

Virgin Atlantic's carbon summary – July 2020

Climate context

1. Aviation is a carbon intensive industry. It also brings huge economic and social benefits.
2. We're clear of the climate science and that all sectors need to quickly and significantly reduce emissions.
3. Many airlines have been working on reductions for >10 years, with global industry targets agreed in 2009:
 - i. 1.5% fuel efficiency from 2009;
 - ii. Carbon neutral growth from 2020;
 - iii. 50% net reductions by 2050 (from 2005).
4. IPCC reports have emphasised the urgent need to go further, faster, leading the UK aviation industry to recently commit to net zero by 2050¹. We believe net zero is challenging but doable if major stakeholders take concerted action and committed to the UK Sustainable Aviation net zero pledge. We also continue to support ICAO² and countries' in developing meaningful *international* targets and measures.
5. >99% of Virgin Atlantic's scope 1 and 2 emissions come from aircraft fuel use³, so reducing aircraft CO₂ has been our no. 1 environmental priority since establishing our Change is in the Air programme in 2007⁴.
6. **Results:** from 2007-2019 we reduced:
 - i. Total aircraft CO₂ by 20% (from 5.2 to 4.1 million tonnes);
 - ii. CO₂ per Revenue Tonne Kilometre⁵ (RTK) by 18% to 0.709kg;
 - iii. CO₂ per Passenger Kilometre (PK) by 17% to 79g.
7. The main carbon reductions big wins for aviation are: **fleet, CORSIA, fuels...**

Fleet

8. Investing in the most efficient aircraft is the single biggest thing an airline can do right now.
9. Since 2011, Virgin Atlantic has been implementing a **\$multi-billion fleet upgrade**, as well as using the right aircraft on the right routes to optimise passenger and cargo loads, and therefore fuel- and carbon-efficiency.
 - i. Our twin-engine A330s, 787s & A350s give **~30% savings per trip** compared to the 4-engine aircraft they replace.
 - ii. From 2021-24 new A330-neos will replace our original A330s, giving a **13% CO₂ saving** over the older twins they'll replace.
10. Future fleet developments such as **hybrid and electric aircraft** are exciting and important developments for the sector. These will benefit short haul travel initially, although probably not before the mid-2030s.

CORSIA

11. We've supported an effective global carbon market based measure (MBM) for international aviation since 2007.
12. International aviation sits outside the Paris climate agreement for a number of important reasons (i.e. to avoid competitive distortion and carbon leakage⁶, all airlines on the same routes must be treated equally).
13. Crucially, good MBMs are more environmentally effective and efficient than taxation because they give value to carbon savings and money goes direct to new carbon reduction projects (not governments).
14. The **Carbon Offsetting and Reduction Scheme for International Aviation** (CORSIA) was agreed by ICAO² and nation states in Oct 2016, following long-term support from airlines. It was designed to help the global industry stabilise emissions and achieve **carbon neutral growth from 2020**.
15. CORSIA is a massive deal. Between 2021-35, airlines from 88 participating states (~77% of international aviation)⁷ will pay **\$billions into robust, new CORSIA-compliant carbon reduction projects** around the world (like renewable energy and forestry projects), mitigating **about 2.5 billion tonnes CO₂** in total.
16. The scheme becomes mandatory for all nations (apart from a few least-developed countries) from 2027.

Sustainable aviation fuels (SAF)

17. It's widely acknowledged (by industry, governments, scientists and NGOs) that unlike ground energy and transport, long-haul aviation will be dependent on liquid 'drop in' fuels for the foreseeable future.
18. >250K commercial sustainable aviation fuels (SAF) flights to date have clearly shown SAF's technical viability⁸. The next breakthrough point is the development of volumes of advanced, sustainably-robust, *affordable* SAF, which will enable airlines to buy and fly them routinely, achieving huge CO₂ savings.
19. We're close to breakthrough with our long-term cleantech fuel partner LanzaTech, who make **RSB⁹ certified fuels with >70% lower life cycle carbon emissions** by recycling carbon-rich gases and other wastes.
 - i. LanzaTech are already producing commercial volumes of ethanol in China. They recently announced funding for a 10mill USG SAF demo plant¹⁰ and are raising funds for 3 full size (30 mill USG) jet fuel plants in different locations around the world.
 - ii. We're keen to secure LanzaTech jet fuel plants in the UK, but this technology is currently excluded from the UK's existing incentive scheme¹¹ putting it and other exciting breakthrough techs at a disadvantage, meaning it can't be produced here.
20. We continue urge the UK government to include **Recycled Carbon Fuels** in the RTFO as soon as possible, so they can be brought to market **as soon as the mid 2020s**, bringing multiple benefits for the UK and beyond.

¹ <https://www.sustainableaviation.co.uk/news/uk-aviation-commits-to-net-zero-carbon-emissions-by-2050/>

² ICAO is the UN body responsible for negotiating **international aviation** agreements <https://www.icao.int/environmental-protection/Pages/climate-change.aspx>.

³ The figure is 85% if we include all Scope 3 (supply chain emissions) from across our airline and holiday operations.

⁴ For videos, reports and further information about our Change is in the Air sustainability programme, visit www.virginatlantic.com/changeisintheair.

⁵ CO₂/RTK is an efficiency measure based on CO₂ emissions per weight passenger and cargo carried.

⁶ Where carbon moves between airlines or routes because of local or regional economics favour some over others.

⁷ As of July 2020: <https://www.icao.int/environmental-protection/CORSIA/Pages/state-pairs.aspx>.

⁸ As of July 2020: www.enviro.aero/SAF.

⁹ Roundtable on Sustainable Biomaterials is the gold standard, independent verification body in this space: www.rsb.org.

¹⁰ <https://www.greenaironline.com/news.php?viewStory=2704>

¹¹ Renewable Transport Fuels Obligation (RTFO): <https://www.gov.uk/government/publications/renewable-transport-fuel-obligation-rtfo-guidance-2019>.