Helaba

Focus on: Credits

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Transition Finance in the Spotlight: Aviation

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One of the most significant environmental challenges of the aviation industry is its impact on climate change. The sector is responsible for a significant portion of greenhouse gas emissions, primarily CO_2 and NOx. The International Civil Aviation Organization (ICAO) estimates aviation contributes around 2% of global CO_2 emissions, and this share is projected to rise due to increasing air traffic and faster decarbonisation of other sectors. Although the Paris Agreement does not establish sector specific goals for addressing temperature rise, analysis shows that for hard-to-decarbonize sectors such as air transport, this will be a major challenge in light of increasing regulatory, investor and consumer pressure. Passenger and freight volumes in the EU and global aviation markets have grown strongly during past decades and will continue to do so. Efficiency improvements were insufficient to compensate for the growing demand, which resulted in rising GHG emissions from the sector.

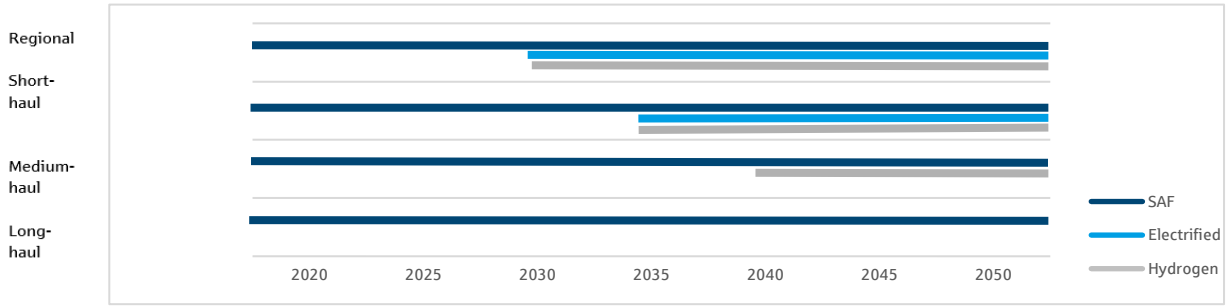
Squaring the circle: emissions reduction in a hardest-to-abate sector

Air transport is expected to carry over 10 billion passengers annually, covering 22 trillion km each year by 2050. Without improvements in technology or operations, this would generate around 2,000 million tons of CO_2 according to the Air Transport Action Group (ATAG). The International Energy Agency (IEA) estimates the aviation sector needs to reduce its CO_2 emissions to 210 million tons by 2050 (2.4% per year) to achieve the Paris Climate Agreement's net zero goal.

It is therefore critical to decouple the changes in greenhouse gas emissions from the underlying trend in air traffic to effectively tackle climate change in the industry as a whole. Although transformative technology for even the smallest commercial aircraft is still more than a decade away, the development of zero-emission aircrafts powered by green hydrogen or electricity is gaining momentum. Airbus recently announced that the first zero-emission commercial aircraft could enter service by 2035 for regional routes catering up to 100 passengers. However, it remains uncertain when such aircraft will be available for the bulk of air transport:

Expected deployment of low-and zero-carbon emission technologies in aircrafts

Based on graphics from Waypoint 2050



Source: ATAG (2022) Waypoint 2050. Balancing growth in connectivity with a comprehensive global air transport response to the climate emergency: a vision of net-zero aviation by mid-century

Until then, airframes and engines' incremental efficiency improvements, combined with sustainable aviation fuels (SAF), are the main mitigation options. Airlines need a threefold strategy to compensate for the expected 3.1% CAGR air transport growth from 2019-2050 whilst striving for the net-zero target:

1) **Technology:** Prioritized development of electric and hybrid electric aircrafts in the short-range and below 100 seat category with entry into service from 2035 and further enhancements for larger aircrafts
2) **Operational:** Optimized flight routes as air traffic volumes recovers to pre-pandemic levels and higher airline load factor improvements to reduce overcapacity
3) **Sustainable Aviation Fuel**: Replacement of most conventional jet fuel with sustainable aviation fuels by 2050

Snapshot: Sustainable Aviation Fuel

Jet fuel is the primary pollutant in aviation and accounts for over 90% of most airlines' emissions in their value chain. Sustainable aviation fuels (SAFs) have emerged as a promising solution to reduce the climate impact of the aviation industry. However, SAFs currently contribute to less than 1% of total aviation fuel in Europe, primarily due to their higher costs and resource scarcity. SAFs have significant potential to reduce the net CO_2 emissions of the aviation industry by up to 80% currently and more than 90% in the future, depending on the feedstock and the SAF conversion pathway:

- A mature production pathway is HEFA (Hydroprocessed Esters and Fatty Acids), which is the most cost-effective pathway currently available but limited by the availability of feedstocks. HEFA processes vegetable oils, waste, and residue lipids and reduces GHG emissions by 75-84%.
- ABtL (Advanced Biomass to Liquids) is another SAF production pathway that transforms biomass and municipal solid waste. One of its key advantages is the ability to use a variety of biomass inputs. ABtL can reduce GHG emissions by 66-94%, but it is currently 25% more expensive than HEFA. Economies of scale are expected to significantly reduce the premium in the future.
- PtL (Power to Liquid), which is based on renewable hydrogen, is the most expensive way to produce SAF, but it allows for GHG emissions by 90-99%. Green hydrogen can be produced in large quantities from wind and solar energy sources.

SAFs are compatible with the existing infrastructure, and from today's perspective, they seem to be the silver bullet for the reduction of GHG emissions in the aviation sector, but resource scarcity is a limiting factor.

How regulation tries to frame a hard-to-abate sector: the EU taxonomy

The concept of sustainability is multifaceted and dynamic, influenced by various perspectives and factors. The EU taxonomy is designed to ensure avoidance of greenwashing within the finance sector and encourage emissions reductions in line with the Paris Agreement and the European Green Deal. For hard-to-abate sectors such as aviation that have no zero-emission technologies available, the rules offer a “transition label” for investments that meet certain “best-in-class” criteria.

On 30 March 2022, the European Commission (EC) published a report of the Platform on Sustainable Finance[1] with recommended screening criteria for (i) manufacturing of aircraft, (ii) leasing of aircraft and (iii) passenger and freight air transport. The focus is on the following three overarching goals:

(i) incentivizing the replacement of older, less efficient aircrafts with newer, more efficient ones without contributing to fleet extension
(ii) promoting the development of increasingly efficient aircrafts while not compromising zero-emission breakthrough technologies
(iii) Incentivizing the replacement of fossil jet fuel with sustainable aviation fuels, including the technical readiness of the aircraft fleet to operate with high blending ratios

Zero-exhaust CO_2 emissions aircrafts powered by electricity or green hydrogen are considered the gold standard. Recognizing that the necessary technologies are still in the developmental phase, transitional steps are accepted. 'Best in class' commercial aircrafts will therefore qualify until the end of 2027. From 2028 to 2032, they need to be 100% SAF certified. To ensure taxonomy criteria do not contribute to a net increase in the average fleet size over a 10-year period, the proposal also introduces the so-called "scrapping rule." For each new 'best in class' aircraft, an older non-compliant aircraft would need to be decommissioned or sold. The decommissioning or sale of the older aircraft must fall within a weight limit of at least 80% of maximum take-off mass (MTOM) of the new aircraft.

The EC is currently discussing the conditions for including the aviation sector into the EU taxonomy and is still divided over the investment rules for the industry. Critics argue that investment in more efficient aircrafts would happen with or without the taxonomy simply due to economic reasons and that the taxonomy puts a green stamp on aviation's business as usual. Nevertheless, excluding the aviation sector would also impede the sector's ability to raise money for decarbonization efforts and undercut overall sustainability objectives.

The challenges of financing the transition in a sustainable way

As global companies operate in different regions and countries, regulations can vary widely. The EU Taxonomy was created to provide a common language and framework for defining sustainable economic activities and guiding capital flows. However, to align with net-zero targets, companies must use additional metrics such as Task Force on Climate Related Financial Disclosures (TCFD) and science-based targets to demonstrate their transition plans. The financial industry plays a crucial role in enabling and ensuring the transition towards a sustainable future. Corporate transition pathways must not only have ambitious goals for environmental factors consistent with planetary boundaries but also clear trajectories to achieve them. These pathways should be tailored to the business model and individual situation of the respective company and differentiate for instance between passenger and freight load factors.

Whilst other sectors experienced significant growth in sustainable finance transactions, the aviation sector remained cautious. One reason certainly has been the lack of investment opportunities in readily available technologies that would have allowed for Green labelled use-of-proceeds transactions. Though Singapore-based lessor Avation financed the acquisition of new commercial aircrafts for the first time with a Green Loan aligned with LMA's Green Loan principles already in 2019, similar transactions remained scarce. Transition Bonds suffered the same fate. Initially considered to finance the transition of hard-to-abate sectors, they are still largely perceived as 'light green' by market participants and so far still remain a niche segment with very limited issuance volume.

In contrast, sustainability-linked financing structures for general corporate purposes that include a margin ratchet linked to sustainability KPIs and respective targets are gaining momentum across sectors – also in hard to abate industries such as aviation. Just recently, in January 2023, Air France-KLM successfully issued the first public sustainability-linked bond in the airline sector. Such finance instruments help underline the level of ambition of a company's decarbonization strategy, in particular if it is linked to internationally recognized frameworks or con-

[1] https://finance.ec.europa.eu/system/files/2022-03/220330-sustainable-finance-platform-finance-report-remaining-environmental-objectives-taxonomy-annex_en.pdf

cepts. For instance, according to the Climate Bond Initiative Framework, a transaction could be certified (once relevant sector-specific criteria are available) as long as the corporate has suitably and ambitious performance targets as well as credible transition plans, i.e., the corporate is undergoing an ambitious and credible transition.

To achieve the Paris-aligned climate goals while still allowing for projected industry growth, a sector-wide GHG intensity pathway is key for the aviation industry.

A potential solution offers the "Milestone Concept" by the Impact on Sustainable Aviation[2]. The concept suggest a clear decoupling of emission reduction and industry growth by granting points for decarbonization in relation to capacity growth. In other words, are total emissions growing slower than capacity (relative decoupling) or declining even as capacity grows (absolute decoupling – the ultimate objective). No additional reward shall be given for relative decoupling after 2030 as major decarbonization levers like SAF or carbon capture increasingly become available. However, sector-specific pathways like the Sectoral Decarbonization Approach (SDA) by the Science Based Targets-Initiative (SBTi)[3] need to be considered to benchmark this progress towards the goal of limiting global warming to 1,5°C (or at least 'well below 2°C') above pre-industrial levels. Still, availability of data remains an issue as only a fraction of airlines worldwide report CO_2 emissions data, mostly not harmonized and difficult to compare.

Our favoured approach: Bespoke science-based targets aligned with industry pathways

While the Taxonomy provides clear standards for efficient and low-emission aircrafts, it does not address issues such as operational efficiency, the scarcity of sustainable aviation fuels or carbon reduction alignment with science-based targets. Well-crafted sustainability-linked structures offer a more comprehensive approach for the alignment of transition strategies with financing programs.

> *„It is so important for us to support the industry on its pathway to decarbonize. This will not be an easy and quick path, but we truly believe that supporting the industry in its transition is the only sensible way forward."*
>
> *Jörg Schirrmacher – Head of Transport Finance Helaba*

To define meaningful KPIs and targets, standardized GHG emissions data must be available. Collecting, sorting and analyzing the relevant data will be one of the major challenges going forward. Regulations like the Corporate Sustainability Reporting Directive (CSRD) will help providing standardized data and increase overall transparency.

Targets need to be ambitious and aligned with industry pathways. As long-term annual growth rates are difficult to forecast and a significant portion of decarbonization capacity is dependent on future technologies, benchmarking within the sector including a clear decoupling of emission reduction and industry growth needs to be the basis.

A solid financing structure should therefore focus on three essential Key Performance Indicators (KPIs)[4] that allow for a sharp view of a company's overall sustainability strategy and performance:

(i) CO_2 reduction in absolute terms (footprint)
(ii) CO_2 intensity referring to fuel efficiency (intensity)
(iii) Separating the adverse environmental impacts from underlying capacity trends (decoupling)

[2] https://impact-on-sustainable-aviation.org/shared-files/1023/?Impact-White-Paper_Milestone-Concept_February23-2.pdf
[3] https://sciencebasedtargets.org/resources/files/SBTi_AviationGuidanceAug2021.pdf
[4] https://impact-on-sustainable-aviation.org/shared-files/1023/?Impact-White-Paper_Milestone-Concept_February23-2.pdf

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