Together We Grow

Environmental Report 2010/11

SINGAPORE AIRLINES

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CEO's Message

While the aviation industry is continuing on its recovery path following a difficult few years as a result of the global economic downturn, the debate on climate change shows no signs of abating.

Though aviation's share of global CO2 emissions is a modest 2% today, the industry has an equal responsibility like all others to be as efficient as possible. Singapore Airlines shares the widely held view among industry stakeholders that policy measures on emissions from international aviation should be developed at a global level through the International Civil Aviation Organisation (ICAO), rather than through unilateral approaches such as the European Union with its Emissions Trading Scheme, which will be applied to international aviation from 2012.

Over the past 40 years the aviation industry has improved fuel efficiency by 70% - with 16% gained between 2001 and 2008. Going forward, the industry has a vision to achieve carbon neutral growth by 2020 on the way to a carbon free industry. This is based on the International Air Transport Association's (IATA) four pillars to build a greener future: technological advancements, operational measures, infrastructural improvements and economic measures. Of these, technology offers the best prospects for emissions reduction, such as through revolutionary new aircraft and engine designs, and the use of lightweight composite materials. Singapore Airlines has had a longstanding policy of maintaining a young and modern fleet and we will continue to invest in new technology to help us do our part for the sustainable development of the air transport sector.

Over the longer term, sustainable biofuels will also play a role in reducing aviation's CO2 emissions. Tests have demonstrated that biofuels are safe and can be blended with existing jet fuel without any aircraft adaptation or modification. However, the cost of biofuels remains prohibitively high, and a challenge is to ensure a steady supply of feedstock that can be processed into biofuels.

As we closely monitor developments related to the future use of biofuels, Singapore Airlines remains committed to further reducing our carbon footprint through ongoing efforts to conserve fuel. Initiatives encompass flight operations enhancements, engineering performance and maintenance improvements, and weight saving measures.

One important development has been the introduction of regular 'green' flights across Asia and the Pacific. On 16 May 2011, through the Asia and Pacific Initiative to Reduce Emissions (ASPIRE) programme, Singapore Airlines introduced enhanced gate-to-gate air traffic management operational procedures for non-stop flights between Los Angeles and Singapore, reducing fuel burn and carbon emissions in all phases of the flight. The procedures are made possible through the co-operation of the Civil Aviation Authority of Singapore (CAAS), working together with the US Federal Aviation Administration and Civil Aviation Authority of the Philippines, with a reduction in fuel burn of some 2 tonnes per flight.

Singapore Airlines is also supportive of projects by others that have tangible benefits for the environment. In August 2010, the Airline committed to donating US$3 million in support of the Harapan Rainforest Initiative, a collaboration between international non-governmental organisations including BirdLife International and Burung Indonesia. The groundbreaking project is helping to conserve and protect over 100,000 hectares of one of the most biodiverse rainforests in the world.

In the pages ahead you will find details of the many environmental initiatives and programmes that Singapore Airlines has been pursuing. We all have a role to play in working to protect our environment, and Singapore Airlines will continue to do its part as a responsible corporate citizen.

Goh Choon Phong
Chief Executive Officer

Aviation and the Environment

Aviation has come a long way. With over two billion people travelling safely around the world every year and some 23,000 aircraft in commercial service, the aviation industry today provides a lifeline to communities, a connector of business and a conduit to the world's great experiences.

Like virtually every area of human activity, air transport has an impact on the environment. This impact takes several forms, including the disturbance caused by aircraft noise and aircraft engine emissions. A major concern for the industry is greenhouse gas emissions from aviation and their implication for climate change.

Though aviation produces around 2% of the world's manmade emissions of carbon dioxide (CO_2), the industry has been doing a great deal to limit its environmental impact. From the moment aircraft are designed, engineers are working out how to make them more efficient. New technologies on the horizon have the potential to significantly decrease greenhouse gas emissions from aviation. Solutions that are being implemented today also promise other savings, which when added together offer significant benefits in total.

Aircraft operations are already over 20% more efficient than 10 years ago, but the industry is aware that much more needs to be done. Going forward, the industry has a vision to achieve carbon neutral growth by 2020 on the way to a carbon free industry.

Risks and Challenges

The airline industry is increasingly exposed to physical risks such as extreme weather conditions like severe snowstorms and volcanic eruptions. Such events can potentially cause flight diversions and cancellations that will result in financial losses to airlines and inconvenience to passengers.

The growing awareness of the impact of climate change and pressure to curb GHG emissions continue to pose a constraint to growth of the industry. The imposition of environmental taxes and levies, including emissions trading schemes such as the one introduced by the EU, would add to the financial burden of airlines and its customers.

However an open emissions trading scheme within a global harmonized framework can present a cost effective approach to mitigating aviation's environmental impact on climate change.

Curbs to restrict GHG emissions can also present an impetus for the industry to look towards new technologies to improve fuel consumption and accelerate the development of alternative fuels such as biofuels to reduce cost and to seek a viable alternative to fossil fuels.

Economic and Social Benefits of Air Transport

Air transport is an innovative industry that drives economic and social progress. It connects people, countries and cultures; provides access to global markets and generates trade and tourism. It also forges links between developed and developing nations.

Air transport is a major contributor to global economic prosperity

It provides the only rapid worldwide transportation network, which makes it essential for global business and tourism and plays a vital role in facilitating economic growth, particularly in developing countries.

Air transport facilitates world trade, helping countries participate in the global economy by increasing access to international markets and allowing globalization of production resulting in millions of jobs created globally through direct, indirect, induced and catalytic impacts. This in turn improves living standards and alleviates poverty.

Air transport is indispensable for tourism, which is a major engine of economic growth, particularly in developing economies. Over 40% of international tourists now travel by air.

Air transport also provides a means of transportation to/from remote areas, and promotes social inclusion by connecting those living in such communities with the rest of their country. In addition, it facilitates the delivery of emergency and humanitarian aid relief such as the swift delivery of food and medical supplies.

Overall air transport improves quality of life by broadening people's leisure and cultural experiences, and provides a wide choice of holiday destinations around the world.

Aviation and Fuel Efficiency

Historic trends in improving efficiency levels show that aircraft entering today's fleet are around 80% more fuel efficient than they were in the 1960s. These efficiency levels have been achieved with step changes in airframe and engine designs. In addition, fuel conservation was further enhanced with the development of flight management systems which automatically set the most efficient. Cruise speed and engine power settings based on fuel and other operational costs involved.

More recently, airlines have undertaken a range of operational, maintenance and planning procedures to ensure that their current technology aircraft are flying to their optimal levels of efficiency. Some of the measures taken to improve fuel efficiency include:-

Paint

New aircraft paints will soon be available that will weigh 10-20% less than current paints. New coatings are under development which will be more resistant to chipping and cracking than current coatings and will be lighter, too.

Clean aircraft, clean engines

Washing an aircraft regularly cuts the amount of fuel used as dirt adds to the aircraft's weight and drag. Engine-washing in particular has also been particularly effective at improving aircraft efficiency. For example, one engine-wash service is reported to reduce engine fuel burn by as much as 1.2% and decrease exhaust gas temperature by as much as 15°C, improving performance and increasing the amount of time between engine maintenance.

Infrastructure improvements

Airports are investing in building 'green-certified' terminals, reducing on-airport vehicle emissions by introducing automatic metro lines. Other measures include switching to vehicles with alternative fuels and low-emission technology, and providing electricity to aircraft at terminal gates using fixed electrical ground power rather than the aircraft's auxiliary power unit.

Congestion at airports contributes to significant impact on emissions. When flights have to hold and circle before they land, or queue on taxiways before taking off, it is not only inconvenient to passengers, but also adds to fuel use. These inefficiencies are continually looked at to determine whether measures such as operating restrictions on flights or new facilities like runways are needed.

Air traffic management

Another vital infrastructure is the air traffic management system. The route a plane takes, the height it flies, and the weather it flies through, all affect the amount of fuel it burns and therefore the CO2 it emits. These factors are managed by air navigation service providers (ANSPs), the companies that provide air traffic control services.

Around the world, ANSPs are helping the industry improve its environmental performance by making better use of airspace design and optimising aircraft performance across all phases of flight. ANSPs work with regulators, aircraft manufacturers, airlines, airports, pilots and engineers to optimise ground and flight operations to improve overall aircraft performance.

Industry Approach to Emissions Reduction

The aviation sector recognizes the growing and urgent need for society to address the global challenge of climate change. It also emphasizes that aviation plays a vital role in promoting sustainable development and should remain safe, affordable and accessible in order to ensure mobility on an equitable basis to all sectors of society.

IATA's four-pillar strategy

As early as 2007, the global aviation community adopted a four-pillar strategy, which promotes and drives efforts in four key areas: improved technology, efficient operations, effective infrastructure and positive economic measures.

Of the four pillars, technology has by far the best prospects for reducing aviation emissions. The industry is making great advances in technology such as: revolutionary new aircraft designs; new composite lightweight materials; radical new engine advances; and the development of sustainable alternative jet fuels which could reduce CO2 emissions 80%, on a full carbon life-cycle basis. The sector is primarily focusing on biofuels from second generation sources such as algae. These fuels can be produced sustainably to minimise impacts on food crops and fresh water usage. Tests flights have clearly demonstrated that the use of biofuel from these sources as "drop-in" fuels is safe and technically sound. Biofuels can be blended with existing jet fuel in increasing quantities as they become available.

Improved operational practices, including reduced auxiliary power unit usage, more efficient flight procedures, and weight reduction measures, could achieve further reductions in CO2 emissions.

Infrastructure improvements present a major opportunity for CO2 reductions in the near term. Initial estimates by the IPCC indicated 12% inefficiency in global air transport infrastructure. Since then 4% efficiencies have already been achieved. Full implementation of more efficient air traffic management and airport infrastructure could provide substantial emissions reductions through implementation of measures such as the Single European Sky and the Next Generation Air Traffic Management system in the United States.

Once the industry has maximised the reductions in emissions through technology, operational efficiencies and infrastructure improvements, we can then turn our attention to the fourth pillar of positive economic measures that can help to limit aviation's climate change effects. Economic measures should first be used to boost the research, development and deployment of new technologies rather than as a tool to suppress demand. The use of tax credits and direct funding must be explored as incentives to drive new technology programmes and encourage companies to invest in new, more efficient equipment.

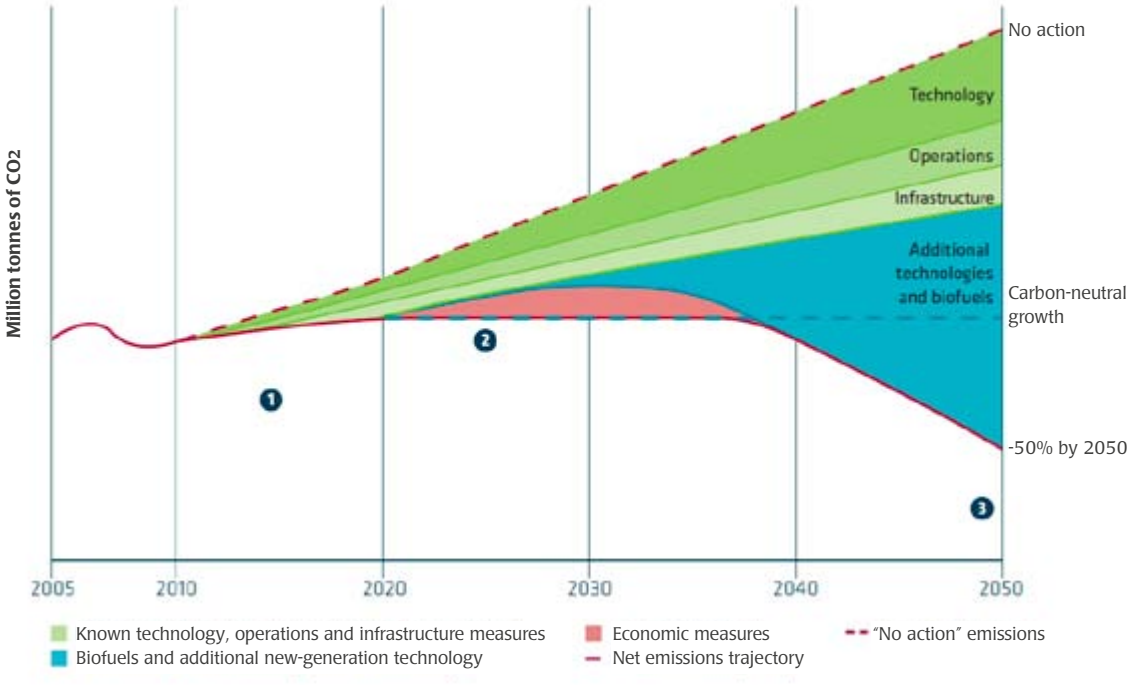
Aviation industry climate targets

In 2009, the sector announced ambitious collective targets for aviation emissions reductions. In the short term, between 2010 and 2020, aviation is committed to improve its fuel efficiency by an average of 1.5% per year, representing a further efficiency gain of 17% by 2020 or 2.2 billion tonnes of CO2 savings. To achieve this, 12,000 new aircraft will have to enter service in this period, at a cost of $1.3 trillion to airlines. Furthermore, some infrastructure and air traffic management efficiency improvements are dependent on direct government investments over which the industry has little visibility and control.

From 2020, aviation will cap its net carbon emissions (through carbon neutral growth) and by 2050 it aims to halve its net emissions compared to 2005 levels.

Mapping out the industry commitments

1. Improve fleet fuel efficiency by 1.5% per year from now till 2020.
2. Cap net emissions from 2020 through carbon neutral growth
3. By 2050, net aviation carbon emissions will be half of what they were in 2005.



(Schematic, indicative diagram only)
(Source: ATAG, the Right Flightpath to Reduce Aviation Emissions, 2010)

A global approach for aviation

Aviation is the ultimate global activity: it provides an interconnected network of air services spanning the entire globe, with aircraft - and their emissions - crossing continents and national jurisdictions on a daily basis. To avoid a patchwork of overlapping and potentially conflicting national and regional policies, a framework for addressing CO2 emissions from aviation must be developed at a global level.

Recognising the specific nature of the aviation sector, governments at the 37th ICAO Assembly (October 2010) demonstrated that multilateral collaborative action by all States through a global sectoral approach under ICAO is the most appropriate mechanism to effectively address international aviation emissions in a post-2012 framework.

To be effective, however, regulatory efforts to limit or reduce CO2 emissions from aviation should address all parts of the aviation supply chain. In addition to aircraft operators this includes for example aircraft anufacturers, fuel suppliers, air navigation service providers and airports, who directly influence aviation's environmental performance through the design and deployment of the products and services they supply.

Lastly, governments have a responsibility to establish the right legal and fiscal frameworks to facilitate and increase investment in cost-effective CO2 emissions reduction measures, including new aircraft and engine technologies, more efficient air traffic management infrastructure and low-carbon sustainable alternative jet fuels, and to enable the full and unrestricted access of the aviation sector to the global carbon market and use of available mitigation measures outside the sector.

The global aviation sector recommends:-

1. Aircraft CO2 emissions should be addressed as part of any post-2012 global climate change agreement, through the International Civil Aviation Organisation (ICAO).

2. Emissions from aviation should be addressed through ICAO adopting a global and comprehensive approach that does not distort competition amongst aircraft operators, treats aviation as one indivisible sector rather than by country.

3. Aviation emissions should be accounted for in a dedicated, global emissions inventory for the sector to reliably track progress against industry targets, avoid double counting and ensure emissions reductions are only paid for once.

4. The aviation industry can achieve carbon neutral growth from 2020 and work towards reducing aviation net carbon emissions by 50% in 2050, compared to 2005 levels. These ambitious targets are contingent upon governments providing necessary investments for:-

• modernisation of air traffic management development;

• aerodynamic and operations technology research; and

• development and commercialization of sustainable, second-generation biofuels for use in aviation.

SIA Environmental Policy

Singapore Airlines is dedicated to flying passengers and freight across the world. We take a long-term view in the sustainable development of our air transportation and related businesses. This includes the broader responsibilities to the worldwide communities that we serve, and recognition that our operations take into account the preservation of the environment.

We are committed to continual improvement in environmental performance and will take appropriate measures to address key areas of environmental concern. We will:

• communicate this policy to all staff and provide training where applicable to ensure that staff are capable of fulfilling their environmental responsibility;

• monitor changes in environmental legislation, audit our compliance and cooperate fully with environmental regulatory authorities;

• establish an environmental action programme to manage environmental issues relating to the use of energy and resources, emissions to atmosphere, effluent discharges, waste management, noise and relations with key suppliers; and

• be open about our environmental affairs and will provide appropriate information as requested by interested parties.

Highlights of Our Achievements

The Asia and Pacific Initiative to Reduce Emissions (ASPIRE) Initiatives

The Asia and Pacific Initiative to Reduce Emissions (ASPIRE) partnership is launching regular 'green' flights across Asia and the Pacific. These come under the 'ASPIRE-Daily City Pair' programme, which aims to deliver gate-to-gate environmental best practices for pairs of airports throughout the Asia Pacific, one of the fastest growing aviation markets in the world.

On 16 May 2011, the Civil Aviation Authority of Singapore (CAAS) and Singapore Airlines (SIA), working together with the United States Federal Aviation Administration and the Civil Aviation Authority of the Philippines, launched the second regular 'city pair' - Los Angeles (LAX) to Singapore (SIN) - flight. SIA flight SQ37, which operates non-stop from Los Angeles to Singapore, employs enhanced gate-to-gate air traffic management operational procedures to reduce fuel burn and carbon emissions in all phases of the flight.

The following air traffic management best practices, which significantly reduce fuel burn and carbon emissions, will be utilised for the LAX-SIN 'green' flight:

'User-Preferred Routes', 'Dynamic Airborne Reroute Procedures' and '30/30 Reduced Oceanic Separation', which allow pilots to take full advantage of atmospheric conditions, such as prevailing winds, to reduce separation between aircraft and shorten flight time;

'Time-Based Arrivals Management' and 'Arrivals Optimisation' which allow aircraft to fly with engines set at idle mode in continuous descent from a high altitude during the landing phase of the flight, thus reducing fuel burn.

"We are pleased to be able to implement these flight procedures on a regular basis, and see this as yet another step towards greener skies. We will be monitoring the flight closely to track the fuel and emission savings, but we expect to reduce fuel burn by 2 tonnes and achieve carbon emission savings of around 6.3 tonnes for each Los Angeles-Singapore sector," says Singapore Airlines' Senior Vice-President Flight Operations, Capt Gerard Yeap.

Harapan Rainforest Preservation Project

In August 2010, Singapore Airlines donated US$3 million in its first major involvement in a large-scale green project with long-term, sustainable benefits for the global environment.

Funds donated by the Airline will go towards supporting the Harapan Rainforest Initiative, a unique collaboration between international non-governmental organisations including BirdLife International and Burung Indonesia (BirdLife Partner in Indonesia).

Straddling Indonesia's Jambi and South Sumatra provinces, Harapan Rainforest spans almost 100,000 hectares – an area one-and-a-half times the size of Singapore.

The forest concession for Harapan was recently licensed to the BirdLife consortium by the Indonesian Government under a new regulation that allows forests, initially slated for felling or plantations, to be managed for long-term conservation and restoration.

Harapan is one of the world's first forest protection and restoration concessions of this type, and the licences have been granted for almost 100 years.

Singapore Airlines' contribution towards the protection and restoration of one of the most extensive tracts of lowland rainforest left in Indonesia reflects its strong belief that environmental efforts must focus on making a real and direct difference to the well-being of our planet, and sustain our shared environment for future generations.

Forests are among the world's chief carbon stores, and the arrestment of deforestation is a key step towards combating climate change. The funds contributed will be used to set up the Harapan Fund, which will help finance ongoing core operations such as the employment of forest patrols to prevent illegal logging and forest fires as well as plant and animal species protection programmes.

Some of the wildlife in the Harapan Rainforest is at risk of extinction including the critically endangered Sumatran tiger, the clouded leopard, Malayan tapir and Asian elephant. The forest also boasts over 290 bird species, of which over 60 are considered under threat. New species are being discovered as regular scientific surveys are carried out in the area.

Harapan also plays a significant role in terms of engaging the local indigenous community. Around 800 people from the Bathin Sembilan indigenous group depend on the forest for their livelihood.

Fleet Modernization Program

During the year, Singapore Airlines took delivery of eight Airbus A330-300s. One more Airbus A380-800 aircraft was also added to the fleet, bringing the total to 11, with eight more on order, and a further six on option. Six Boeing 777-200ERs were leased during the year to Royal Brunei Airlines RBA.

The Singapore Airlines passenger aircraft fleet, as at 31 March 2011, comprised 108 aircraft – seven B747-400s, sixty-six B777s, nineteen A330-300s, eleven A380-800s and five A340-500s – with an average age of 6 years and 3 months.

Singapore Airlines Cargo operated a fleet of eleven Boeing 747-400 freighters with an average age of 9 years and 2 months as at 31 March 2011.

The SilkAir fleet comprised twelve Airbus A320s and six A319s with an average age of 5 years and 11 months.

These compare favourably with the industry average of 13 years and 7 months as at March 2011.

Average Age of Aircraft (months), 31 March 2011	2010-11	2009-10	2008-09	2007-08
SIA Passenger Fleet	75	75	74	77
SIA Freighters	110	98	102	88
SilkAir Fleet	71	73	70	68
Industrywide	163	162	162	162

A380-800
No. of Seats 471 Length 72.7m Wingspan 79.8m Cruising Speed 0.85 Mach

A340-500
No. of Seats 100 Length 67.9m Wingspan 63.45m Cruising Speed 0.83 Mach

A330-300
No. of Seats 285 In 2-Class Config Length 63.6m Wingspan 60.3m Cruising Speed 0.82 Mach

B747-400
No. of Seats 375 Length 70.6m Wingspan 64.4m Cruising Speed 0.85 Mach

B777-300
No. of Seats 332 (278 In ER) Length 73.9m Wingspan 60.9m (64.8m For B777-300ER) Cruising Speed 0.84 Mach

B777-200
No. of Seats 288 In 3-Class Config.; 323 In 2-Class Config.; (285 In ER) Length 63.7m Wingspan 60.9m Cruising Speed 0.84 Mach

Illustration: SPH Magazines

Going Green

Fuel Productivity

Singapore Airlines is committed to mitigating the effects of climate change by improving the fuel productivity of our aircraft operations.

Key initiatives in our fuel productivity improvement program consist of:-

- Renewal of our aircraft fleet to ensure that the aircraft in operation are as technologically advanced and fuel-efficient as possible.

- Our participation in the ASPIRE program such as the second regular city pair from Los Angeles to Singapore launched in March 2011 that employ enhanced gate-to-gate air traffic management operational procedures to reduce fuel burn and carbon emissions in all phases of the flight.

- Flight operations procedure that reduces fuel burn for A380s at Heathrow. The A380s operated by Singapore Airlines, departing Heathrow, now uses less power when taking off, saving fuel and and emitting less CO2 and NOx while remaining within the airport's strict noise procedure.

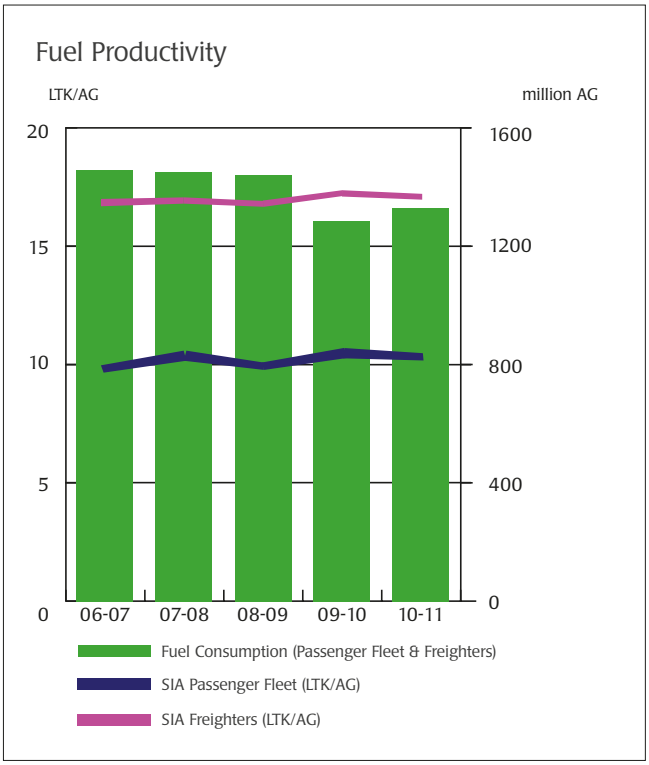
- Other improvements in flight operation procedures, eg. tailored arrivals and continuous descent operations that minimize fuel use without compromising safety.

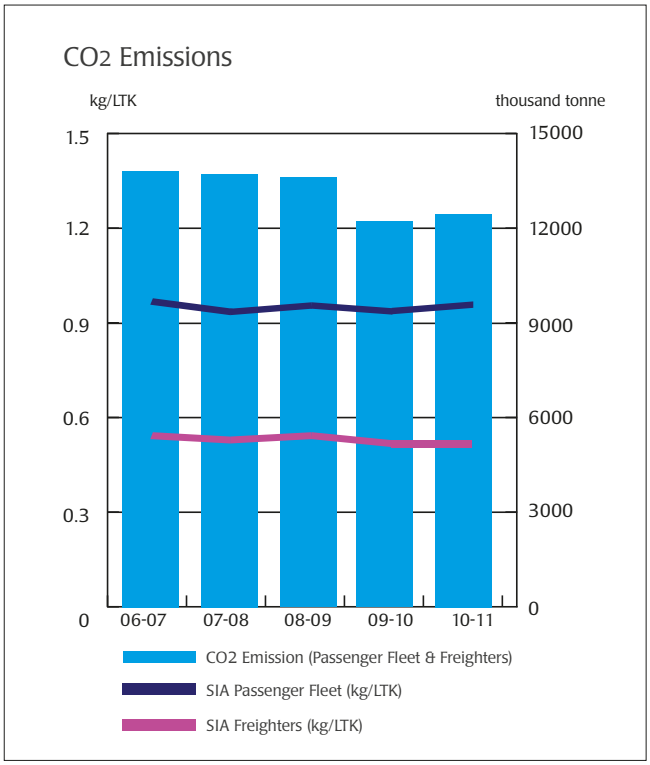
- Route planning procedures to enable our planes fly the most fuel-efficient routes possible.

- Active participation in international arena on route restructuring to establish new airways for more efficient routings.

- Maintenance programs for both airframes and engines that ensure operational efficiency and enhance fuel efficiency.

- Use of lightweight crockery, cargo containers, and other aircraft modifications that minimize the weight of the aircraft.





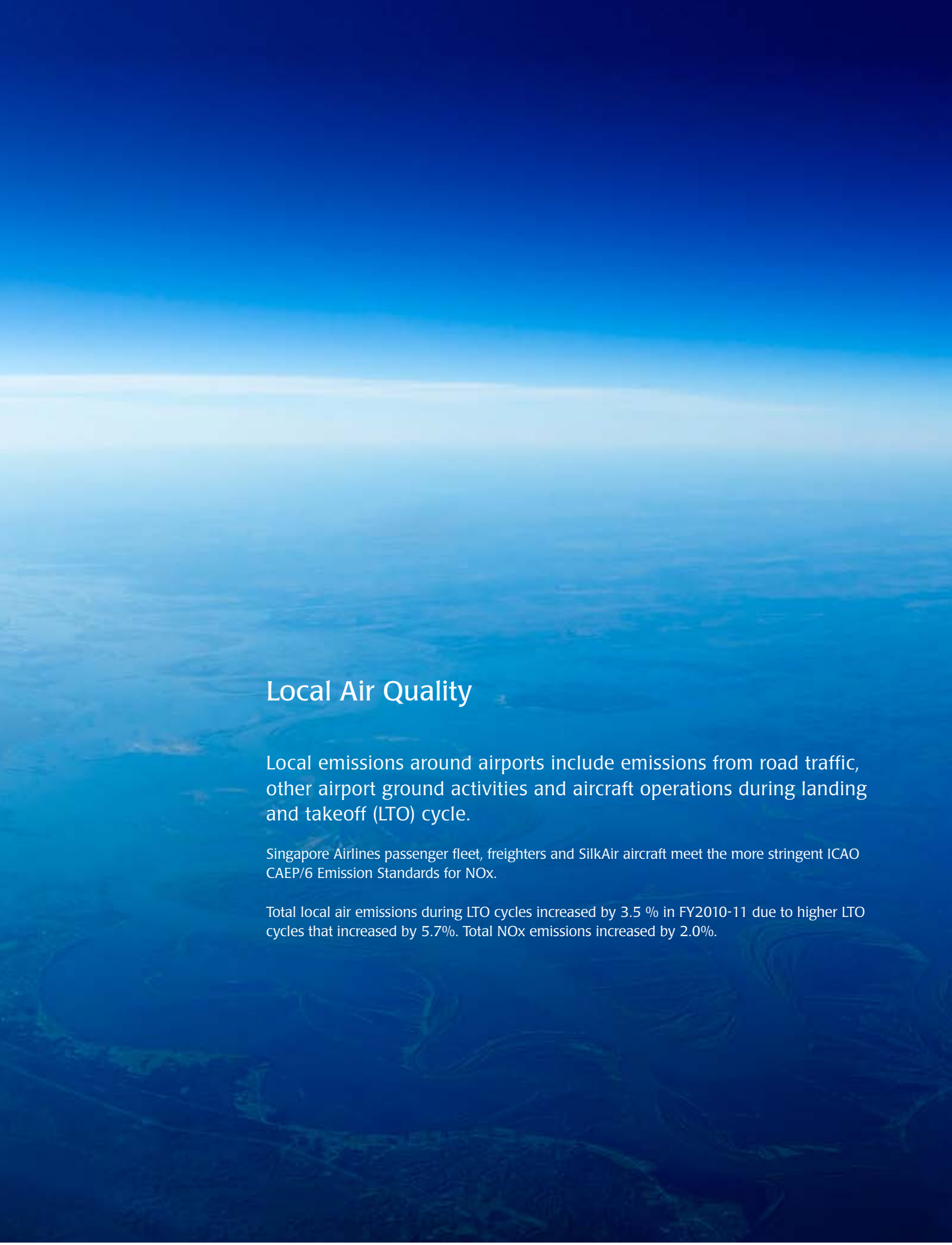
SIA Fuel Productivity (Load-tonne-km/AG)	2010-11	2009-10	2008-09
Passenger & Freighter Fleet	11.17	11.22	10.91
Passenger Fleet	10.13	10.29	9.90
Freighters	17.92	17.90	17.22
SilkAir Fleet	8.06	7.96	7.69

SIA Carbon Dioxide Emissions (kg/LTK)	2010-11	2009-10	2008-09
Passenger & Freighter Fleet	0.84	0.84	0.86
Passenger Fleet	0.93	0.92	0.95
Freighters	0.53	0.53	0.55
SilkAir Fleet	1.17	1.18	1.23

SIA Group LTO Emissions (tonnes)	2010-11	2009-10	2008-09
NOx	5,426.4	5,319.0	5,908.6
CO	2,343.9	2,194.9	2,239.5
Unburned hybrocarbons (UHC)	213.2	198.6	200.4

Fuel productivity of the Singapore Airlines passanger fleet as measured by load tonne-km per American gallon of jet fuel decreased by 1.5% over the previous year to 10.13 ltk/AG in FY2010-11. This was mainly due to a decline in the overall load factor.

Carbon dioxide emission per unit of load-tonne-km flown has been on a general decline over the last 10 years in line with fuel efficiency improvement. It now stands at 930gm/ltk for our passenger fleet for FY2010-11.



Local Air Quality

Local emissions around airports include emissions from road traffic, other airport ground activities and aircraft operations during landing and takeoff (LTO) cycle.

Singapore Airlines passenger fleet, freighters and SilkAir aircraft meet the more stringent ICAO CAEP/6 Emission Standards for NOx.

Total local air emissions during LTO cycles increased by 3.5 % in FY2010-11 due to higher LTO cycles that increased by 5.7%. Total NOx emissions increased by 2.0%.

Green Initiatives on the Ground

Environmental Management System

Singapore Airlines has implemented an Environmental Management System (EMS) in the Engineering and Flight Operations Divisions that has been certified to the ISO 14001:2004 standard. As part of the EMS, environmental action programs are regularly reviewed and updated to ensure that objectives and targets are measurable, and consistent with the environmental policy including to its commitment to prevention of pollution, legal compliance and continual improvement of the system.

Regular environmental articles are also featured in in-house magazines and the Employee Bulletin Board to enhance environmental awareness of all staff. In addition, environmental talks such as one organized in December 2010 on Green Documentation were held to promote environmental best practices to reduce wastage and optimize the efficient use of resources.

Regular monitoring and measurement of operations that have a significant environmental impact are made to ensure that applicable operational controls are documented and implemented in conformity with the EMS.

Energy and resource conservation on the ground

Best practices are in place for preventive maintenance of buildings and their equipment. The integrated approach to maintenance and management helps to yield ongoing energy savings.

Some ongoing initiatives include scheduled replacement of AHUs at Airline House and SIA Training Centre. These AHUs have reached the end of their effective life cycle. The new AHUs are energy efficient models with integrated variable speed drives and pre-cool units to treat fresh air intake for temperature and humidity controls. This improves the overall energy efficiency of the air-conditioning system.

Gradual replacement of lightings to more energy efficient ones across all buildings were implemented in the past year. This includes replacing existing halogen downlights with LED lights at the Silver Kris lounge and changing exit lights to the LED type in our buildings.

Meanwhile, there is an ongoing study to evaluate the merits of installing a heat recovery unit at the Silver Kris lounge. The heat recovery unit will capture waste heat discharged from the refrigerant cycle of the air condensing unit and used to heat water in the kitchen and toilets.

Reducing and optimizing water usage is an ongoing effort for all in Singapore where water is a scarce resource. Taps and dual flush valves in the toilets of our buildings are fitted with flow restrictors. Recycled water (Newater) is used in cooling towers and watering of landscapes. Non-chemical water treatment is applied to cooling towers which besides saving water is also environmentally-friendly as no chemical are handled or discharged.

In addition, rainwater at the Airline House rooftop is collected and used for watering plants and flushing of toilets.

Much efforts have gone into conserving and optimizing our resource use. Water consumption has been declining over the past 3 years due to water saving measures taken in all SIA buildings such as use of flow restrictors in taps and dual flush valves. However, electricity consumption is hovering around 58 Gwh pa. In spite of the electricity saving measures being implemented in the buildings, energy use for maintenance activities in the hangars remains the main share of consumption.

Resource Utilisation *	2010-11	2009-10	2008-09
Water Consumption (,000m^3)	253.6	272.1	302.3
Electricity Consumption (Gwh)	58.4	56.1	59.3
Petrol (,000 litres)	288	272	279
Diesel (,000 litres)	3,376	3,190	3,243
Paper Consumption - A4 paper (reams)	58,820	65,975	86,818

Carbon Emission - Ground Operations *	2010-11	2009-10	2008-09
From Fossil Fuel (tonnes)	9,440	8,920	9,073
From Electricity Used (tonnes)	30,552	29,375	31,033

Recycling

Recycling is one of the strategies that has a significant impact on the use of limited resources. Reduction in paper usage and recycling are undertaken companywide involving wide staff participation. Staff are encouraged to:-

- print documents on both sides of the paper;
- store documents, files and archives electronically;
- use electronic methods of communication, where possible;
- receive and distribute fax messages electronically;
- re-use paper that has been printed on one side for note taking, printing drafts or message taking.

As a consequence of the efforts put in by all staff, paper consumption of the SIA Group has be declining steadily over the past 3 years from 86,818 in FY 2008-09 to 58,820 reams in FY 2010-11. Recycling bins are placed at canteens for the recycling of aluminium cans. Off-site segregation and recycling of materials from general wastes collected from our premises conducted by the appointed waste collectors.

Waste generated in SIA Group *	2010-11	2009-10	2008-09
General Waste (tonnes)	5,981	5,413	4,789
Toxic Waste (litres)	72,000	77,200	98,800

Recyclables #	2010-11	2009-10	2008-09
Used Cooking Oil (kg)	19,750	27,550	35,624
Used Carton Boxes (kg)	612,640	513,680	684,299
Used Magazine (kg) (estimate)	141,854	120,643	95,014
Old Newspaper (kg) (estimate)	327,183	216,248	150,485
Glass Bottles (kg)	159,918	119,290	124,854

** Figures adjusted to account for the exclusion of SATS.*
 # Figures are those from SIA operations in Singapore.

Safety,
Our Number One Priority

Mr Goh Choon Phong, CEO Singapore Airlines in his 2011 new year's message stated "Safety will always be our number one priority, coupled with a zealous focus on our customers."

Safety is one of the Company's six core values - We regard safety as an essential part of all our operations, and maintain and adopt practices that promote the safety of our customers and employees. We conform to the highest and most stringent international safety standards to ensure the safety of our customers and employees. This requires our constant attention and assessment of associated risks, especially as we introduce new equipment, technology and processes to our operations.

The importance of safety and security was highlighted at the annual Safety & Security Week observed across the SIA Group from 20-24 September 2010 with a series of activities to promote the awareness and practice of safety and security. The theme for 2010 was "Risk Management & You". The main message was the need for every staff to remain vigilant and be proactive in upholding safety and security.

Delivering the opening address at the launch event at the SIA Training Centre Auditorium on September 20, Executive Vice-President (Operations & Services) Mak Swee Wah pointed out that the SIA Group operates in a highly unpredictable external environment and stressed the importance of having a clearly defined process to manage risk. "We have to be proactive in identifying risks and hazards and putting in place mitigating measures." He added that "even if we are repeating ourselves, we offer no apology. Safety and security are fundamental to our business, so safety and security messages must be repeated … repeatedly."

Mr Mak also presented awards and citations to individuals and teams in the SIA Group for their exemplary efforts in upholding safety and security.

A seminar forming part of the launch event was held. Three guest speakers brought fresh perspectives to the subject of risk management from their professional areas. Elaine Liew from IATA stressed the importance of continuous monitoring and continuous improvement in developing an effective safety and risk management process. Dr Chew Peng Ho of Parkway Shenton Medical Group highlighted the impact of fatigue on the individual. He provided insights to sleep patterns, explained how they affected the performance of pilots. Commander Airport Police Keok Tong San spoke on balancing the requirements of security and facilitating smooth air travel.

In other activities during the week, Flight Operations held a Safety Symposium, SilkAir organised a Safety & Security Seminar and Engineering held a Divisional Safety Forum.

Data Summary

Operating Statistics	2010-11	2009-10	2008-09
SIA Group			
Total Group Revenue (S$ million)	14,524.8	12,707.3	15,996.3
Average Number of Employees	21,997	33,222	31,834
SIA Passenger & Cargo Services			
Overall Capacity (million tonne-km)	21,897.7	20,962.1	23,946.0
Overall Load (million tonne-km)	15,173.5	14,508.4	15,876.9
SIA Passenger Services			
Available Seat-km (million)	108,060.2	105,673.7	117,788.7
Revenue Pax-km (million)	84,801.3	82,882.5	90,128.1
Passenger Carried (thousand)	16,647	16,480	18,293
SIA Cargo Services			
Cargo Capacity (million tonne-km)	11,208.5	10,510.1	12,292.5
Cargo Load (million tonne-km)	7,174.0	6,659.1	7,299.3
SilkAir Capacity & Traffic			
Overall Capacity (million tonne-km)	617.2	533.8	522.5
Overall Load (million tonne-km)	402.8	345.2	320.0
Passenger Load Carried (million pax-km)	4,039.5	3,466.0	3,159.0

Fuel Productivity & CO_2 Emissions	2010-11	2009-10	2008-09
SIA Passenger Fleet & Freighters			
Fuel Consumption (million AG)	1,357.88	1,293.06	1,455.72
Fuel Productivity (LTK/AG)	11.17	11.22	10.91
CO2 emission (thousand tonnes)	12,805.32	12,193.96	13,727.96
CO2 emission (kg/LTK)	0.84	0.84	0.86
SIA Passenger Fleet			
Fuel Consumption (million AG)	1,175.83	1,134.83	1,255.30
Fuel Productivity (LTK/AG)	10.13	10.29	9.90
CO2 emission (thousand tonnes)	11,088.45	10,701.84	11,837.87
CO2 emission (kg/LTK)	0.93	0.92	0.95
SIA Freighters			
Fuel Consumption (million AG)	182.06	158.23	200.43
Fuel Productivity (LTK/AG)	17.92	17.90	17.22
CO2 emission (thousand tonnes)	1,716.87	1,492.12	1,890.08
CO2 emission (kg/LTK)	0.53	0.53	0.55
SilkAir			
Fuel Consumption (million AG)	50.00	43.37	41.62
Fuel Productivity (LTK/AG)	8.06	7.96	7.69
CO2 emission (thousand tonnes)	471.53	409.00	392.52
CO2 emission (kg/LTK)	1.17	1.18	1.23

Resource*	2010-11	2009-10	2008-09
Water Consumption (,000 m3)	253.6	272.1	302.3
Electricity Consumption (Gwh)	58.4	56.1	59.3
Petrol (,000 litres)	288	272	279
Diesel (,000 litres)	3,376	3,190	3,243
CO2 Emissions (Grd Operations) (tonnes)	39,992	38,295	40,106
Paper Consumption – A4 paper (reams)	58,820	65,975	86,818

**Figures adjusted to account for the exclusion of SATS.*

Glossary

ATAG -- Air Transport Action Group is an independent coalition of member organisations and companies throughout the global air transport industry that have united to drive aviation infrastructure improvements in an environmentally-responsible manner.

CAEP - The Committee on Aviation Environmental Protection (CAEP) consists of Members and Observers from States, intergovernmental and non-governmental organizations representing aviation industry and environmental interests. It assists the ICAO Council in formulating new policies and adopting new Standards on aircraft noise and aircraft engine emissions.

Carbon dioxide (CO2) - A gas produced when fossil fuels such as oil, gas, coal and aviation fuel are burnt (it is also produced naturally when wood burns and animals breath). Many scientists believe that an increase in atmospheric levels of carbon dioxide caused by human activity is one of the main causes of global warming.

Carbon Monoxide (CO) - A poisonous gas produced in aircraft engines, particularly at low thrust levels when there is incomplete combustion of fuel.

Fuel Productivity - A measure of how energy-efficient a plane is. It is calculated in terms of load carried and distance flown per unit of fuel consumed (Load-tonne-km/American gallon).

Global Warming - The rise in the earth's temperature that is thought by many scientists to be occurring due to increases in the levels of greenhouse gases, such as carbon dioxide in the atmosphere.

IATA - International Air Transport Association (IATA) is the world organization of scheduled airlines.

ICAO - The International Civil Aviation Organisation (ICAO) is a United Nations organisation that works to establish international standards, recommended practices and procedures covering the technical fields of aviation.

IPCC - The Intergovernmental Panel on Climate Change (IPCC) is the leading body for the assessment of climate change, established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) to provide the world with a clear scientific view on the current state of climate change and its potential environmental and socio-economic consequences.

LTO - The landing/takeoff zone (LTO) is the area up to 900 metres above the ground at and around an airport. Aircraft enter the LTO zone about 20 kilometers out from the runway, and leave it about 7 kilometres after takeoff.

Nitrogen Oxides (NOx) - Polluting gases produced by aircraft engines and also by cars, trucks and electric power plants. They can make respiratory problems worse and also contribute to the formation of acid rain and ozone.

Unburned Hydrocarbons (UHC) - Emissions from aircraft and other engines that can lead to the formation of smog.

Reference

In preparing this environmental report, reference is made to the Global Reporting Initiative's (GRI) 2006 Sustainability Reporting Guidelines and resources from the ICAO, ATAG and IATA.

Feedback

SIA welcomes your questions, comments and suggestions regarding our environmental report.
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