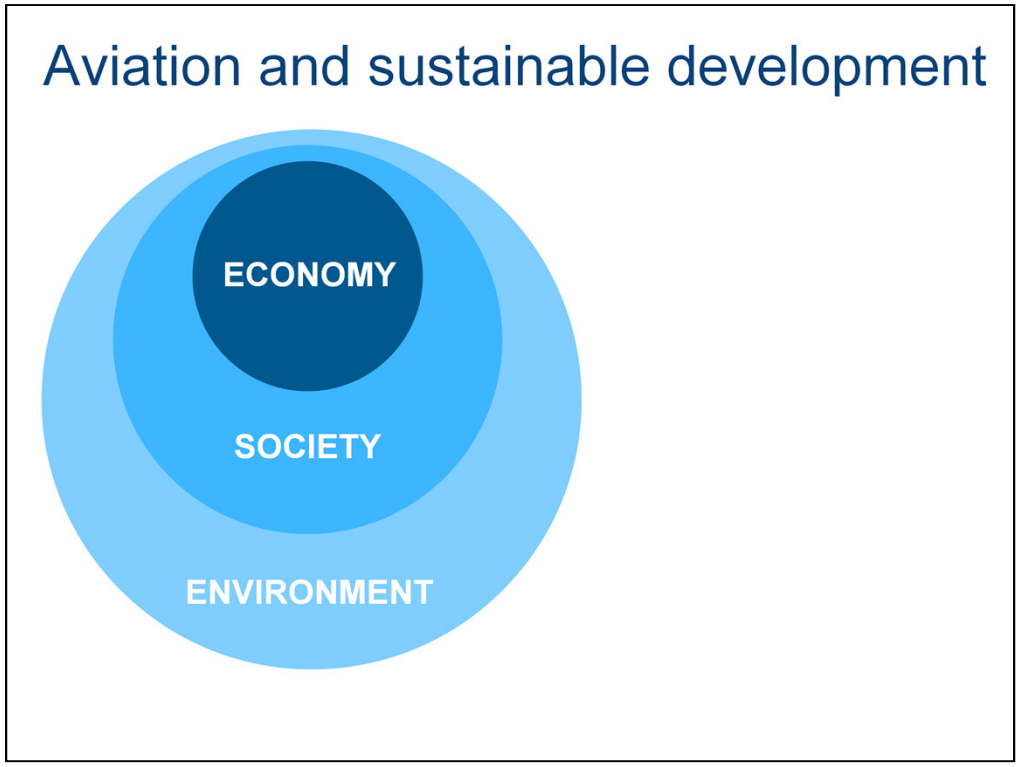
# Aviation and Climate Change

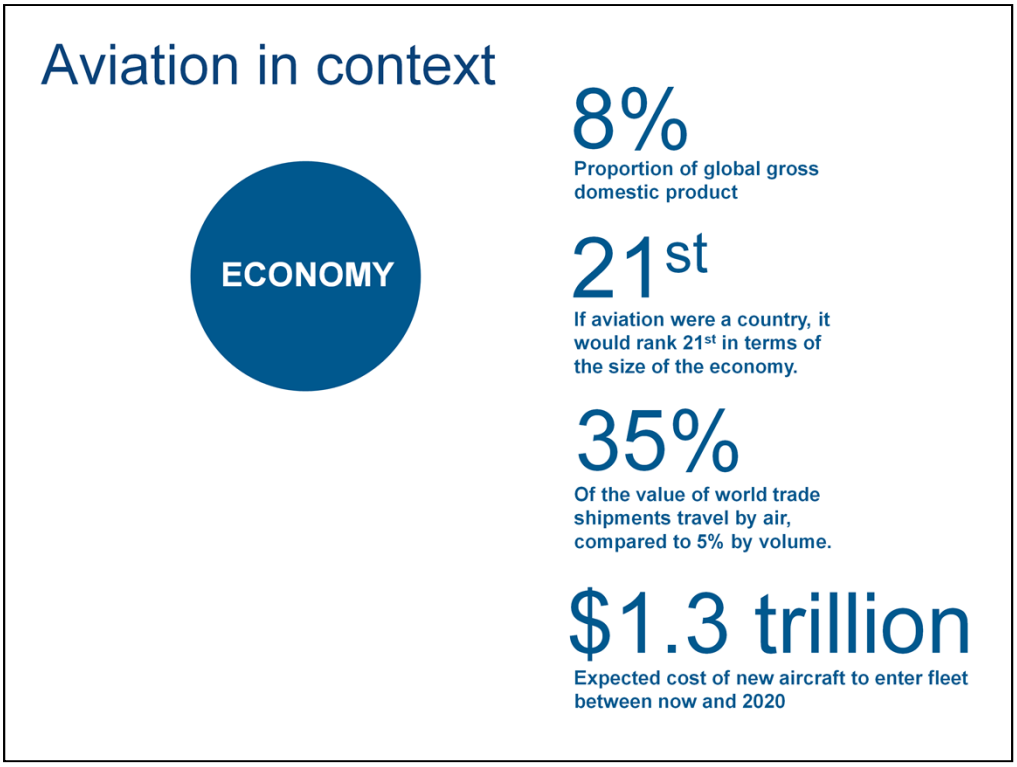
**Paul Steele**
**Director Aviation Environment**

To represent, lead and serve the airline industry



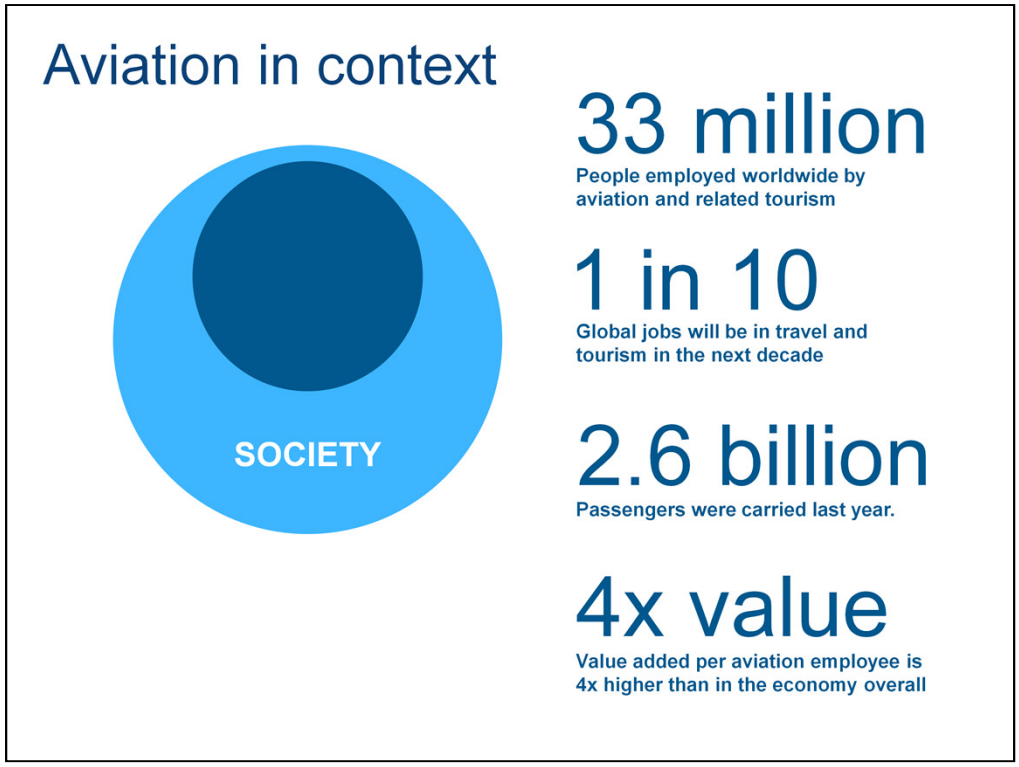

It is important to put aviation into the broader context of sustainable development

This is comprised of the key elements of Economy – Society – and Environment



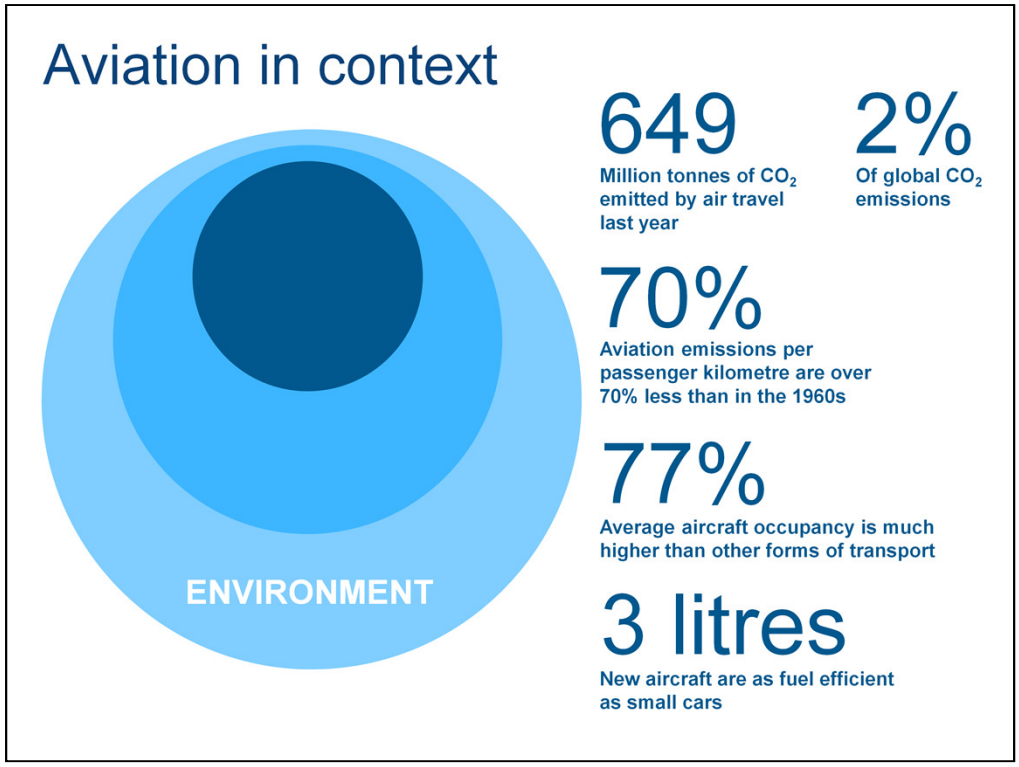

Aviation contributes substantially to the economy

For example, aviation is spending $1.3 trillion dollars on new aircraft over the coming decade




Aviation also generates 33 million jobs worldwide

These are high-value jobs too - 4X average value compared to the economy overall

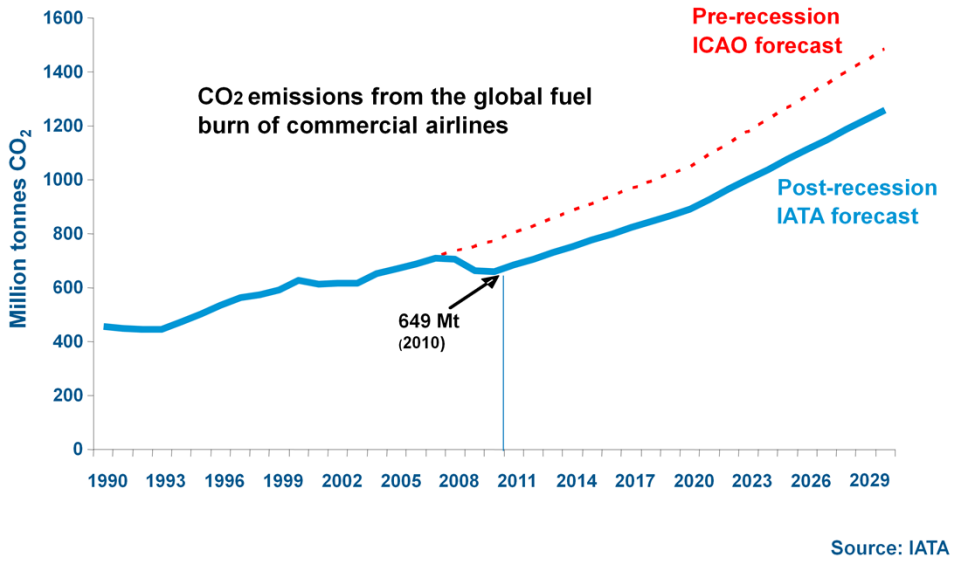



But the environmental impact is a major challenge

In 2010 aviation emitted 649 million tonnes of CO2.

However, the fuel efficiency track record of the industry is good – and the latest generation of aircraft are as fuel efficient in terms of fuel burn as a small car: just 3 litres per passenger km

# Aviation faces an emissions challenge




Under a business as usual scenario, emissions will continue rising even after the effects of the financial crisis are taken into account

# Industry Commitment on Climate Change 2008

Aviation Industry Commitment to Action on Climate Change

As leaders of the aviation industry, we recognise our environmental responsibilities and agree on the need to:

- build on the strong track record of technological progress and innovation that has made our industry the safest and most efficient transport mode; and
- accelerate action to mitigate our environmental impact, especially in respect to climate change while pursuing our growing role in the sustainable development of our global society.

Therefore, we, the undersigned aviation industry companies and organisations declare that we are committed to a pathway to carbon-neutral growth and aspire to a carbon free future.

To this end, in line with the four pillar strategy unanimously endorsed at the 2007 ICAO Assembly we will:

1. push forward the development and implementation of new technologies, including cleaner fuels;
2. further optimise the 'net efficiency' of our fleet and the way we fly aircraft, and manage ground operations;
3. improve air routes, air traffic management, and airport infrastructure; and
4. implement positive economic instruments to achieve greenhouse gas reductions wherever they are cost-effective.

We urge all governments to participate in these efforts by:

1. supporting and co-financing appropriate research and development in the pursuit of greener technological breakthroughs;
2. taking urgent measures to improve airspace design including technologies & taxation, air traffic management infrastructure and procedures for approving revised airport development; and
3. developing and implementing a global, sectoral and stable framework for aviation through ICAO, consistent with the United Nations roadmap agreed in Bali in December 2007.

Our efforts and commitment to work in partnership with governments, other industries and representatives of civil society will provide meaningful benefits on tackling climate change and other environmental challenges.

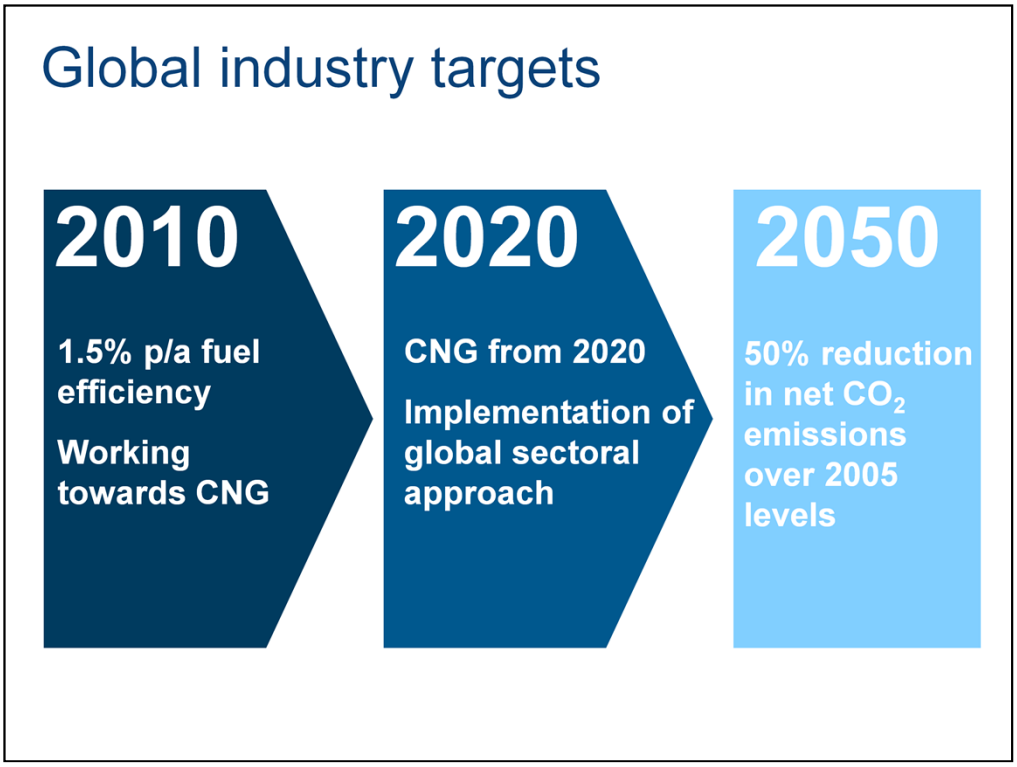
We strongly encourage others to join us in this endeavour.

In 2008 the whole industry came together to sign a declaration on action on climate change. This would be reached through a four pillar strategy

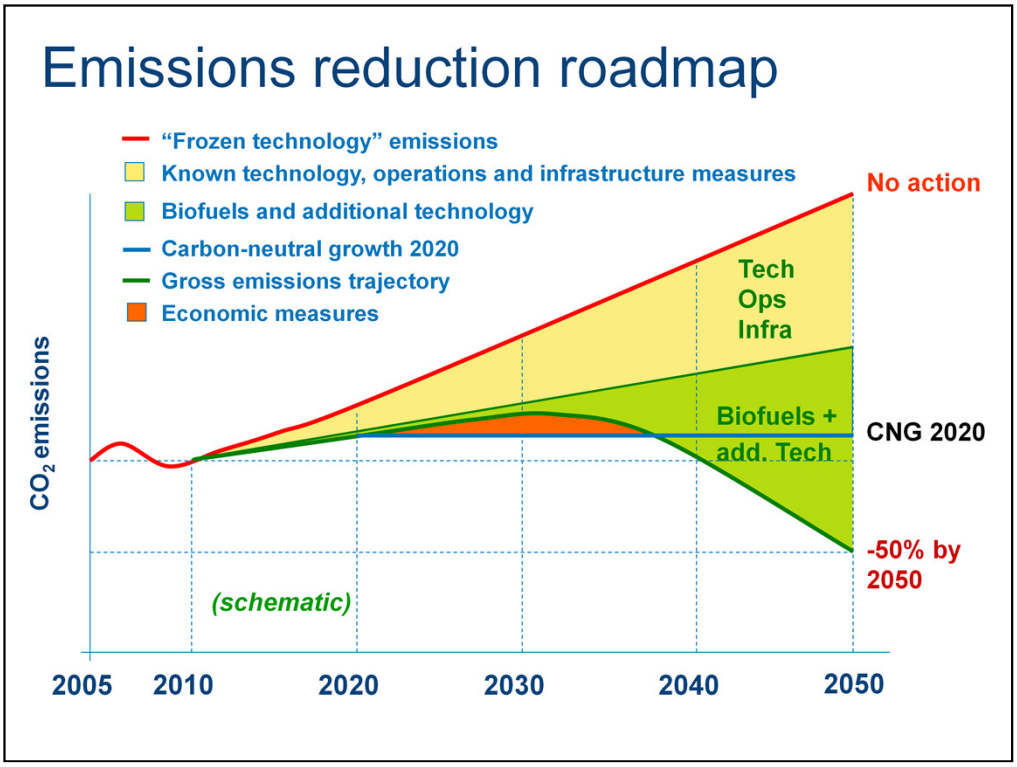

The IATA Four Pillar Strategy Guides will continue to guide our efforts

- Investment in technology
- Better operations
- Improved infrastructure
- Economic measures

This was endorsed by ICAO at the 2007 Triennial Assembly




In 2009 the industry collectively agreed the ambitious targets of 1.5% fuel efficiency to 2010, carbon neutral growth from 2020, and a 50% reduction in net emissions by 2050. The latter two targets were also agreed by ICAO as aspirational goals.




So what is it we are trying to do?

The red line is business as usual – it shows were emissions will be by 2050 if we take no action.

The bottom green line shows where emissions must go to reach our 2050 goal.

The yellow, blue and orange sections show the contribution of the four pillars to reaching our target.


So what progress has been made on the four pillars?

Firstly, progress on technology: New, more fuel efficient aircraft have entered the fleet, in each class, such as the Airbus A380, Boeing 787, and the proposed new Bombardier C-series. We've also seen announcements for new re-engined versions of the A320 and B737.

Composite materials, new engines and advanced aerodynamics are all playing their part in this new generation of aircraft being around 20% more efficient than their predecessors.

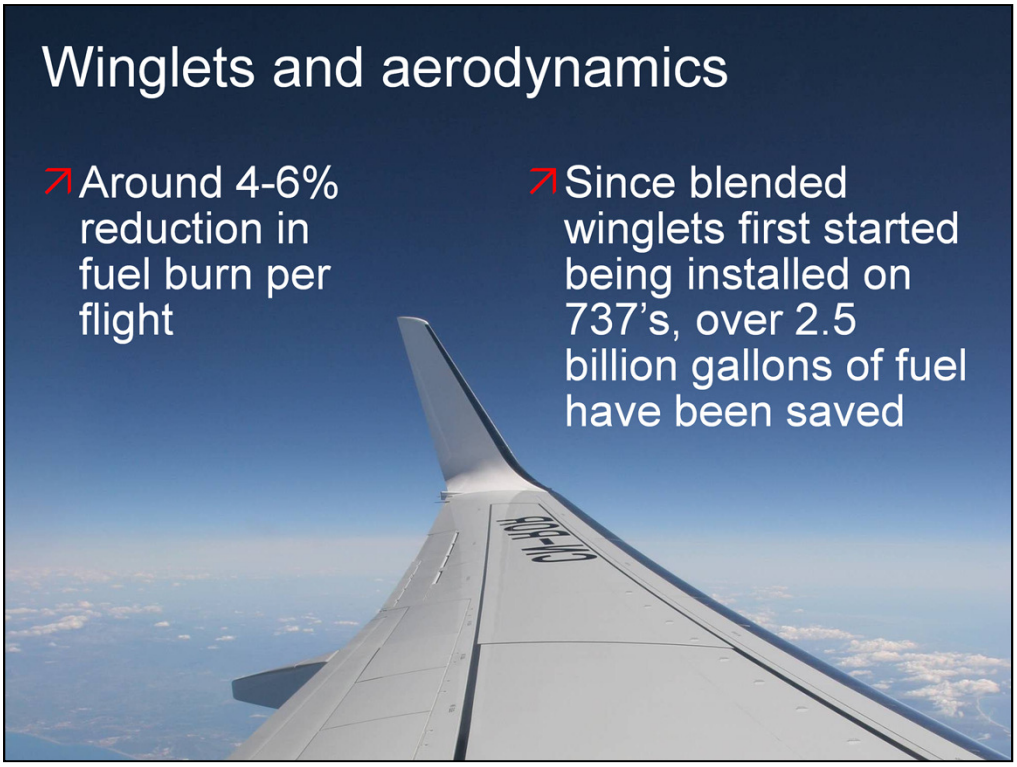
# New aircraft

**787**

30% more efficient than a 767

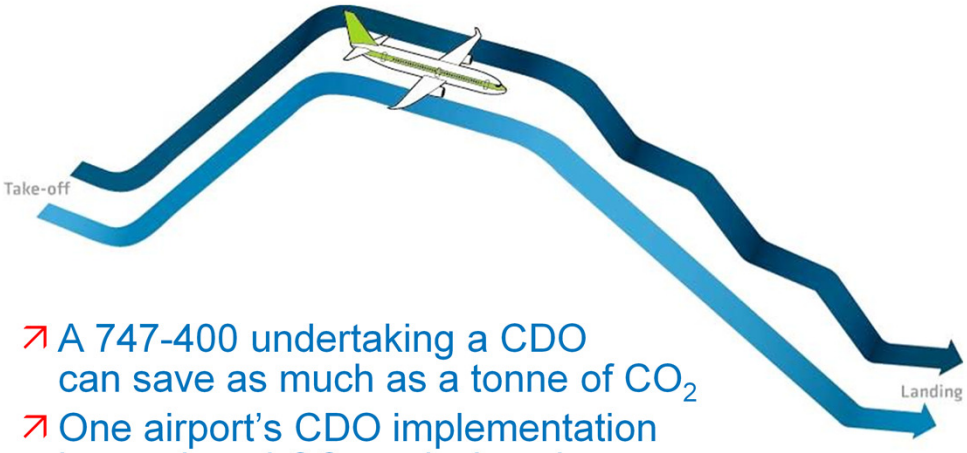
Use of composite materials and latest generation engines

# New aircraft



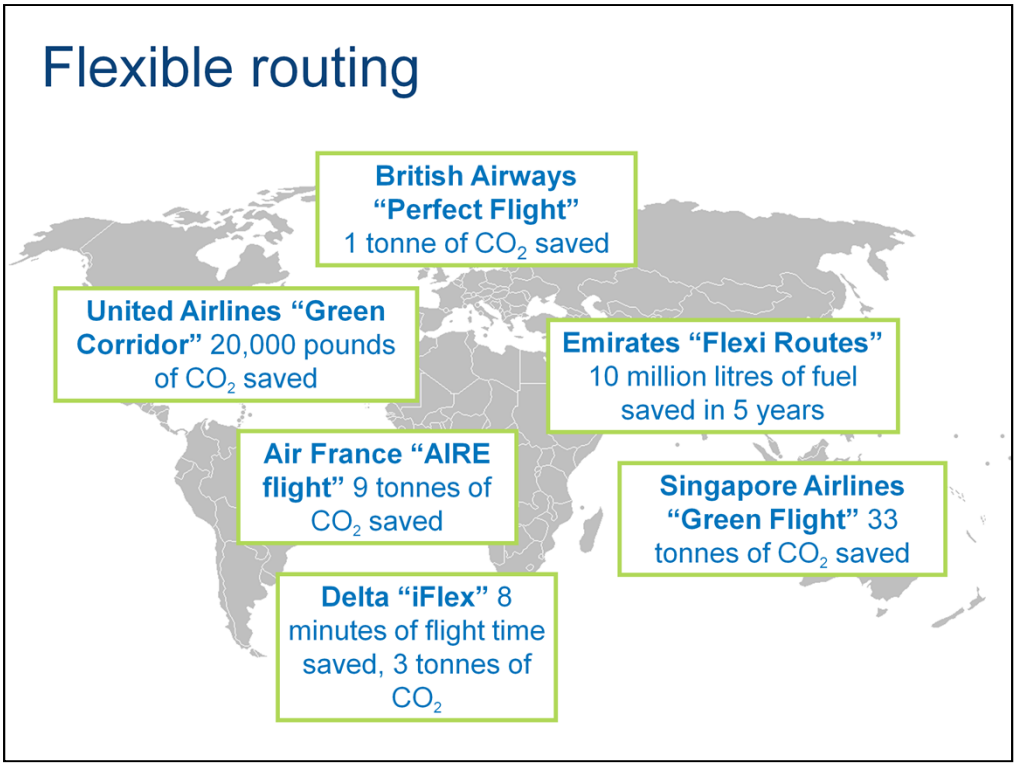

Apart from new aircraft, there is also adaptation to the current fleet, to cut fuel burn – winglets are a good example.

## Continuous descent operations




- A 747-400 undertaking a CDO can save as much as a tonne of $CO_2$
- One airport's CDO implementation has reduced $CO_2$ emissions by 32,000 tonnes a year

We're seeing good results from the implementation of Continuous Descent Operations




Another new development is optimum flight routes – making use of new technology to give aircraft greater autonomy in flight. Aircraft are able to use favorable weather conditions or shorter routes to save fuel. The slide shows examples of flexible routes which have been implemented over past twelve months.

# Lightweighting

Yet another step is to reduce weight on aircraft. Two examples are Lufthansa's introduction of a new, light-weight, trolley, which will save 28,350 tonnes of CO2…

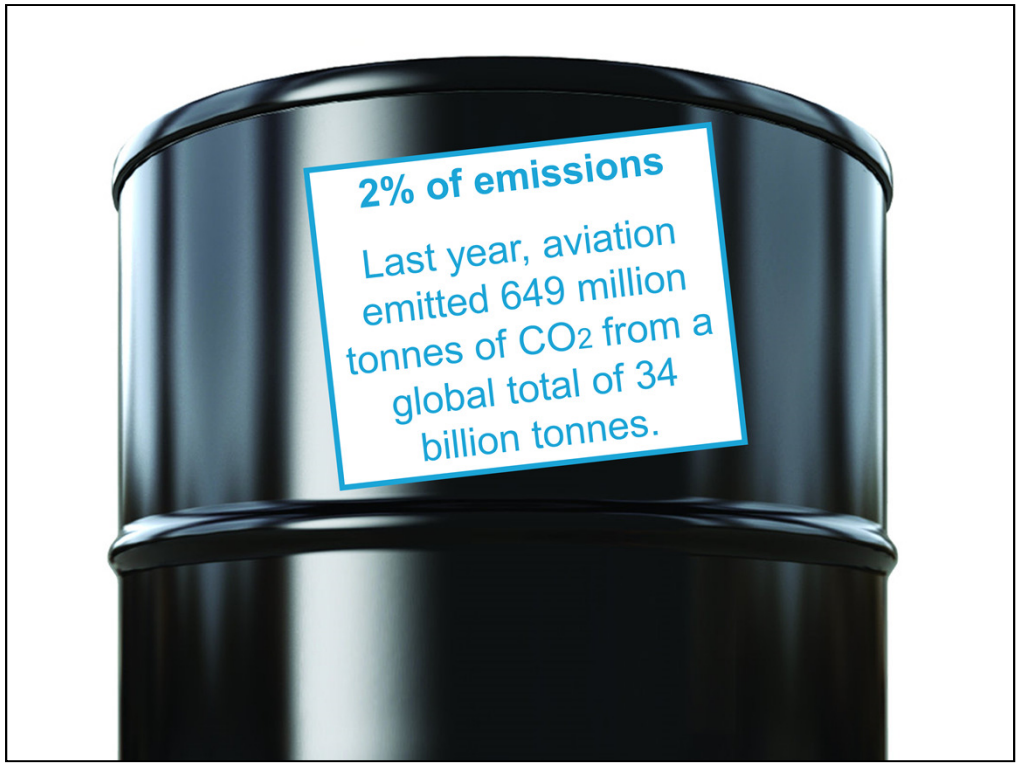
…and Swiss New slim-line seats, which are being installed on a number of airlines. Swiss International Air Lines installed these on it's entire fleet and saved 2,800 tonnes of $CO_2$ each year


Some of the biggest wins come from the reform of air traffic management, particularly the two mega projects of NextGen (US) and SESAR/Single European Sky (Europe). These projects require political will and government action. IATA continues to press for robust progress in these two projects.

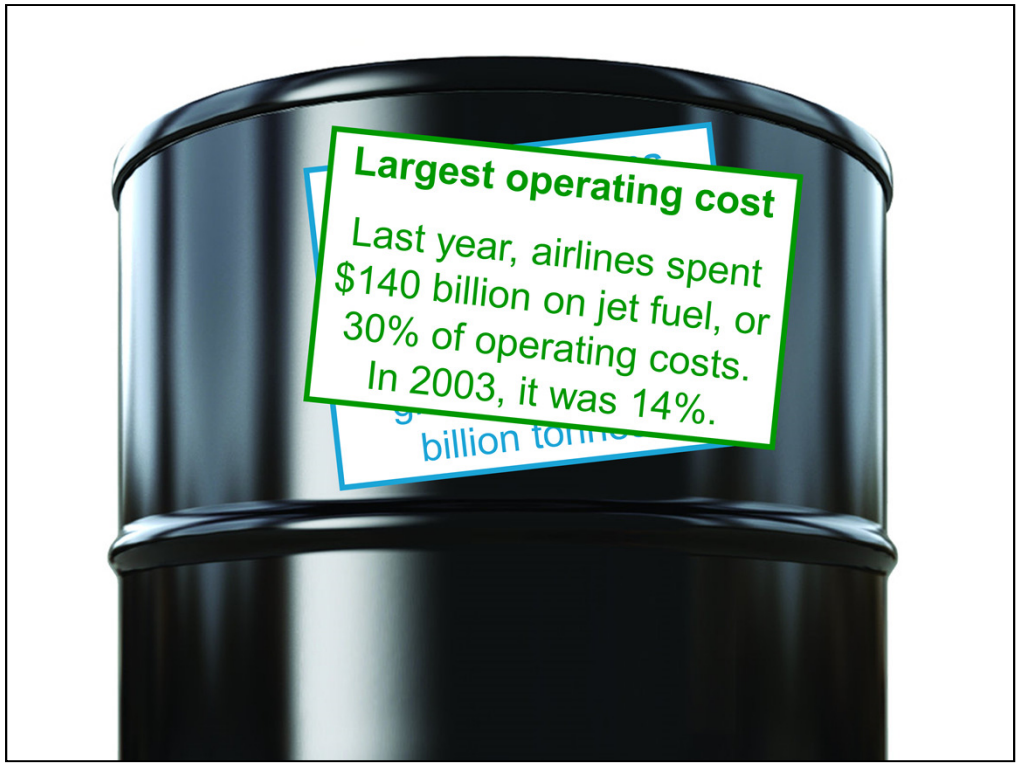

By far the biggest opportunity right now is sustainable aviation biofuels

I can't stress enough how much development has gone on over the past 12 months.

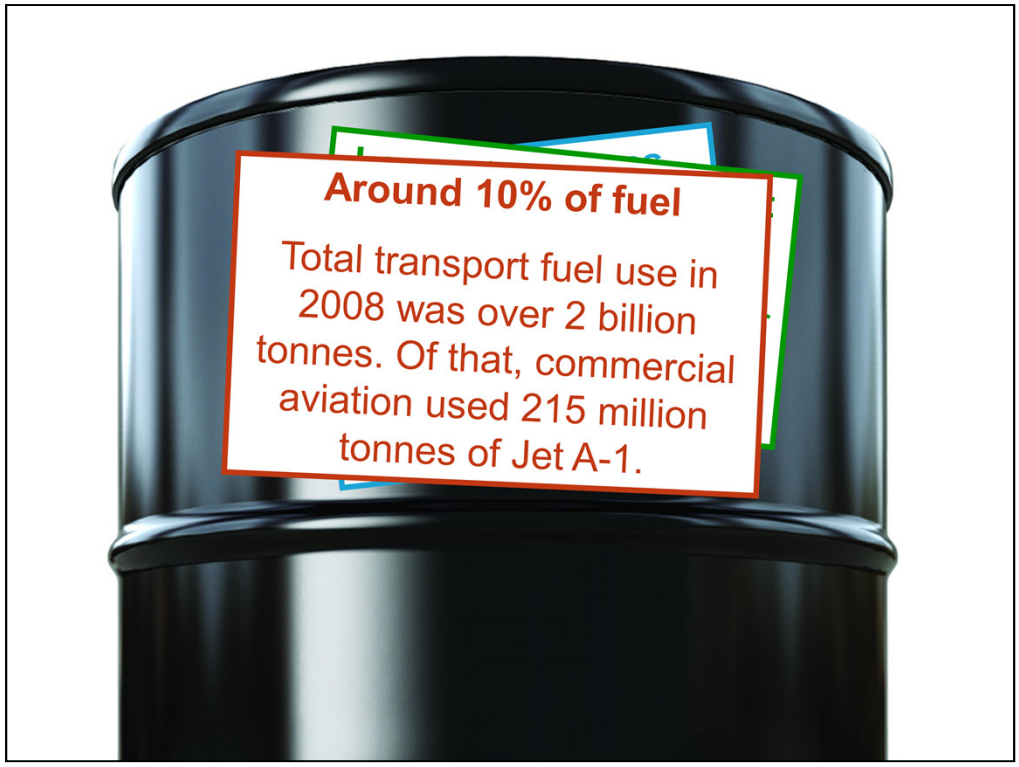

Let’s look at the facts on developing aviation biofuels



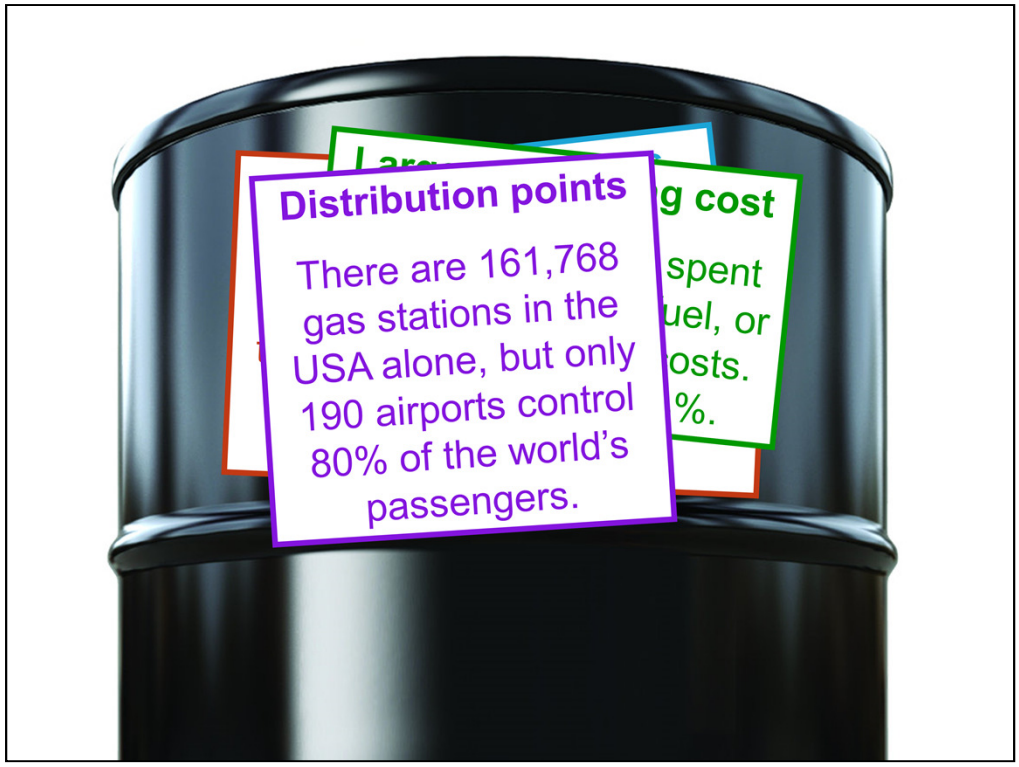

Aviation is trying to reduce the 649 million tonnes of CO2 is emitted last year.



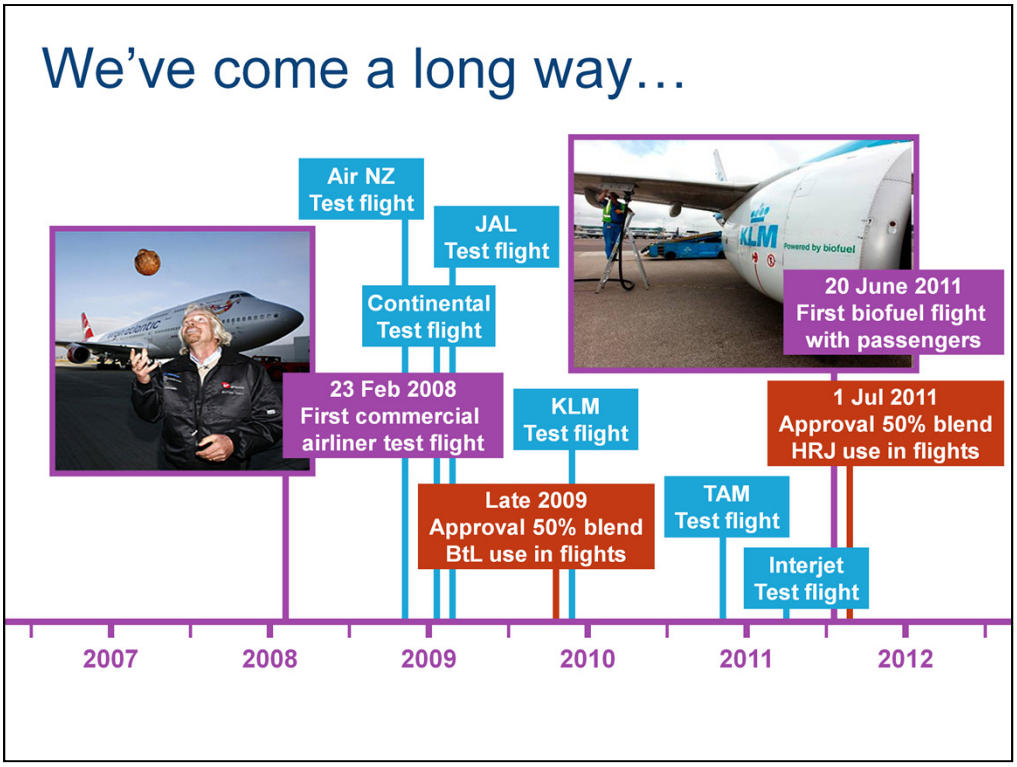

There is a big incentive to do so – since 2003 the fuel cost has gone from 14%-30% of operating costs




Because 10% of liquid transport fuel use is for aviation, delivering biofuels to aviation is a smaller challenge than delivering biofuels to other transport sectors in general




Aviation has a highly concentrated distribution system. 190 airports cover 80% passenger traffic.




Timeline of aviation biofuel development


**More than 1000 commercial biofuel flights**

**KLM**: First pax flights Amsterdam – Paris CDG

**Lufthansa**: long-term passenger flights, 1,200 flights between Hamburg and Frankfurt

**Finnair**: Flight between Amsterdam and Helsinki

**Interjet**: Domestic flight in Mexico

**AeroMexico**: Mexico City to Madrid – first transocean biofuel flight

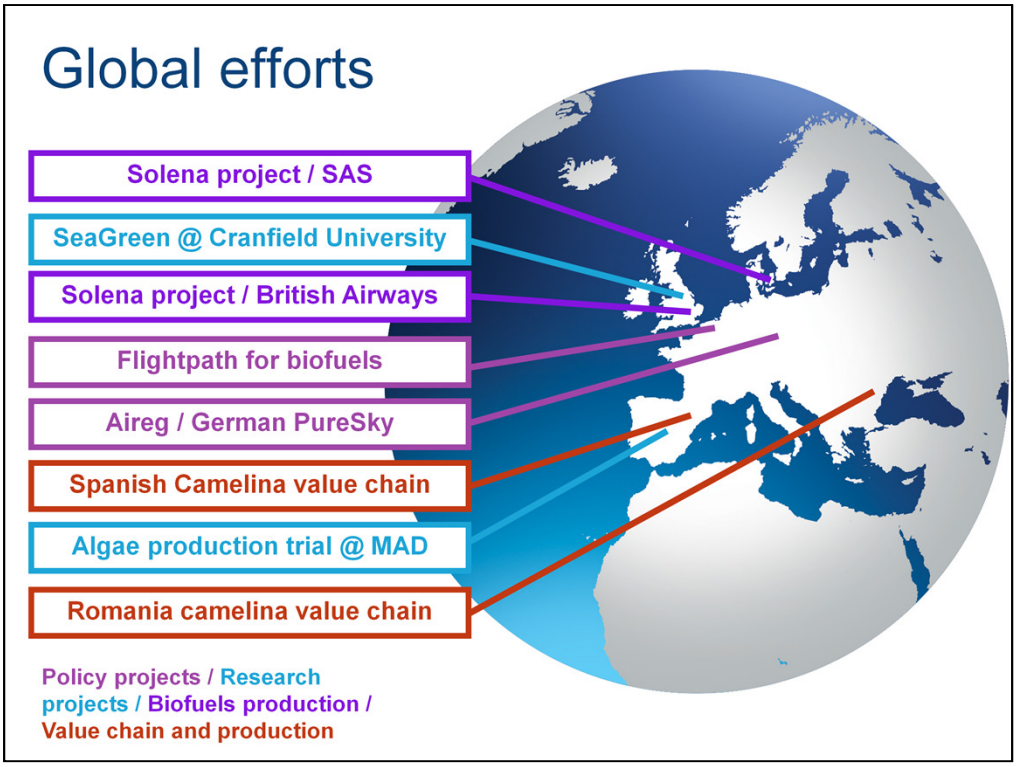
**Thomson Airways**: Birmingham – Palma once a week for a year


But there is still a long way to go

There is continuing development and opportunity with different feedstocks – waste products for example

The challenge is to move from small scale to commercial scale in scope…

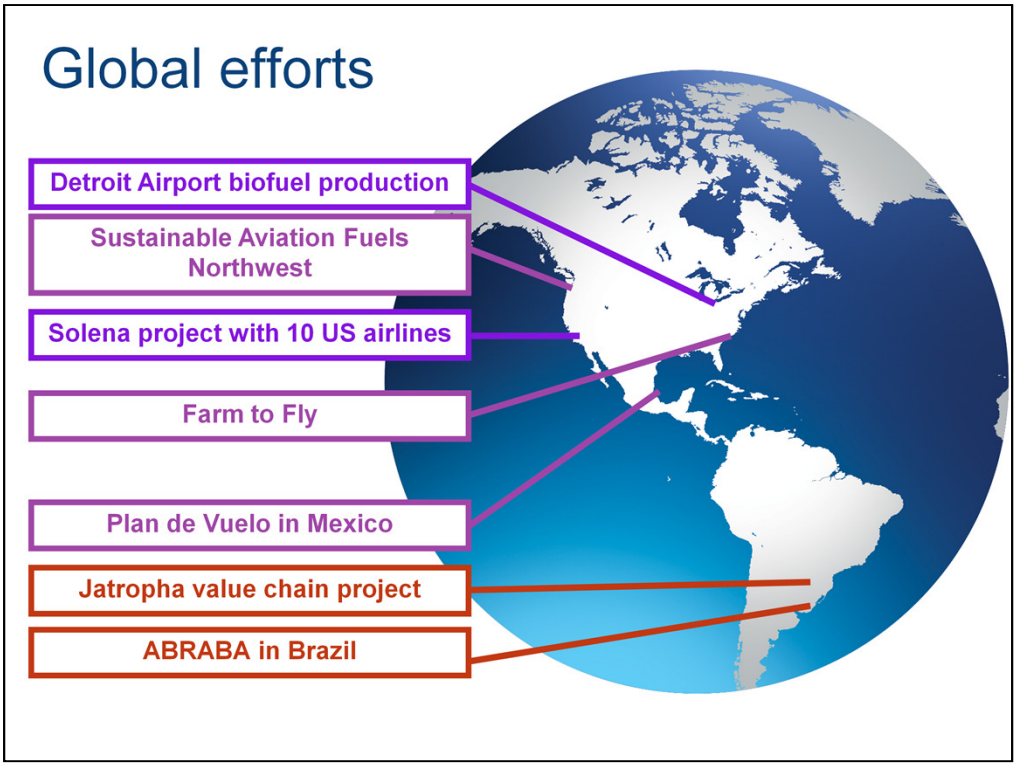
…and to do it sustainably.




Let me briefly share with you what's going on in different parts of the world, starting with some of the projects in Europe.

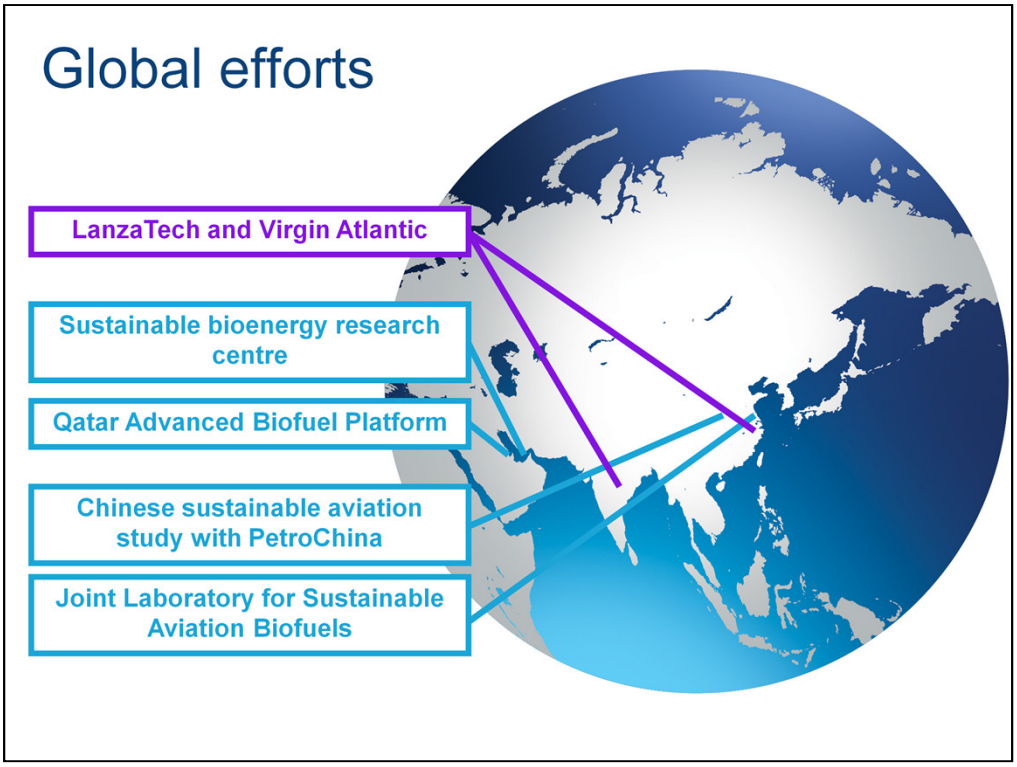
The Solena project in London with British Airways is looking at creating biofuel from household waste.

While in Spain, the government is developing an algae fuel production plant at Madrid airport.



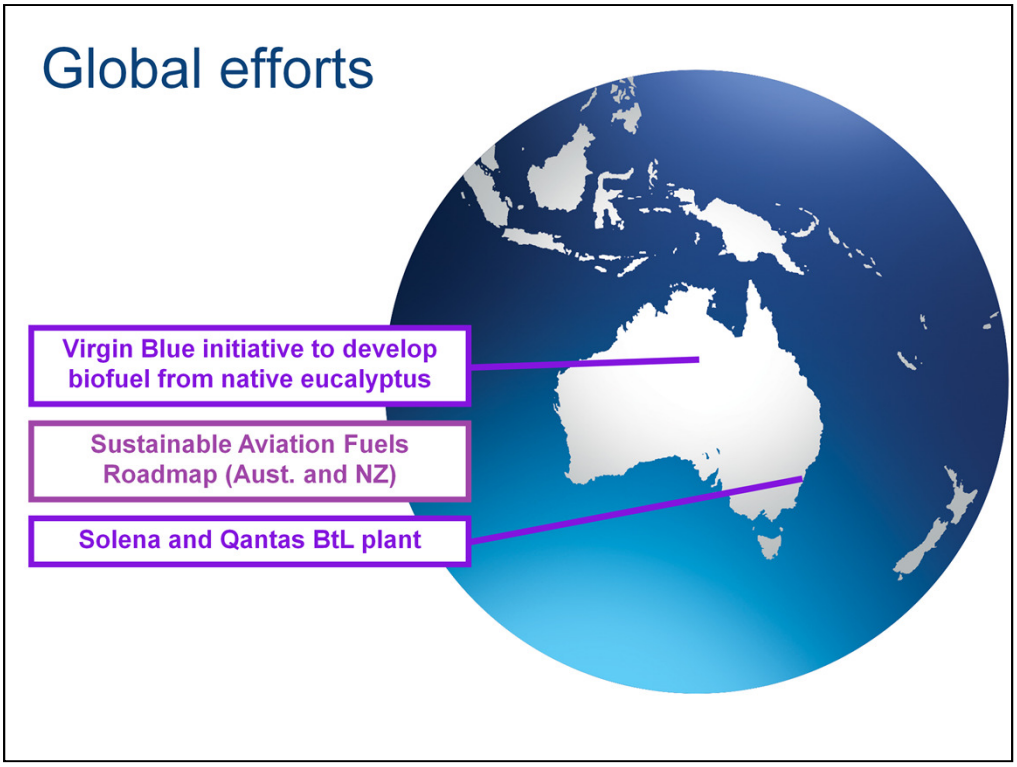

There is a huge amount of research and development in the US, with all stakeholders linked together in the ‘farm to fly’ program

And in Mexico the government is committed to supplying biofuel to airports through the Plan de Vuelo project.




There's similar growth in projects in Asia.

A particularly interesting project by LanzaTech is looking to harness the waste gasses from steel manufacture in China and India.




Finally Australasia is also involved in a number of projects.


Sustainability is absolutely key and the industry is committed to it.

The Sustainable Aviation Fuel Users Group was formed in September 2008 with support and advice from the world's leading environmental organizations such as the Natural Resources Defense Council and the Roundtable for Sustainable Biofuels (RSB). The group is focused on accelerating the development and commercialization of sustainable aviation biofuels.

All members have signed a Sustainability Pledge, and believe that a key driver to a carbon neutral industry is advancing and adopting sustainable aviation biofuels. Sustainable aviation biofuels will perform equal to, or better than, petroleum based fuels and will have a carbon neutral lifecycle - production through use. These fuels:

- Exhibit minimal impact on biodiversity
- Meet a sustainability standard with respect to land, water, and energy use
- Do not displace or compete with food crops
- Provide a positive socioeconomic impact
- Do not require any special fuel handling equipment, distribution systems, or changes to engine design

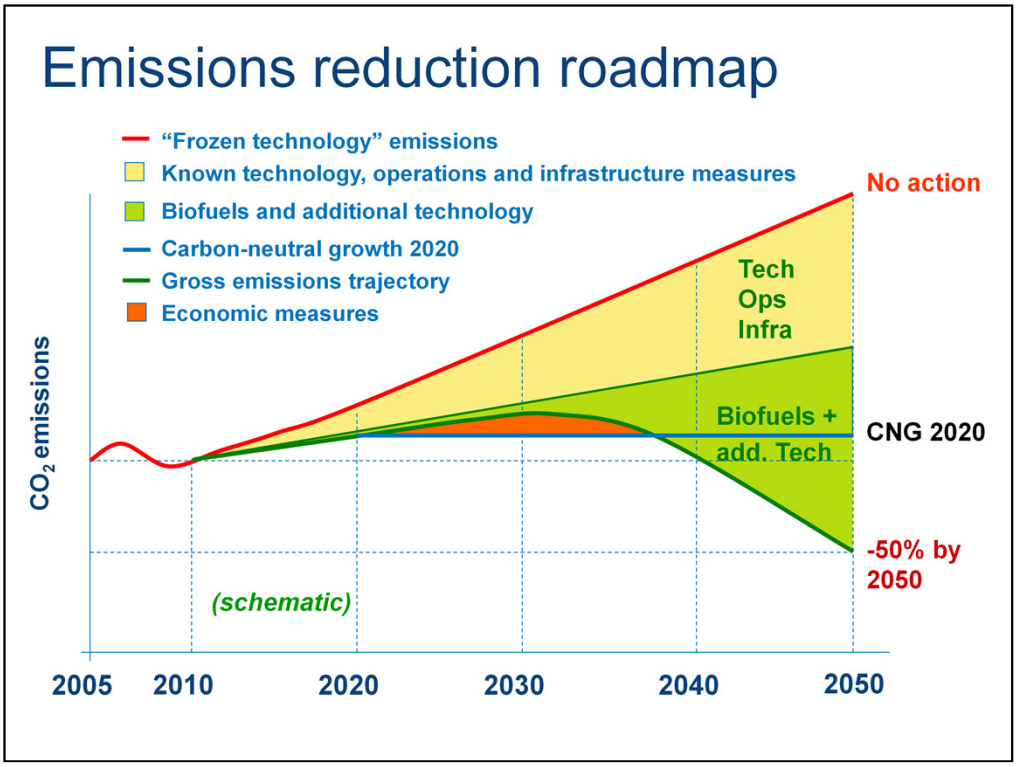
Also joined by Boeing, Honeywell UOP, Airbus and Embraer


But the industry can only do so much. It also needs help from governments

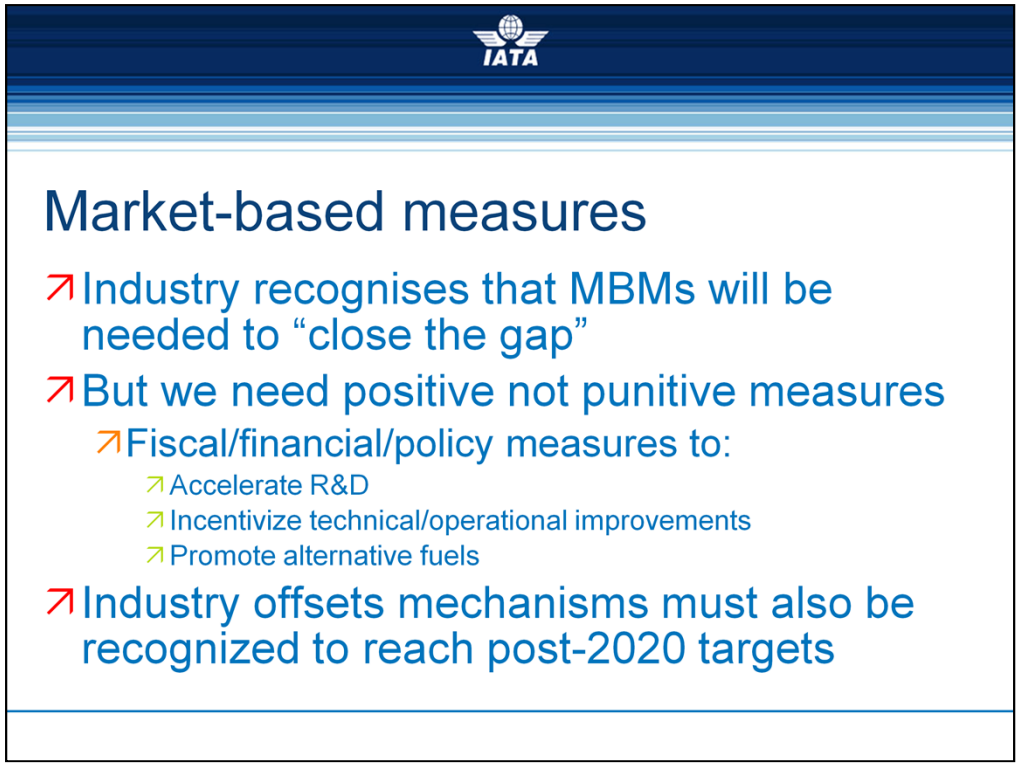
We have developed a 6 point plan for government support for a sustainable and commercially viable aviation biofuel industry.


Aviation is a perfect candidate industry for partial de-carbonization. Controlled distribution, technological compatibility and strong customer demand are big advantages. Aviation is also a high-profile sector which could show the world that a step-change towards a carbon-free future is possible.

This is why we are exited about biofuels.




However, in the medium-term we do recognise that we need to offset some emissions using positive economic measures. The part these will play is represented by the orange section on the roadmap.




The goal must be positive, not punitive, measures. For example, the revenues from such economic instruments should be re-invested in carbon reduction projects for aviation.

We still believe a **global approach** is the **only** way forward

Above all, with economic instruments, we remain committed to a global approach.

Talk of a global approach brings me to Europe’s Emissions Trading Scheme


The scheme is triggering concern in several areas, but specifically those of

Sovereignty of airspace

No hypothecation – governments are not required to use the money for environmental purposes

"Equivalent measures" – these could distort the market

## EU ETS – opposition

- **Pressure** is building
  - Delhi Declaration
  - BASIC countries' statement
  - ICAO Council resolution
  - WTO GATT challenges
- **Next** moves?
  - US Congress Bill
  - Russia/ China/India threats?
  - ICAO Article 84 Challenge??

Opposition to the scheme is mounting.

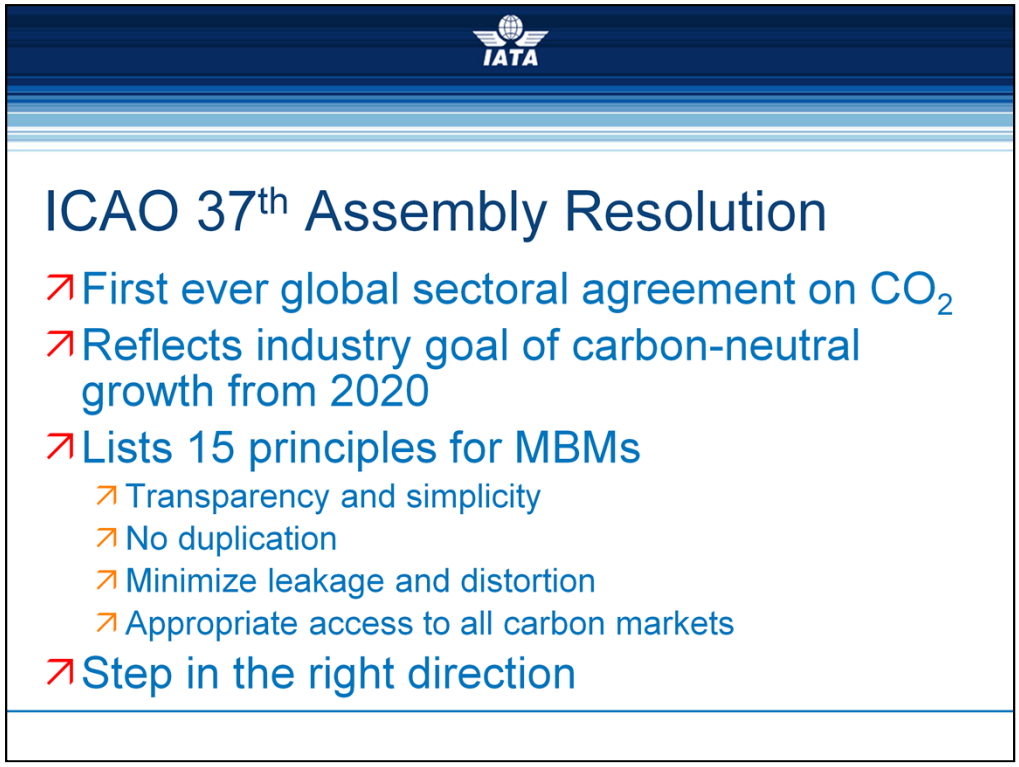
More than 20 states have indicated their dissatisfaction with Europe's unilateral action.

The danger of a trade war is still possible with Russia, China and India all raising the possibility, while a Bill is making its way through Congress to prevent US carriers from taking part.


The EU Commission is under pressure from the rest of World while the Parliament has not indicated it is willing to change the Directive.


All of the options available to alter the EU scheme have problems.

The only real way to resolve this is for all the governments to get back round the table at ICAO and work towards a global framework in time to deliver Carbon Neutral Growth in 2020.



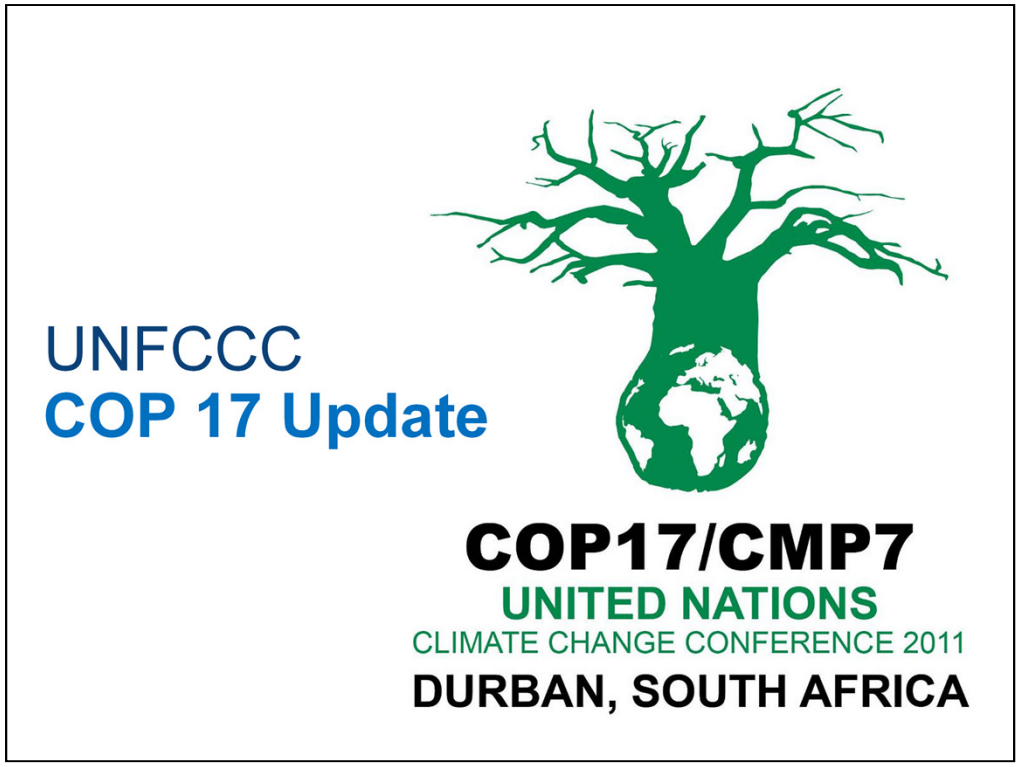

Let me remind you of the steps taken by the 37th ICAO Assembly in 2010.

This represented the first global agreement on climate change in any industrial sector. In additional to agreeing with the industry goal of carbon-neutral growth from 2020, the Assembly also adopted 15 principles for Market-Based Measures. The Assembly agreed to review progress towards agreeing a global scheme for aviation at its next Assembly in 2013.


So ICAO is moving forward – developing the goals and agreeing a framework for Market-Based Measures

IATA has been working hard to get negotiations back on track by encouraging governments to deal with this at ICAO.


IATA's key environmental focus in 2012 is to keep working for a global agreement at ICAO. Agree a CO2 standard for new aircraft, and establish sustainable biofuels on a commercial footing.




And now I would like to update you with the latest information from the COP17 discussions here in Durban.

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