



Green Flight
enable green

Global Aviation's Big Hairy Goal

**100% Carbon Neutral
by July 1, 2010**

The Objective?

**For the Industry to show
Governments and our passengers
that we can manage our own
Greenhouse Gas Emissions –
so they work with us, not against us**

Summary

This White Paper expresses the views of Green Flight on ways to manage our industry Greenhouse Gas Emissions and the resulting contributions to Climate Change.

The goals of the White Paper are to:

1. Propose that the industry can and should commit to zero net CO₂ emissions by July 1, 2010
 2. Show how we can achieve industry net carbon-neutrality by July 1, 2010
 3. Provide a simple framework for a global aviation emissions management (not trading) scheme which will also:
 - a. Ensure that revenues raised by the emissions management system flow through to carbon credit projects that are independently verified as projects that meet true “additionality” criteria (as defined under Kyoto Protocol Clean Development Mechanism terms) as well as providing real sustainable benefits for the communities in which those projects are based
 4. Gain industry acceptance of the goals and the emissions management scheme framework
 5. As a result of industry acceptance of the framework, keep the global Commercial Passenger and Freight Aviation industry sectors out of the various proposed and potential government-imposed Emissions Trading Schemes
- and
6. Achieve the above goals at minimum cost to the industry and / or it's passengers / clients

Background

This Paper does not attempt to argue the science of climate change. It merely accepts that CO₂ emissions will be required to be paid for by the industry in a mandatory environment in the future and sets out to propose a way forward for the aviation industry in a global reduced carbon environment.

In the context of Global Warming and the emission of Greenhouse Gases by the aviation industry (such as Carbon Dioxide – CO₂), various Governments and regulators are introducing or looking to introduce Emissions Trading Schemes (ETS) in the near future. These include the European Union (EU), Australia, Japan, Korea and potentially the USA and others.

This trend will continue if the 2009 Copenhagen Climate Change Conference results in a general framework of agreement for global emission reductions (and even if it doesn't).

The potential for such schemes also increases if Governments see the opportunity for using a “green” tax as a standard for revenue raising that can contribute to their General Revenue bottom line, in the guise of reducing demand.



Now, whether all of these Schemes are introduced (and whether other Governments determine to do the same) is a debatable issue. However, there is no doubt that in the absence of concerted action by the industry to self-manage our emissions, some Governments around the world will introduce some form of additional regulation and taxation to achieve their Global Warming goals at some point in the near future.

We can see this by the readiness of the UK government to introduce (and increase) the Airport Departure Tax (APD), which, while touted as a “green” tax, achieves no environmental benefit, and works as a demand restraint rather than an emissions reduction strategy.

For those governments who have made claims to environmental awareness, their political credibility will depend on having some such scheme in place sometime in the next 2 to 3 years, notwithstanding the quality of the scheme or the good or ill it may do to different industries, including the aviation industry.

As discussed at the recent Greener Skies Conference in Hong Kong, a “patchwork” outcome of regional and competing Emission Trading Schemes would impose significant cost and operational impacts on the industry, without necessarily achieving the real goals of emission reductions.

This come is to be avoided at all costs and the time is now, before revenues start to flow from the EU ETS, as it will be much harder to wean governments off the revenue stream once it starts.

Contributions from the Industry

There have been various propositions put forward by industry bodies and representative groups, including the Association of European Airlines (AEA), IATA and more recently, the Aviation Global Deal Group (AGDG). We review the positions taken by these groups and provide our views as to the relative strengths and weaknesses of those positions.

IATA’s Contribution

IATA has put forward a range of initiatives (see below) most of which we agree with, although at the moment it is more a form of wish list rather than a solid set of action steps.

IATA aviation emissions reduction plans are as follows (**Green Flight views in bold**):

- An overall 50 per cent CO2 emissions reduction by 2050
We do not disagree with this but hope that technology and other factors permit a faster timeframe
- An aim of achieving carbon neutral growth within aviation by 2020
We say the goal is limited and we should be talking about carbon-neutrality for the total industry and we believe this can (and should) be achieved much, much faster
- An aim of achieving a consistent annual CO2 emissions reduction target of 1.5 per cent each year from 2009 to 2020
We do not disagree with this but again hope that new technologies and other factors allow faster and greater reductions



AEA's Contribution

AEA in 2008 through a speech by **Ulrich Schulte-Strathaus, (AEA Secretary General)** indicated that, while satisfied with the concept of an ETS, they felt that the EU ETS as it is currently designed, would not achieve the real aims of an ETS; namely Emission Reductions.

And further, that the flow of permit payments from auctioning permits merely served to increase Government revenues, without achieving environmental gains.

Green Flight View

- **Green Flight agrees with these sentiments in entirety. However, as we have not seen a concrete plan put forward by AEA to counter the current EU ETS (or other patch work ETS-type arrangements that may occur), we cannot comment on their solutions plan.**

AGDG's Contribution

AGDG has also stated that they foresee significant problems with the EU ETS and potential patchwork ETS schemes that may apply around the world.

Their proposition provides for a specific Global Aviation ETS type scheme that is administered by a UN body, with auctioning of permits (at various % levels) and the funds being used to support real environmental initiatives through the framework of the international Clean Development Mechanism (CDM) projects and carbon credits.

Green Flight View

- **We do not disagree with the thrust of the AGDG proposition; however we believe it is overly complex and still provides for “free” permits (which is a nice way of saying “permission to pollute at no charge”)**
- **We are not averse to a UN body being overall “administrator”; however, we believe the industry can and should provide that oversight as an industry funded body**
- **Proposition does not set firm targets, nor does it speak of net industry carbon-neutrality, which we believe should be the goal**



Green Flight plan:

- A separate industry sector managed Emissions Management (rather than trading) Scheme
- A separate industry wide body to administer the Management scheme
- Accurately measure the emission impacts of air traffic management and other less than optimum routing issues outside the control of airlines and publicise those emission figures to increase pressure on responsible bodies to rapidly progress those issues
- Do what can be done and use carbon credits from CDM and Gold Standard projects to offset the rest of the emissions
- No “free” allowances – every tonne is paid for by the emitting airline
- Airlines to determine whether to pass on no, partial or full costs to their passengers and freight clients
- **Achieve total carbon neutrality within the aviation sector by July 1, 2010**

Our Objectives

We believe the focus of action and progress should be on achieving the REAL goals of emissions trading schemes, which are net industry emission reductions, and not the benefits or disadvantages of the Schemes, which is where the debate tends to be at the moment.

It seems that the tendency around the world when a Government Scheme is proposed is to spend more time on rounds of negotiations to decide who does NOT pay, rather than making sure the Schemes achieve the ambitious reduction targets that Governments start with. As a result, the Schemes get watered down, the public loses interest and the goal of emission reduction is lost along the way.

And while it is extremely unfortunate that the environment suffers due to this, that lack of progress leaves the aviation industry in a particularly exposed position, as we are:

1. Publicly (and regularly) open to attack by the more extreme environmental groups and sections of the media
2. A simple target for regulators for the same reasons that a global aviation ETS is our best option – we are a discrete and easily identifiable sector

This paper proposes that the global commercial aviation industry demonstrate that we can, in fact, self-manage our emissions to the point of carbon neutrality. And in order to do that, we need to set a BIG HAIRY GOAL (BHG) – a goal with a definite timeframe, and a goal that literally tells governments to work with us – BUT BACK OFF!!

The only way we can do that is to draw a line in the sand that says

“We can reduce our net Carbon Footprint to Zero in a short timeframe”



And show them how we will do it – and then to go ahead and achieve that goal.

So how can we achieve this BHG?

First of all, we need to understand just how big our collective carbon footprint is. This is a relatively simple task that merely requires us to measure the total fuel burn of the industry on an annual basis, or we can use credible figures provided by international bodies.

In the recently released International Energy Agency (IEA) Statistics Report for 2009, total global CO₂ emissions for 2007 were 28,962M tonnes of which international aviation bunker fuels contributed 412M tonnes – a contribution of approximately 1.4%.

However, even though our contribution is low, this should not distract us from the goal of lowering our industry net emissions to zero (or below).

Defining the Goal

We define achieving the Goal of Zero Industry emissions as:

1. Do all that can be done (and continue to do so) to reduce actual emissions from all airline operations (flight, maintenance, administration, training, etc) by fleet renewal, weight reduction, flight planning improvements, etc
2. Offset the remaining emissions using credible, independently verified and internationally tradable carbon credits from projects that deliver not only carbon credit offsets but also generate proven local community benefits in the form of local (sustainable) jobs, better access to resources and improved living standards.

At the moment, we also have to accept that there are areas outside our direct control that cause increased emissions, such as air traffic management systems and some national border constraints that prevent us flying the most efficient routes, while at the same time working with ATC bodies and Governments to remove those constraints.

We need to accurately measure the CO₂ impact of these constraints and make those figures publicly available, to increase pressure on governments and regulators to improve their performance.

At the moment, some (not all) airlines have commenced reviewing their operating emissions. Some are required to do so because of regulation in countries like Australia and regions such as the EU. Others are yet to commence the process.

Most airlines have not yet gone outside of fuel burn to capture their Scope 1 (direct operational emissions) and Scope 2 emissions (indirect organization emissions such as power usage, company vehicle fuel usage, etc), nor reviewed their energy usage as a business improvement process, which presents a range of efficiency and saving opportunities beyond the scope of this Paper.

In many cases, the data collection is seen as a necessary evil, rather than the superb opportunity it provides to reduce their energy usage and emissions, and in the process:

- Reduce costs
- Improve operations



- Enhance their public profile
- And generally to make their business more robust for the future

We need to demonstrate with real world examples how a focus on reducing emission across all areas of an airlines operations can reduce costs and enhance the overall business.

What will it cost?

And quite simply, we need to identify the per passenger and freight client amounts of CO2 generated by the flights taken and inform the clients of those amounts. The total amount of CO2 tonnes generated by each airline would then need to be offset by each airline by purchasing the required amount of carbon credits.

The same approach needs to be taken regarding freight (whether dedicated freight operations or belly freight), with a per kg cost associated with freight movements.

Whether the airline directly passes on the full cost of those carbon credits, or absorbs the cost (fully or partially) would be up to the airline, and could be a point of difference in the promotion of the airline's services.

And we need to understand the size of the commitment for each leg – see the next page for the author's latest trip (as calculated and offset by our MyGreenFlight calculator www.mygreenflight.com/carbon-calculator using a variety of carriers and varying routes / distances) (certificate and copy of invoice can be seen at www.mygreenflight.com – price for carbon credits used was USD\$12.50 per tonne, although this may vary depending the type of credits to be purchased.

Naturally, volume pricing will be much lower than ad hoc transactional costs, which adds to the need for a coordinated approach by the industry.

Cost per Passenger for Carbon Neutrality

If we use IATA figures of approximately 2 billion passengers in 2006 as a rough guide to passenger numbers in 2007 (and beyond), and divide the total aviation CO2 figure of 412M tonnes, we end up with an average pax CO2 figure of 0.2 t per passenger flight.

At USD\$12.50 per tonne of carbon credits, this means a mandatory average cost per passenger of USD\$2.50 per flight. (at USD\$15 per tonne= USD\$3, at USD\$25 per tonne = USD\$5).

NB: This case assumes all flight CO2 emissions are addressed purely by a pax fee, without subtracting the freight emissions and allocating a fee per kg for freight movements. This would naturally reduce the pax contribution.

Although we are proposing a much more accurate measurement by fuel burn per leg per aircraft, you can see that this cost is not significant in terms of airline ticket prices. Airlines generally imposed a much higher cost for fuel levies in the 2008 high oil / fuel price environment without a significant demand reduction.

And as the industry reduces emissions by fleet replacement, technology enhancements, etc, the per pax emission number reduces with a corresponding reduction in fee.



Table of Carbon Offsets from www.mygreenflight.com

Destination	Passengers	CO2	Amount (USD\$)
BNE-MEL Jetstar Airways, Econ One Way	1	0.14 t	\$1.80
MEL-DRW Jetstar Airways, Econ One Way	1	0.26 t	\$3.42
DRW-SIN Jetstar Airways, Econ One Way	1	0.28 t	\$3.64
SIN-KUL Air Asia X Sdn Bhd, Econ One Way	1	0.04 t	\$0.51
KUL-MXA Air Asia X Sdn Bhd, Econ One Way	1	1.79 t	\$21.47
MXA-CGK CEBU Pacific Air, Econ One Way	1	1.87 t	\$24.37
SRG-CGK Garuda Indonesia, Econ One Way	1	0.08 t	\$1.09
CGK-DPS Garuda Indonesia, Econ One Way	1	0.13 t	\$1.73
DPS-CGK Lion Airlines, Econ One Way	1	0.11 t	\$1.46
CGK-KUL Air Asia X Sdn Bhd, Econ One Way	1	0.11 t	\$1.32
KUL-HKG Air Asia X Sdn Bhd, Econ One Way	1	0.21 t	\$2.55
HKG-KUL Air Asia X Sdn Bhd, Econ One Way	1	0.21 t	\$2.55
KUL-OOL Air Asia X Sdn Bhd, Econ One Way	1	0.58 t	\$7.00
Summary of all flights		5.84 t	\$72.92

Now, even though the figures above are for passenger flights and do not address freight generated emissions, looking at the figures above, it is our belief that even if the full cost of offsetting the emissions from each flight is passed onto the passenger, this will not restrict demand, particularly if we as an industry show that the money is going to achieve the emission reduction and social benefit goals we set for it.

To reach the big hairy goal of zero tonne nett emissions will require a change of attitude and approach by many aviation operators. But it will be worth it.

Because whether the time, effort and resources are utilised to best effect now (at whatever cost that may be), rest assured that if the various ETS captures some of the larger operators at the start, there is no doubt that the net will widen in the future. Which means that the extra costs that would be associated with paying the ETS permit "tax" will have a direct impact on the bottom line of aviation operators – either through absorbing the costs or raising prices (with the resultant passenger decline).



Unless we step outside the system and achieve the goal of Carbon Neutrality on our own. And what a message to take to Copenhagen!

“Yes, you need to do something about those emitters who cannot, or will not, manage their emissions on their own – but we can – and here’s how we’re going to do it! So give us a hand but leave us alone to get on with it!”

Imagine the impact of that stance at Prime Ministerial / President level – not only do they NOT have to fight the industry (or concede and dilute their own goals), they can hold us up as an example of how industry can make a difference on their own.

So back to the question – how?

There are various avenues available to the industry to achieve the BHG.

Below are a range of the types of innovations that can be part of an overall strategy, for both individual operators and the industry as a whole.

Examples of emission and energy reduction activities (and the points of control):

- More efficient engines **(OEM and operator capital investment)**
- More efficient aircraft **(OEM and operator capital investment)**
- Lighter aircraft **(OEM and operator capital investment)**
- Improved operator-internal flight operations **(airlines)**
 - Pilot aircraft management
 - Flight management / navigation systems
 - Improved scheduling
- Improved external flight operations **(governments / regulators / ATC bodies)**
 - Air traffic control
 - Airport configuration
 - Airport apron management
- Reductions in energy usage **(airlines)**
 - Electricity
 - Non-aircraft fuel usage
- Carbon abatement / offset programmes **(airlines)**
 - Direct investment in abatement projects
 - Company funded purchase
 - Passenger funded purchase
 - Freight offset arrangements

And with a bit of thought, there will be others that can assist in the attainment of the BHG. And the industry will be in a strong position to ask for government cooperation in helping to achieve our goal in those areas beyond the scope of any one operator.



Cooperation such as:

- Assistance in reforming air traffic management so the industry operates in a world's best practice environment.
- Assistance in asset upgrades so the industry can take advantage of the most efficient equipment.
- Involving the public in supporting our goal by personal and corporate carbon offsetting, as part of the cost to fly.

But achieving the goal will require superb management, and like anything – if you don't measure it, you can't manage it. So the process is as follows (we call it the **Green Flight 12 Step Program** as it is designed to break our CO2 habit☺)

- Step 1: Measure emissions and energy usage across the board (domestic and international operations)
- Step 2: Review efficiency opportunities
- Step 3: Develop per operator Carbon Reduction / Neutral strategies
- Step 4: Gain industry overview to assess where synergies can be obtained by cross-operator cooperation
- Step 5: Implement all strategies
- Step 6: Implement airline specific flight CO2 calculations as part of the ticketing process
- Step 7: Implement airline CO2 Offset Programs
- Step 8: Monitor progress
- Step 9: Purchase Carbon Credits as required to offset airline totals
- Step 10: Modify strategies where necessary
- Step 11: Achieve goal
- Step 12: Continue to improve

And I believe we can achieve all of the above by July 1, 2010 – if not before.

But it will take commitment from all levels of the aviation industry – from the majors to the regionals to the bizjet & (lighter) charter and freight operators.

And the best way for that to occur is by combining all of the players under one unifying banner – one brand that clearly demonstrates what the industry is trying to achieve. I believe that such a branded organisation, because of its single issue focus, needs to stand outside of established industry groupings such as the IATA and ICAO, while working in conjunction with them. I have tentatively entitled such a body **The Green Flight Club**.

And it would be an organisation with a single purpose – to achieve the BHG. It would be a body where:

- ✓ Resources and knowledge can be shared by all
- ✓ The experiences of one can be a learning for all
- ✓ Amazing synergies will take place benefiting all



Carbon Neutral Support

There are a number of support functions that the Green Flight Club could provide, including airline emissions measurement, management and reporting solutions and provision of a standardized Carbon Offset Program with airline specific calculations (with calculations methodology reviewed and approved by AEA Group on behalf of the UK Department of Energy & Environment), which we can discuss when you have had a chance to review and consider the thrust of this paper.

Please give me a call on +61403586111 or email me at dennis@mygreenflight.com to discuss.

Thank you

Dennis

Dennis McMahon
Sales Manager
Green Flight
dennis@mygreenflight.com

The Last Word

We have a choice – commit to a simple (but not easy) BHG – or be steamrolled by governments whose agenda will be political emission targets, not the health and future of the global Aviation Industry.

Which will it be?