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Overview of consumer carbon-offsetting schemes in the aviation sector

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1 Introduction

This document consists of a quick overview of some existing consumer compensation schemes offered by the aviation industry. This will consist of (if the information was available) a description of how the scheme works, an overview of the project types the scheme proposes, information about the scope/size of the scheme, data about costs, and potential issues. Note that we focused on the schemes offered by airlines (note that EasyJet does not seem to have a consumer offset scheme), as these are the most likely to be used by passengers, since they are integrated in the ticket purchasing process. Schemes outside the ones proposed by airlines have additional burdens for uptake: They need to be known, and they need an extra effort. These schemes are briefly discussed at the end of this report.

2 Ryanair

Ryanair lets its customers voluntarily donate to a selection of projects. These donations had totaled €2.5 million as of April 2020. To translate this into tonnes, we look at the other schemes (see below, and in the report 'The impact of renewable fuels on plane tickets'), and assume that the compensation costs are about €10/tonne CO_2 (note that the range is ~€8-€25/tonne, but the Ryanair schemes are likely on the lower end of the scale). This would mean that the Ryanair scheme has compensated about 250'000 tonnes of CO_2. This corresponds to about a million passenger roundtrips between Amsterdam and Madrid (which are about 250 kg each, see the report 'The impact of renewable fuels on plane tickets'. This is about 1% of the amount of passengers Ryanair carries every year, whereas the figure of the scheme goes back to the start of the programme in 2018. Note that Ryanair indicates that 2% of their passengers have contributed, which might mean that the contributions per passenger are lower than for other schemes. This would make it similar to the size of KLM's scheme (see below), albeit on a shorter timescale, with a considerably higher uptake in terms of contributors (about 10 times more), but with lower contributions per passenger. The projects that the Ryanair scheme proposes include:

1) First Climate distributes energy efficient cookstoves in the Kampala region of Uganda (520'000 to date). These stoves use less wood and charcoal.
2) Renature Monchique. Plants trees in Monchique area of Algarve (Portugal), where there was a wildfire in 2018.
3) Native Woodland Trust buys woodland in Ireland to preserve it. A portion of all Ryanair customers' environmental donations will go towards the purchase of land near one of the last ancient woods in Ireland. They also grow the forests, using locally collected tree seeds.
4) Irish Whale & Dolphin Group nations will go towards a major study of humpback and fin whales in Irish waters – called Whaletrack Ireland. (Note: This does not directly help whales and dolphins, as Irish territorial waters are already a sanctuary for dolphins and whales).

3 KLM

KLM started its CO2zero programme in 2008. The programme claims to have compensated about 260’000 tonnes over 10 years. As discussed above, this makes it similar (in terms of revenue) to the (younger) Ryanair scheme. The fact that they have similar revenue over different time scales might be due to an increased interest of passengers over the last few years , which is in line with the claims of KLM that its programme is growing (40’000 carbon-neutral passengers in 2016, 60’000 in 2017, 88’000 in 2018). However, the uptake in terms of passengers seems to be quite lower than the 2% claimed by Ryanair, since the 88,000 carbon-neutral passengers in 2018 (out of 34.2 million) would be about 0.26%. Note that these numbers cannot directly be used to determine which programme is more successful. The seemingly higher uptake of Ryanair is based on the absolute number of passengers, while KLM looks at carbon-neutral passenger equivalents, which probably explains at least some of the discrepancy. Furthermore, the similar revenue figures over different time scales should be tempered by the fact that Ryanair carries about three times as much passengers as KLM. As such, the conclusion is that it is difficult to properly compare the programmes.

Projects supported by KLM’s scheme include:

1) Clean cooking stoves in Africa (Ghana, Mali, Uganda, Kenya): about 50'000 stoves over 10 years
2) Since October 2017, KLM invests the compensation funding in a reforestation project in Panama, called the ‘CO2OL Tropical Mix’. This project transforms former pastures into new forests consisting of a mix of tree species and a variety of ecosystems.

Note that KLM only invests the compensation funding in projects that are certified within the Gold Standard of the Global Goals.

4 SAS

SAS has an offsetting scheme, which is run by an external partner (Natural Capital Partners). All youth tickets (1.5 million tickets per year), Eurobonus-members SAS-flights (5.6 million ticket per year), and trips by SAS employees are CO_2-compensated. In total, SAS claims to compensate 40% of its plane emissions with this scheme. This much higher uptake compared to Ryanair and KLM is most probably due to the automatic uptake rather than a focus on voluntary offsets. SAS claims that their portfolio is built on different energy projects that replace fossil fuel with renewable energy. Note that the projects at Natural Capital Partners do include fossil to renewable projects, but they also have forestation projects and projects where biomass is replaced by other renewable sources (plus others). SAS seems to claim that they have a higher threshold.

Additionally, SAS offers to option to buy biofuels for trips. Travelers can buy biofuel corresponding to 20-minute blocks of flight time for one passenger, at a cost of €10 per block. This would translate into costs of €150 for the five hours of flight time in the round-trip between Amsterdam and Madrid. This is consistent with the numbers provided in the report 'The impact of renewable fuels on plane tickets' (€46-€229 premium). The numbers provided by SAS indicate that the biofuel premium is about three times the price of fossil fuel (€46), or that biokerosene costs about 4 times as much as fossil kerosene. Note, however, that actually trying to book biofuel slots does not seem to work as of April 2020 (link is here: https://www.flysas.com/th-en/fly-with-us/travel-extras/biofuel/).

5 Lufthansa

Lufthansa has a partnership with MyClimate, with a customized version with selected projects. These selected projects include:

1) Efficient and solar stoves in Madagascar
2) Biogas from animal manure in Bali, Indonesia
3) Efficient cookstoves in Kenya
4) Electricity from wood waste in Brazil.

Note that the emissions computed by the Lufthansa calculator for the reference Amsterdam-Madrid round trip (250 kg) are similar to the numbers of the KLM calculator and the ICAO calculator (see the report 'The impact of renewable fuels on plane tickets'). The costs of compensation are higher, however: They are €5 versus €2.12 at KLM, indicating that the portfolio of Lufthansa projects has higher prices.

6 Non-airline schemes

Passengers can also choose to use a third party to offset their emissions, such as Atmosfair, MyClimate, Gold Standard, or South Pole Group. These typically provide passengers the option to compensate a chosen amount of CO_2 by selecting projects in a portfolio, with prices that are typically higher than the schemes that airlines propose (see above: about €8-€20/tonne), at about €25/tonne for Atmosfair (which uses a set rate of €23/tonne) and MyClimate (which proposes different options, including a high-cost one with projects in Switzerland). Passengers can also compensate a given flight by providing its details into a calculator.

Interestingly, the emissions computed by the calculators are considerably higher than the ICAO or airline-provided numbers (which were all in the range of 250 kg for the reference Amsterdam-Madrid round-trip flight), at 549 kg for MyClimate and 752 for Atmosfair. The difference mostly comes from the fact that the ICAO and airlines base their numbers solely on CO_2 emissions from fuel combustion, while these calculators add other effects, such as the impact of contrails. MyClimate multiplies the emissions by a factor 2 for this reason, and they also look at lifecycle effects (such as aircraft production, maintenance, and disposal, as well as infrastructure. Atmosfair says they include NOx and soot related climate impact. The reason for the discrepancy between these two calculators is probably a reflection of the fact that the climate impact of contrails and proper accounting for indirect/full lifecycle emissions are a complex and not yet settled matter.