

Climate Change

One of the biggest environmental challenges facing our business is mitigating the impact of climate change. Managing our carbon emissions and staying abreast of international regulations are at the core of our Sustainable Development Strategy. We believe that our work on reducing emissions, calling for an ambitious global agreement on climate change and formulating a business strategy for sustainable development are extremely important to us.

The air transport sector presently accounts for 2%³ of global man-made emissions. Aviation carbon dioxide (CO₂) emissions are projected to increase to 3% by 2050, implying that aviation is currently a small but growing contributor to climate change. As well as emitting CO₂, aircraft contribute to climate change through the emission of other GHGs formed from fuel combustion in aircraft engines such as oxides of nitrogen (NO_x), as well as soot, sulphate aerosols and water vapour.

These impacts are summarised below.

Non-CO ₂ Emissions	Nature of Impact
NO _x	Increases the GHG ozone: warming effect Destruction of methane: cooling effect
Water vapour	Forms condensation trails: in exhaust air, warming effects dependent on altitude, location and atmospheric conditions
Sulphate Aerosols	Reflect incoming solar radiation: cooling effect
Soot	Small warming effect

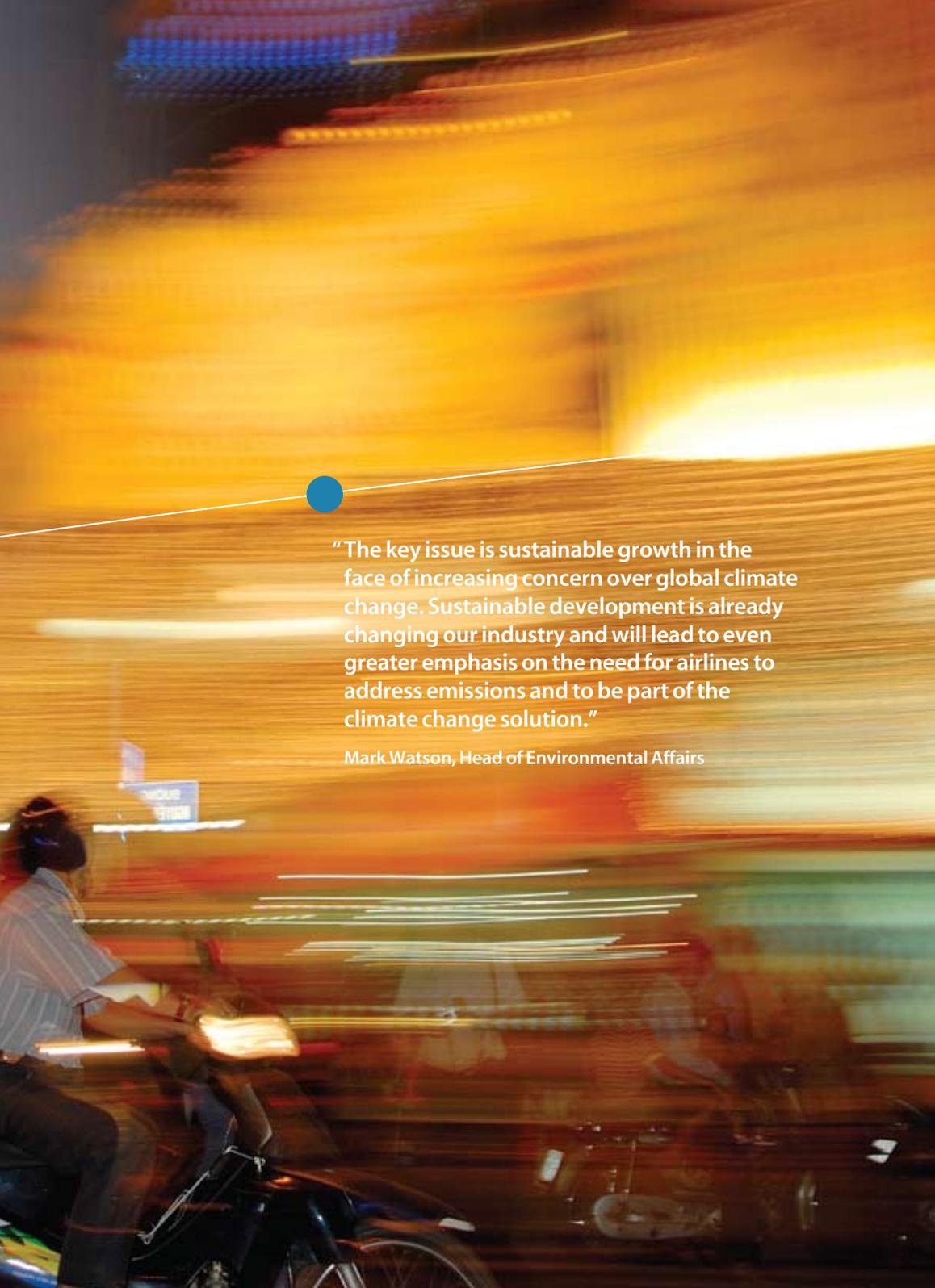
Source: IPCC

³ IPCC, 2007 and IPCC-AIE, 2005

8.4%

CO₂ emissions reduction
per ATK since 1998





“The key issue is sustainable growth in the face of increasing concern over global climate change. Sustainable development is already changing our industry and will lead to even greater emphasis on the need for airlines to address emissions and to be part of the climate change solution.”

Mark Watson, Head of Environmental Affairs



Our engagement

We work closely with other airlines and trade associations, including representation on the Environmental Committee of the International Air Transport Association (IATA) and on the Environmental Working Group of the Association of Asia Pacific Airlines (AAPA). These strategic partnerships enable us to effect change on a larger scale and prioritise our global challenges and opportunities.

IATA

Our Chief Executive, Tony Tyler, became Chairman of the IATA Board of Governors in June, the first appointment of a Cathay Pacific Chief Executive to this key position in our global industry body. He is working closely with IATA's Director-General and CEO to ensure that airlines' voices are heard at an international level in relation to how they intend to address climate change.

Copenhagen Communiqué

We were amongst 950 companies that signed the Copenhagen Communiqué on Climate Change calling on world leaders to agree an “ambitious, robust and equitable global deal on climate change”. We were part of the IATA delegation at the United Nations climate negotiations in Copenhagen in December 2009, where the industry highlighted its call to be part of a new climate change agreement. We have also advocated our support for IATA's target of stabilising net carbon emissions from 2020 onwards.

Aviation Global Deal Group

As a founding member of the Aviation Global Deal (AGD) Group, we continued our active role in contributing to the international debate to include emissions from international aviation in a global climate change treaty. See Pg. 18 for more details.



Our engagement in Hong Kong

Our Chief Executive has also been a champion for business engagement in climate change issues and in 2009 continued his role as Chairman of the Executive Committee of the Climate Change Business Forum (CCBF) in Hong Kong. This is a business partnership set up to tackle climate change through research, communications and the sharing of best practice.

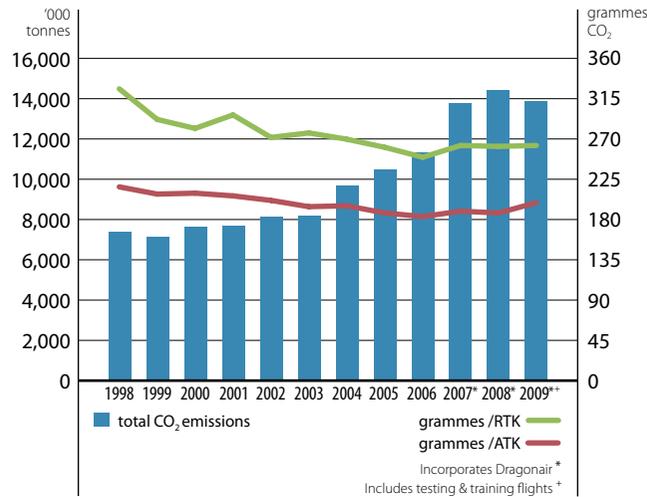
We were a key sponsor of the third international Greener Skies conference in Hong Kong which highlighted the key issues around aviation and the environment. Amongst the many points highlighted at the conference was the need for better global air traffic management to help reduce emissions and for international aviation emissions to be addressed under a comprehensive global sectoral approach.

Ongoing emissions targets

In 2009, the Board of Governors of IATA took a landmark decision to adopt a set of ambitious targets to mitigate GHG emissions from aviation. We fully support these targets:

- an average improvement in fuel efficiency of 1.5% per year from 2009 to 2020;
- a cap on aviation CO₂ emissions from 2020 (carbon-neutral growth); and,
- a reduction in net CO₂ emissions of 50% by 2050, relative to 2005 levels.

Global CO₂ Emissions – Cathay Pacific and Dragonair Fleet



Our emissions

Fuel burn from our aircraft is the source of the majority of our emissions and we monitor this in all aspects of our operations. Our emissions performance is reported based on fuel efficiency in relation to payload or per revenue tonne kilometres (RTK) and capacity or available tonne kilometres (ATK).

In 2009, we were responsible for a total of 13.9 million tonnes of CO₂ (tCO₂) from fuel burn, bringing a total efficiency improvement of 8.4% since 1998.

This year a reduction in CO₂ emissions was only recorded per RTK, whilst CO₂ emissions per ATK increased, due to reductions in our capacity as our response to the global economic downturn (e.g. reduced flights and parked aircraft). This led to an increase in passenger and cargo loads per aircraft, increasing weight and consuming more fuel per capacity. This situation led to a decrease in our absolute CO₂ emissions by 4% or 0.54 million tCO₂.

In 2008 we made a commitment to ensure that our GHG accounting process is in line with international standards. We have now developed an emissions inventory procedure fully in line with the World Resource Institute and World Business Council for Sustainable Development's Greenhouse Gas Protocol.

We have been disclosing our GHG emissions profile and risks under the Carbon Disclosure Project (CDP) since 2007. Cathay Pacific was identified in the CDP Asia ex-Japan 2008 report as being one of the leaders in the industrial sector along with Swire Pacific, our largest shareholder. We were also identified by the United Kingdom-based Brand Emissions' Leaders Project as a Brand Emissions' Leader in the Airline Sector. We were recognised for having the most carbon-efficient performance based on the previous year's turnover per CO₂ emissions.

2009 GHG Emissions (tCO₂e)*

Scope 1 jet fuel, ground fuel and Towngas	▲ 13,882,506 (99.64%)
Scope 2 electricity and Towngas	▲ 50,267 (0.36%)

*Details of our GHG emissions are available in www.cathaypacific.com/sdreport

▲refer to PricewaterhouseCoopers report (Pg.52).

Progress against 2009 actions

Consider the implications of possible carbon pricing on investment decisions	ongoing
Work on a global sectoral scheme for addressing aviation's emissions	✓
Ensure that our GHG accounting process is in line with international standards	✓
Undertake a study of climate change impacts to our business	ongoing

Agenda for 2010

Develop targets for the reduction of major GHG emission sources
Expand GHG reporting to major outports and subsidiaries

Moving towards a low carbon business model

In 2009, we developed our internal assessment of the implications of possible carbon pricing on our business. This assessment is part of our move towards further linking environmental considerations, risk and compliance into our overall business planning.

IATA estimates that the European Union Emissions Trading Scheme (EU ETS) will cost the aviation industry some €3.5 billion. As well as ensuring overall regulatory compliance with the scheme, we are currently assessing the financial costs, administrative and systems-related impacts of compliance. In addition, we are also considering the impact of regional schemes or a new global scheme beyond 2012.

Our business operations therefore face a number of risks related to climate change. In response to these risks and to ensure we better manage our climate change impact, we developed our Climate Change Position⁴ in 2006, which outlines our commitments and is the basis for our work on this issue. We continue to fully endorse IATA's 'four-pillar strategy' to address climate change and we outline below how we are following this strategy to reduce our overall impact.

Four pillars to emissions reduction

IATA has adopted a four-pillar strategy to achieve carbon neutral growth:

- 1 Technology:** Innovation in aircraft and engine technologies, enhancements to the existing fleet and alternative fuels.
- 2 Operations:** Fuel efficiency improvements in ground operations, optimal flight routes and speeds, more efficient aircraft.
- 3 Infrastructure:** Improved use of airspace and airport infrastructures adapted to needs.
- 4 Economic measures:** Promotion of positive economic instruments to provide real incentives for emissions reductions.

We have succeeded in further reducing flight emissions through modernising our fleet, enhancing operational procedures, optimising routes, and further reducing aircraft weight.



Fleet modernisation

We continued our fleet modernisation programme and introduced five more Boeing 777-300 Extended Range (ER) passenger aircraft. In 2010, we will introduce a further five Boeing 777-300 ER passenger aircraft and most of our Trans-Pacific operations will be serviced by these aircraft, which, on these routes, are 26% more efficient than the aircraft that they replace.

We are now using more fuel-efficient ultra long-haul Boeing 747-400 Extended Range Freighters (ERF) in our cargo fleet with the addition of a further four in 2009.

In 2009, we phased out all of our Boeing 747-200F and 747-300F Classic freighters from both Cathay Pacific and Dragonair. We have placed orders for 10 next generation Boeing 747-8 Freighter aircraft, to be delivered commencing in 2011. This will bring significant efficiency gains through the inclusion of new technology on the aircraft, including a new engine, the GENx-2B and a new wing design – an advanced raked wing tip, further reducing fuel consumption and fleet maintenance costs.

New aircraft will also be utilised as far as possible on routes where maximum fuel efficiency gains can be made.

Sample of actual fuel savings (in tonnes fuel) of Boeing 747-400ERF

Hong Kong to Dubai	18 tonnes
Dubai to Hong Kong	13 tonnes
Total saving on a single round trip	31 tonnes
Total CO ₂ saved on a round trip	97.65 tCO ₂

Climate Change Long Term Action Group

In the future, significant reductions in emissions will depend on technological changes and we are working with a number of technology providers to make these a reality. Our Climate Change Long Term Action Group (LTAG), which is composed of senior managers, seeks to support and influence the design of future technologies and maximise environmental benefits. This, in turn, feeds into our Fleet Steering Group which is responsible for the procurement of new aircraft.

“Cathay Pacific has shown leadership regarding optimising efficiency gains, but once they are close to using current technology in the most efficient way, what comes next?”

UK environmental NGO

Sustainable biofuels

We continue to work with relevant partners to identify sustainable biofuels which meet or exceed the energy characteristics of kerosene and offer substantial improvements to emissions performance. However, we are well aware of stakeholder concerns that for such fuel to be viable it must be produced in a sustainable way. In 2009, Cathay Pacific joined the Sustainable Aviation Fuel Users Group (SAFUG), a Boeing-led industry working group united by the desire to accelerate the commercialisation of sustainable aviation biofuels by developing robust, global sustainability criteria and best practices for the aviation biofuels market.

As a member, we subscribe to the sustainability criteria that aviation biofuels must not compete with food and drinking water supplies, biodiversity, and local populations.

We aim to reduce our absolute emissions in the long term and we realise that biofuels are not the only way to achieve this. Nevertheless, we view working towards the adoption of sustainable biofuels as a significant opportunity to address the environmental impact of our operations as part of our support and our drive towards the IATA four-pillar approach and a low carbon business model.

⁴ www.cathaypacific.com/climatechange

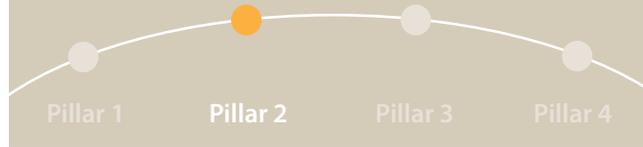


Innovative engine technology

We signed a new agreement with Rolls-Royce to provide performance improvement kits for our fleet powered by its Trent 700 engines. The engine manufacturer will add an Enhanced Performance modification to 24 engines to support the operations of 12 A330 aircraft. The modification, which consists of detailed aerodynamic changes to the engine compressors, will deliver a 1% fuel saving on each engine, equivalent to a total reduction of 3,700 tonnes of fuel consumption and 11,000 tCO₂ emissions per year.



Operational measures



Optimising flight routes and speeds

Beyond engine and airframe technology improvements, substantial environmental gains can be achieved through better airline operations. The IPCC estimates that more efficient aircraft operations can save fuel and CO₂ emissions by up to 6%.

In 2009, we continued to utilise real-time wind data to generate flexible flight tracks for dynamic flight planning. These 'flextracks' are evaluated with the relevant authorities before changes are implemented. We have been monitoring the amount of fuel burn and time saved using these optimised routes and in 2009 saved a total of 218 tonnes of fuel and 688 tCO₂.

Aircraft maintenance and reducing weight

The overall weight of an aircraft is a key factor in determining the amount of fuel burned. Our Aircraft Weight Task Force identifies and assesses opportunities for reductions. In 2006 we reported on an initiative to strip bare most of the paint from the aircraft body, making it lighter and reducing fuel usage. Yet, despite the fuel savings, we have had to revise this decision due to maintenance reasons.

In 2008 we trialled an alternative base coat exterior paint that reduced 23 kilogrammes (kg) on an A340 aircraft. We are now using it on all aircraft within the fleet.

The introduction of lighter weight meal carts and trays over the last few years has also led to weight and fuel savings.



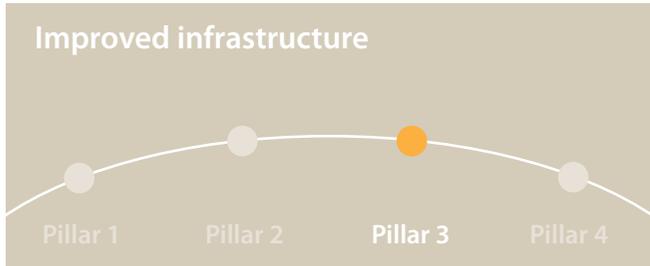
Taxi times

During our stakeholder engagement, one frequent flyer raised their concerns about aircraft taxiing on the runway as a potential waste of fuel. We have looked into this issue and we found that using ground vehicles to tow aircraft onto the runway is not environmentally optimal for Cathay Pacific. Engines need to be run for a few minutes before take off, allowing the core engine to warm up in the most optimum manner and stopping wear, which reduces fuel burn.

We work very hard to minimise taxi times, which at our home port average about 10 minutes, consistent with the optimum engine warm-up time prior to selecting take-off power.

Core washing our engines

Our Engineering Department has been conducting a regular core washing programme for our engines for many years and in 2005 switched to using new core wash equipment. This involves spraying hot water into the engine using a specialist piece of equipment to clean internal surfaces, ensuring the best possible efficiency is achieved. This has resulted in more than five million kg of fuel saved per year through the whole fleet, equivalent to a reduction of about 16,000 tCO₂ per year.



Air traffic management

The IPCC has estimated that globally, there may be as much as 12% inefficiency in air transport infrastructure. This is the single largest cause of fuel wastage in the aviation industry and requires working with governments to address the issue.

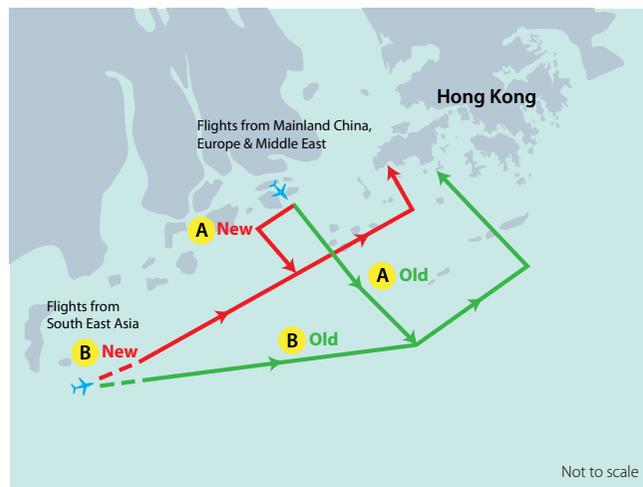
We continue to work with industry partners and regulatory authorities to optimise air traffic control systems and infrastructure.

Some significant developments took place in 2009 including changes to flight paths over the Pearl River Delta (PRD) into Hong Kong. The re-design has significantly shortened the two longest arrival routes inbound from the north and west. The route inbound from Bangkok, for example, is 210 kilometres shorter, saving eight minutes flying time, equivalent to 54,000 tCO₂ emissions a year. All flights inbound from Europe and China and most services from New York and Toronto are seeing improvements. We have been working through IATA and with the Hong Kong Civil Aviation Department (CAD) for several years to achieve route improvements and we welcome this new initiative.

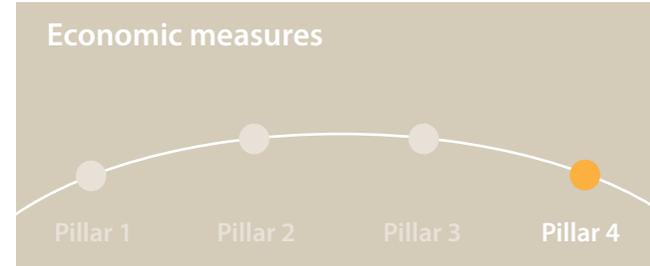
“The PRD has long been seen as one area in which more direct routings could have real significance in terms of reducing unnecessary fuel burn and lowering emissions. Such initiatives will play an important role in assisting in IATA’s commitment to the overall carbon-neutral growth of aviation.”

Mark Watson, Head of Environmental Affairs

Illustrative diagram of new arrival tracks from north & west of Hong Kong



In kilometres	Old track	New track	Saving
Flight via A	329	141	188
Flight via B	494	309	185



We acknowledge the need for aviation to take account of its climate impacts through positive economic measures such as emissions trading.

The EU ETS

In July 2008, the EU adopted the inclusion of aviation into the EU ETS, which will begin in 2012.

We believe that given the nature of the industry, a global sectoral framework is the right approach. We do not support the inclusion of international aviation in a regional scheme such as the EU ETS because this distorts competition for airlines operating to and from that region. There is also no indication that revenues derived from the auctioning of allowances within the EU will be used to fund climate change or environmental projects.

In March we responded to a consultation on the inclusion of aviation in the EU ETS. In October our Chief Executive wrote to the Department of Energy and Climate Change and the Department of Transport in the United Kingdom further outlining our position on the EU ETS. Despite our protests, we have acted in full compliance with this legislation. We received full approval of our monitoring plans in December.

Progress against 2009 actions

- Begin the phase out of our Boeing 747-200 freighters and commence the phase in of more fuel-efficient Boeing 747-400ERFs ✓
- Continue to support and lobby for airspace improvements in the Pearl River Delta ✓

Aviation Global Deal Group

The AGD Group⁵ is an industry coalition that brings together leading international airlines, aviation sector companies and an international environmental NGO. We played a key role in the development of the AGD Communiqué on International Aviation Emissions and Climate Change Policy, which sets out plans for a global sectoral approach for international aviation.

Our goal is to contribute to a pragmatic, fair and effective policy solution that incorporates international aviation into a global climate change agreement.

The AGD Group fully endorses IATA's work in this area and plays an active role in assisting the industry's collective call for aviation to be covered by a global sectoral approach.

“There must be a recognition that international aviation emissions are best tackled at a global level by a single global sectoral agreement, encompassing all air transport operators.”

Tony Tyler, Chief Executive

FLY greener

The FLY greener programme offers passengers the option of using cash or frequent flyer miles to offset the carbon emissions associated with their flight. The key aim behind FLY greener is to help raise awareness amongst passengers and support the development of emissions reduction projects.

⁵ www.agdgroup.org/

To date the uptake has been small, but comparable to schemes offered by other international airlines. In 2009, we focused on educating staff and providing additional channels for passengers to purchase these offsets. We held a number of briefing sessions amongst cabin crew and developed an inflight sales brochure to help them better prepare for the launching of FLY greener in our duty free inflight sales in early 2010.

For corporate offsetting, we produced a brochure for all account managers, reservations staff and sales agents and developed a dedicated website for our corporate clients. We are also producing a brochure to encourage further uptake of the programme.

Going forward, we are committed to exploring new ways of increasing the awareness and uptake of our FLY greener programme.



Windfarm project in Heilongjiang

courtesy of
JPMorgan ClimateCare



Key facts

In 2009, 3,263 tCO₂ were offset by our passengers, including several companies in Hong Kong, China and Taiwan.

Cathay Pacific and Dragonair also offset their own staff travel amounting to 8,097 tCO₂ at an approximate cost of HK\$550,000.

Offset projects

In 2009, we diversified our portfolio of offset projects to include 3 different initiatives in Mainland China – a natural gas project in Beijing, a micro hydro power plant project in Guizhou and a group of 20 wind turbines in Heilongjiang. All of these offset credits are certified under the Voluntary Carbon Standard or VER Plus. As part of our commitment to provide credible offsets, we have carefully evaluated the environmental and social impacts of all these projects and we strive to benefit local communities.

Climate change adaptation

Climate change also poses a number of risks to our operations. Risks on the ground include increased frequency and intensity of typhoons which already disrupt our operations in Asia and impact on our global network. In the past few years, whilst these events caused flights to be delayed or cancelled, damage to our infrastructure was minimal.

We are aware that increased physical changes will test our emergency and service disruption responses and these changes have prompted us to re-think our plans (see Pg. 32-33).

Progress against 2009 actions

Further promote our FLY greener carbon offset programme and encourage uptake amongst partners and corporate customers ✓

Implementing initiatives that will enable offsets to be bought via different channels ✓

Agenda for 2010

Launch FLY greener into inflight sales and offer carbon offsets at different customer touchpoints including online bookings and at the airport

Develop a brochure for corporate clients to encourage further uptake of the FLY greener programme