



International Aviation

Addressing emissions while respecting equity issues

Aviation and climate change

Science tells us that aviation accounts for about 5% of global greenhouse gas (GHG) emissions because of the CO₂ that is emitted when jet fuel is burned. But aviation not only causes global warming through CO₂ emissions, other factors, such as contrails and cirrus clouds also lead to significant warming (see: www.co2offsetresearch.org/aviation/AviationImpacts.html). If all these factors are taken into account, aviation may currently be responsible for up to 14% of man-made climate change (Lee et al., 2009).

The GHG emissions from aviation are growing rapidly at about 4% annually (Solomon et al., 2007). Globally, CO₂ emissions from aviation almost doubled from 1990 to 2006. In the absence of policies to control, emissions from aviation could grow by 300-400% by 2050.

The climate impacts from air travel are caused by only 2% of the world population that actively takes part in air travel.

Aviation and climate justice

Emissions from aviation together with emissions from shipping are often called “bunkers” or

“bunker fuels”. Bunkers pose a particular challenge because it is difficult to allocate emissions to a particular country: should they be allocated to the country where the plane is fuelled, where the plane originates or in the country of destination? In addition to the difficulty of emissions allocation there is the question of fairness and equity: Who should pay for climate protection?

There is broad agreement that rich and poor nations should not be equally responsible for addressing climate change. Yet countries strongly disagree how to operationalize and apply such equity principles. For an overview on equity principles, see: CAN Fair Effort Sharing Discussion Paper at www.climatenetwork.org/publication/can-discussion-paper-fair-effort-sharing-jul-2011.

Discussions of how to allocate aviation emissions started under the UN Framework Convention on Climate Change (UNFCCC) in 1996, but there has been no substantive debate on the issue for several years.

For all other GHG emissions the UNFCCC distinguishes between rich and poor countries: The concept of Common but Differentiated Responsibilities and Respective Capabilities (CBDRRC) says that developed nations have a historical responsibility and more capacity to tackle climate

Myths about tourism

Tourism industry interest groups argue that a regulative framework for capping emissions from international air traffic could have negative impacts on tourism revenues that are assumed to contribute to poverty alleviation in developing countries. The AFG report estimates that climate mitigation measures might increase air travel costs by 2-3% (AGF report, 2009).

Also, research indicates that taxation will only negligibly reduce demand, especially for long-haul travel, due to a lack of good substitutes for long journeys compared to short journeys that can be undertaken by car, train or boat (IIED, 2011). Limiting growth in the aviation sector could be achieved by reducing short haul flights. Such measures would not impact the poor. It must

also be questioned how much of the income generated from tourism eventually reaches the 'poor.' Various studies show that as much as 85% of tourism revenues 'leak' out of developing countries (cited in Bolwell and Weinz, 2008), due to various factors most notably the power of international tour operators (Broham, 1996), foreign ownership and the high import propensity of tourism (Jules, 2005).

Tourism critical groups therefore call for a fundamental transformation of global tourism to create fair, just, sustainable and participatory models for business and development that will respect human rights and benefit the poor instead of being used as an excuse to avoid emission regulations.

change and should thus take the lead in reducing and financing emissions reduction.

However the simple categorization into developed and developing countries under the UNFCCC has become outdated. Over the past two decades emissions from some developing nations have grown very rapidly. Per capita emissions in these countries are now higher or on par with many of the countries that were originally classified as "developed" countries under the UNFCCC.

This is also true for the aviation sector where developed and developing nations are already competing on an equal footing. Furthermore, aviation users - no matter which country they come from - cannot be considered poor but rather are middle or high income earners. This makes the equity argument in the aviation sector even more difficult.

Resolving the equity issue in the aviation sector requires implementing measures that reduce aviation emissions substantially, it also offers the opportunity to generate finance for climate action in developing countries.

There is a great need for international finance for climate mitigation and adaptation. Bunker fuels offer many possibilities to generate funds such as incorporating their emissions in international emission trading schemes, taxing fuels and/or introducing a ticket tax.

The High-Level Advisory Group on Climate Change Financing (AGF) appointed by UN Sec-

retary General Ban Ki-Moon presented its recommendations in December 2010. Among other innovative finance instruments the panel recommended international aviation and maritime transport as sources for climate financing. The AGF report suggests designing a global financial mechanism that will cause no economic burden for developing countries (this principle is often called "no net incidence").

The revenue could be earmarked for climate change action in developing countries. Further, to minimize the potential negative consequences on the most vulnerable developing countries, flights to and from Small Island Development States (SIDS) and Least Developed Countries (LDC) should be exempt - an approach that would apply a "de minimis thresholds". States with less than 1% of global aviation activity could also be exempt from market-based measures. This would mean that while regulative measures would apply only to an estimated 22 states, these would capture about 80% of emissions from international aviation.

ICAO: Politics of inaction

Airlines currently do not face any GHG emissions regulation although the aviation industry is one of the most rapidly growing sources of emissions.

Under the UNFCCC, countries do not have to account for their aviation and shipping emissions, even if they have an emission reduction obligation



The EU decided that all flights arriving to and flying from the EU would have to account for their emissions

Photo: Michael Lindner

under the Kyoto Protocol, the international climate regime that regulates GHG emissions from all other sectors.

In 1997, the responsibility to reduce aviation emissions was given to the International Civil Aviation Organization (ICAO) an UN organisation with 191 Member States. The organization was commissioned to develop a suitable climate protection mechanism for its sector. It has failed in this task: after 16 years the ICAO has yet to come up with any significant and internationally binding measure or target.

The ICAO Assembly in 2010 agreed to an aspirational goal of carbon-neutral growth by 2020. The aviation industry had also committed to a similar goal as well as to reduce emissions by 50% on 2005 levels by 2050. However, voluntary actions will not suffice: a business-as-usual scenario shows a 400% increase in aviation emissions by 2050.

ICAO has been tasked with developing a global market-based measure to address greenhouse gas (GHG) emissions from international aviation (see below). However, there is a genuine lack of trust that ICAO can deliver clear cut proposals on how to actually reduce aviation emissions given ICAO's track record of 'aspirational goals' of improving fuel efficiency, increased use of biofuels

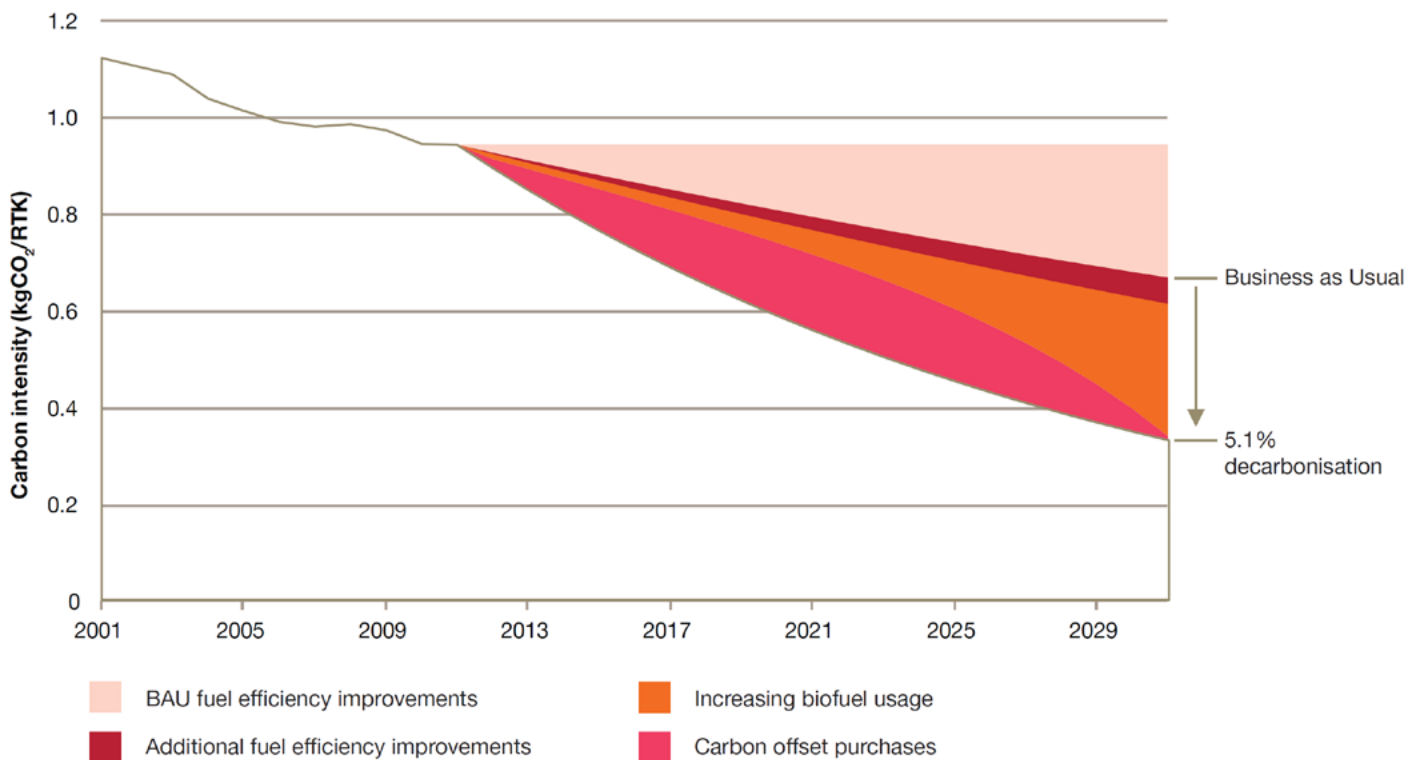
that does not reduce CO₂ footprint, lax CO₂ standards and preference for voluntary carbon offsetting schemes.

European Union acts first and backtracks again

For several years, the European Union (EU) signalled the intention of addressing aviation emissions unilaterally if ICAO would not take stronger action and commit to a plan to reduce aviation emissions.

Slow progress under ICAO to agree on binding targets to reduce aviation emissions prompted the EU in 2008 to act. The EU decided that starting from 2012 all flights arriving to and flying from the EU would have to account for their emissions and be included in its cap-and-trade scheme (EU-ETS). The EU Directive 2008/101/EC amends the EU Emissions Trading Scheme (ETS) to include aviation sources of CO₂ emissions effective January 1, 2012. If implemented, this EU measure would have forced all EU and international carriers to reduce their emissions from flights to and from Europe by 5% over the period 2013-2020 compared to 2004-2006 average emissions.

The EU's decision prompted very strong reaction, in particular from China, India and the US.



The graph shows a set of options that can be implemented to achieve a 5.1% reduction in carbon intensity of the aviation sector. Proposed measures include the use of carbon offsets. The projections by PricewaterhouseCoopers assume that the aviation sector will create additional demand for carbon offsets amounting to 100 million carbon offsets yearly. Source: IATA WATS 2011, PwC "Low Carbon Economy Index 2012: Aviation" (December 2012)

The EU was accused that its unilateral approach would spark a trade war and infringe on national sovereignty. For example, Airlines for America (A4A) and two of its members, American Airlines and United Continental Holdings brought a legal suit against the EU to the Court of Justice of the EU. They argued that the inclusion of international carriers into the EU-ETS breaches the Chicago Convention, the Open Skies Agreement and the Kyoto Protocol.

But in October 2011 the Court of Justice of the EU ruled that the EU's 'unilateral approach' is fully compliant with international law:

EU legislation does not infringe the sovereignty of other states or the freedom of the high seas guaranteed under international law, and is compatible with the relevant international agreements (Court of Justice of the European Union (06/10/2011).

After months of tense negotiations and lawsuits the EU introduced the 'stop the clock' derogation, the partial revocation of the law, which

temporarily halts the inclusion of intercontinental flights in the EU-ETS for a period of one year to allow ICAO member states to agree on a market-based measure to limit the growth of international aviation emissions. Only flights within the EU still have to comply with the EU-ETS.

In April 2013, the 'stop the clock' derogation was approved in the European Parliament and the European Council. The EU stated that a global approach remained the EU's preferred option and that the 'stop the clock' gesture would now create a unique window of opportunity for the ICAO process.

The EU also made clear that ICAO would need to agree on an immediate and meaningful framework and a realistic timetable for a global market-based measure and an ambitious set of technological and operational measures. The original EU provisions to include international flights in the EU-ETS will again be applied to external flights on 1 January 2014 unless ICAO achieves significant progress.



Clean Development Mechanism (CDM) supported monocultures typically involve local communities and are challenging to implement. Experience with a CDM forestry project in India has shown that farmers bear the financial risk in cases where revenues from carbon credits do not materialise.
Photo: Ranjan K Panda

Options for a global market based measure (MBM)

ICAO's negotiations towards a global agreement are currently focused on three elements:

- developing a global market based measure (MBM) to mitigate the sector's emissions,
- agreeing to a framework to support member states that would like to implement their own measures, and
- developing non-market "basket of measures" like technological improvements and operational measures.

While a global MBM is the outcome sought on behalf of the EU, little progress has been made. The EU's position is that by the 38th ICAO Assembly in September 2013, member states must agree to a framework and come up with a realistic timetable for the implementation of the global MBM by ICAO's next triennial Assembly in 2016.

The framework is to provide guidance on how states or regions could set up their own MBMs

(such as the EU-ETS) in the absence of an agreement on a global MBM. However, a recent study shows that a global MBM would be more efficient in reducing emissions than a framework that only covers aviation emissions in sovereign airspace which would only cover 22% of the sector's total emissions at most (Lee, D.S. et al. 2013).

China, India, Brazil and others strongly oppose a global MBM in ICAO and instead advocate for an aspirational goal of carbon neutral growth from 2020 or later. Even though the US opposes a global MBM it agreed to continue discussions on the global MBM so long as the two other strands of work, the MBM framework and the non-market 'basket of measures' are also included in the negotiations.

ICAO is increasingly being seen as an industry driven organization. An overwhelming majority of members of the group tasked with negotiating the global MBM is working in the aviation industry. The negotiating process lacks transparency. Negotiations are often 'closed door' and civil society therefore has limited ability to monitor and assess the position of member states.

Overview of offsetting mechanisms

Clean Development Mechanism (CDM):

CDM offset credits are called Certified Emission Reduction (CER) and are approved under the UNFCCC. CERs are issued for projects that reduce emissions in developing countries. Despite international oversight, an independent study commissioned by the CDM Policy Dialogue in 2012 has found that potentially two thirds of all CDM credits expected between 2013 and 2020 could come from business-as-usual power supply projects and therefore cause an increase in emissions of up to 3.6 billion tonnes of CO₂-eq. if used for compliance. Also industrial gas projects have been found to represent artificial reductions. This has led the European Union, Australia and New Zealand to ban industrial gas credits from their national emissions trading schemes. In addition, some CDM projects have caused significant harm to the local population and in some cases have even been connected to human rights abuses.

Recommendation: Quality restrictions should be placed on CDM offset credits to ensure that only CERs that come from projects with high environmental and social quality can be used for compliance under an ICAO scheme. Gold Standard certification of CDM projects for example ensures the social integrity of these projects.

Joint Implementation (JI): JI offset credits or Emission Reduction Units (ERUs) are issued for projects that reduce emissions in developed countries that have signed the Kyoto Protocol. JI has been repeatedly criticised for a severe lack of quality control. 95% of all ERUs issued to date are issued by host countries without any international oversight. Despite the on-going reform it is unlikely that JI projects post 2012 will be of significantly better quality.

Recommendation: Offset credits from JI should not be eligible under an ICAO scheme.

New Market Mechanism (NMM): A new offsetting mechanism was approved in 2011 and is being developed under the UNFCCC framework. It will likely take many years until emission reduction units will be issued under this new mechanism.

Recommendation: NMM credits should only be eligible under an ICAO scheme if they are verified to be real, permanent and additional.

Voluntary offset programmes: There are a variety of voluntary offset programmes currently operating. None of them would deliver large enough volumes to satisfy the needs of ICAOs potential scheme. Also, offsets from such voluntary schemes are often of low quality due to limited or no regulatory oversight.

Recommendation: Because of the limited regulatory oversight, offset credits from the voluntary market should not be eligible for compliance under an ICAO scheme.

Bilateral offset mechanisms: Several countries are developing bilateral offsetting schemes without oversight of the UNFCCC. Due to the lack of international oversight, especially related to additionality testing, the quality of bilateral offset credits is likely to be lower than CDM credits.

Recommendation: Offset credits from bilateral offsetting mechanisms should not be eligible under an ICAO scheme.

Allowances from cap-and-trade systems: Emission permits could also be acquired in the form of allowances from cap-and-trade schemes, such as European Allowances (EUAs) from the European Emissions Trading Scheme (EU ETS). Cap-and-trade systems only lead to emissions reductions if there is a scarcity of allowances. The two biggest emissions trading schemes are severely oversupplied. The EU ETS and International Emissions Trading (ET) under the Kyoto Protocol are oversupplied with 2 and 13 billion allowances respectively. These two systems therefore do not lead to new emissions reductions.

Recommendation: A potential ICAO cap-and-trade scheme must have a stringent cap based on conservative emission estimates. Surplus allowances from over-supplied schemes such as the EU-ETS or ET should not be eligible under an ICAO scheme.

Risks of offsetting

A group of experts was established in 2012 to work on the three elements. The group's suggestions on implementing a global MBM include a mandatory global offsetting system and a cap-and-trade scheme. Both options involve the use of offset credits to compensate for emission reductions:

- An offsetting system would require airlines to pay into a central fund that would purchase carbon offsets.
- A cap-and-trade scheme would allocate each airline a number of emissions allowances equivalent to the tonnes of CO₂ an airline operator is allowed to emit. To meet their obligations under a cap-and-trade scheme, an operator would have to either reduce emissions, purchase emissions allowances from other operators or buy carbon offsets from an offsetting mechanism that is approved under the cap-and-trade scheme.

Offsetting is not a long term solution because it does not lead to emissions reductions in the aviation sector itself but merely compensates these emissions. Yet the growth of emissions in the aviation sector is not sustainable. Left unmitigated international aviation and shipping emissions will take up about 30% of the 2 degree Celsius global emissions budget by 2050. This makes it clear the aviation sector must reduce its own emissions if we are to achieve the 2 degree Celsius goal.

Even as a short term solution, offsetting has serious drawbacks that if not addressed could completely negate any climate benefits of an aviation MBM: For each tonne of emissions reductions an offset project receives an offset credit which it then can sell to an entity with emission reduction obligations. One offset entitles the buyer to emit one ton more than they would have been allowed otherwise. It is therefore essential to ensure that every offset credit comes from a project that leads to real and verified emission reductions which would not have happened anyway. A project that would have been realised anyway should not receive offsets. Offsets from such "non-additional" projects cause an increase in global emissions because they entitle the buyer to emit more without "offsetting" that emission from a new project that was implemented because of the revenue it earns from the sale of its emission reductions.

It is still unclear what types of offset credits would be approved for compliance under an avi-



The CDM allows new coal plants to earn carbon credits for claimed improvements in power plant efficiency. However, coal projects do not belong in the CDM, because they conflict with the CDM's sustainability objectives by inflicting toxic burdens on local populations and ecosystems, they undermine climate mitigation goals by locking in billions of tons of CO₂ emissions over decades to come, and they would have been built in the absence of the CDM and hence do not generate carbon credits that represent real emissions reductions. This image shows a young boy in India collecting coal. Photo: Jörg Böthling

ation MBM. A large variety of offset credits exist and their environmental quality varies significantly. The UNFCCC Kyoto Protocol includes offset credits from the Clean Development Mechanism (CDM) and Joint Implementation (JI). Offset credits are also produced outside the UNFCCC. These include voluntary offset programmes (e.g. Verified Carbon Standard, Gold Standard), national offset programmes (e.g. Australia's Carbon Farming Initiative), bilateral offset mechanisms (e.g. Japan's Bilateral Offset Credit Mechanism) and regional offset programmes (e.g. Climate Action Reserve offsets allowed under California's cap and trade scheme). The box "Overview of offsetting mechanisms" summarizes the most important offset programmes.

To ensure environmental integrity, strict criteria would have to be established that would exclude offset types from sectors, projects or mechanisms that have been shown to deliver sub-standard offsets. Such quality criteria should exclude at the minimum offsets from large power and industrial gas projects and offsets from JI and voluntary mechanisms. Moreover, the use of offset credits should be supplementary to own in-sector reductions.

Any decision to allow cap-and-trade allowances in a mechanism designed by ICAO should ensure that allowances from oversupplied cap-and-trade systems are prohibited. If ICAO decides to establish its own cap-and-trade system it must be based on a stringent cap and avoid over-allocation of allowances.

Also, such a cap-and-trade mechanism must not be linked to an oversupplied system, such as the current EU-ETS, as this would severely compromise the environmental and economic effectiveness of an ICAO trading mechanism.

It is important to stress that even strict offset quality restrictions would not address the issue that an offsetting mechanism without other measures would delay reductions in the aviation sector itself.

Conclusion

The aviation sector needs to reduce its emissions significantly if we are to limit global warming to less than 2 degrees Celsius. No matter the nationality of air travellers, only wealthy people fly.

The poorest in the world do not take part in aviation but they will have to bear the brunt of the most severe impacts of climate change.

Any aviation scheme developed under ICAO must lead to significant emission reductions in the aviation sector itself.

If offsets are to be part of a global MBM, high environmental and social standards for offsets and allowances are needed to ensure that offsets lead to real emission reductions.

Funds generated from such a scheme should be made available to developing countries for climate mitigation, adaptation activities and address climate induced loss and damages.

References

Court of Justice of the European Union (06/10/2011): According to Advocate General Kokott the inclusion of international aviation in the EU emissions trading scheme is compatible with international law. [Online] Available from: <http://europa.eu/rapid/pressReleasesAction.do?reference=CJE/11/104>

EED Tourism Watch et al. (2011): Last call to Durban. Beyond Numbers: A call for social, economic and climate justice in tourism. http://tourism-watch.de/files/cop_17_positionpaper_climatejustice_tourism.pdf

Lee et al. (2009): Aviation and global climate in the 21st century. Atmospheric Environment

Lee, D.S. et al. (2013): Bridging the aviation CO₂ emissions gap: why emissions trading is needed. Manchester Metropolitan University. Available at: www.cate.mmu.ac.uk/wp-content/uploads/Bridging_the_aviation_emissions_gap_010313.pdf

Solomon, S. et al. (2007): Assessment Report of the Intergovernmental Panel on Climate Change. In: IPCC Climate Change 2007. The Physical Science Basis. Cambridge University Press, UK

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