet.

One of the largest of these vehicle fleets is operated by the Group's Central Services department in Dubai, which uses 810 light vehicles and 69 crew buses to transport airline staff, deliver goods and carry out a range of other general business tasks.

Around 5,000 cabin crew are transported between their residences and the Emirates Group headquarters for work each day, using a fleet of dedicated minibuses and coach

transfers. Until recently, there were a total of 900 daily bus trips operating to achieve this.

A detailed in-house review of timetables, capacity and utilisation, resulted in a change to the overall approach to cabin crew transfer timetables. These changes were implemented in June 2010, and so far have yielded a 13% decrease in the total number of trips per day (from 900 to 820).

These changes to cabin crew transfers have had direct benefits for the Group's environmental and financial performance. A reduction of 1.296 million kilometres annually has been forecast in the first year of the revised transport scheme, which will reduce carbon dioxide emissions by some 872 tonnes over 12 months. This will also result in an associated fuel cost saving of around AED 1.5 million per year.

Overall Carbon Footprint

In 2010-11, the Emirates Group activities addressed in this report generated 18,400,606 tonnes of carbon dioxide equivalent (CO₂ e) emissions.

96.2% of the Group's carbon dioxide emissions, or 17,702,341 tonnes, were from the consumption of jet fuel for Emirates' flight operations (passenger and cargo services). These are considered to be direct Scope 1 emissions.

3.8% of the Group's carbon dioxide emissions, or 698,266 tonnes, were produced through Emirates' and dnata's ground operations in Dubai. This included 89,225 tonnes of CO₂ emissions from diesel and petrol consumption by ground vehicles and equipment in Dubai (also considered to be Scope 1 emissions).

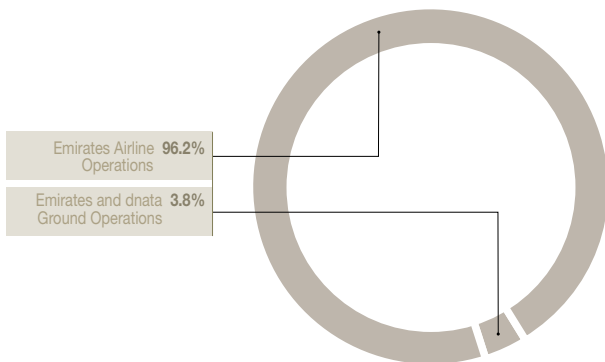
As all potable water consumed in Dubai is produced through desalination, the

carbon dioxide emissions associated with the multi stage flash (MSF) desalination process were included in the Group's tally for Scope 2 emissions, along with the consumption of electricity (which is typically supplied by natural-gas fired power stations). Scope 3 emissions covered in this report only included the CO₂ e (carbon dioxide equivalent) emissions of waste sent to landfill (as a result of the decomposition process).

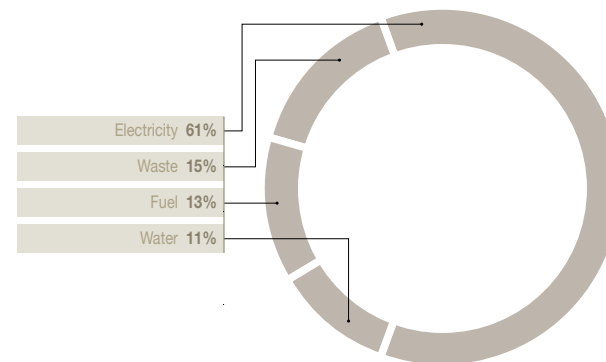
CO ₂ e Emissions ¹	Source	Tonnes of CO ₂ e
Scope 1	Aviation fuel, diesel and petrol consumption	17,791,566
Scope 2	Electricity and water consumption	508,056
Scope 3	Waste to landfill	100,984
Total		18,400,606

¹ Within the scope of this report

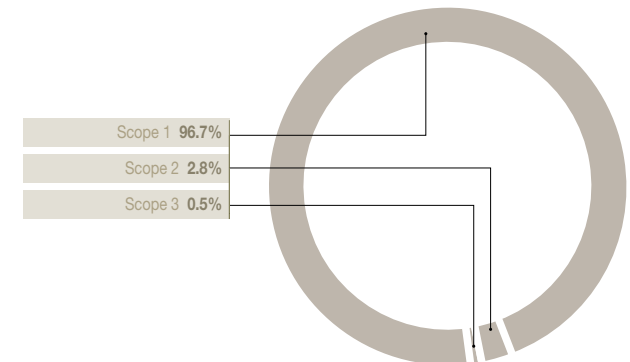
Emirates Group Overall CO₂ Emissions



CO₂ Emissions From Ground Operations



CO₂ Emissions by Scope



Case Study

Voluntary Carbon Off-Setting

The Emirates Group is firmly committed to ecologically sustainable development, and the concept of eco-efficiency is a cornerstone of everything we do – as described earlier in this report.

As a Group, our biggest impact on the environment is our airline operations, as shown in the chart on the previous page. We pride ourselves on having one of the most modern, quietest, low-emissions fleets in the world - with an average age of just 6.4 years (as of 31 March 2011).

As a large, modern airline, Emirates is occasionally asked about voluntary carbon off-set programmes. Emirates believes in the 'emitter-pays principle' - as such, we - as the aircraft operator - are responsible for minimising our

emissions, in the ways described above - instead of simply passing this responsibility on to our customers.

Emirates is not the only airline to subscribe to this point of view. A number of other modern airlines concentrate their efforts on real emissions savings by investing in modern aircraft, and operating efficiently through a geographically favourable hub – rather than passing the responsibility for carbon off-setting on to their passengers.

Nevertheless, Emirates understands that some customers still want to off-set their travel-related emissions. In these cases, we refer them to one of several leading carbon off-set organisations.





Committed to Conservation and Communities

The Emirates Group continuously supports a wide range of community and workplace projects, including humanitarian and conservation programmes. Many projects are supported by direct funding, such as the Dubai Desert Conservation Reserve, and in-kind support and staff volunteer participation, such as dnata's community campaigns. Another 37 humanitarian projects are supported by The Emirates Airline Foundation, a non-profit organisation set up to support children's charities through donations of funds and Skywards Miles by Emirates passengers, staff and workplace programmes. A number of these projects are conservation-based, or have a strong environmental focus.

Dubai Desert Conservation Reserve (DDCR)

Recognising the importance of wildlife conservation, the Emirates Group has been instrumental in the establishment, management and ongoing sponsorship of the Dubai Desert Conservation Reserve (DDCR), since its inauguration as a protected area in 2003. The Reserve was established for the protection of endangered species and the conservation of desert habitat and traditional heritage. Covering 225 square kilometres, or almost 5% of the Emirate of Dubai, the DDCR is a centre for scientific research and the home of several critical conservation programmes.

The Arabian Oryx is just one of the Reserve's success stories. Fifty years ago the Arabian Oryx was extinct from the wild in the UAE. In 1999, the reserve reintroduced 70 Arabian Oryx back into their native habitat. Through careful management, the DDCR now has a population of more than 400 Arabian Oryx and is working with other conservation organisations across the region to protect this species in the wild.

As well as the Arabian Oryx, the Reserve is home to a rich ecosystem of 43 mammals and reptiles, more than 120 species of

birds, and 57 species of plants. The flora and fauna of the DDCR are protected by a management plan that employs utilisation zones ranging from complete exclusion to limited access for safari groups.

The operation of the Reserve was audited by the United Nations Environment Programme (UNEP) World Conservation Monitoring Centre and it is now registered with the World Database on Protected Areas. The DDCR is also a member of the International Union for the Conservation of Nature (IUCN).

The Reserve is the focus of a number of research projects studying the desert's flora and fauna. Amongst current projects, researchers are studying the Arabian Fox, Macqueen's Bustard, and the carrying capacity of the Reserve's rangeland vegetation for foraging species. The more cryptic nocturnal species within the DDCR are being recorded through camera trap survey techniques using infrared and motion sensors.

The Emirates Group supported the establishment of the DDCR with an initial contribution of AED 15 million for its first five years of operations, and is continuing to provide ongoing financial assistance of AED 2 million per year.

Wolgan Valley Resort and Spa

Located on rehabilitated farmland approximately 100 kilometres north-west of Sydney, the Emirates Group invested over A\$125 million to establish a resort and conservation reserve that is now a globally recognised model of responsible tourism.

The resort itself takes up just 2% of an overall property of some 1,600 hectares. The property is treated as a wildlife conservancy, and is surrounded by three national parks, including the World Heritage-listed Blue Mountains National Park, the Gardens of Stone National Park and the Wollemi National Park (home to the extremely rare and recently-discovered Wollemi Pine – *Wollemi nobilis*).

Conservation programmes at the park include removal of cattle from the property, feral animal control and large scale weed suppression. A feral animal-proof fence has been erected around part of the property to exclude introduced predators such as cats and foxes. This allows small native animals, such as birds, reptiles and marsupials to re-establish stable populations in the exclusion zone. More than 175,000 indigenous trees have been planted in wildlife corridors and along the banks of a degraded creek that traverses the property.





Adopting green building principles during the design and construction phases was essential to build a facility with a very low carbon footprint. As well as using captured rainwater, solar power and heat recovery technology, the resort receives supplementary power from 35% renewable energy sources provided by the local utility company. The Wolgan Valley Resort and Spa is also dedicated to sourcing regional food for its guests from within a 160 kilometre radius, which further reduces the emissions associated with food transportation.

When it opened in October 2009, the resort received carboNZero™ carbon neutral certification - the first hotel in the world to receive such certification from an independently verified scheme, and in accordance with international standards. This certification also recognises the resort's ongoing commitment to continuously managing and reducing its emissions, and is renewed on a regular basis.

Wolgan Valley Resort and Spa also supports a number of biodiversity

research projects by undergraduate and postgraduate students at the University of Western Sydney.

The Emirates Airline Foundation

The Emirates Airline Foundation was established in 2003 as a non-profit charity, with the aim of improving the quality of life for disadvantaged children – regardless of geographical, political, or religious boundaries. The Foundation provides philanthropic aid for underprivileged children in the areas of health, housing, food and education.

The Emirates Airline Foundation supported more than 37 projects around the world in 2010-11, through the generosity of Emirates' passengers, and through the contributions of Emirates staff and recycling initiatives. Further information on the Foundation can be found at www.emiratesairlinefoundation.org

A number of the Foundation's projects have a strong environmental focus, assisting communities with clean water supply and sanitation, renewable energy



installations and relief from natural disasters such as severe flooding. An overview of selected programmes supported by the Emirates Airline Foundation is given below.

The Foundation's projects are primarily located within countries served by Emirates, enabling Emirates staff volunteers to take a role in assisting or overseeing the projects.

Clean Water Project, Arusha, Tanzania

Using Skywards Miles donated by Emirates passengers, The Emirates Airline Foundation flew volunteers from the UK, Canada, the USA and Australia to Dar Es Salaam, to work on a water facilities improvement project in Tanzania.

Led by Projects Abroad UK, and in cooperation with the BridgIT Water Foundation in Australia, volunteers travelled to the Saint Gabriel's children's home in Arusha, which accommodates children whose mothers have been imprisoned.

The existing water supply infrastructure was inadequate for the needs of the children's home, as well as their small vegetable garden. The situation was exacerbated by the home's borehole running dry (due to over-extraction by a nearby textile factory), and severe pressure for water resources from surrounding villages.

The volunteer team included electricians, plumbers, irrigation specialists and builders who, together with local workers, constructed two new water tanks of 90,000 litres capacity and roof guttering systems to allow for passive rainwater collection. The team also installed a new diesel-powered generator to supply electricity to the home, as well as to the pumps for the new water supply system.

Solar Irrigation Project, Tambacounda, Senegal

In Tambacounda, Senegal, local farmers were irrigating 35 hectares of banana plantation manually with the assistance of three large old diesel powered pumps. This required six hours of manual watering daily, during the heat of the day. Rising diesel prices, falling banana prices and

political instability further exacerbated the situation. As the 0.5 hectares of land used for growing vegetables for their own consumption was insufficient, farmers often had to travel by bus to the nearest major city in order to buy vegetables.

A solar powered pump was installed in the local river to replace the three diesel pumps, with power now being supplied by a solar panel array. The traditional manual irrigation system was replaced with a highly efficient, automated drip irrigation system. The time and money saved by no longer having to irrigate the banana cash crop by hand, and no longer having to buy diesel to run the pumps, is now used to cultivate subsistence vegetables – with surplus produce sold at local markets for additional income.

With an overall budget of only €15,000, it is hoped that this pilot solar water pumping project will be the first of many in the region. Volunteers from the project team were flown to Dakar from Germany and back using Skywards Miles donated by Emirates passengers to the Emirates Airline Foundation.



Biogas Digester Project, Karagwe, Tanzania

Thanks to Skywards Miles donated by passengers, The Emirates Airline Foundation provided volunteers from Engineers without Borders Germany with tickets to travel to this project in Tanzania.

As most meals are traditionally cooked on open wood fires in rural Africa, the clearing of vegetation for firewood or charcoal production has led to considerable deforestation and decreased soil quality. Reductions in soil quality lead to reduced food security, as many people in the region depend on agriculture.

Biogas is a mixture of methane and carbon dioxide produced by bacterial degradation of organic matter. If biogas is used as a cooking fuel, there are health and environmental benefits for the local population. This includes the reduction of the risk of respiratory diseases and ophthalmitis through reduced smoke exposure. The fermented substrates can also be used as fertiliser to improve soil quality, which has a positive effect on local agriculture.

Solar Water Supply and LED Lighting Project, Floriano, Brazil

The Emirates Airline Foundation flew volunteers from Engineers Without Borders Germany to Brazil for another important water supply project, using Skywards Miles donated by passengers.

Many communities in the interior of Brazil still do not have access to clean running water. Water is brought up by hand or using diesel powered pumps from wells with poor water quality. This problem is exacerbated in the dry season. The volunteer team travelled to Floriano to install a solar powered, maintenance-free water supply system to enable the local community to reduce its reliance on an old, inefficient diesel system, and to ensure access to clean, potable water.

Completed in February 2011, the new well in Floriano is more than 100 metres deep and provides clean water to over 650 people. The new system does not have any ongoing running costs, which allows the local community greater independence. New fruit and vegetable gardens have been established in the village, with surplus

produce sold at the local markets. One particular family, whose three children have albinism, has especially benefited from the clean water supply, as clean water is vital to avoid skin infections associated with this congenital condition.

An additional component of the project involved the installation of a low-energy LED lighting system in the centre of Kolping village, to provide light to community facilities used for meetings, lectures and courses.

Rainwater Harvesting Projects, Karagwe and Ngara, Tanzania

With the assistance of Skywards Miles donated by Emirates passengers, teams of volunteers from Engineers Without Borders Germany and specially-trained local workers constructed 18 new water holding tanks in the region, in addition to 13 already built. The tanks range in capacity from 20,000 to 45,000 litres and are located across several sites, providing a secure, clean potable water supply to 1,200 local people, including the Baramba Girls Secondary School.

Prior to the tanks being installed, children were sent to fetch water from distant and unreliable springs and, as such, were not able to attend school. Installing centralised, large capacity rainwater collection tanks (and associated guttering and piping from roofs of nearby buildings) ensures a much more reliable water supply for the local community.

With a budget of over €70,000, the volunteers and locally-trained specialists provided additional training to local people, so that they could learn how to install and maintain gutters, pipes and hand pumps by themselves, in addition to the all-important task of underground water tank construction. The project team plans to install a further 57 new water tanks in 2011.

dnata Community Projects

dnata has a long history of supporting charities and campaigns both in the UAE and abroad. Programmes are initiated and driven by dnata staff volunteers through their own efforts in organising events, collecting donations, or participating directly. At a corporate

level, contributions include the donation of cargo transportation and distribution services, direct funding, and the provision of air tickets for volunteers.

dnata organises a wide range of campaigns and activities in the areas of environment, medical research, education, hunger relief, emergency response, and disaster relief. dnata's philanthropic work is undertaken in Kenya, Ethiopia, Mauritius, Pakistan, the Philippines, the UAE and wherever there is a need for dnata's airport emergency team.

dnata is an investor partner of Dubai Quality Group, a corporate member of Emirates Environmental Group (EEG) – a UAE-based environmental NGO, and a founding member of the CSR and Benchmarking Network. A selection of dnata's community environmental programmes is discussed below.

Dubai Clean Creek Campaign

The Clean Creek Campaign is an annual dnata environmental initiative to raise awareness about pollution. Every year since 2005, over 50 dnata and Emirates



volunteer scuba divers spend a day removing debris and rubbish from the bed of Dubai Creek, with the help of land-based volunteers.

dnata and EKFC Aluminium Can Collection Campaigns

Every year, various dnata offices and Emirates Flight Catering (EKFC) participate in the "Can Collection Campaign" arranged by the Emirates Environment Group (EEG).

Thousands of aluminium cans are collected by staff and dropped off at central collection points, while EKFC sets aside aluminium cans collected from its catering operations.

In 2010-11 alone, over 2,000 kilograms of aluminium cans were donated to EEG, with EKFC again winning first prize for the single corporate entity collecting the largest amount of cans (by weight). The aluminium cans collected by EEG are sold for recycling, and the monies raised are used to fund ongoing environmental awareness projects in the UAE.



Workplace Environmental Programmes

The Emirates Group undertakes a number of workplace environmental programmes, to raise environmental awareness among staff and to provide an opportunity for environmentally-passionate employees to participate in projects in the workplace, in staff accommodation and in the community.

'Environment Champions' Programme

In late 2009, staff interested in environmental issues were asked to nominate themselves as 'Environment Champions', as part of the Group's wider 'Environment' programme. Over 1,200 dnata and Emirates employees globally nominated themselves to participate in the programme.

'Environment Champions' participate in various workplace and extra-curricular environmental activities, such as photographic competitions, recycling drives, environment day events, clean-up campaigns and tree-planting projects.

In the next reporting period, the 'Environment Champions' will be offered the opportunity to participate in conservation activities at the Dubai Desert Conservation Reserve and projects further afield, while also assisting with operational environmental initiatives, such as workplace recycling and energy efficiency projects.

World Environment Day - 5 June 2010

The Emirates Group celebrated World Environment Day (WED) in 2010 by organising a large static display in the Atrium of the Emirates Group Headquarters building, running for the entire week. The display included recycling installations with interpretive banners, showing actual samples of the different materials recycled across the Group - such as aluminium seat frames and cabin carpets from Emirates Engineering, plastic bottles and aluminium cans from Emirates Flight Catering, used printer cartridges from Group office locations, and used uniforms from the Uniform Store.

The most popular display was of live native invertebrates from the wadis and deserts

of the UAE, including scorpions, dragonfly larvae, stick insects, spiders and water beetles - arranged and attended by one of the UAE's leading biologists, Dr Emma Smart. The display was accompanied by an interpretive board describing the number of threatened species in the UAE - driving home the theme of biodiversity protection on WED 2010.

UAE Environment Day - 4 February 2011

The Emirates Group accepted the UAE Ministry of Environment and Water's invitation to celebrate UAE Environment Day in 2011, with the announcement of an annual tree planting programme at the Dubai 7evens rugby and cricket grounds. This was launched with the symbolic planting of the first tree by the General Manager of The 7evens on the boundary of Cricket Pitch 1. Only the first of many trees to go in the ground, the programme plans to gradually create a green buffer around the site, using both indigenous species and landscaping specimens.

Staff at the Emirates Group Technology Centre also held their own environmental awareness event

on the day, with the launch of an internal office recycling programme, an environmentally-themed essay competition and a staff plant sale.

EGHQ Car-Pooling Initiative

April 2010 saw the launch of the Group's first priority parking programme for staff car-poolers commuting to the EGHQ building. Staff who have registered their vehicles with the scheme are given priority parking in the EGHQ carpark when they car-pool with two or more people in the car. The scheme results in emissions reductions of over 4 tonnes of CO₂ per annum, not to mention reductions in pollutants such as nitrous oxides, carbon monoxide and particulates. Combined with the new Dubai Metro station at EGHQ, and improved staff bus services, the car-pooling scheme offers the Emirates Group staff working at EGHQ another environmentally-friendly option to commute to work.

The Emirates Group Used Clothes Recycling Programme

In March 2010, the Emirates Group launched its used clothing collection and recycling programme, in partnership with BCR Global Textiles from the UK. Over

24,000 kilograms of used clothing and shoes were collected from staff during the 2010-11 financial year.

The used clothes collection programme involved the placement of 17 bright blue collection banks in visible areas of the Group's main office locations and several staff accommodation buildings. An additional 25 collection banks will be placed in accommodation buildings during the next reporting period, with collections anticipated to top 50,000 kilograms.

dnata Freight Gate 5 - Earth Hour - 26 March 2011

The Emirates Group has participated in the global Earth Hour event since 2008, encouraging staff to turn off all non-essential lights and electrical equipment at home and in the workplace for a symbolic hour at the end of March each year. The new EGHQ building participated in the event in March 2009, and twenty three buildings across the Group joined the event in March 2010.

Staff from dnata enthusiastically celebrate the event each year at dnata's Freight Gate 3, 4 and 5 cargo handling facilities, going so far as to turn off all non-essential

lighting in the workplace, and operating by candlelight. It is particularly fitting that this event includes Freight Gate 5, as it is the region's first carbon-neutral warehouse (see case study earlier in this report). Staff at dnata lead the way in a wide range of environmental initiatives, from ISO14001 certification, to comprehensive recycling and energy efficiency programmes.

The Najm ('Star') Programme

The Emirates Group encourages 'star performance' of all staff through the Najm programme. This formalised programme of recognition for innovative suggestions and exemplary performance allows staff to be officially recognised for outstanding performance, through the award of bronze, silver, gold and platinum Najm prizes. Every year, many Najms are awarded to staff for environmental initiatives - from waste minimisation and efficiency suggestions, to major Group-wide projects.

The top prize-winners are presented Chairman's Awards in an annual ceremony at EGHQ. In 2010 a 'Najm' Chairman's Award was presented to the Emirates EU ETS team, who achieved in-house compliance with the scheme without the need for external consultants.





A Sustainable Future

Continuing Investment in New Technology

Much has been made in this report about Emirates' young and eco-efficient fleet, with its world-leading fuel efficiency and environmental performance. However, we are not resting on our laurels – the company has reaffirmed its commitment to maintaining the youngest fleet possible, with a US\$35 billion order for 70 Airbus A350 XWBs (extra wide bodies).



The A350 XWB will offer the latest in passenger comfort and fuel efficiency for a wide body aircraft, with:

- New next-generation, high bypass engines that will be some 20% more fuel efficient, with NOx emissions 40% lower than ICAO CAEP 6 requirements, and exterior noise levels 16dB lower than ICAO Chapter 4 regulations.
- A new fuselage that will maximise efficiency through extensive use of composite materials.
- A new wing that will be optimised for Mach 0.85 cruise speed, with new aerodynamic efficiency and composite construction.
- New state-of-the-art avionics systems developed from service-proven A380 technology.

These new aircraft are not simply added to the existing fleet – they replace older aircraft, which are retired from service. Emirates' ongoing commitment to maintaining a young fleet ensures exceptional fuel economy and improved environmental performance, while continuously improving passenger comfort.

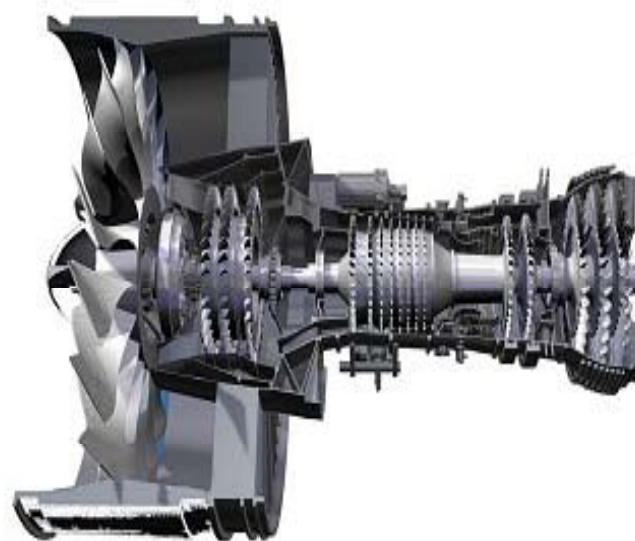
Technological Improvements

Emirates and many in the commercial aviation industry are watching with great anticipation many of the new developments in engine technologies and aircraft shape.

Research and development into more efficient engines and aircraft shapes represents one of the four IATA pillars of reducing aviation emissions in the medium to long term.

Some technological advances, such as the Pratt & Whitney geared-turbo fan engine are a new reality, and will be put into service on smaller regional jets and narrow-bodied aircraft as early as 2013.

A gear system, much like a car's, allows a geared turbofan engine's fan section to operate at a slow speed, while the low pressure compressor and turbine are operating at a much higher speed. This dramatically increases the engine's fuel efficiency (by some 15-20%, compared to the engines they will replace), while lowering gaseous emissions and noise levels.



Other technological advances, particularly in regards to radical new aircraft designs, are still many years away. However, projects such as the Very Efficient Large Aircraft (VELA) project, headed by Airbus and the University of Greenwich, are already demonstrating that the 'blended wing' aircraft shape could deliver per-seat fuel consumption improvements of up to 32%, compared to existing aircraft designs (ATAG, 2010).

Biofuels

One of the most exciting prospective technological developments in aviation is the development of jet fuels produced from sustainably sourced biological material – namely plant material. Fuels produced from such biological feedstocks have potentially up to 80% less carbon dioxide emissions (in their overall lifecycle) than traditional fossil-fuel derived kerosene – simply because the plants grown for their production absorb significant quantities of carbon dioxide. The fuels are not completely 'carbon neutral', as there are still energy requirements needed to irrigate and fertilise them, as well as in the refining and production processes. There can also be significant associated carbon emissions with 'land-use change', if vegetated land is cleared to grow biofuels.



Emirates spends over US\$4 billion on fuel each year, so naturally we are monitoring the development of biofuel technology with great interest. However, Emirates is an end-customer - we are not a specialist fuel research and development company - nor are we a large-scale grower of agricultural or algal feedstocks. When aviation biofuels have been developed that are technically safe, cost competitive, and truly sustainable - Emirates will be first in line to buy them. This is a job for agronomists and aquaculture specialists, and for fuel researchers and engine manufacturers.

Setting Improvement Goals

As this is the Emirates Group's first environmental baseline monitoring year, it is premature to set improvement targets for the next reporting period (the 2011-12 financial year) - until we have two consecutive years of monitoring data.

Once we have analysed the results for 2011-12, and presented them in our next Emirates Group Environmental Report, we intend to set ourselves a series of high-level improvement goals based on some of the following key metrics:

- airline fuel efficiency
- airline CO₂ efficiency
- airline NO_x and UHC emissions
- airline noise efficiency factors
- overall waste to landfill
- quantities of recyclables collected
- energy and water consumption
- ground transport fuel efficiency

As mentioned earlier in this report, Emirates is already operating at a peak fuel efficiency, more than 25% better than the global fleet average - and far ahead of many of our competitors. Nevertheless, we expect to achieve even further improvements in fuel and emissions efficiency, as we continue to phase out older aircraft types, and as brand new aircraft join our fleet. Emirates has numerous new aircraft scheduled for delivery in the next few years - many of them highly-efficient Airbus A380s and Boeing 777-300ERs.

Our Next Report

It is also the Group's intention to widen the scope of the next Emirates Group Environmental Report to include more of the dnata and Emirates owned subsidiary

companies (both in the UAE and overseas), and to cover as many of our 'outstation' operations as is feasible.

Likewise, we also intend to broaden the scope of the independent verification process to audit more of the key reporting metrics during the next reporting period, and to ultimately verify the entire report.

Reporting Guidelines and Methodology

Acknowledging that this first-time report primarily addresses environmental issues, the 2010-11 Emirates Group Environmental Report was prepared with reference to many of the methods within the Global Reporting Initiative - G3 Reporting Guidelines. The following GRI-G3 reporting principles were applied: materiality, stakeholder inclusiveness, sustainability context, and completeness. For these reasons, an application level check was not considered relevant.

References to Scope 1, 2 and 3 emissions within this report are based on definitions from the Greenhouse Gas Protocol – revised edition (2011).

Methodology and Calculations

This section outlines the process for the collation and analysis of data, the basis of the underlying assumptions, and the methodology applied to the calculations undertaken during the preparation of this report.

The methodology for the calculation of selected flight operations metrics was taken into account by PwC in their assurance procedures (see PwC assurance report on page 90).

Flight Operations Metrics – Emirates Airline

Emirates Flight Operations team calculated the following environmental performance metrics for the 2010-11 Environmental Report. All metrics were calculated for the reporting period 1 April 2010 to 31 March 2011 (the Emirates Group's 2010-11 financial year).

- Total fuel consumption in tonnes (all scheduled and unscheduled Emirates passenger, cargo and wet-leased cargo aircraft operations).
- Total carbon dioxide in tonnes (as above).
- Fuel efficiency of Emirates passenger flights – in litres per 100 passenger-kilometres (L per 100PK).

- Fuel efficiency of Emirates SkyCargo flights (freighter aircraft only) – in litres per freight tonne-kilometre (L per FTK).
- Total fuel efficiency (for all Emirates passenger, cargo and wet-leased cargo aircraft operations) - in litres per tonne-kilometre (L per TK).
- CO₂ efficiency of Emirates passenger flights – in grams of CO₂ per passenger-kilometre (gCO₂ per PK).
- CO₂ efficiency of Emirates SkyCargo flights – in grams of CO₂ per freight tonne-kilometre (gCO₂ per FTK).
- Total CO₂ efficiency (for all Emirates passenger, cargo and wet-leased cargo aircraft operations) - in kilograms of CO₂ per tonne-kilometre (kgCO₂ per TK).
- Landing and Take-Off (LTO) cycle gaseous emissions of unburnt hydrocarbons (UHCs), carbon monoxide (CO), and nitrous oxides (NOx) - for all Emirates passenger, cargo and wet-leased cargo aircraft.
- Gaseous emissions (for all Emirates passenger and cargo aircraft, excluding wet-leased cargo aircraft) – compliance margins relative to regulatory limits (ICAO CAEP4 and CAEP6 standards) – by aircraft type, and weighted fleet averages over time.
- Noise levels (for all Emirates passenger and cargo aircraft, excluding wet-leased cargo aircraft) – compliance margins relative to regulatory limits (ICAO Chapter 3 and Chapter 4 standards) – by aircraft type, and weighted fleet averages over time.
- Noise Efficiency Factors for Take-Off (NEF-T) and Landing (NEF-L) - for all Emirates passenger and cargo aircraft, excluding wet-leased cargo aircraft.
- Noise contour maps for take-off and landing cycles of Emirates aircraft.

Total Fuel Consumption (For All Emirates Aircraft)

Total fuel consumption for all Emirates flights that occurred between 1 April 2010 and 31 March 2011 was calculated using the European Union Emissions Trading Scheme (EU ETS) Method B

calculation, in order to capture fuel consumption by the aircraft's auxiliary power unit (APU) on the ground. Emirates flights are defined as all flights flown by aircraft with the Emirates' ICAO call sign (scheduled and unscheduled services, passenger and cargo operations).

The Method B calculation used by Emirates to calculate fuel consumption per flight is as follows:

$$\text{FUEL_CONSi} = \text{REMi}_{i-1} + \text{FuelUplift}_i - \text{REMi}$$

Where:

FUEL_CONSi = Total Fuel Consumption on sector i, in tonnes
 REMi-1 = Remaining Fuel on previous sector performed by the same aircraft, in tonnes
 REMi = Remaining Fuel on sector i, in tonnes
 FuelUplifti = Total Fuel Uplift on sector i, in tonnes

The EU ETS Method B calculation was used because normal block fuel (as measured by on board fuel monitoring systems) does not include fuel consumption by the APU on the ground. This method is already used by Emirates for EU ETS compliance purposes, and is considered to be a method which is more easily replicated for subsequent reporting periods, thereby ensuring consistency in data analysis and comparison between periods.

On board measuring systems on all aircraft owned and operated by Emirates have an uncertainty level of less than +/-1.0%. This is supported by manufacturer's statements.

The flight planning information for each flight is uploaded to Emirates' scheduling database. The scheduling database only includes flights that have actually occurred – if the flight is not in the scheduling database, it cannot occur, as it cannot be assigned an aircraft, crew or an approved flight plan.

This ability to schedule individual flights acts as the main control activity for accurate counting of flight events for the reporting period – in many ways, this is the key data factor.

If there is a malfunction in the fuel measuring system on the aircraft (or if there is missing fuel uplift information), then there is the potential for invalid data and even a measurement of zero block fuel. In the event of such an incident or any missing or erroneous data, it is picked up by Emirates' internal database through a consistency check of expected values, and substituted with data using an applied polynomial interpolation to accurately estimate actual block fuel. Data gaps for wet-leased freighter fuel consumption are substituted using an average calculated by aircraft type and sector type.

The average fuel density figure used for fuel volume to mass calculations (and vice versa) is 0.785 kg per litre. This density figure represents the average density value across Emirates' network, according to all fuel supplier data entered into Emirates' fuel uplift database.

The Flight Operations team extracted a host of flight-level information from Emirates' internal database for this reporting exercise, including:

- number of flights performed
- date and time of flights
- city pairs
- aircraft types and registration numbers
- planned distances to be flown
- payloads and passenger numbers
- fuel uplift (as provided by fuel supplier)
- remaining fuel and trip fuel (as measured by on board fuel monitoring systems)
- Zero Fuel Weight (ZFW) and Take-Off Weight (TOW)

Total Carbon Dioxide (For All Emirates Aircraft)

Tonnes of CO₂ = Total Block Fuel for all flights x 3.15

CO₂ emissions from aviation fuel are 3.15 kg per kg of fuel burnt (industry standard).

Total Passengers and Payload

Passenger numbers are derived from the Emirates check-in system that is controlled by a specialist IT platform. This information is fed into the Emirates Flight Operations database, for flights that actually occurred. All persons aboard the aircraft (except active crew on duty) are included in the total passenger count (i.e. all male, female, child and infant passengers and non-revenue passengers, such as crew on non-active duty).

The Emirates passenger database differentiates passengers by male, female, child and infant, and assigns a given mass to each, as approved by the UAE General Civil Aviation Authority.

The system is also able to include the mass of checked baggage, excess checked baggage, cargo and courier load (freight and mail). The total mass of passengers, baggage, excess checked baggage, cargo and courier load is defined as the flight 'payload' (in tonnes). The cargo component feeds into SkyCargo's cargo processing database.

Cargo carried by dedicated freighter aircraft is controlled directly by SkyCargo's cargo processing database.

Distance

The distance in kilometres for all flights that occurred during the monitoring period used ESAD (Equivalent Still Air Distance) measurements. ESAD is the planned air distance expected to be flown by the aircraft during the flight, taking into account the planned actual ground distance (from the Emirates flight planning system), plus the effects of expected tail winds or

head winds during the flight. This is considered to be a far more accurate estimation of actual distance flown by the aircraft on each flight, compared to the Great Circle Distance (GCD) calculation – which simply estimates the straight-line distance between two points on the surface of a sphere.

A consistency check was carried out on all ESAD distances between city pairs during the reporting period. Any erroneous data was substituted using the GCD calculation.

GCD calculations were used to estimate distances for calculation of tonne-kilometres performed by wet-leased cargo aircraft, as these flights are operated by third parties on Emirates behalf (under Emirates flight codes and Emirates ICAO call signs). As such, Emirates does not have access to the flight planning information to obtain ESADs.

Tonne-Kilometres (TK)

Tonne-kilometres (TK) for a flight are defined as the distance flown by an aircraft (in kilometres) for a given flight multiplied by the payload of the aircraft (in tonnes).

Fuel Efficiency (Emirates Passenger Flights) – Litres per 100 Passenger-Kilometres (L per 100PK)

The total fuel efficiency for Emirates passenger flights (on a per passenger basis) was calculated by using the weighted average of the litres of fuel consumed by each aircraft per 100 passenger-kilometres flown (for all Emirates passenger aircraft, as per the total number of flights flown by each aircraft type).

The calculation for L per 100PK does not include cargo and baggage contributions, as the ICAO definition of a 'passenger-kilometre' is 'one passenger flown one kilometre' (there are no weight factors involved). It also does not include the fuel burnt to carry the extra fuel used to carry these components (cargo and baggage).

Average Fuel Efficiency (Emirates SkyCargo Flights) - Litres per Freight Tonne-Kilometre (L per FTK)

The average fuel efficiency for all Emirates SkyCargo flights was calculated by using a weighted average of fuel efficiency of the litres of fuel consumed by each aircraft per tonne-kilometre (for all Emirates freighter (cargo) aircraft, as per the total number of flights for each aircraft type).

It should be noted that this metric does not include freight carried in the cargo holds of passenger aircraft, as it is impossible to accurately assign the proportion of fuel burnt by a passenger aircraft in transporting passengers and their luggage (and the associated aircraft infrastructure), versus the fuel burnt by the same aircraft in transporting non-passenger cargo in the hold (and the associated aircraft infrastructure). Although some airlines attempt to make this differentiation, Emirates has chosen to present only accurate estimations for its dedicated freighter aircraft.

Average Emirates Fleet Fuel Efficiency - Litres per Tonne-Kilometre (L per TK)

The total average fuel efficiency for all flights performed by the entire Emirates fleet was calculated by using a weighted average fuel efficiency of the litres of fuel consumed by each aircraft per tonne-kilometre (for all Emirates aircraft, as per the total number of flights for each aircraft type).

Carbon Dioxide Efficiency For Emirates Passenger Flights (Without Cargo and Baggage Contribution) - Grams of CO₂ per Passenger-Kilometre (gCO₂ per PK)

Grams of CO₂ per passenger-kilometre = Litres per 100 passenger-kilometres x (0.785 x 3.15 x 1000) / 100.

Carbon Dioxide Efficiency of Emirates SkyCargo (Freighter) Flights - Grams of CO₂ per Freight Tonne-Kilometre (gCO₂ per FTK)

Carbon Dioxide Efficiency of SkyCargo (freighter) flights = Total grams of CO₂ for all freighter flights / Total freight tonne-kilometres.

(Total freight tonne-kilometres = Total distance of all freighter flights x Total payload of all freighter flights).

Average Emirates Fleet Carbon Dioxide Efficiency

Average Carbon Dioxide Efficiency = Total kg of CO₂ / Total tonne-kilometres x 1000.

(Total tonne-kilometres = Total distance of all flights x Total payload of all flights).

Landing and Take-Off (LTO) Cycle Emissions For Emirates Aircraft

The data reported for LTO emissions of unburnt hydrocarbons (UHCs), carbon monoxide (CO) and nitrous oxides (NO_x) are based on the sum of total flights for each aircraft type multiplied by the number of that engine type on that aircraft type, multiplied by the manufacturer's published emissions data for that engine type. The LTO Cycle is defined by the industry as all operations < 3,000 feet altitude, therefore the figures for these emissions are reported in tonnes (< 3,000 feet), rather than tonnes (total).

Gaseous Emissions of Emirates Aircraft – Compliance Margins Relative to Regulatory Limits (ICAO CAEP4 and CAEP6 Standards)

Emissions margins against ICAO CAEP4 and CAEP6 regulatory limits for unburnt hydrocarbons (UHCs) and nitrous oxides (NO_x) by Emirates aircraft and engine type are provided directly from the ICAO engine database. These results are presented

by Emirates aircraft (and engine) type, and by weighted fleet averages over the last 3 years (for all Emirates passenger and cargo aircraft, excluding wet-leased cargo aircraft).

Noise Levels of Emirates Aircraft – Compliance Margins Relative to Regulatory Limits (ICAO Chapter 3 and Chapter 4 Standards)

Noise levels margins of Emirates aircraft and engine types (during landing and take-off cycles) are compared against ICAO noise level standards. These results are presented by Emirates aircraft (and engine) type, and by weighted fleet averages over the last 3 years (for all Emirates passenger and cargo aircraft, excluding wet-leased cargo aircraft).

Noise Efficiency Factors For Emirates Aircraft For Take-Off (NEF-T) and Landing (NEF-L)

Emirates Flight Operations team developed the following parameter for take-off noise and landing efficiency:

$$1000 \times \text{EPNdB} \times \text{Noise Contour Area (km}^2\text{)} / [\text{ZFW (kg)} \times \text{Planned Distance (km)}]$$

Where:

1000 = Factor to make the numbers usable

EPNdB = 85 dB

ZFW = Zero Fuel Weight

Planned Distance = Equivalent Still Air Distance (ESAD) as recorded on the Flight Plan (in LIDO)

ZFW is used as it encompasses both aircraft and payload, and does not differentiate between passengers and cargo. ZFW is used rather than Take-Off Weight (TOW) to clarify the fuel burn efficiency.

Take-off calculations are assumed with average take-off weights for each sector, ISA (International Standard Atmosphere)

conditions, sea level altitude, maximum optimum flaps/slats configuration, and reduced take-off thrust. Landing calculations are assumed with average landing weights for each sector, ISA conditions, sea level altitude and maximum landing flaps/slats configuration.

The calculations provide noise efficiency factors for each aircraft operated in the Emirates fleet (excluding wet-leased Boeing 747-400F freighters). Newer aircraft such as the A380 have the lowest noise efficiency factors. A weighted average Noise Efficiency Factor for Take-Off (NEF-T) and a weighted average Noise Efficiency Factor for Landing (NEF-L) were calculated for the entire Emirates fleet (excluding wet-leased Boeing 747-400F freighters).

Noise Contour Maps For Take-Off and Landing Cycles of Emirates Aircraft

The environmental impact of take-off and landing noise from Emirates aircraft at ground level was presented by calculating the perimeter of an area of land where a given noise level (EPNdB = 85 dB) is reached, i.e. noise contours. This is known as the "effective perceived noise level" (EPNdB). The noise contours were produced by Emirates Flight Operations department using noise calculation software provided by Airbus (Winpep - Noise Calculation Level Module) and Boeing (Boeing Climb Our Software - Noise Calculation Module).

Several noise contour maps were produced for all Emirates aircraft types, in plan view and 3D, assuming standard conditions (without weather influences) and assumed operational (equipment) settings.

A further example was produced to graphically show the difference between the noise contours from a Boeing 747-400F freighter aircraft compared to an Airbus A380-800 aircraft, at a hypothetical airport, and assuming standard weather and operational conditions. These contours were then overlain on a map of an actual airport.

Ground Operations Metrics – Emirates and dnata (Dubai)

Taking into account issues regarding materiality, stakeholder interest, sustainability context, availability of information, resources and time constraints, the scope of the ground operations section of the first Emirates Group Environmental Report addressed the major environmental impacts associated with the following ground operations activities of the Group:

- All dnata operations in Dubai (aircraft ground-handling, cargo and travel services).
- All Emirates and dnata commercial buildings in Dubai, including offices, training colleges, flight catering, laundry services, warehouses, IT and engineering services.
- All Emirates Group staff accommodation buildings in Dubai (apartment buildings and houses).
- Emirates and dnata ground vehicle fleets in Dubai, including diesel powered equipment.
- Arabian Adventures, Al Maha Desert Resort and Spa and Dubai Desert Conservation Reserve.

Environmental impacts associated with the following activities of the Emirates Group were not included in the ground operations section of the report:

- Emirates Leisure Retail (ELR) and Emirates consumer goods businesses in the UAE and other countries.
- Partly-owned Emirates companies in the UAE and other countries.
- Emirates 'outstations' – the airline's offices and activities outside of the UAE.
- dnata aircraft and cargo handling services, and flight catering companies outside of the UAE (fully or partly-owned).
- Partly-owned dnata travel service companies in the UAE and other countries.
- Partly-owned dnata freight-forwarding and security companies in the UAE.

It is intended to progressively include the environmental impacts of these activities in subsequent reporting years.

Ground Operations Metrics

The following environmental performance metrics were calculated for the 2010-11 Environmental Report. All metrics for the aforementioned scope were calculated for the reporting period.

- Total electricity consumption in megawatt hours (MWh).
- Total tonnes of CO₂ emissions due to electricity consumption.
- Electricity consumption per head of staff (in kWh per head per day).¹
- Total water consumption in mega litres (ML).
- Total tonnes of CO₂ emissions due to energy consumption from the desalination process.
- Water consumption per head of staff (in litres per head per day).¹
- Total waste disposed to landfill in tonnes.
- Total tonnes of CO₂ emissions due to waste disposal to landfill.
- Waste generation per head of staff (in kilograms per head per day).¹
- Total of all recycled materials in tonnes.
- Recycling rate (compared to waste to landfill) in percent.
- Recycling per head of staff (in kilograms per head of staff per day).¹
- Total quantity of diesel and petrol consumed by ground vehicles and equipment (in litres).
- Total tonnes of CO₂ emissions due to fuel consumption (ground operations).
- Total tonnes of CO₂ emissions due to ground operations.

¹ For Emirates, dnata and EKFC Dubai-based staff only (total of 40,272 people as of 31 March 2011) – this excludes subsidiary companies.

Total Electricity Consumption in Megawatt Hours (MWh)

Electricity consumption across the Group's ground operations in Dubai was based on billing information provided by Dubai Electricity and Water Authority (DEWA). All data used in the preparation of this report was provided by the Emirates Group Facilities Department and Emirates Flight Catering (EKFC).

DEWA applies a unique consumer number for each meter that has been installed for measuring electricity consumption. Some buildings or facilities have multiple meters and, as such, have a matching number of consumer numbers. Working from the DEWA consumer numbers, electricity consumption for all ground operations assets within the scope was collated as kilowatt hours (kWh) and was then converted to megawatt hours (MWh) for reporting purposes.

In the case of EKFC, electricity consumption in kWh was calculated from the billing quantity (in AED), using the applicable electricity tariff at that time (in AED per kWh).

In cases where February and March 2011 electricity consumption billing data was not available at the time of report preparation, a seasonal (winter) average consumption was calculated for February and March 2011.

The Emirates Group does not receive billing or consumption information from Dubai Airports Company for dnata offices and facilities in Terminals 1, 2 and 3. Electricity consumption is paid through a nominal amount in the lease. There is no separate metering of dnata's electricity consumption. It is therefore not possible to accurately estimate the electricity consumption attributable directly to the Emirates Group, as the facilities (e.g. toilets, airport halls, baggage collection areas, check-in areas, other offices and retail outlets) are shared with other tenants and the general public. As such, electricity consumption of dnata assets at Dubai International Airport is not included in this report.

Total Tonnes of CO₂ Emissions Due to Electricity Consumption

The total tonnage of carbon dioxide emissions due to electricity consumption for the assets identified in the scope was calculated by multiplying the total megawatt hours by the carbon dioxide emissions factor assigned to the local method of power generation. The carbon dioxide emissions factor applied was 0.700 kg CO₂/kWh for DEWA supplied electricity. DEWA states that the emission factor of the UAE national grid is 700 gCO₂/kWh which is calculated according to the Approved Consolidated Methodology ACM0002 version 01.1 tool to calculate the emission factor for an electricity system (UNFCCC, 2009).

Electricity Consumption per Head of Staff

Electricity consumption per head of staff was calculated by simply dividing the total annual electricity consumption by all the business units, facilities and geographical locations included in the scope of this report, by the number of all staff based at those units, facilities and locations. This number is presented in kWh per head per day, as this is a common standard electricity consumption comparison figure. It should be noted that this electricity consumption figure includes industrial, office and accommodation buildings (and not just residential or office electricity consumption per head).

Total Water Consumption in Mega Litres (ML)

Water consumption across the Group's ground operations in Dubai was based on billing information provided by Dubai Electricity and Water Authority (DEWA). All data used in the preparation of this report was provided by the Emirates Group Facilities Department and Emirates Flight Catering.

DEWA applies a unique consumer number for each meter that has been installed for measuring water consumption. Some

buildings or facilities have multiple meters and, as such, have a matching number of consumer numbers. Working from the DEWA consumer numbers, water consumption for all ground operations assets within the scope was collated as imperial gallons (IG), as billed by DEWA. The water consumption data has been converted to litres through the summation process then converted to mega litres (ML) for reporting purposes. In the case of Emirates Flight Catering (EKFC), water consumption in imperial gallons (IG) was calculated from the billing quantity (in AED), using the applicable water tariff at that time (AED per IG). This was then converted into litres and mega litres, as above.

In cases where February and March 2011 water consumption billing data was not available at the time of report preparation, a seasonal (winter) average consumption was calculated for February and March 2011.

As for electricity, the Emirates Group does not receive billing or consumption information from Dubai Airports Company for dnata offices and facilities in Terminals 1, 2 and 3. Water consumption is paid through a nominal amount in the lease. There is no separate metering of water consumption. It is not feasible to estimate the water consumption attributable directly to the Emirates Group, as the facilities (e.g. toilets, airport halls, baggage collection areas, check-in areas, other offices and retail outlets) are shared with other tenants and the general public. As such, water consumption of dnata assets at Dubai International Airport is not included in this report.

Total Tonnes of CO₂ Emissions Due to Energy Consumption From The Desalination Process

As all potable water consumed in Dubai is produced through desalination, the carbon dioxide emissions associated with the multi stage flash (MSF) desalination process were included in

the Group's Environmental Report under Scope 2 emissions. The total tonnage of carbon dioxide emissions due to water consumption for the assets identified in the scope was calculated by multiplying the total volume of water consumed by the carbon dioxide emissions factor assigned to the desalination process utilised by DEWA. The carbon dioxide emissions factor applied was: 15 kg of carbon dioxide per cubic metre of water (Arab Forum for Environment and Development, 2010), based on the knowledge that the cogeneration MSF desalination process is utilised in the production of DEWA supplied water.

Water Consumption per Head of Staff

Water consumption per head of staff was calculated by simply dividing the total annual water consumption (in ML) by all the business units, facilities and geographical locations included in the scope of this report (as above), by the number of all staff based at those units, facilities and locations. This number is presented in litres per head per day, as this is a common standard water consumption comparison figure – such as that used in the World Wildlife Funds' Living Planet Reports. It should be noted that this water consumption figure includes industrial, office and accommodation buildings (and not just residential or office water consumption per head).

Total Waste to Landfill in Tonnes

The calculation of the tonnage of waste sent to landfill used a range of methods to account for the existing variety of systems employed to track waste across the Group.

In the case of waste generation from the Group's commercial buildings, the waste management contract and associated monthly reporting was based on the total number of skips (of various sizes) emptied during the reporting period. As such, the total volume of waste generated (disposed in landfill) was calculated by taking the volume of each specific skip type,

multiplied by the total number of that skip type that was emptied over the reporting year. This total volume of waste from commercial buildings was then multiplied by a density factor to provide a final waste total in tonnes. This was done using the New South Wales Environmental Protection Authority's (NSW EPA's) WRAPP Programme Waste Density Calculator.

This tool was sourced from the following regulatory website: <http://www.environment.nsw.gov.au/sustainbus/wastereductioninofficebuildings.htm>. The tool was developed using data from NSW EPA's WRAPP Programme (R Birdsey, 2001). For buildings that used waste compactors, the waste density factor for compacted waste from the NSW EPA WRAPP Programme was adopted, to give a final waste total in tonnes.

EKFC has a well developed system for recycling plastics, steel, aluminium, paper and cardboard, cooking oil, and wooden pallets. The residual waste that cannot be recycled comprises a high proportion of food waste. For all EKFC waste that was sent to landfill, the reporting system was based on the number of compactors collected over the reporting period. The total volume of waste (to landfill) generated by EKFC was calculated by taking the volume of each specific compactor type multiplied by the total number of that compactor type that was emptied over the reporting year. As the EKFC waste management system employs waste compactors, the total volume of compacted food waste was multiplied by a density factor of 1029 kg per cubic metre (EPA Victoria, 2011), to arrive at a final waste total in tonnes.

The waste management system for staff accommodation involves the collection of skips and the disposal of waste to landfill by Dubai Municipality (DM). DM does not provide records of the quantity of waste in the skips or the frequency of collection. The skips are shared with other residents that are not part of the Group. Therefore it is not possible to accurately measure the actual quantity of waste generated by group personnel in staff

accommodation. As such, a waste generation estimate (kilograms) per person was multiplied by the estimated total head count (occupancy) across the different types of staff accommodation. The calculation of occupancy of apartments and villas applied assumptions to account for duty travel outside of Dubai as well as a typical annual leave allocation of four weeks. The calculation of waste to landfill from staff accommodation adopted two waste generation estimates for villas and for apartments, respectively. Research conducted in Abu Dhabi (Abu Qdais, Hamoda and Newham, 1997 - Analysis of Residential Solid Waste At Generation Sites) quotes 1.76 kg/person/day for residents of Abu Dhabi, with a 35% increase (2.376 kg/person/day) for upper economic class households. For this report, 1.76 kg/person/day has been applied as the waste generation estimate for occupants of apartments and 2.376 kg/person/day has been applied as the waste generation estimate for occupants of villas.

Total Tonnes of CO₂ Emissions Due to Waste to Landfill

The total carbon dioxide emissions (in tonnes) due to the group's waste to landfill was calculated by multiplying the total tonnage of waste to landfill by a carbon dioxide emissions factor of 1.000 tonnes of CO₂ e per tonne of municipal waste. This carbon dioxide emissions factor is provided in the Australian Government's Department of Climate Change and Energy Efficiency's National Greenhouse Accounts Factors Report (July, 2010), page 69. The carbon dioxide emissions factor is derived from the National Greenhouse and Energy Reporting (Measurement) Determination, 2008.

Waste Generation per Head of Staff

Waste generation per head of staff was calculated by simply dividing the total annual waste generation (in tonnes) by all the business units, facilities and geographical locations included in the scope of this report, by the number of staff based at those units, facilities and locations. This number is presented

Reporting Guidelines and Methodology

in kilograms per head per day, as this is a common standard waste generation comparison figure. It should be noted that this waste generation figure includes industrial, office and accommodation buildings (and not just residential or office waste generation per head).

Recycled Materials in Tonnes

All individual streams of recyclable materials across the Group were reported internally in kilograms, as this was the contractual basis for the invoicing and revenue generation aspects of the recycling programmes. The monthly quantity (mass) of individual recycling streams was based on the summation of loads recorded on weighbridge tickets issued by independently operated and calibrated weighbridge stations. Waste recycling for all ground operations within the scope was collated in kilograms and was then converted to tonnes for reporting purposes.

Recycling Rate

The overall average recycling rate (for all business units, facilities and locations included in the scope of this report) was calculated by simply dividing the total quantity of recycled material in tonnes, by the total quantity of waste disposed to landfill in tonnes, and presenting this as a percentage.

Recycling Rate per Head of Staff

The recycling rate per head of staff was calculated by simply dividing the total annual recycling quantity (in tonnes) from all the business units, facilities and geographical locations included in the scope of this report, by the number of staff based at those units, facilities and locations. This number is presented in kilograms per head per day. It should be noted that this recycling figure includes industrial, office and accommodation buildings (and not just residential or office recycling rates per head).

Total Tonnes of CO₂ Emissions Due to Fuel Consumption

Fuel consumption for the ground operations fleet was collected directly from monthly departmental records for each vehicle. Across departments, the fuel consumption data that was received was recorded in either imperial gallons or litres. All consumption figures were converted to litres prior to the calculation of carbon dioxide emissions.

In the case of the Central Services fleet, carbon dioxide emissions from vehicles were calculated using manufacturers' engine ratings for CO₂ emissions, assuming a mixed engine cycle (highway/built-up area), and using actual kilometres travelled from vehicle odometer logs. These calculations were supplied by the Emirates Group's Central Services department.

For the remainder of the ground operations fleet, including dnata, EKFC, Arabian Adventures and Emirates Engineering, carbon dioxide emissions were calculated using the US Environment Protection Agency methodology (source: <http://www.epa.gov/oms/climate/420f05001.htm#carbon>). Reference to gallons in this method is to US gallons.

Carbon Dioxide Emissions From Petrol Engines

CO₂ emissions from a gallon of petrol = 2,421 grams x 0.99 x (44/12) = 8,788 grams = 8.8 kg/gallon = 19.4 pounds/gallon.

This equates to 8.788 kg/US gallon or 2.325 kg CO₂/litre.

For this report, 2.325 kg CO₂ per litre of petrol was used to calculate carbon dioxide emissions from petrol engines.

Carbon Dioxide Emissions From Diesel Engines

CO₂ emissions from a gallon of diesel = 2,778 grams x 0.99 x (44/12) = 10,084 grams = 10.1 kg/gallon = 22.2 pounds/gallon.

This equates to 10.084 kg CO₂/US gallon or 2.664 kg CO₂/litre.

For this report, 2.664 kg CO₂ per litre of diesel was used to calculate carbon dioxide emissions from diesel engines.

The unit conversion factors that were used in the collection and analysis of fuel consumption data are provided below:

1 x US gallon = 3.785 litres.

1 x imperial gallon = 4.546 litres.

UAE Decree No. 270/3 (2009) requires all fuel to be measured in metric units from 1 January 2010 (it was previously measured in imperial gallons).

Fuel Consumption per Head of Staff

Fuel consumption per head of staff was calculated by simply dividing the total annual fuel consumed (in litres) by all the business units, facilities and geographical locations included in the scope of this report (as previous), by the number of all staff based at those units, facilities and locations. This number is presented in litres per head per day. It should be noted that this fuel consumption figure includes fuel used for all commercial ground transport operations covered by the scope of this report and does not include the fuel consumption of staff private vehicles.

Total Tonnes of CO₂ Emissions Due to Ground Operations

The calculation of the total tonnes of carbon dioxide equivalent (CO₂ e) emissions from the Group's ground operations required the summation of the total reported quantity from each source of emissions, multiplied by

its respective carbon dioxide equivalent emissions factor (as shown below).

CO₂ e or 'carbon dioxide equivalent' is a metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (<http://www.epa.gov/climatechange/glossary.html>, 2011).

The calculation of carbon dioxide equivalent (CO₂ e) emissions from the Group's ground operations used the following carbon dioxide equivalent (CO₂ e) emissions factors.

Source of Carbon Dioxide Emissions	CO ₂ e Emissions Factor
Electricity Consumption	0.700 kg CO ₂ per kWh
Vehicle Fuel Consumption - Petrol	2.325 kg CO ₂ per litre
Vehicle Fuel Consumption - Diesel	2.664 kg CO ₂ per litre
Water Consumption	15 kg CO ₂ per m ³ of water
Waste Generation (and subsequent decomposition in landfill)	1 tonne CO ₂ per tonne of waste (municipal solid waste)

Scope 1, 2 and 3 Emissions

The Greenhouse Gas Protocol standard (A Corporate Accounting and Reporting Standard, revised edition 2011) is commonly used to categorise an organisation's emissions into 3 groups or 'scopes'.

Scope 1 - Direct Emissions: Airline and Vehicle Fuel Consumption

These are direct emissions resulting from activities within the organisation's control. This includes on-site fuel combustion, manufacturing and process emissions, refrigerant losses, and particularly in the case of Emirates, fuel consumption by aircraft and company vehicles.

Scope 2 - Indirect Emissions: Electricity and Water Consumption

These are indirect emissions associated with electricity, heating or cooling purchased and used by the organisation, and in the case of organisations in the UAE, water produced through desalination.

Scope 3 - Indirect Emissions: Other

These are considered to be any other indirect emissions from sources not directly controlled by the organisation. Examples include: employee business travel; outsourced transportation; waste disposal; and employee commuting.

Under the Greenhouse Gas Protocol, an organisation must include Scope 1 and 2 emissions within its carbon footprint reporting. There is broad discretion about which Scope 3 emissions should be included in a company's carbon footprint - for example: organisations often include waste disposed to landfill and employee business travel as Scope 3 emissions.

For the purposes of this report, sources of carbon dioxide emissions were classified as follows:

Scope 1: Airline and Vehicle Fuel Consumption

Scope 2: Electricity and Water Consumption

Scope 3: Waste Generation



Reasonable assurance report

To: the Presidents of the Emirates Group

Engagement and responsibilities

We have been engaged by the Emirates Group to perform a reasonable assurance engagement on the following measures presented at page 3 and marked with a ✓ (hereafter: the reported annual emissions data) in the accompanying Environmental Report 2010-2011 by the Emirates Group, Dubai, dated 12 July 2011:

- Total jet fuel consumption of the airline (aircraft fuel consumption only);
- Total CO₂ emissions of the airline (aircraft emissions only);
- Fuel efficiency of the airline, in terms of volume per passenger kilometre, volume per freight kilometre and volume per total tonne-kilometre (aircraft fuel consumption only);
- CO₂ efficiency of the airline in terms of CO₂ weight per passenger kilometre, CO₂ weight per freight kilometre and kilograms CO₂ per total tonne-kilometre (aircraft emissions only).

All other information in the Environmental Report 2010-2011 was not subject to our engagement and we do not report and do not opine on this information.

The Presidents of the Emirates Group are ultimately responsible for the preparation and presentation of the Environmental Report 2010-2011. We are responsible for providing an assurance report on the reported annual emissions data presented in the Environmental Report 2010-2011.

Criteria

The reporting criteria used by the Emirates Group are described in the Emirates Group Environmental Report 2010-2011 in the section titled “Reporting Guidelines and Methodology”, refer to page 82 to 89. We consider the reporting criteria to be relevant and sufficient for our engagement.

CO₂ quantification is subject to uncertainty because of such things as emissions factors that are used by mathematical models to calculate emissions, and the inability of those models to precisely characterize under all circumstances the relationships between various inputs and the resultant emissions because of incomplete scientific knowledge.

Scope and procedures performed

We planned and performed our procedures in accordance with Dutch Law and the International Standard on Assurance Engagements (ISAE 3000) ‘Assurance engagements other than audits or reviews of historical financial information’. This standard requires that we plan and perform our procedures to obtain reasonable assurance about whether the reported annual emissions data are free from material misstatement.

Reasonable assurance

This engagement is aimed at providing reasonable assurance. A reasonable assurance engagement involves performing procedures to obtain verification evidence about the reported annual emissions data in the Emirates Group Environmental Report 2010-2011. The procedures selected depend on our judgement, including the assessment of the risks of material misstatement in the reported annual emissions data due to omissions, misrepresentations and errors. In making those risk assessments, the verifier considers internal controls relevant to the company’s preparation and fair presentation of the reported annual emissions data in order to design verification procedures that are appropriate in the circumstances, but not

for the purpose of expressing an opinion on the effectiveness of the company's internal controls regarding environmental reporting.

Within the scope of our work we performed, amongst others, the following procedures:

- reviewed documents to gain an understanding of the activities and structure of the Emirates Group;
- conducted interviews with Emirates Group management to understand the data collection process and to evaluate the accuracy of the quantitative and qualitative information in the reported annual emissions data;
- reconciled reported data with internal and external source documentation;
- performed analytical procedures on the reported data;
- evaluated the appropriateness of quantification methods and reporting policies used;
- assessed the data gap approach used, and the methods used to estimate missing data; and
- evaluated the overall format and presentation of the annual emissions data, as presented in the Environmental Report 2010-11 (including an evaluation of the consistency of the information, in line with the above-mentioned reporting criteria).

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Opinion

In our opinion, the reported annual emissions data, as included in the Emirates Group Environmental Report 2010-2011 (page 3) and marked with a ✓, as mentioned in the paragraph “Engagement and responsibilities”, have been prepared, in all material respects, in accordance with the Emirates Group's reporting criteria.

Amsterdam, 12 July 2011
PricewaterhouseCoopers Accountants N.V.

Original signed by
Peter Eimers

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Wolgan Valley Resort and Spa



First hotel in the world to achieve carbon neutral certification from an internationally accredited greenhouse gas certification scheme, carboNZeroCert™



Winner - Tourism for Tomorrow, World Tourism and Travel Council, Conservation Award 2010



Winner - World Travel Awards, The Middle East's Responsible Tourism Award 2010



Winner - The Leading Hotels of the World, Commitment to Excellence - Environment Category 2010

Emirates Flight Catering



Winner - International Travel Catering Association Award "Healthier Cooking"

dnata Travel Services



World's Leading Travel Management Company 2010 (and 2009)

Middle East's Leading Travel Management Company 2010 (2007, 2008, 2009)

Arabian Adventures



CEMARS certification (Carbon Emissions Management and Reduction Scheme), with carboNZeroCert™

Emirates



International Airline of the Year - Air Transport World, February 2011

SkyCargo



Cargo Airline of the Year, Best Cargo Airline to the Middle East (22nd year running) and Best All Cargo Airline - Cargo Airline of the Year Awards, Air Cargo News, 2010



Gold Award at the Annual Air Cargo Excellence Awards - IATA World Cargo Symposium in Vancouver, Canada, 2010

Facts and Figures¹

33 million

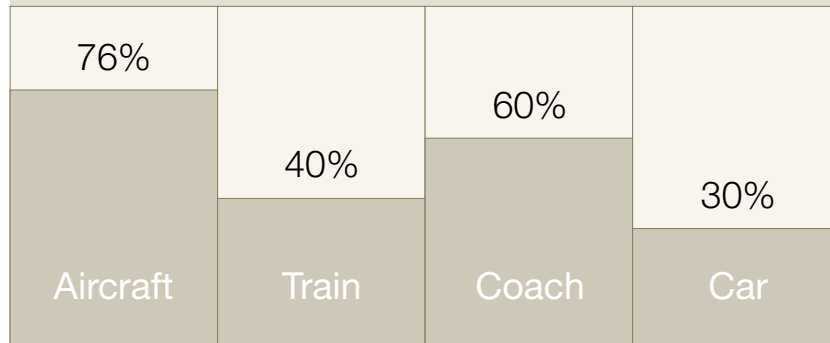
Over 33 million people are employed worldwide by activities relating to aviation and tourism. Of this total, 5.5 million people work directly in the aviation industry.

80%

Around 80% of aviation CO₂ emissions are emitted from flights of over 1,500 kilometres, for which there are no practical alternative modes of transport.

76%

Globally, the average occupancy of aircraft is around 76%, which is far greater than other forms of transport.



US\$1.3 trillion

In order for aviation to reach its target of a 1.5% average fleet fuel efficiency improvement per annum (from now until 2020), the world's airlines will have to purchase 12,000 new aircraft at a cost of US\$1.3 trillion.

23,000 aircraft

1,715 airlines globally operate a fleet of 23,000 aircraft, serving 3,750 airports, through a route network of several million kilometres, managed by 160 air navigation service providers.

2.2 billion

In 2009, over 2.2 billion passengers were carried by the world's airlines.

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¹ Source: ATAG, 2010



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