

Doc 9951



Offsetting Emissions from the Aviation Sector

Approved by the Secretary General
and published under his authority

First Edition — 2011

International Civil Aviation Organization

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EXECUTIVE SUMMARY

THE UNDERSTANDING OF OFFSETTING

In general terms an offset is a “compensating equivalent”. As an activity, offsetting is the “cancelling out” or “neutralizing” of emissions from a sector like aviation with emissions reductions achieved in a different activity or location that have been rigorously quantified and verified.

Offsetting can occur in either a regulatory or a non-regulatory context. In a non-regulatory context, offsetting is an idealistically or politically motivated action. In a regulatory context, offsetting is an action by companies or nations to achieve compliance with a mandatory emissions commitment.

In a regulatory context, it is only when credits are acquired from outside the emissions trading scheme or linked schemes and used to meet commitments/obligations under the scheme that the activity is referred to as offsetting. On the other hand, if a regulated emitter acquires compliance units (allowances or credits) from another regulated emitter within the same emissions trading scheme, or from a linked scheme, this is referred to simply as emissions trading.

OFFSETTING WITHIN AVIATION UP TO NOW

Within the aviation sector, the only offsetting that is currently taking place is non-regulated voluntarily passenger-based offsetting. The airlines’ roles are limited to offering an opportunity for the passengers to offset emissions caused by their travel.

Several concerns related to offsetting activities are discussed in this report. The most important relate to difficulties airline passengers have navigating on websites, limited participation, lack of transparency about the credits being offered, including the general absence of rigorous verification requirements.

On the positive side, buying offsets mitigates GHG emissions. Airline consumers are being educated about the effects of air travel on climate change, the development of carbon markets is encouraged, and the need for improved standards and verification requirements for the generation of offset credits is becoming more accepted.

OFFSETTING IN THE FUTURE

Despite the rapid ongoing growth of voluntary offsetting by air passengers, the potential for this type of voluntary approach for mitigating the effects of aviation emissions on global climate change is likely limited. Despite what appears to be widespread support, the willingness to actually purchase credits on a voluntary basis has been weak.

Nevertheless, steps might be taken to increase demand and quality of non-regulatory offsetting. For example, ensuring offset credits meet internationally accepted rigorous standards for quantification and verification, and improving systems for tracking credits to ensure they are used only once, should be pursued.

Offsetting in a regulatory context may be an important tool in the future. If there is a decision to regulate emissions from aviation that allows for emissions trading and emission sources not covered by a regulated system that can reduce emissions at a cost less than reducing emissions from aviation itself, an offsetting mechanism is likely to be part of the scheme.

This report concludes with a discussion of opportunities to use offsetting in the future. At the passenger level, it is possible to draw on current voluntary experience. However, there is also the possibility of using offsetting at a global sectoral level, either in a regulated emissions trading system or through an emissions charge. Offsetting can also be applied at an air carrier level rather than at the passenger level. These options offer some interesting possibilities for the future.

GLOSSARY

The terms contained herein are intended to clarify concepts as used in this document.

Additionality. To avoid giving credits for GHG emissions reductions that would have happened anyway, eligibility criteria have been developed to determine whether the reductions are “additional” — that is, are more than would have occurred in the absence of the project (environmental additionality) or in the absence of the incentive from the clean development mechanism (CDM) (project additionality).

Allocation. The initial distribution of allowances to accountable entities for a compliance period. This allocation could, for example, be based on historical emissions or a performance standard and level of production and could be made “gratis” or through an auction process.

Allowance (emissions allowance). An allowance is a tradable emissions permit that can be used for compliance purposes in a cap-and-trade system. Each allowance allows the holder to emit a specific quantity of a pollutant (e.g. one tonne of CO₂) one time.

Annex I Parties or Countries. A group of industrialized countries and economies in transition included in Annex I to the United Nations Framework Convention on Climate Change (UNFCCC) that committed individually or jointly to returning to their 1990 levels of GHG emissions by the year 2000.

Assigned amount units (AAUs). Emissions targets for industrialized country Parties to the Kyoto Protocol are expressed as levels of allowed emissions or “assigned amounts” for the 2008-2012 commitment period. Such assigned amounts are denominated in tonnes of CO₂ equivalent emissions (CO₂e).

Auctioning. The distribution of allowances — either the initial distribution or from a set-aside. This is achieved through an auction in which system participants bid for the right to purchase allowances. Different auction models could be used. Auctions often complement other forms of allowance allocation.

Aviation bunker fuels. The international share of fuel sold to aircraft.

Banking. A banking provision permits allowances issued for one compliance period to be saved for use during a subsequent compliance period.

Baseline-and-credit (emissions intensity) system. An emissions trading system that establishes an emissions performance standard and allows regulated participants to generate tradable credits (or emissions performance credits/allowances) by reducing their emissions intensity below that standard. Regulated participants that remain with an emissions intensity above the standard would need to submit credits to the regulating authority.

Benchmarking. A reference level, such as emission per unit of output, that can be part of the formula for the free allocation of allowances under a cap-and-trade system or that can define the target in an emission intensity system.

Buyer. A legally recognized entity (individual, corporation, not-for-profit organization or government) that acquires allowances or other compliance units from another legally recognized entity (the seller) through a purchase, lease, trade or other means of transfer.

Cap-and-trade emissions trading system. A cap-and-trade system allows for the trading of emissions allowances that are limited or “capped” in quantity by a regulatory authority. Before each compliance period, the regulatory authority distributes the allowances through a free allocation, sale and/or auction. At the end of the compliance period each accountable entity must surrender sufficient allowances to cover its actual emissions during the period. The trading of allowances promotes cost-efficient emissions reductions because entities that can reduce emissions at lower cost have the incentive to pursue these emissions reductions and to then sell their surplus allowances to entities that face higher emissions reduction costs.

Carbon dioxide equivalent (CO₂e). The unit of measurement that denotes the global warming potential (GWP) of a greenhouse gas. This metric enables the impact on the climate of different greenhouse gases to be easily compared.

Certified emission reductions (CERs). A compliance unit under the Kyoto Protocol issued for emissions reductions achieved from project activities in non-Annex I Parties that meet the requirements of the clean development mechanism (CDM). One CER is equal to one metric tonne of CO₂ equivalent.

Cirrus cloud. A type of cloud composed of ice crystals and shaped like hair-like filaments. May be partly induced by aviation.

Clean development mechanism (CDM). A mechanism established by the Kyoto Protocol that enables emissions reduction projects in non-Annex I Parties to earn CERs that can be sold to entities in Annex I Parties for compliance with their emissions limitation or reduction commitments under the Kyoto Protocol.

Climate change. A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and is in addition to natural climate variability over comparable time periods.

Contrails. The condensation trail left behind jet aircraft. Contrails only form when hot humid air from jet exhaust mixes with ambient air of low vapour pressure temperature.

Credit or offset credit. In this report the term “credit” or “offset credit” is used to denote the compensating emissions reductions (product) that have been achieved and can be applied in the activity of offsetting. An offset credit could equate to a one-tonne reduction of carbon dioxide (CO₂) emissions or a one-kilogram reduction of nitrogen oxide (NO_x) emissions, for example. These credits can be tradable units.

Domestic aviation emissions. Emissions from civil domestic passenger and freight traffic (commercial, private, agriculture, etc.) that departs and arrives in the same country including take-offs and landings for these flight stages.

Emissions intensity target. An emissions target defined in terms of emissions per unit of output.

Emissions trading. Emissions trading is a market-based tool that provides entities the flexibility to select cost-effective solutions to achieve their environmental targets. With emissions trading, entities can meet these targets either by reducing their own emissions or by securing, through the market, compliance units that take account of emissions reductions achieved elsewhere.

Flexible mechanisms. To give countries with binding obligations to limit or reduce emissions more options for meeting their targets, the Kyoto Protocol contains three market-based “flexibility mechanisms” — the clean development mechanism, joint implementation and international emissions trading.

Global warming potential (GWP). Global warming potentials (GWPs) are calculated as the ratio of the radiative forcing of one kilogramme GHG emitted to the atmosphere to that from one kilogramme of CO₂ emitted over a period of time (100 years). For example, with carbon dioxide assigned a GWP of 1, methane has a GWP of 23.