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Airline fleet renewal strategies

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This document summarizes the Airneth seminar entitled “Airline fleet renewal strategies” held on April 14th 2022 in The Hague. The seminar included presentations by: Peerlings (Royal Netherlands Aerospace Centre), Ranasinghe (easyJet), Visser & Mazereeuw (KLM) and Dray (UCL Energy Institute) followed by a round-table discussion.

1. Key takeaways

Presentations

- ❖ Currently, the majority of flights departing from Dutch airports is operated using Boeing 737NG, Embraer E-jets and Airbus A320 aircraft;
- ❖ According to NLR estimations, the share of fifth generation aircraft (e.g. Airbus A320neo, Boeing 737MAX & Embraer E2) in the number of flights departing from Dutch airports will increase from 4 percent in 2019 to 74 percent in 2030. The higher fuel efficiency of these aircraft is expected to yield a 4 to 8 percent decrease in CO₂ emissions in 2025 and a 7 to 14 percent decrease in 2030 (compared with a baseline scenario);
- ❖ From 2030 onwards, alternative energy sources and efficiency improvements are expected to further decrease CO₂ emissions of aircraft;
- ❖ Sustainable aviation fuels (SAF), hydrogen and battery electricity are available energy sources for aviation. Hydrogen will most likely be available for shorter distance flights first (from 2035 onwards), and later on in for longer distance flights (after 2050). Provided the hydrogen is green (i.e. renewable), it has potential to contribute heavily to decarbonizing aviation. Drop-in SAF is available in the shorter term and can be used across distance segments;
- ❖ Low-cost carriers like EasyJet generally operate a uniform fleet. Hub carriers like KLM operate a fleet with multiple aircraft types to cater their hub and spoke network;
- ❖ Important challenges for airlines regarding fleet renewal are: limited supply of new aircraft, aircraft exit strategy, capital expenditures, teething problems of new fleet (including training crew), and infrastructure availability/compatibility;
- ❖ KLM recently acquired hundred aircraft of the Airbus A320neo family. The most important reasons being the spaciousness of this aircraft type and its reduced CO₂ and NO_x emissions compared to the precursor Airbus A320ceo aircraft;
- ❖ Academic literature shows that policy makers have several options for stimulating fleet renewal, e.g.: R&D support, standards for in-production and/or in-operation aircraft, carbon trading and fuel taxation;
- ❖ Ideally, policies to stimulate fleet renewal are made on a global level. Nevertheless, regional policies (e.g. on the European level) can also have a global impact. For example, EU ETS carbon costs may incentivize airlines to acquire sustainable aircraft, that are used on non-EU routes as well.

Discussion

- ❖ Preferably, the technology path towards sustainable aviation is globally determined;
- ❖ Airports play a role. They are able to stimulate sustainable aviation by investing in charging equipment for electric aircraft or refuelling equipment for hydrogen aircraft. Allowing airports to differentiate airport charges (more) with respect to emissions is mentioned as another policy alternative;
- ❖ In addition to designing sustainable aircraft, certifying and (mass) producing are important challenges for manufactures. It is important EASA makes the certification of electric and hydrogen aircraft possible and to analyze the market demand for these aircraft given the availability of ‘conventional’ aircrafts as a substitute.