In 2006, Cathay Pacific initiated the identification of specific climate change concerns and participated in the Swire Group’s “Value at Stake” project which analysed mechanisms for greenhouse gas (GHG) reporting and considered the climate change implications for our business. The potential impacts were assessed against our revenues and reputation.

Following this exercise, we developed a clear climate change position as a basis for ensuring progress could continue to be made. With the developments in the last two years, some parts of the position statement below have been progressed, such as the setting of Cathay Pacific’s own CO₂ target for 2020, the International Air Transport Association (IATA)’s commitment to carbon neutral growth by 2020 (CNG 2020), and the securing of a global agreement with International Civil Aviation Organization (ICAO). However, our overall approach remains the same:
The Cathay Pacific Group Climate Change Position

Substantial reductions in global carbon emissions are urgently required to mitigate the impacts of climate change. Cathay Pacific acknowledges that:

- Aviation is estimated to contribute to approximately 2% of man-made carbon dioxide emissions.
- Improved efficiency can be achieved through technological improvements, operations controls and improved air traffic management systems.
- Absolute emissions will continue to rise as the industry grows.

We are already making a very positive contribution towards addressing climate change by:

- Measuring and reporting openly on our emissions.
- Working with industry partners and regulators to support route improvements and address inefficiencies in air traffic management.
- Maximising efficiency through operational efficiency drives and fleet development.
- Addressing climate change through the development of a carbon management plan and a carbon offset project.
- Calling on governments to put climate change at the heart of a global scheme on emissions.

We support the following:

- The important role that market-based measures can play to help secure the required reduction in global carbon emissions at minimum cost.
- The funding of carbon emission reduction strategies on the ground from any revenues raised through market-based measures.
- The leadership by the International Civil Aviation Organization (ICAO) in establishing a global offset scheme for international aviation.

Cathay Pacific will continue to work through the International Air Transport Association (IATA) and other industry partnerships to facilitate such action.

Our Climate Change Position has enabled us to clarify our approach towards addressing climate change through three key principles:

1. Maximising fuel efficiency and reducing fuel wastage through fleet modernisation, technical improvements to our existing fleet, weight management and the implementation of operational efficiency drives.

2. Addressing inefficiencies on air traffic management through collaboration and by supporting industry lobbying efforts.

3. Acknowledging the role of market-based measures such as offsetting and emissions trading.
According to the Intergovernmental Panel on Climate Change (IPCC) and the International Energy Agency (IEA), in 2009, aviation accounts for 649 million tonnes of the global total of around 30 billion tonnes of CO₂, equivalent to 2% of global emissions from human activity. As aviation grows to meet increasing demand, the IPCC has forecasted that by 2050, this could rise to 3%. While the forecast emissions for 2050 can vary significantly, it does highlight the challenge that the aviation industry faces in the next 40 years.

According to the IPCC, aircraft contribute to climate change through the emission of oxides of nitrogen (NOx), soot, sulphate aerosols and water vapour. These impacts are summarised below:

### Non-CO₂ Emissions from Aircraft

<table>
<thead>
<tr>
<th>Non-CO₂ Emissions</th>
<th>Nature of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>Increases the GHG ozone: warming effect&lt;br&gt;Destruction of methane: cooling effect</td>
</tr>
<tr>
<td>Water Vapour</td>
<td>Forms condensation trails: in exhaust air. Warming effects dependent on altitude, location and atmospheric conditions</td>
</tr>
<tr>
<td>Sulphate Aerosols</td>
<td>Reflect incoming solar radiation: cooling effects</td>
</tr>
<tr>
<td>Soot</td>
<td>Small warming effect</td>
</tr>
</tbody>
</table>

Source: IPCC
Uncertainty remains within the scientific community regarding the full impact of other greenhouse gases (GHGs) in the upper atmosphere. In 2007, the IPCC estimated these effects to be two to four times greater than those of aviation’s CO₂ emissions alone, and by 2050, aviation’s total climate change contribution, including CO₂ and other effects, could rise to 5% (with a worst-case scenario of 15% of human emissions). However, the IPCC acknowledges that there is still uncertainty and the non-CO₂ impacts of aviation are the subject of intensive academic research.

In light of uncertainty about the cumulative or ‘multiplier’ impacts of other aviation-related GHGs, we continue to focus our efforts on reducing our CO₂ emissions while monitoring the latest atmospheric science research findings of the relevant organisations and research institutes. These include the Goddard Institute of Space Studies (GISS) at the National Aeronautics and Space Administration (NASA), the Institute of Atmospheric Physics at the German Aerospace Centre (DLR), and various academic institutions around the world.

Contributing to Climate Change Science

To assist in increasing understanding of climate change science in the atmosphere, in 2011 we signed a memorandum of agreement with the In-service Aircraft for a Global Observing System (IAGOS) Project, which is part of the European Commission’s European Strategy Forum on Research Infrastructures. Its aim is to conduct long-term monitoring of climate change contributors such as aerosol, cloud particles and atmospheric composition through the use of installed equipment on long-haul aircraft of international airlines, where satellite collections are not feasible. While carbon dioxide’s effect on climate change is widely known, IAGOS explores the uncertainties about other atmospheric gases when mixed at altitude, including methane, nitrogen oxide and water vapour. By trying to build a global picture of their effects, this will contribute to the scientific understanding of aviation and climate change.

In 2013, one of our Airbus A330-300 aircraft was the first of its type to be equipped with IAGOS scientific instruments following the certification of the IAGOS system on the Airbus A330. Since then, it has operated over 1,400 flights, primarily on Australian and Middle East routes from Hong Kong, to complement other similarly equipped commercial aircraft operating on other routes around the world, which would help build a better global picture of climate change. Data on ozone, carbon monoxide, water vapour, and clouds is recorded during take-off, cruising, and landing and transmitted from the aircraft on a daily basis to the IAGOS central database for access by science and policy users, including the provision of useful real time data for weather prediction, air quality forecasting and climate models. The growing IAGOS database will continue to improve our understanding of cloud processes and their impact on climate.
Between 2012 and 2014, data covering 74,759 clouds sampled during 4,399 IAGOS flights yielded new insights into our understanding of small cirrus ice crystals and their implications for flight operations. The findings revealed that the safety of an aircraft may be affected when flying through clouds with very high ice crystal concentrations, where instrument interference can cause anomalous readings from temperature and airspeed sensors.

More information can be found at www.iagos.org.

3 2015 CO₂ Emissions Performance

In 2015, Cathay Pacific and Dragonair were collectively responsible for emitting 17.3 million tonnes of carbon dioxide (CO₂) from jet fuel burn, an increase of 4% from 2014. Over the same period, an increase of 8% and 4% were recorded for passengers and cargo carried respectively. Our fuel efficiency improved by 1.2% and 2.7% in relation to capacity (available tonne kilometre, ATK) and traffic carried (revenue tonne kilometre, RTK) respectively over 2014. This brought our total fuel efficiency improvement since 1998 to 16.3% and 24.8% per ATK and RTK respectively.

Global CO₂ Emissions – Cathay Pacific Group Fleet

2015 CO₂ Emissions Performance

<table>
<thead>
<tr>
<th>Year</th>
<th>Total CO₂ Emissions (tCO₂e)</th>
<th>Scope 1 Emissions (tCO₂e)</th>
<th>Scope 2 Emissions (tCO₂e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>17,368,305</td>
<td>17,368,305</td>
<td>86,289</td>
</tr>
<tr>
<td></td>
<td>(99.50%)</td>
<td>(99.50%)</td>
<td>(0.50%)</td>
</tr>
<tr>
<td></td>
<td>Aviation Fuel, Fuel Combustion and Towngas</td>
<td>Electricity and Towngas</td>
<td></td>
</tr>
</tbody>
</table>
4 Fuel Efficiency – A 35 Year Story

Our operating culture of fuel efficiency has been embedded in our operational DNA since our first non-stop long-haul flights from Hong Kong to London in 1980 and Hong Kong to Vancouver in 1983. Reducing weight onboard these two routes enabled us to offer a unique and competitive service to our customers. Various teams within Cathay Pacific and Dragonair worked on implementing innovative initiatives such as a fuel monitoring system; use of core washing; introduction of lighter weight onboard equipment (for example food carts and cargo container boxes); and utilising flight techniques and flight planning systems that reduce fuel use – which have been part of the airline’s standard operating procedures for the past 35 years. This has allowed us to operate our aircraft in a highly efficient manner, and to a certain extent, play a part in helping to build resilience in the face of adverse conditions such as additional carbon charges and rising fuel prices.

Our fuel efficiency initiatives in the past 35 years reflected the IATA four-pillar strategy:

1. Technology
   - Airframe, engine
   - New fuels

2. Operations
   - Maximum efficiency
   - Minimise weight

3. Infrastructure
   - Air routes, ATM
   - Airport procedures

4. Economic instruments
   - Offsets & trading
   - Incentives
In 2015, apart from the operational efficiencies embedded in our operations, other progress on fuel efficiency included:

- **Fleet modernisation** – We took delivery of nine new aircraft in 2015: three Airbus A330-300s and six Boeing 777-300ERs. Four Airbus A340-300s and four Boeing 747-400s were retired from our fleet. In addition, we have 70 new aircraft on order for delivery up to 2024. In 2016, we will begin taking delivery of a new aircraft type, the Airbus A350, which will offer improved fuel efficiency and lower noise footprint.

- **Route improvements** – In 2013, we conducted four demonstration flights from Hong Kong to Sydney, Melbourne, Anchorage, and San Francisco respectively in November. These were the first multi-destination “green flights” in one day under the Asia and Pacific Initiative to Reduce Emissions (ASPIRE), which is a sister initiative of INSPIRE in which we participated during 2012. By incorporating best practices in air traffic management by optimising airport procedures, air routes, and air traffic management, we highlighted the potential for real reduction in fuel usage and CO₂ emissions on a daily basis. For our flights to Australia, this best practice approach saved 4.5 to 12 minutes per flight. As we operate 13 flights a day into Australia, this could lead to potential savings up to 1,000 tonnes of fuel and 3,150 tonnes of CO₂ per year.
The following are some route improvement initiatives implemented by Cathay Pacific and Dragonair in the past 10 years:

<table>
<thead>
<tr>
<th>Examples of Cathay Pacific &amp; Dragonair Route Improvements</th>
<th>Emission Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia and Pacific Initiative to Reduce Emissions (ASPIRE) – demonstration flights in 2013</td>
<td>Up to 3,150 tCO₂/year</td>
</tr>
<tr>
<td>Flexible entry/exit points implementation in China for European flights (Y-1 route)</td>
<td>14,000 tCO₂/year</td>
</tr>
<tr>
<td>North Pacific route improvements</td>
<td>835 tCO₂/year</td>
</tr>
<tr>
<td>Flexible entry/exit points implementation in China for European flights (MORIT route)</td>
<td>0.6 to 0.9 tCO₂ per flight</td>
</tr>
<tr>
<td>Re-design of flight paths over the Pearl River Delta</td>
<td>54,000 tCO₂/year</td>
</tr>
<tr>
<td>Further North Pacific route improvements (SFO-HKG)</td>
<td>792 tCO₂/year</td>
</tr>
</tbody>
</table>

**Fuel efficiency initiatives** – In 2012, as part of the larger eEnabled aircraft programme, we signed an agreement with Navtech to develop e-charts, as part of a broader plan to develop a fully paperless cockpit. eEnabled Aircraft is a major multi-year initiative to develop a full time, global air-ground data communications on all our aircraft. The eEnabled Aircraft solution brings many benefits including:

- Improving the speed, accuracy, deployment and presentation of information between the aircraft and ground control, enabling improvements to operational efficiency, maintenance effectiveness and service delivery.
- Enabling pilots to determine precise fuel requirements and the potential for increased payload for each flight.
- Reducing the environmental impact of producing, distributing and disposing of operations manuals, charts, and documents and decreasing the weight of carrying these on the aircraft.
- Enabling earlier preparation and faster action by ground engineers, with less time spent retrieving and analysing information from paper technical and cabin logs.

- In 2014, 11 Boeing 777-300ERs were fitted with Electronic Flight Bags. New antennas were also installed significantly reduced aircraft drag, thereby reducing fuel burn. Three aircraft were involved in a rigorous Operational Evaluation, where a formal assessment of the operability of Electronic Flight Bags and related systems was conducted.

- In 2015, operational approval was granted by the Hong Kong Civil Aviation Department (HKCAD) for the eEnabled System. Each eEnabled aircraft will have its paper charts, manuals, and documents, which can weigh up to 51 kg, replaced with the Electronic Flight Bag and Electronic TechLog. Activation of the system on the first 11 aircraft is expected to be completed by January 2016.
We will continue to roll out the eEnabled System across our fleet of Boeing 777, Airbus A330, and Boeing 747 freighter aircraft. The A330s and A320/A321s in the passenger fleet of Dragonair will also have the new technology installed progressively.

Approximately 5,500 tonnes of fuel was saved from engine core washes performed in 2015, resulting in 17,200 tonnes of CO₂ emissions reduction.

The following are some fuel efficiency improvements implemented in the past 10 years:

<table>
<thead>
<tr>
<th>Examples of Cathay Pacific &amp; Dragonair Initiatives on Fuel Efficiency</th>
<th>Emission Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dragonair use of idle reverse thrust when operationally feasible</td>
<td>Data not yet available</td>
</tr>
<tr>
<td>Reduced engine taxi-in (RETI) after landing</td>
<td>12,100 tCO₂/year</td>
</tr>
<tr>
<td>Weight reduction from inflight magazine paper grammage reduction</td>
<td>880 tCO₂/year</td>
</tr>
<tr>
<td>Modification of engines on our A330 fleet</td>
<td>11,000 tCO₂/year</td>
</tr>
<tr>
<td>Utilising and manually fine-tuning the flexitrack approach – use of real-time wind data to generate flexible flight tracks for flight planning</td>
<td>607 tCO₂ on monitored flights in 2010</td>
</tr>
<tr>
<td>Using alternative base coat exterior paint</td>
<td>Depends on aircraft type e.g. 134 tCO₂ on the A340 in 2008</td>
</tr>
<tr>
<td>Core washing engines</td>
<td>105,700 tCO₂ since 2010</td>
</tr>
<tr>
<td>Weight reductions from catering and food equipment (e.g. lightweight cargo and baggage containers and food carts, cutlery, etc)</td>
<td>78,460 tCO₂/year since 2004</td>
</tr>
</tbody>
</table>

In 2014, in order to have a more coordinated effort in managing our fuel use better and improving fuel efficiency, the Flight Efficiency Working Group was established. The team, which comprised colleagues from different departments, focussed on projects in the following areas:

- **Aircraft operations** – To manage the challenges of load distribution within the aircraft to improve its flight efficiency, the use of auxiliary power units (APU), refuelling, taxiing, flying at the optimal speeds and other techniques.

- **Aircraft weight** – To ensure aircraft weight is controlled or improved whenever possible, such as when considering aircraft components and catering equipment.

- **Aircraft performance** – To ensure our aircraft and engines are in the best shape to maximise efficiency.

- **Airspace efficiency** – To influence positive change in airspace design and management.

One project in 2014 included a study with the Hong Kong International Airport in preparation for the APU ban at the airport in December. The initiative involved both Cathay Pacific and Dragonair maintenance, repair and overhaul (MRO) agents and the Airport Authority Hong Kong to evaluate various procedures to minimise APU usage. Cathay Pacific also implemented reduced engine taxi-in (RETI) in 2014 as a result of the work by the Working Group. Dragonair introduced RETI to its operations in 2013.
In 2015, trials were conducted on lowering the window blinds during disembarkation to reduce the rate of temperature increase in the aircraft cabin by up to 3-4 °C per hour. If the temperature increase rate is slowed down, the pilots are able to delay the start of the auxiliary power units (which uses jet fuel) and as such conserve energy whilst maintaining a comfortable environment in the cabin for our crew and passengers.

In order to conduct more advanced analytics that will help to guide our future efficiency initiatives, we entered a five-year agreement with Rolls-Royce to collect flight data. Flight data of 188 aircraft operated by Cathay Pacific and Dragonair will be analysed to further optimise our growing operations.

Washing an Engine Core

Engine core washing reduces fuel burn and leads to better efficiency. The cores are washed at intervals ranging from two months to half a year, and each wash consumes roughly 120 litres of water – what a person would use for a shower.

How it is done:
1. A specially-designed hollow J-hook is used.
2. An engineer places the J-hook behind the engine’s fan blades.
3. The J-hook is attached to a water hose. Once in place, water will pass through the hook to spray directly onto the compressor blades inside the engine core.
4. Tap water is de-ionised for purification. The water is then heated to 70 to 80 °C and kept in two water tanks where it is pressurised. The high heat de-stabilises molecules, making it easier for engineers and mechanics to remove dirt.
5. The engine is dry-motored, which means it is moved mechanically without using fuel, to create a suction effect. This ensures that water will be sucked in to cover the surface of each rotor blade.
6. The engine core is hosed for five minutes. Technicians then allow the components to soak in the water for five minutes, so that the grease and dust inside the core can dissolve. Mechanics then hose the engine core for another five minutes to flush out the dirty water.
5 The Future – Our New Fleet & Sustainable Biofuels

New Fleet

Our ongoing fleet modernisation programme – purchasing the most fuel efficient aircraft that are appropriate for our operations – is one of the most significant ways that an airline can reduce its environmental impact.

For our passenger aircraft fleet, 53 Boeing 777-300ERs are in service. We will begin taking delivery of 48 Airbus A350 XWBs from 2016, and 21 Boeing 777-9Xs from 2021. On the freighter side, we expect delivery of one Boeing 747-8F in 2016 in addition to the 13 currently in the fleet. From 2016 to 2024, we will be taking delivery of 70 aircraft with up to 25% lower fuel consumption than the aircraft these will replace.

Boeing 777-9X Fuel Efficiency Features

Airbus A350-900 XWB Fuel Efficiency Features
The reality is our industry is highly reliant on technological advancements to get us to where we need to be by 2050. While we expect to take delivery of what are still considered conventional aircraft designs, we are increasingly seeing significant changes in aircraft technology through more efficient engines, improved aerodynamics, weight reduction through use of composite materials, eco-design and end-of-life aircraft initiatives, onboard systems to minimise fuel burn and the use of sustainable aviation biofuels.

We recognise the amount of research and development effort that goes into designing, testing and manufacturing a new aircraft and the significant investment and risk associated with bringing a new product to market. But this is the challenge of climate change – where a step-change through radical designs and technology is imperative in meeting our climate change targets. We will work with the manufacturers and developers so that these technologies can be brought to the forefront.

Biofuel

One such example of working together is on the issue of sustainable aviation biofuels. As a member of an industry coalition, the Sustainable Aviation Fuel Users Group (SAFUG), we are united in our desire to accelerate the commercialisation of sustainable jet fuel, including subscribing to a set of sustainability criteria to ensure that these biofuels do not compete with food and drinking water supplies, biodiversity and local populations.

We are a member of the Roundtable on Sustainable Biomaterials (RSB), an international initiative hosted within the Swiss Federal Institute of Technology in Lausanne (EPFL), Switzerland, along with more than 120 organisations around the world. In addition to being a certification body for sustainable biofuels, the RSB actively involves its members in the development and implementation of the RSB Global Sustainability Standard, a global standard for sustainable production, conversion and use of biomass.

From a research perspective, we are one of the very few airlines selected to join the FAA Centre of Excellence for Alternative Jet Fuels, which is a forum dedicated to the research, development and commercialisation of sustainable aviation biofuels.

In 2014, Cathay Pacific joined the Commercial Alternative Aviation Fuels Initiative (CAAFI) as a participating member. CAAFI seeks to enhance energy security and environmental sustainability for aviation through alternative jet fuels. The group is a coalition that focuses the efforts of commercial aviation to engage the emerging alternative fuels industry. It enables its diverse participants – representing all the leading stakeholders in the field of aviation – to build relationships, share and collect data, identify resources, and direct research, development and deployment of alternative jet fuels.
Since the appointment of a dedicated Cathay Pacific Biofuel Manager in 2011, we have had a robust sustainable aviation fuels strategy in place and are progressing several projects, many of which focus on the use of waste and residues as a source of feedstock for the production of fuels. One of these projects involved working with an international technology partner to undertake a study on the feasibility of a Hong Kong based biojet fuel facility, producing fuel made from commercial and household waste streams in the city. This local supply chain could help reduce burden on landfill and the use of the fuels would significantly reduce the net CO₂ emissions from our aircraft. Outside of Hong Kong, we continue to pursue opportunities that will lay the foundation for a consistent, sustainable alternative biofuel source for the future.

In 2014, we announced an investment in a US-based sustainable biofuel developer, Fulcrum BioEnergy Inc. This is part of our biofuel strategy, and will help us achieve a target of carbon-neutral growth from 2020. Fulcrum is a world pioneer in the development and commercialisation of converting municipal solid waste into sustainable aviation fuel.

We have negotiated a long-term supply agreement with Fulcrum for an initial 375 million US gallons of sustainable aviation fuel over 10 years, which meets all the airline’s technical requirements, specifications and sustainability criteria.

According to Fulcrum, jet fuel produced by their waste-to-fuels process will reduce lifecycle carbon emissions when used in aircraft or road transport by 50 to 80% when compared to traditional fuels derived from crude oil and other fossil sources. This process also reduces the amount of municipal solid waste going into landfill sites and the methane gas emissions. If not captured, methane gas is 21 times more potent than carbon dioxide as a global warming contributor.

Construction of the first phase of its first commercial scale plant commenced in 2015. When production begins, the plant will convert more than 163,000 tonnes of prepared municipal solid waste feedstock into approximately 12 million gallons per year of renewable synthetic crude oil that will be further refined into low carbon jet fuel.
In spite of the current low fuel price environment, Cathay Pacific remains committed to the biofuel agenda as part of our long term strategy to reducing our climate change impact.

Despite advancements in technology, we are reliant on the work of governments and regulators to ensure that we are allowed to fly the most efficient routes and operate in the most efficient manner during take-off and landing. For example, Air Navigation Service Providers (ANSPs) must work with regulators in areas such as the European Union (EU), the United States and China to increase efficiencies in the global air traffic management system, which could reduce the industry’s CO₂ emissions by at least 12% of its emissions, roughly around 78 million tonnes of CO₂.

“Fulcrum has successfully demonstrated a process of converting municipal solid waste feedstock into sustainable aviation fuel at its scale demonstration facility. [...] The company has proved that its technology is viable and has supply commitments in place for feedstock needed for the fuel production. These supply commitments will cover both near-term and future developments.”

Jeff Ovens
Biofuel Manager
6 International Regulation on Aviation Emissions

While Cathay Pacific supports market-based measures as one of the interim solutions to reduce aviation’s emissions, we do not support the imposition of the European Union’s Emissions Trading Scheme (EU ETS) to airlines based outside of Europe for several reasons. These include:

- Distortion of the market;
- Additional bureaucracy and cost; and
- Most significantly, no guarantee of environmental effectiveness since revenue generated from the scheme will not be specifically directed into funding much needed climate change initiatives.

Since 2008, Cathay Pacific has been calling for aviation emissions to be regulated under a global sectoral scheme under the United Nation’s International Civil Aviation Organization (ICAO), which we believe is more appropriate and effective for the global nature of the industry, rather than through regional schemes such as the EU ETS.

Together with a small group of other leading international airlines, aviation sector companies and an international environmental non-governmental organisation (NGO), we convened the Aviation Global Deal Group in 2008, setting out plans for a global solution to emissions that meet environmental and developmental needs whilst ensuring a level playing field in our industry, in full support of ICAO and IATA.

Our Head of Environmental Affairs was appointed to IATA’s Climate Change Task Force (CCTF) in 2011. The CCTF led the industry’s work to develop airlines’ commitment to carbon neutral growth for 2020 (CNG 2020), and to develop proposals for a global agreement on emissions under ICAO’s leadership. Cathay Pacific’s view is that any approach must be clear, transparent and equitable.

In 2012, the CCTF completed extensive work to examine the opportunities and practical issues around the implementation of CNG 2020 and the need for an appropriate mechanism through which this industry commitment could be operationalised. We welcomed the EU’s decision to “stop the clock” on the inclusion of international aviation under the EU ETS for one year, which was conditional on significant progress being made within the United Nation’s ICAO process.
The 38th ICAO Assembly convened in Montreal in October 2013 where representatives from 191 countries gathered to discuss a range of issues pertinent to the global aviation industry, including climate change. The Assembly agreed to proceed with the development of a global market-based measure (MBM) addressing emissions from international aviation for the next Assembly to approve in 2016 and for implementation by 2020. The Assembly called upon Member States to engage in constructive consultations when designing new and implementing existing MBMs for international aviation. Cathay Pacific’s commitment is towards seeking a global MBM solution that is fair, equitable and avoids market distortion. In hindsight, Cathay Pacific’s participation in the Aviation Global Deal and the CCTF played a significant role in the process as it helped to highlight the need to tackle the issue, and garner support between airlines and within IATA for the first comprehensive agreement on climate change for any global sector.

In the same month, the EU Commission announced its proposal to amend the EU ETS so that aviation emissions would be covered for the part of flights that takes place in European airspace. This proposal was backed by the Environment, Health, and Food Safety Committee of the European Parliament. However, the Council of the European Union, representing the majority of EU Member States, supported the continuation of ‘stop-the-clock’, which limited the scope to include only intra-European Economic Area (EEA) flights. The latter proposal was approved by the European Parliament and formally adopted by the European Council in April 2014. The revised regulation will extend the ‘stop-the-clock’ suspension of the ETS with respect to flights to and from non-EEA countries until 2016, as well as requiring Member States to report on how they use revenue from ETS allowance auctions.

Although we welcomed the clarity this provided airlines for the next three years, the continual amendments to the regulation added to legislative uncertainty. Nonetheless, we remain in full compliance with the EU ETS regulation but our commitment is towards seeking a global MBM solution that is fair, equitable and avoids market distortion.
In 2014, ICAO began the development of a global MBM to address the growth of international aviation emissions. The Global Market-based Measure Technical Task Force (GMTF), comprised of representatives and experts from ICAO member states, industry and NGOs, was convened and held its first meeting in Washington D.C. in March. Cathay Pacific is a member of the GMTF and has been actively engaged in the dialogue on the implementation of a global MBM for aviation emissions under ICAO. We are part of a small group of IATA carriers that are members of the expert groups looking at specific technical aspects of a global MBM through the ICAO Advisory Committee on Environmental Protection (CAEP), together with NGOs, states and academia. We are also part of IATA’s advisory group that supports the industry’s efforts in ICAO to develop a global MBM.

Significant progress was made in 2015 on defining the technical details of the MBM scheme. The momentum is set to continue with additional meetings planned leading up to the next ICAO Assembly in 2016 and we will continue to play a full part in the process.

Global Efforts by the Aviation Industry in Reducing Emissions

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>Cathay Pacific as a Founding member of the Aviation Global Deal Group</td>
</tr>
<tr>
<td>2009</td>
<td>The aviation industry committed to new and ambitious targets for emissions reductions through IATA</td>
</tr>
<tr>
<td>2010</td>
<td>Monitoring of CO₂ data began in compliance with the EUETS</td>
</tr>
<tr>
<td>2011</td>
<td>Cathay Pacific appointed to IATA Climate Change Task Force</td>
</tr>
<tr>
<td>2012</td>
<td>CCTF completed extensive work around the implementation of CNG 2020</td>
</tr>
<tr>
<td>2013</td>
<td>The 38th ICAO Assembly agreed to proceed with the development of a global market-based measure for international aviation industry emissions</td>
</tr>
<tr>
<td>2014/2015</td>
<td>GMTF and working group meetings to discuss details of the global MBM</td>
</tr>
</tbody>
</table>
7 FLY greener

FLY greener, Cathay Pacific’s carbon offset programme launched in 2007, the first by an Asian airline, is part of our ongoing effort to engage with passengers on climate change issues. They can contribute to projects that reduce CO2 emissions, and increase their awareness on climate change issues. More information on this programme and the projects we offer, including our unique corporate carbon offset programme for corporate clients, can be found at www.cathaypacific.com/flygreener and www.dragonair.com/flygreener.

Based on carbon emissions calculated for the specified flights, the attributable monetary contributions go directly to fund third-party validated projects that help to offset the carbon dioxide generated by those flights. All of the projects we offer are certified under the Voluntary Carbon Standard (VCS) to ensure that they are verifiable, credible and make a difference to local communities and the environment.

In 2015, 3,300 tCO2 were offset by our passengers, including several companies in Hong Kong, China, and Taiwan.

Cathay Pacific and Dragonair also offset the CO2 impacts of staff travelling on business, amounting to 12,300 tCO2 at an approximate cost of HK$292,000 in 2015.

A summary of carbon emissions offset purchased in previous years:

<table>
<thead>
<tr>
<th></th>
<th>Passengers</th>
<th>Staff Travelling on Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>3,300 tCO2</td>
<td>8,100 tCO2</td>
</tr>
<tr>
<td>2010</td>
<td>3,100 tCO2</td>
<td>12,000 tCO2</td>
</tr>
<tr>
<td>2011</td>
<td>3,400 tCO2</td>
<td>15,000 tCO2</td>
</tr>
<tr>
<td>2012</td>
<td>2,600 tCO2</td>
<td>9,400 tCO2</td>
</tr>
<tr>
<td>2013</td>
<td>3,000 tCO2</td>
<td>8,000 tCO2</td>
</tr>
<tr>
<td>2014</td>
<td>3,300 tCO2</td>
<td>10,000 tCO2</td>
</tr>
<tr>
<td>2015</td>
<td>3,300 tCO2</td>
<td>12,300 tCO2</td>
</tr>
</tbody>
</table>

Portfolio of projects currently supported by FLY greener:

- **Clean and Efficient Cooking and Heating Project, China**
  - Shanxi, China

- **InfraVest Changbin and Taichung bundled Wind Farms Project**
  - Set of 65 wind turbines
  - Taiwan
Clean and Efficient Cooking and Heating Project, China

Located in the rural areas of Shanxi Province, China, this fuel-switching project reduces greenhouse gases (GHGs) by replacing coal with renewable biomass on a household level. More than 7,000 inefficient coal burning stoves were replaced with highly efficient ones that used agricultural residue, which would have been burned in the fields as waste. The GHG reductions were approximately 82,000 tonnes per year. Another benefit was improved indoor air quality as less fumes was produced due to more efficient combustion. By using agricultural waste as a source of fuel, families were also saving on fuel spending, allowing for better use of family income.

InfraVest Changbin and Taichung Bundled Wind Farms Project, Taiwan

Two wind farms consisting of 65 wind turbines along the west coast of Taiwan generated an annual clean electricity equivalent to 110,000 households’ demand for a year. The project reduced GHG emissions by 370,000 tonnes per year and helped to improve local air quality through reduced air pollutants such as sulphur dioxide and nitrogen oxides. This project created a number employment opportunities in support of the operation of the wind farms. Increased public interest in the wind farms inspired local guided tours of the facility.
8 Understanding Climate Change Risks

As part of our overall risk management process, we identified specific issues and events related to climate change that could affect our business. These ranged from severe disruptions brought about by a changing climate, pandemics, resource scarcity and impacts to our supply chain. While this work is still ongoing, our initial findings show that we have some of the contingency plans in place as part of dealing with weather-related disruptions; but also that more work needs to be done to understand the full impact of climate change to our business. We are exploring the use of scenario planning tools and methodologies to assist us in developing our understanding of climate change.

In 2012 and 2013, we worked on this issue with like-minded companies in Hong Kong through the Climate Change Business Forum (CCBF), of which we were a member. CCBF embarked on a climate change risk study in Hong Kong that was aimed at understanding the appropriate tools and information Hong Kong and its companies need to better prepare to adapt to climate change. The members produced a report entitled, “The New Normal: A Hong Kong Business Primer on Climate Change Adaptation”, which identified predictable and calculable risks to business continuity, which would facilitate longer-term analysis of climate impacts and consequent investment in resilience. In particular, it looked at a number of sectors, namely: transport, energy generation, construction, property, finance and manufacturing & supply chain.

The Environmental Affairs Department works with all relevant departments to identify the key business units with risk exposure to climate change, promote awareness of these issues when the departmental risk registers are being reviewed, and manage any emerging risks appropriately.
In 2011, the Airport Authority Hong Kong (AAHK) released its 20-year development blueprint for Hong Kong International Airport (HKIA) ("Master Plan 2030") to solicit stakeholder and public feedback on the airport's future development direction, including the construction of a third runway, over a three-month consultation period. Cathay Pacific supports the plans and believes that expansion of the Hong Kong airport is important to the overall sustainability of the Hong Kong economy and to ensure the long-term competitiveness of our home hub.

In March 2012, the Government of the Hong Kong Special Administrative Region (HKSAR) adopted in principle the three-runway option as the official expansion plan. We welcomed this as the future development blueprint for the HKIA. In August of the same year, Cathay Pacific provided a consultation response to the Study Brief for the Environmental Impact Assessment (EIA) of the proposed third runway, issued by the HKSAR Government’s Environmental Protection Department (EPD).

The AAHK proceeded to conduct the EIA in 2014 which covered twelve key assessment aspects. Whilst we acknowledge that aviation has an impact on the environment and climate change, the industry is working to ensure that we are also part of the solution in its commitment to achieve sustainable long-term growth, reduce its environmental impact whilst continuing to generate significant benefits for societies, tourism, world trade and economies.

To support the EIA studies, we provided past emissions and engine performance, air traffic data and future forecast plans to AAHK’s consultants team. We were also an active participant in the EIA technical briefing groups dealing with air quality and noise, and provide support on community liaison groups, exhibitions, and public forums.

“The importance of achieving a balance between the environmental considerations and economic benefits of developing a new runway should not be underestimated. […] Cathay Pacific has given its full backing for a third runway at HKIA. […] Hong Kong simply cannot allow its strategic strength as an aviation hub to be undermined by a failure to provide the necessary infrastructure. […] Connectivity helped to make Hong Kong what it is today and is the key to our city’s future.”

Ivan Chu
Chief Executive
The EIA was released for public consultation in June 2014 and Cathay Pacific provided a consultation response, with an excerpt provided below:

“Cathay Pacific reiterates its support for the expansion of HKIA to a third runway system. [...] Clearly, there are important environmental impacts identified in the EIA report which must be addressed. Cathay Pacific therefore calls on the AAHK to ensure that the construction of the third runway at HKIA will be undertaken with the least impact to the environment and that the mitigation measures proposed in the EIA and subsequently approved by the EPD will be fully implemented. Where possible, the Authority should do all in its power to avoid adversely impacting the environment.

Cathay Pacific is strongly committed to sustainable development and it is vital that, in the development of a three runway system at HKIA, proper consideration is given to all three pillars of sustainable development – specifically, economic prosperity, social and community development and environmental protection.”

The EIA was endorsed with conditions by the Advisory Committee on the Environment (ACE), and the Director of Environmental Protection issued an Environmental Permit for the project in November 2014.

The HKSAR Government’s Executive Council approved the expansion of Hong Kong International Airport in March 2015.

In addition, under the AAHK’s Carbon Reduction Programme, over 40 business partners around the airport community pledged to reduce airport-wide carbon emissions by 25% per workload unit by 2015 from 2008 levels (where one workload unit is equal to one passenger or 100 kg of cargo). As part of the AAHK’s community, we fully support this pledge and believe our climate change commitments align with it.
10 Our approach on the Ground

We have been working tirelessly on our ground operations to reduce our carbon footprint, primarily from electricity consumption of our buildings, equipment stock and vehicular emissions.

Headquarter Buildings

Our headquarter buildings, Cathay City and Dragonair House, are based at Chek Lap Kok, near Hong Kong International Airport. They cover a total floor area of 193,000 m² and mainly comprise offices, flight training centres and stores. Both premises are certified to the ISO14001 international environmental management standard. They are both equipped with a building management system. Cathay City also has automatic lighting, air-conditioning controls and motion sensors in conference rooms.

In 2015, the total electricity consumption at Cathay City and Dragonair House was 36,332,526 kWh\(^*\) and 7,043,874 kWh\(^*\) respectively, representing a decrease of 0.9% and increase of 0.3% respectively. We continued to invest in energy saving measures such as chilled water system optimisation and LED lighting replacements. The incremental increase in consumption at Dragonair House was mainly due to increased training and recruitment activities. There is also a 500-room staff hotel, the Headland, adjacent to Cathay City. This is managed separately by Swire Hotels, and therefore falls outside of the scope of this report.
The Pioneer Floor Programme to renovate Cathay City began in 2013, where the offices are being progressively revitalised by introducing a new office layout. The project area consisted of workstations, private offices, meeting rooms, filing/equipment areas, centralised storage areas, printing rooms and pantries. Breakout areas were also introduced to facilitate better collaboration between different teams.

Key sustainability features that were adopted for the renovated floors included the following:

**Lighting**
- The new layout, which consisted of fewer walls, maximised the penetration of natural light from the atrium and windows.
- The existing lighting panels were reused to reduce material wastage. These were modified to hold LED light tubes instead of T8 light tubes. The light-coloured decoration also reduced lighting density in the office. All these resulted in a better lighting performance, greater energy saving, and the need for fewer lighting panels.
- Motion sensors controlled lighting in the cabin crew briefing rooms to reduce energy consumption when a room was not in use.

**Window blinds**
- Two layers of roller blinds were installed in front of the base building curtain wall, including a layer of solar control and a layer of semi-translucent colour film. These minimised the UV and heat entering the office, and hence reducing the energy required for air-conditioning.

**Washrooms**
- New features included LED light tubes, and automatic urinal flushing and water taps.

The renovated areas featured a number of waste management and resource use initiatives. These are described in the Waste Management Factsheet.
As part of making our buildings more energy efficient, a detailed energy audit for Cathay City and Dragonair House was commissioned and undertaken in 2012/2013. The audit provided an overview of the type, usage, operation, and performance of the key components of the buildings, their historical energy performance, and energy management opportunities.

The findings of this audit will form the basis of refining our energy-efficiency improvement programme and assist us in setting appropriate energy targets. The chilled water system optimisation regime in Cathay City was intensified in 2013, and has become an ongoing practice of system operations.

Electricity Consumption (kWh) between 2009 and 2015

An electric vehicle charging point was installed in the Cathay City carpark in 2013 to support the Earth Hour I Will If You Will campaign. Since then, to support the increasing demand that more staff were driving electric vehicles to work, the space next to the charger was designated for electric vehicles only. Three further outdoor EV chargers were installed in 2015 to make up a total of seven EV chargers across Cathay City and Dragonair House.
Our Airport Lounges

Hong Kong International Airport

In the refurbishment of our First and Business Class lounge, The Cabin, in 2011, a number of sustainability features were designed in. For example, the feature wall at the reception area was made of recycled glass, and fast-growing wood material such as bamboo was also used.

At The Bridge, which was refurbished in 2013, a heating, ventilation and air conditioning (HVAC) system was installed whereby waste heat produced from the system was reclaimed and utilised to achieve energy conservation and minimise electricity consumption at the lounge. This process makes use of energy exchange between the water boiler and the HVAC system. Following several feasibility studies, it was decided that water-to-water heat pump utilising waste heat recovery would be applied due to the significant hot water consumption pattern at The Bridge. Energy consumption of the heat pumps at The Bridge in 2014 was 11,286 kWh, compared with the energy consumption of conventional electrical boilers at The Wing which was 18,005 kWh during the same period. Based on these figures, energy saved from using heat pumps was 6,719 kWh, which was around 37.3%. LED lights are used throughout the lounge. Toilets are equipped with a dual flushing system to encourage the efficient use of water.

A water-to-water heat pump system has also been installed at The Pier to reduce our energy usage.

Outport Lounges

Opened in 2012, our airport lounge at Paris Charles de Gaulle (CDG) Airport was LEED® certified to the Silver level in July 2014. This was consistent with our commitment to consider green standards for our new buildings and refurbishments. CDG was also the first and only airport lounge in the world that has received such certification to date. Read more about it in the Sustainable Sourcing Factsheet.
Our Wholly-Owned Subsidiaries

Hong Kong Airport Services

Hong Kong Airport Services (HAS) operates the largest vehicle fleet in the Group, serving 26 airlines. HAS is committed to reducing carbon emissions from their fleet and started the first term of a three-year Ground Support Equipment (GSE) Replacement Programme since 2011.

The second term of this Programme commenced in 2014. Twenty-six aged and less fuel efficient GSE and vehicles were replaced in 2015. Over 60% of HAS motorised vehicles and GSE are now electrically-powered or comply with the latest emission standard, which are: Stage IIIA for GSE; and Euro V for vehicles.

There was a decrease of 3.6% in total fuel consumption in 2015 mainly due to better fuel efficiency of equipment and vehicles used.

To further reduce carbon emissions, HAS introduced 10 electric Lower Deck Loaders into the GSE fleet in 2015. This is one of HAS’ key equipment for aircraft loading and unloading operations.

HAS aims to replace 25% of its diesel Lower Deck Loader fleet with electric ones before 2020. It is expected that that replacement of each conventional diesel loader with electric loaders can save up to 25 tonnes of CO2e per year. It would also reduce the noise generated during operation and the frequency for repair and maintenance.
Cathay Pacific Services Limited
Cathay Pacific Services Limited (CPSL) has been operating the Cathay Pacific Cargo Terminal since 2013. With design features to support sustainability, CPSL is committed to support green operations and engage our stakeholders via different initiatives and measures.

Electricity usage was 21.8 kWh per tonnage in 2015, representing a 13.6% decrease against 2014.

Energy efficiency initiatives implemented in 2015 include:

a) Introduction of solar power passenger steps;

b) Extended usage of electric vehicle Euro IV Engine and environmentally friendly cargo loaders;

c) Optimisation of cargo/ passenger lifts;

d) Installation of induction lamp and LED lights

e) Circuitry medication with timers;

f) Energy review on the chiller plant for optimisation;

g) Recycled heat emitted by the air-conditioning system for hot water supply;

h) Engaging “Energy Saving Charter on Indoor Temperature 2015” with the Electrical and Mechanical Services Department of the Hong Kong SAR Government.

In 2016, CPSL will focus on reducing paper usage by 10% and power consumption by 5%.
Vogue Laundry Services
Vogue Laundry Services employs over 537 staff and serves over 18 airlines, 19 hotels and has a daily output of 251,000 items, equivalent to 64 tonnes of laundry. It is the first laundry in Hong Kong to be certified to the ISO 14001 environmental management standard and the OHSAS 18001 occupational health and safety standard.

Over the past few years, Vogue has been actively exploring ways to reduce emissions through active carbon absorption in the dry cleaning machines and from perchloroethylene, which is a volatile organic compound (VOC) consumed in the dry cleaning process. Consumption of this solvent was increased by 23% in 2015 owing to an increase in the number of items for dry cleaning. Vogue also switched from diesel boiler to a dual-fuel boiler which utilised Towngas and ultra-low sulphur diesel at a 90:10 ratio, and helped to reduce CO₂ emissions.

Vogue runs a fleet of 24 vehicles for its collection and delivery services. In 2015, three Euro II trucks were disposed of. In 2016, two new Euro V trucks will be added to the fleet and two Euro III trucks will be disposed of. Starting from March 2016, the use of B5 biodiesel will be trialed on one of the delivery routes.

Cathay Pacific Catering Services
Cathay Pacific Catering Services (CPCS) serves 41 airlines and is one of the largest flight kitchens in the world.

In 2013, CPCS installed cold room plastic curtains for outbound and tray set cold rooms, which reduced 27 tonnes of CO₂ emissions. It also continued to use Towngas as boiler fuel, which reduced 1,600 tonnes of CO₂ emissions. A total of 449 LED light tubes were installed at the new first floor ware wash area, which operates for twelve hours daily, and reduced 12.8 tonnes of CO₂ emissions. In some work areas, the temperature rose by 1°C and reduced 40 tonnes of CO₂ emissions. CPCS’s dedicated purchasing team continued to source sustainable seafood.

In 2014, the replacement of condensers on the roof and LED lights installed around the premises resulted in an estimated total saving of 647 tonnes of carbon for the year.

In 2015, projects included replacing air-cooled chillers with two efficient water-cooled ones, fitting two heat pumps, and continuing the installation of LED lights around the premise, which resulted in an estimated total saving of 4,977 tonnes of carbon for the year.

In the vehicle fleet, all pre-Euro type trucks have been replaced and the number of Euro V trucks increased from 16 in 2013 to 20 in 2014. To contribute to improving roadside air quality at the airport in Hong Kong, CPCS purchased their first electric vehicle in November 2014. It will mainly be used for transporting staff at the ramp area and additional meal deliveries.
New Building Projects for Vogue Laundry and CPCS

New facilities are required to meet CPCS and Vogue Laundry’s expansion plans. Vogue is constructing a new factory and CPCS began site work on a building extension. Both are designed to achieve the BEAM Plus GOLD standard, which is an environmental assessment scheme for buildings in Hong Kong.

Vogue Laundry is building a new production factory, which will be in operation towards the end of 2016. Building materials, green areas, energy consumption and water consumption are considered in the new building design. Vogue Laundry will partner with the Hong Kong Productivity Council to build a waste water treatment plant within the new premise and aims to recycle 30% of its waste water from the operation of the building.

At CPCS, site work for a building extension began in December 2014. Construction is due to be completed in 2016. The design team is dedicated to driving the operation and energy efficiency in the new facility to the next level. The use of relevant innovations and technologies are part of the design and equipment selection process. In particular, there are four highlights:

1. Water-cooled refrigeration systems will be installed, which in general is 30% more energy efficient than air-cooled systems.

2. New ware-wash technology is expected to save 20% in water and energy consumption compared to the current installations.

3. Specialised vertical cold storage towers will be installed to improve cooling efficiency for the out-going meal carts, which is one of the most critical stages in meeting hygiene standards.

4. The new facility is designed to achieve Hong Kong BEAM Gold Standard.
### Summary of Recent Key Initiatives of Cathay Pacific Subsidiaries

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<tr>
<th>Company</th>
<th>Initiatives</th>
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<tr>
<td><strong>Hong Kong Airport Services</strong></td>
<td>In 2015, 26 units of aged and less fuel efficient GSE and vehicles were replaced. Over 60% of HAS’ motorised GSE &amp; vehicle fleet are electrically powered or complies with Stage IIIA for GSE and Euro V for vehicles. The Business Improvement Team initiated a series of Lean campaigns in the Company to reduce waste and streamline processes in daily work. Over 310,000 pieces of paper will be saved per year. Total paper consumption reduced by 15% in 2015 compared with 2014. Supported by the China Light &amp; Power Group, HAS conducted an energy audit and reviewed energy usage in their premises whilst exploring future energy management opportunities.</td>
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<td><strong>Vogue Laundry Services</strong></td>
<td>Sustainability design for the new production factory (expected completion in Q4 2016), with the aim of achieving Hong Kong BEAM Plus Gold standard. The first laundry company in Hong Kong to be certified to the ISO 14001 environmental management standard and the OHSAS 18001 occupational health and safety standard. Diesel boiler replaced by a dual fuel boiler, with a 12% CO2 emissions reduction in 2011. Continuous phasing out of older Euro standard trucks with newer Euro V vehicles.</td>
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<tr>
<td><strong>Cathay Pacific Catering Services</strong></td>
<td>Sustainability design for the new extension facility, with the aim of achieving Hong Kong BEAM Plus Gold standard. Purchased first electric vehicle in 2014. Air-cooled condensers in blast chillers replaced by water-cooled condensers, with energy saving of 385,440 kWh in 2012. Plastic curtains were installed in the cold rooms to reduce energy consumption. The use of Towngas boilers, installation of LED lights and the raising of temperature in some work areas all helped to reduce overall electricity consumption.</td>
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<td><strong>Cathay Pacific Services Limited</strong></td>
<td>All 72 units of diesel-powered ground support equipment comply with Euro IIIA or higher emission standards. Chilled ceiling cooling system High performance exterior cladding Collection of grey water for irrigation and flushing Water separation Use of electric vehicles and equipment Retrofitting with power efficient lamps and circuitry modifications Motion sensors and photo sensors to reduce lighting usage Solar powered ramp handling equipment Use of Cargo loaders with US Tier 4 Final Engine Optimisation of cargo and passenger elevators Recycling of heat emitted by the air conditioning system for the hot water supply</td>
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Engaging with regulators and groups involved in shaping climate change and aviation policy is a key component of our climate change strategy. We work with organisations not only in increasing awareness on climate change issues, but also in developing appropriate solutions for the aviation industry.

**International Air Transport Association (IATA)** – The IATA AGM in June 2009 agreed to commit to new and ambitious targets for emissions reduction. Aviation is the only industry where collective climate change targets have been endorsed by the whole industry at a global level. Specific analysis and actions continue to focus on an equitable global approach to emissions accounting, carbon offsetting, a full range of balanced mitigation measures and investment support for new aircraft. We were actively involved in the IATA Environmental Committees through representation by our Head of Environmental Affairs. In 2013, we joined the IATA Air Cargo Carbon Footprint Working Group, which was newly convened to assess the carbon emissions generated from air cargo and develop industry recommended practice on CO₂ reporting for cargo operations. In 2014 and 2015, Cathay Pacific continued to be actively engaged in the dialogue on the implementation of a global MBM for aviation emissions under ICAO. We are part of a small group of IATA carriers that are members of the expert group looking at specific technical aspects of a global market-based measure (MBM) through the ICAO Advisory Committee on Environmental Protection (CAEP), together with NGOs, states and academia. This work will report to the ICAO Assembly in 2016. We are also members of IATA’s internal advisory group supporting efforts in ICAO to develop the global MBM.

**Airport Council International (ACI)** – Cathay Pacific shared and exchanged some of our environmental issues with airports environmental experts at their 2014 Asia-Pacific Regional Environment Committee Meeting.

**Greener Skies Conference** – Cathay Pacific has been sponsoring this aviation sustainability conference since 2007, and which is supported by IATA, the Air Transport Action Group (ATAG) and the Association of Asia Pacific Airlines (AAPA). The 5th conference, held in 2013 in Hong Kong, saw John Slosar, Chief Executive of Cathay Pacific at the time, delivering the opening remarks and Mark Watson, Head of Environmental Affairs, moderating a panel discussion on how the industry can work together to formulate a global solution to reduce aviation emissions, especially in the realm of using market-based measures.
Climate Change Business Forum (CCBF) in Hong Kong – We have been an active member of CCBF, a forum for Hong Kong business leaders to collaborate on tackling climate change since 2008. CCBF serves as the Southeast Asia anchor on climate change issues for the World Business Council for Sustainable Development (WBCSD). It is also an international network partner of The Prince of Wales’s Corporate Leaders Group on Climate Change (CLG), and is often called upon by these and other groups seeking Asian business leadership on climate change and low-carbon issues. In 2012, its founding Patron Chair, Mr. C.Y. Leung, was elected Chief Executive of Hong Kong. CCBF intensified its efforts to offer advice on Hong Kong’s transition to a low carbon economy, through both opinion editorials and targeted policy papers. A number of CCBF members demonstrated action leadership by signing a Building Energy Pledge which originated with the WBCSD. Cathay Pacific was one of the first Hong Kong companies to sign the Pledge, which commits signatories to calculate a carbon or energy baseline for commercial buildings; set a reduction target consistent with transformational change; and report annually against that target. This demonstration of collective leadership was welcomed by Hong Kong Secretary for Environment K.S. Wong, and sets the stage for further thought and action leadership in the coming year. In 2013, CCBF became one of four Advisory Groups under the new Business Environment Council structure.

Sustainable Aviation Fuel Users Group (SAFUG) – Cathay Pacific is a member of SAFUG, an 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. SAFUG is working closely with the Roundtable on Sustainable Biomaterials (RSB) bringing together farmers, airlines, fuel producers, government regulators and NGOs to agree on a way forward for obtaining biofuels from responsible and sustainable sources. We subscribe to the sustainability criteria that aviation biofuels must not compete with food and drinking water supplies, biodiversity and local populations.

Commercial Alternative Aviation Fuels Initiative (CAAFI) – In 2014, Cathay Pacific joined CAAFI as a participating member. CAAFI seeks to enhance energy security and environmental sustainability for aviation through alternative jet fuels. The group is a coalition that focuses the efforts of commercial aviation to engage the emerging alternative fuels industry. It enables its diverse participants – representing all the leading stakeholders in the field of aviation – to build relationships, share and collect data, identify resources, and direct research, development and deployment of alternative jet fuels.
Carbon Price Communiqué of the Prince of Wales’ Corporate Leaders Group on Climate Change (CLG) – We signed the Carbon Price Communiqué in 2012, which defines the international business community’s expectations on a carbon price signal – “asserts that one of the main building blocks of a cost-effective, pro-business policy framework for climate change is a clear and transparent price on carbon emissions”. In the past we have signed the Cancun Communiqué in 2010, urging governments not to wait for one global deal; instead, they should pursue new sectoral, bilateral or regional agreements, depending on their appropriateness and relevance. For example, the Communiqué called for a comprehensive global approach on emissions for aviation and shipping. In 2009, we also signed the Copenhagen Communiqué calling on world leaders to agree on “ambitious, robust and equitable global deal on climate change.” In 2008, we signed the Poznan Communiqué, which sets out what business leaders believe should be the key elements of an international agreement on climate change.

Carbon Reporting – Cathay Pacific was listed in the Dow Jones Sustainability Index (DJSI) in 2013 and 2014, a world-leading and one of the most recognised sustainability indices. Since 2014, we have been supporting the HKSAR Government’s Carbon Footprint Repository, which was newly developed for listed companies in Hong Kong, by disclosing our emissions data through this system. Cathay Pacific obtained an ‘AA’ rating under the Hang Seng Corporate Sustainability Index. We were listed in the Carbon Disclosure Leadership Index (CDLI) under the Industrials sector in 2011 and 2012, for having one of the top scores for showing positive actions that the company has demonstrated to promote climate change mitigation, adaptation and transparency.