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Business aviation deserves a fair carbon transition opportunity

Less populism, more trust in earnest commitment of business aviation industry to keep up with environmental care tenets!

Latest environmental protest 'creativity', like that of puncturing tires of new cars at the dealership or even … plugging the golf course holes, has now also touched the business aviation. Spray-painting the fuselage of and gluing to a business jet landed on a small German resort island of Sylt it is just one example. On government level, various politicians have sought to limit either private jets flights in particular or flights less than 2 two 2,5 hours in general. Emotions aside from such 'performances' and 'environmental solutions', business aviation can be a catalyst in bringing a hope for a difficult to decarbonize sector of aviation in general, if given a meaningful financial boost.

A natural tendency for the aircraft operators is to constantly seek newer or upgraded fleet to better serve the clients through added comfort or service (including, the passenger to freighter cargo conversions), and to meet stringer environmental compliance requirements. It comes at a significant financial cost. And that's where financiers and investors can lend a hand. Yet, the caveat is the risk of stereotyped prejudice towards business aviation as the crucial contributor to global warming that somehow cultivates at the moment.

Environmental NGOs tend to outline only the *relative* carbon footprint of the business aviation in comparison with the commercial aviation. For instance, the notable *Transport & Environment* in its 2021 study titled *'Private jets: can the super rich supercharge zero-emission aviation?'* finds that:

- *'In just one hour, a single private jet can emit two tonnes of CO2. The average person in the EU emits 8.2 tCO2eq over the course of an entire year.'* (p.3)
- *'private jets are 5 to 14 times more polluting than commercial planes (per passenger), and 50 times more polluting than trains, a gap which will grow as private jet users move towards aircraft which are bigger and more polluting than their commercial alternatives'* (pp.3-4)
- *'industry data shows that relatively efficient aircraft such as the Pilatus PC-12 are the exception rather than the norm, and that all the other popular models pollute much more. As a result, private jets are on average 10 times more carbon intensive than commercial flights.'* (p.12)
- *'Except for the last economic crisis (2008), private aviation has seen a constant increase in traffic between 2005 and 2019. The emissions of the sector grew by 31%, compared to 25% for European commercial aviation (Fig. 9)'* (p.23)

This resonates with the tickers at the EU level:

- in contrast to commercial aviation, exclusion of *business* aircraft manufacturing, leasing, purchase, financing, and operation from being deemed *economically sustainable activities* under the EU Taxonomy (Sections 3.21., 6.18., and 6.19. in Annex I to the EU Climate Delegated Act, introduced through Delegated Regulation 2023/2485 having entered into force on December 11, 2023 after successfully passing the European Parliament scrutiny)
- tasking the European Commission, in its yearly EU carbon market report in 2026, to include assessment of climate impact of flights less than 1,000 km (620 mi) and consideration of measures to mitigate those impacts, such as the usage of alternative modes of transport and increased use of sustainable aviation fuels (Article 30(5) in the EU Emissions Trading System Directive).
  Flights less than 1,000 km (620 mi) well encompass the most frequent business aviation routes in Europe (approximately half of such flights measure 500 km (310 mi) or less).

Such positioning of business aviation is put into improper context and depicts an incorrect impact that the business aviation actually poses to the environment. One shall instead reflect on:

- global business aviation industry determination towards the environmental care

- actual carbon impact that the business aviation poses
- place of the industry in the overall context of all hard to abate sectors

Global business aviation industry determination towards the environmental care

Through collaboration on the International Business Aviation Council, the international business aviation industry has constantly been aware of the environmental care, and has always meticulously adopted approaches in tandem with the work at the International Civil Aviation Organization and the global climate science voice from the Intergovernmental Panel on Climate Change:

- in 2009, the Business Aviation Commitment on Climate Change (BACC) was adopted in conjunction with the General Aviation Manufacturers Association, to provide for (i) annual fuel efficiency improvement rate of 2% up to 2020, (ii) carbon neutral growth from 2020, and (iii) 50% cutting in 2005 emissions until 2050
- in 2020, the BACC was updated to reflect on the latest industry developments and programs under the ICAO auspices
- again in 2021, the Net-Zero 2050 goal was clearly acknowledged, through adoption of the Business Aviation Declaration on Net-Zero Carbon Emissions by 2050, to ensure the IPCC 1,5°C (2,7°F) alignment.

Actual carbon impact that the business aviation poses

Contrary to the perception that normally is being implied as to the business aviation environmental footprint, it's *actual* impact is *tiny*: only 2% of the overall aviation emissions. So, depending on the measurement in terms of aviation CO_2 impact (2,5% in conservative estimates) or overall warming impact, the so called effective radiative forcing (3,5% in conservative estimates), the **business aviation contributes merely to 0,05% or 0,07% of global emissions factor, respectively**.

In Europe, that share goes mathematically higher, yet still is negligible. Assuming the traffic year 2022 as basis, there were 3,385,538 tCO_2 emitted attributable to EU27 plus Norway, Switzerland, and UK business aviation. Wrapping this into the latest publicly available data (2019) for roughly the same geography in a broader aviation context, as stemming from the 3rd European Aviation Environmental Report prepared by the European Union Aviation Safety Agency with support from the European Environment Agency and EUROCONTROL, one can calculate that the business aviation carries a share of roughly 3,39/147=2% of CO_2 aviation impact in Europe. Yet, against the background of the aggregate amount of CO_2 emissions from all sectors in Europe (as deductible from aggregation the total data for the same region), this brings the following number: **0,00339/3,34=0.1014% only of all European wide CO_2 emissions are caused by EU business aviation**.

Environmental NGOs sometimes acknowledge the tiny factor of business aviation climate impact, at the same time downplay this on basis of… the need to catch up with what other industries are doing (for instance, see p.24 in the *Transport & Environment* 2021 study titled *'Private jets: can the super rich supercharge zero-emission aviation?'*). So once again, instead of a structurally merits-based approach, the business aviation industry is being simply automatically installed on 'one size fits all' track.

Place of the industry in the overall context of all hard to abate sectors

Aviation generally is only on of the so called hard to abate sectors, where decarbonization is a pathway to assist in reaching the Net Zero 2050 goal. Virtually every economically strategically sector is still lagging behind the formalized preferred waypoints. According to the International Energy Association's specialized monitoring method, the Tracking Clean Energy Progress (TCEP), which monitors the progress against reaching the IEA's Net Zero Emissions by 2050 Scenario (NZE), only 3 (of more than 50) elements (solar PV, electric vehicles, and lighting) are fully on track, while all others, including, the major economy boosters, such as aviation, shipping, heavy duty transportation (transport), steel, aluminium, paper manufacturing (industry), and methane abatement (oil and gas) are still pushing through.

One should also assess the carbon footprint management policy design as applicable to airlines:

- EU ETS ('cap and trade' type emissions trading system)
- ICAO CORSIA (carbon 'offsetting' type mechanism)
- SAF (sustainable aviation fuel)
- Sustainable finance block

EU ETS ('cap and trade' type emissions trading system)

Fundamentals of the EU ETS are laid out in the EU ETS Directive. The basic idea is that there is an EU wide (limited) emissions cap set for EU aviation activities and all aircraft operators are incentivized to strive lowering their carbon footprint in order to tap by those limited resources. As of 2024, the system structure works along this course:

- On an operator level
    - *EU and non-EU* operators performing *intra*-European Economic Area (EEA) flights, or flights from EEA *to* Switzerland or UK are subject to the system, when (i) in case of commercial operators, annual emissions from system covered flights *reach* 10,000 tCO_2 (*yet including*, flights from Switzerland or UK to EEA or Heads of State flights) or, (ii) in case of non-commercial operators, for period until end of 2030, annual emissions *reach* 1,000 tCO_2 (*yet including*, flights from Switzerland or UK to EEA)

- General temporary exemptions
    - until end of 2026, flights *between EEA and any third country (other than flights to Switzerland or UK)* are exempt from the obligation to *surrender* respective emission allowances
- Specific temporary exemptions
    - in light of the adoption of the ICAO CORSIA mechanism, until end of 2026, *flights between EEA and third countries* are exempt from the *system*
- Review of the system
    - Commission is empowered to assess the ICAO CORSIA progress and *extend* the system, as of 2027, to *flights from EEA to any third country* or, if the level of CORSIA implementation is deemed proper, to *flights to non-CORSIA States*
- Determination of the emissions cap
    - the overall emissions cap for the EU is set at the 2023 activity level (minus 4,3% from the reference year (2020), continuing this annual reduction progression until 2027; as of 2028, the new annual reduction factor becomes 4,4% from the reference year (2020)) with the January 1, 2024 adjustments: (i) top-up for flights between an outermost region of one Member State and another Member State (EEA) *or* flights from that region to Switzerland or UK, and (ii) deduction of flights between the outermost region and the same Member State.
- Annually, deduction is made for two types of reserves:
    - (for the period until end of 2030 in aggregate) up to 20 million emission allowances EU-wide are set aside for compensating the *commercial* operators for the use of SAF for *subsonic* flights, which rate of compensation may run from 50% to 100% of the difference between the SAF price and the fossil fuel price, depending on the type of SAF used
    - (for year 2026 only) 5 million allowances are set aside towards the EU Innovation Fund
- Free allocation and Auctioning:
    - After deducting the mandatory reserves, 36,25% of the yearly amount of emission allowances are auctioned in 2024 and 57,5% in 2025. As of 2026, all allowances (except the mandatory reserves) are auctioned (minus the mandatory reserves), so the operators are eligible for receiving free allowances only this and next year, on basis of their emissions in 2023. This implies that free allocation is grandfathered, and the new entrants would need to buy the allowances on the market or through dedicated public auctions

    - Auctioning is the primary market for emission allowances, and European Energy Exchange AG (a member entity of Deutsche Börse) (EEX) has been awarded the status of the common auction platform with entitlement to organize regular auctions on behalf of Member States
- Excess emissions:
    - When operator's actual emissions in the reported (which is chronologically a preceding one) year exceed the free allowances allocated to it or otherwise in its possession, those additionally required emission allowances can be purchased, apart from the primary market (regular public auctions) in open carbon markets (such as Intercontinental Exchange (ICE)) or through private dealings, namely, over the counter (OTC) transactions. Also, the public auctions organized by Member States is a source of acquisition. All transactions must be acknowledged through a specialized EU ETS Registry, to enable a valid surrender procedure of those allowances and meeting the actual emissions coverage obligation.
- Aggregate amount of allowances issued for the aviation sector in 2024:
    - Under the European Commission decision for 2024, the total number of aviation related allowances issued EU-wide equals 28,866,578 units.

ICAO CORSIA (carbon 'offsetting' type mechanism)

On a global scale, ICAO has established a different type of emissions reduction system. In contrast to EU's approach, where emissions are to be directly addressed in the company's activities, the ICAO approach is neutrality based, implying that any emissions caused by international flights shall be offset on part of operators with projects that bring a carbon reduction to the same extent elsewhere.

Basis of the system is reflected in a dedicated piece of standards and recommended practices adopted under the ICAO Convention on Civil Aviation, namely, in its Annex 16 — Environmental Protection - Volume IV — Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). Guidance material is provided in the Environmental Technical Manual (Doc 9501), Volume IV — Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). Crucial five elements of the system, including, eligible CORSIA offset units and eligible fuels (used for crediting towards the offsetting requirements), in their turn, are accordingly reflected in the additional material adopted under the ICAO auspices.

- Worldwide international flights emissions in 2019 are taken as the reference, and excess emissions in future periods are subject to offsetting by all operators in proportion to their share. In years 2024-2035, the reference basis is reduced to 85% of those 2019 emissions.

- Period 2024-2026 is set as First phase, while Second phase covers 2027-2035. The difference is that First phase is voluntary (it chronologically succeeds the original, Pilot phase (2021-2023)). The mandatory Second phase (2027-2035) enrolls, with certain exceptions, automatically those States which, in the reference year (2018) (i) exceeded individually 0,5% in revenue tonne kilometers (RTK) metrics of international traffic, or (ii) jointly held, when assessed from the highest to lower, 90% of total RTK
- Major criteria for inclusion in the system are (i) at least 10,000 tCO_2 annual emissions and (ii) utilization of *aeroplanes* with at least 5,700 kg Maximum Take-Off Mass (MTOW)
- While all covered operators are obliged to annually monitor, report, and verify (*MRV*) their emissions stemming from all of their international activities, only those operators that operate *included* international routes (so called Chapter 3 State Pairs) are subject to the *offsetting* requirements. That designation (Chapter 3 State Pairs) means those States that have notified of their voluntary intention to participate in the offsetting regime, as well as those States that are mandatorily so included in the Second phase (2027-2035)
- In the period 2033-2035, the offsetting amount will involve not only the overall global aviation emissions growth (so called sector's growth factor), but also the particular operator's individual growth (so called operator's growth factor). Those aspects will be allocated as 85% sector's/15% operator's individual growth share.
- In terms of offsetting, there is a three consecutive year compliance period concept introduced (running 2024-2026, 2027-2029, 2030-2032, and 2033-2035), for each of which is the final offsetting requirement determined and actually to be *made* (the operator may accomplish the task, technically, also before the mandatory timeline)
- Offsetting is done through acquisition and cancellation of eligible carbon credits, so called, CORSIA eligible emissions units. ICAO Council approves the respective programs, whose units can be purchased for the CORSIA offsetting purposes in carbon markets or through OTC transactions.
- Offsetting amounts may be reduced through utilization of qualified SAF and lower carbon fuel. In order to be deemed eligible as an offsetting reduction asset, the respective batches of aviation fuel used and claimed by the operator must be (i) *blended* during the respective compliance period (the relevant consecutive three year periods) and (ii) produced by the manufacturer certified (to the compliance of the requisite ICAO provisions) by Sustainability Certification Schemes (SCS). SCS are approved by ICAO Council. The operator arrives at the amount of offsetting reduction it can claim from the use of the respective batches of fuel through determining their life cycle emissions values. There is a pre-defined default

('reference') method (*default life cycle emissions value*) and the concrete method looking into the actual figures (*actual life cycle emissions value*). To ensure that the actual figures (the actual life cycle emissions value method) is applied correctly, a requirement is that such calculations and determinations are confirmed by a SCS.

- It is estimated that 80% of all international traffic will be covered (using 2018 as the reference year) in the First phase of CORSIA (2024-2026)

Interaction of EU ETS and ICAO CORSIA

In the EU, CORSIA is being implemented through the EU ETS system as a separate sub-package. Right of way is given to CORSIA, through exempting the *generic* EU ETS coverage (routes between EEA and third countries) for (i) routes between EEA and third countries and (ii) routes, operated by EU operators, between third countries, *or* between Switzerland or UK and third countries. This temporary derogation is valid until end of 2026. As of 2027, the EU ETS will either be extended to cover flights from EEA to all third countries, or from EEA to third countries not participating in CORSIA.
Flights from EEA to Switzerland or UK remain unaffected as being included in the EU ETS (in light of the Switzerland and UK ETS linking arrangements in place).
EU has decided on the CORSIA participation already as of the Pilot phase (2021-2023), while at the same time, mandating the Member States to notify the differences to ICAO with Annex 16 of the ICAO Convention, in order to preserve the priority and self-standing nature of EU ETS.

- The single MRV mechanism (for EU operators) is being utilized for the EU ETS and CORSIA compliance purposes, to the extent the operator is subject to both systems.
- As a special rule, EU ETS technically narrows down the scope of otherwise eligible CORSIA carbon credits that the EU operators are allowed to use as part of their CORSIA offsetting obligations. Most important aspect is that Commission may issue a delegated legislative act to determine the list of States or programs whose generated carbon credits reflect a sufficiently robust level of carbon neutrality goal achievement.

SAF policy in Europe

On account that fossil fuel combustion substitution with electric or liquid hydrogen-based propulsions can occur for *short*-haul commercial aircraft first, in 2035, then for *medium*-haul machines somewhere at midcentury with potential hydrogen-based propulsion instead (contrasting the technical feasibility limits of the electric battery storage), SAF has a significant role to play on decarbonization roads. It's occasionally considered that CORSIA type offsetting mechanisms are a temporary solution until (i) new propulsion systems are fully commercialized to a sufficient scale and (ii) the same has happened with

SAF deployment. Such merit is also reflected in the current timeline for CORSIA being set to operate till 2035.

SAFs are basically of two types: *biofuels* and *synthetic* fuels (the latter type is also called power to liquid or e-fuels). Biofuels use as a feedstock any of the two base materials: (i) *biomass*, such as from agriculture, forestry, or fisheries (for instance, corn grain), or (ii) *waste and residues* from *biological* sources, such as from agriculture, forestry, or fisheries (for instance, wood mill waste) and *biodegradable portion of municipal or industrial waste* (for instance, used cooking oil or food waste). Synthetic fuels turn up through an electrolysis process, where hydrogen is, first, obtained from desalinated water with the use of sustainably generated electricity, and then, through merging of that hydrogen with clean carbon stemming from the captured air.

Liquid hydrogen (first phase of synthetic fuel production) can itself be used directly as a fuel, and its nature of production implies such use involves no CO_2 emissions at all. For synthetic fuel (merging the hydrogen obtained in the first phase with captured CO_2), the captured CO_2 is balanced by the same amount of emissions when used as a fuel, so this use conceptually can run at carbon neutral mode or close to that. Biofuels, technically, emit zero emissions.

There is also another type of SAF, the *recycled carbon fuel*. It stems from fossil sources, but its processing (conversion) ensures that a significant reduction in overall lifecycle emissions is achieved in contrast to a normal kerosene usage. Feedstock for this type of SAF is (i) unrecoverable waste of non-biological origin (for instance, plastic), (ii) industrial waste processing gas (for instance, landfill gas) or (iii) industrial exhaust gas (for instance, off-gas occurring during the crude oil refining).

Asides from the liquid hydrogen, which can be directly and fully used in the combustion on aircraft, all other SAF types are currently permitted to operate (by technical safety standards adopted by the industry) on a blending basis only, with 50% SAF being the current maximum of blending rate to be mixed with the traditional aviation kerosene in a given unified flight batch.

The overall concept for the European SAF can be found in the recently adopted ReFuelEU Regulation:

- Similar to EU ETS, *both* EU and non-EU operators are covered
- encompasses *commercial* flights *departing from* any EEA airport
- operators are captured when making at least 500 commercial passenger flights or 52 cargo flights in the prior accounting year *departing from* any EEA airport
- (i) non-commercial operators or (ii) commercial operators below the operator threshold *or* with respect to their non-commercial flights may also opt-in (apparently that would be sensible if the operators were eligible to claim SAF credit under the EU ETS system)

- By default, encompasses any EEA airport that *exceeds* a minimum annual passenger traffic of 800,000 or cargo traffic of 100,000 metric tons (220,462 lbs), other than an EU outermost region airport (so called *'Union airport'*)
- As of 2025:
    - provides the so-called *supply-side management* through an obligation of each Union airport's *fuel suppliers* to provide an aggregate available minimum share of SAF annually (in this regard, SAF is deemed as the already blended offer of traditional kerosene and the SAF element), which is gradually increasing from 2% in 2025, through 6% as of 2030, to 70% as of 2050. There are also minimum sub-rates set for synthetic fuels. Until end of 2034, the fuel supplies may discharge the obligation through an average weighted approach across all Union airports it supplies the fuel; accordingly, the fuel supplier may decide to supply larger portions to airports when demand is high and, theoretically, omit at all at least some airports where demand would be virtually non-existing or where structural logistics reasons (most importantly, delivery costs) would make such delivery economically unsensible.
    - All three SAF types, as discussed above, are included, with certain elements being specifically designated in terms of either general compliance or a minimum sub-mandate to be secured. *Excluded* (with narrow exceptions) from the eligible SAF types are those biofuels that are produced from (i) food and feed crop, (ii) intermediate crop, (iii) palm fatty acid distillate, (iv) palm and soy-derived materials, or (v) soap stock and its derivatives (to disincentivize prioritization of non-food intended feedstock production to the detriment of food or feed stock availability or to avoid unsustainable land use changes). For any mode of SAF to be deemed eligible under the ReFuelEU system, it shall comply with the specifications noted under the respective provisions of the EU Renewable Energy Directive (RED II), with certain narrow-down aspects clearly noted in the ReFuelEU itself. This implies that respective certifications must be obtained *by the manufacturer* of the particular SAF in order *for the operator* to be allowed to treat this as a renewable source under the RED II system (so called *'voluntary schemes'*) (and, consequently, under the ReFuelEU).
    - Provides an obligation of each covered aircraft operator to uplift at least 90% of its yearly Union airport uptake at the level of each such Union airport it departs from. The idea is that of anti-tankering measure rather than, technically, a mandate to purchase a certain level of SAF. The tankering is quite a usual practice, where aircraft, for price difference

reasons, offload the overall roundtrip fuel amount (or close to that) already at the departure airport. The anti-tankering obligation may be avoided:

- for fuel related safety reasons (for instance, lack of sufficient amount of fuel at the particular destination airport). The operator needs to provide a reason for such deviation in an annual fuel related report it is otherwise bound to submit to the competent authority and the European Aviation Safety Agency (EASA).
- For routes shorter than 850 km (528 mi) or 1200 km (746 mi) if departing to isolated islands, an operator may request a temporary general derogation from the competent authority on basis of pre-defined operational difficulties (significantly increased turnaround time *or* significantly higher fuel prices for structural geographical reasons at the particular Union airport).

- Union airports shall, generally, facilitate the access by operators of the SAF to the minimum shares as mandated by the ReFuelEU Regulation
- As for reporting obligations, in addition to the annual fuel related reporting, the operators shall also notify EASA, as a supplement to that standard report, statement on the emissions systems it participates in (and if SAF credits may be claimed) and the SAF related public support programs within EEA, as well as assurance that the particular SAF batch has been credited only under one of such systems. The requirement is that the monitoring, reporting, and verification of the concrete report is done in accordance with the EU ETS Monitoring and Reporting Regulation and EU ETS Verification and Accreditation Regulation.
- If an operator is otherwise outside the EU ETS scope, it will still need to devise a monitoring plan, which is to be approved by the respective competent authority.

- Union airports, in particular, in tandem with fuel suppliers and fuel handlers shall cooperate with their Member States to ensure a development of national policies in furtherance of proper implementation of the Alternative Fuels Infrastructure Regulation regarding the respective Union airports, in order to safeguard access by operators to hydrogen and electricity uptake for aircraft propulsion. That AFIR Regulation is aimed at assisting decarbonization of EU transport sector through mandating installation a certain level of alternative fuels recharging (refueling) stations for the transport sector, including, aviation and shipping.
- Voluntary *'Environmental Labeling Scheme'* is established, where the operator may request EASA issuance of a specific, time limited (up to one year) certificate (*'label'*), at each covered route level, for *all* flights covered by the ReFuelEU system. The operator may *additionally* request issuance of such label regarding the

covered commercial flights of the operator (that is, at least 500 commercial passenger flights or 52 cargo flights in the prior accounting year) *arriving* in the EAA airports. Two types of metrics are included in the label: (i) carbon footprint per passenger and (ii) CO_2 efficiency per kilometre. The modalities are subject to the Commission delegated legislation, to be yet adopted by January 1, 2025.

Sustainable finance block

The environmental care international instruments are striving to reach the goal through prioritizing private and public investment and capital flow towards the decarbonization projects. Finance and investment is the core capital generating stream for businesses, so when financiers or investors increase their demands over the environmental characteristics, the businesses will need to seek a change to reflect that. Such implications contrast with earlier environmental regime factual impact, where businesses and financiers were acting, normally, solely on basis of market intricacies.

Core instruments are (i) the 1992 United Nations Framework Convention on Climate Change (*'UNFCC'*), (ii) the 1997 Kyoto Protocol to the UNFCC (*'Kyoto Protocol'*) and (ii) the 2015 Paris Agreement (*'Paris Agreement'*). The UNFCC is the founding global acknowledgment to tackle the greenhouse gas (*'GHG'*) emissions, while the Kyoto Protocol, among other elements, paved the way for the emergence of emissions trading systems (including, the EU ETS as an example of 'cap and trade' approach, as well as offsetting type approaches at State cooperation level, namely, Clean Development Mechanism and Joint Implementation). Kyoto Protocol also specifies seven types of GHGs to tackle with. All of those GHGs are also deemed the coverage under EU ETS, with the exception of nitrogen trifluoride (NF_3). Paris Agreement, in its turn, is setting a goal for limiting the global temperature increase to well below 2°C (3,6°F) by end of 2099 (in comparison with pre-industrial era, which is roughly understood to cover years 1850–1900), with an effort to strive reaching the 1,5°C (2,7°F) with a stated intent of minimizing potential adverse impact of climate change.

An independent UN inter-governmental cooperation platform Intergovernmental Panel on Climate Change (IPCC) was created in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP). Its task is to render a neutral assessment of science regarding the climate change in assisting the States in tackling the prospectively adverse impacts.

- In 2018 Special Report (so called 'SR15'), the IPCC suggested that 1,5°C (2,7°F) pathway is the preferable route to minimize extent or intensity of prospectively adverse climate change impact. In that IPCC scientific parlance, we shall focus on *'pathways that limit global warming to 1.5°C with no or limited overshoot'*. That Special Report also suggests that the path is achievable when 2030 emissions will

be reduced by 45% *in comparison with the 2010 levels*, and if net zero is secured in 2050 (p.12 of that Report, section 'Summary for Policymakers').

- The IPCC's latest available, 6th Assessment Report, Working Group III 2022 contribution block *'Climate Change 2022: Mitigation of Climate Change'* states (on p.329) that *'Pathways that limit global warming to 1.5°C (>50%) with no or limited overshoot require a further acceleration in the pace of the transformation, with GHG emissions reductions of 43% (34–60%) by 2030 and 84% (73–98%) in 2050 relative to modelled 2019 emission levels.'* (correlating this to the 2010-2019 period having generated largest average annual emissions amount in the history so far).

For the EU, the basis lies in the European Climate Law, where the reference is made to the Paris Agreement temperature goal provision. The respective regulation is designed across the 2018 IPCC Special Report strategic vision to stick by the 1,5°C (2,7°F) goal increase. So, net-zero concept by 2050 is affirmed, with a dedicated EU intermediate target for emission reductions in 2030 by 55% *with respect to the 1990 level*. *Reduction* is prioritized in comparison with the *removals by sink*. In the broader climate change context, this term 'reduction' means a deliberate activity lowering the carbon footprint (for instance, upgrading fleet to newer aircraft providing better environmental performance), while 'removal by sink' refers to an activity deliberately removing the carbon from the atmosphere and storing it permanently (so, removing) in a natural or man-made reservoir (sink). The examples include reforestation as a nature-based solution and biomass carbon removal and storage (BiCRS) (a process of sustainably converting biomass, which has already naturally captured ambient CO_2, and storing the dissected carbon in long-term below the Earth's surface or in manufactured long-term products (such as concrete through CO_2 chemical conversion mode into a mineral)) as man-made solution.

Following on the concept, the Sustainable Finance Disclosure Regulation (*'SFDR'*) was adopted to put the investors and intermediaries on transparency track regarding their investment and intermediation activities. Transparency procedures are dictated to *'financial market participants'* regarding their *'financial products'*.

The following ten entities are deemed 'financial market participants' (with subsequent references being made in SFDR to the relevant EU legislation governing the respective investment or intermediation activities):

(i) *a credit institution* which provides *portfolio management*
(ii) *an investment firm* which provides *portfolio management*
(iii) *an alternative investment fund manager* (AIFM)
(iv) *a manager of a qualifying venture capital fund*
(v) *a manager of a qualifying social entrepreneurship fund*

(vi) *a management company of an undertaking for collective investment in transferable securities* (UCITS management company)
(vii) *an insurance undertaking* which makes available an insurance-based investment product (IBIP)
(viii) *an institution for occupational retirement provision* (IORP)
(ix) *a manufacturer of a pension product*
(x) *a pan-European personal pension product* (PEPP) *provider*

As a corollary, the 'financial products' are defined as any of the following:

(i) a managed portfolio
(ii) an alternative investment fund (AIF)
(iii) a UCITS
(iv) an IBIP
(v) a pension product
(vi) a pension scheme
(vii) a PEPP

Last, a covered adviser is deemed 'financial adviser' and the concept encompasses the following entities in a similar vein:

(i) *a credit institution* which provides *investment advice*
(ii) *an investment firm* which provides *investment advice*
(iii) *an AIFM* which provides *investment advice*
(iv) *a UCITS management company* which provides *investment advice*
(v) *an insurance intermediary* which provides *insurance advice with regard to IBIPs*
(vi) *an insurance undertaking* which provides *insurance advice with regard to IBIPs*

Conceptually, airlines, including, business aviation operators, may fall under the factual impact of the SFDR, since any actual debt and equity investment in an operator or advice in regards to that would fall under the definitions of 'financial market participants', 'financial products', and 'financial advisers'.

The ensuing obligations are structured around three tenets: *'sustainable investment'*, *'sustainability risk'*, and *'sustainability factor'*. Sustainability risk is in line with the usage of that connotation in a broader climate change and ESG (environmental, social, and governance related) parlance, meaning any event that may adversely impact the underlying object (in this instance, the *value of a financial product*). For climate related aspects, that normally includes both physical risk (such as draughts) and low carbon transition risk (for instance, obsolescence of a current technology). Sustainability factor is any major ESG element (including, human rights and anti-bribery concepts). Finally, the sustainable investment is defined as an investment in any economic activity that (i) contributes to an environmental *or* social objective, (ii) that does not harm any of such objectives, and (iii) where the investee entities observe good governance practices.

For overall understanding of ESG matters for a corporate and investment world, including, the good governance practices of a company, it is advisable to refer to various high-level instruments devised under the OECD auspices, which, on many occasions underpin the general design and structure of the EU policy on ESG matters, including, the environmental care principles. These are conceptualized under the 'Responsible Business Conduct' pillar there. The OECD Responsible Business Conduct could be perceived as pragmatical concretizations of the global ESG policy document adopted by the United Nations in 2015 'Transforming our world: the 2030 Agenda for Sustainable Development' (containing the famous seventeen UN Sustainable Development Goals, so called *'UN SDGs'*).

At a financial market participant level:

- information must appear on their websites
    - concerning incorporation of sustainability risk aspects in the overall investment policies
    - concerning assessment of implications of investment decisions on sustainability factors, including, due diligence policies, if such assessment is carried out (in light of the participant business nature and product types offered), or explanation for omission, if such assessment is not carried out. Certain large financial institutions must install such assessment mechanism.

At a financial adviser level:

- information must appear on their websites
    - concerning incorporation of sustainability risk aspects in the overall investment or insurance advice policies
    - concerning assessment of implications of investment or insurance advice on sustainability factors, in light of the nature of their business and product types offered, and explanation for omission, if such assessment is not carried out.

At a financial product level:

- in pre-contractual disclosures by financial market participants:
    - the mode of integration of sustainability risks into the overall investment decisions and the assessment results regarding the return of the respective financial product, or if no such integration exists, the explanation for the omission
    - if assessment of implications of investment decisions on sustainability factors is carried out at entity level, concretizations in respect of the particular financial product (if the product is covered by such assessment)
    - regarding promotion of an environmental or social characteristics in an investee company observing the good governance conduct:
        - description on how the characteristics are met

        - in case an index benchmark is used, explanation why and how such index correlates to the characteristics
        - (if environmental *characteristics* of an investment are being promoted) exact one or more environmental *objectives* specified in the EU Taxonomy Regulation that are being promoted, and the *extent* to which that investment is in an *environmentally sustainable activity*, as defined by the EU Taxonomy Regulation.
    - Regarding sustainable investments:
        - if an index is designated for benchmarking an activity (in which the investment is made), explanation of how that index correlates to the activity performance, as well as how that particular index differs from the broad market index (the market indices designed to track the performance of a wider set of stocks, such as *S&P 500 Index* or *Stoxx Europe 600*)
        - if no index is designated, explanation on how the invested activity performance will be tracked. For investments in activities seeking carbon reduction, any available EU Climate Transition Benchmark or EU Paris-aligned Benchmark index, corresponding to the investment objective, must be mandatorily chosen.
        - For investments in activities seeking carbon reduction, information must be provided on the achievement of that goal in light of the Paris Agreement tenets
- in pre-contractual disclosures by financial advisers:
    - the mode of integration of sustainability risks into the overall investment decisions and the assessment results regarding the return of the respective financial product, or if no such integration exists, the explanation for the omission
- by financial market participants on their websites, *in a simple and accurate fashion*:
    - exact social or environmental characteristics, or objective of sustainable investment being promoted
    - measures to track the achievement of that particular characteristics or the objective
    - regarding promotion of an environmental or social characteristics in an investee company observing the good governance conduct:
        - description on how the characteristics are met
        - in case an index benchmark is used, explanation why and how such index correlates to the characteristics
        - (if environmental characteristics of an investment are being promoted) exact one or more environmental objectives specified in

the EU Taxonomy Regulation that are being promoted, and the extent to which that investment is in an environmentally sustainable activity, as defined by the EU Taxonomy Regulation.

- regarding sustainable investments:
  - if an index is designated for benchmarking an activity (in which the investment is made), explanation of how that index correlates to the activity performance, as well as how that particular index differs from the broad market index (the market indices designed to track the performance of a wider set of stocks, such as S&P 500 Index or Stoxx Europe 600)
  - if no index is designated, explanation on how the invested activity performance will be tracked. For investments in activities seeking carbon reduction, any available EU Climate Transition Benchmark or EU Paris-aligned Benchmark index, corresponding to the investment objective, must be mandatorily chosen.
  - For investments in activities seeking carbon reduction, information must be provided on the achievement of that goal in light of the Paris Agreement tenets

It's also mandated that the financial market participants' and financial advisers' marketing communication is in line with the mandatory disclosures principles. To remind, (i) when *environmental characteristics* are being promoted for the respective financial product, one must mandatorily refer *also to a relevant environmental objective* under the EU Taxonomy Regulation, (ii) when *sustainable* investment has an *environmental* objective, that objective must be referred to in light of the *relevant environmental objective* under the EU Taxonomy Regulation, and (iii) when *sustainable* investment has an *environmental* objective, its performance must be tracked through reference to any relevant EU Climate Transition Benchmark or EU Paris-aligned Benchmark index. The *environmentally* sustainable investment (that is, *sustainable investment with* an *environmental* objective) is understood in light of the next described piece of EU legislation.

That specific piece, which came chronologically later in time, is the eponymous EU Taxonomy Regulation, which 'trademarked' the concept and term *'environmentally sustainable economic activity'*. Reference in EU to environmentally sustainable activity can be made only if the underlying activity complies with the strict requirements outlined in the EU Taxonomy Regulation. Besides the general tenets (as specified in more details in the Regulation) of (i) substantial contribution to one of six specified environmental objectives, (ii) observance of 'do not significant harm' in respect of any of those objectives, and (iii) observance of minimum international ESG standards, the decisive matter is if the activity is listed in the Commission delegated legislation (called *'technical*

screening criteria'). As of now, two delegated regulations have been adopted (with relevant amendments and supplements so far):

- June 4, 2021 Delegated Regulation regarding list of environmentally sustainable economic activities in furtherance of the objectives of (i) climate change mitigation and (ii) climate change adaptation (so called *'Climate Delegated Act'*)
- June 27, 2023 Delegated Regulation regarding list of environmentally sustainable economic activities in furtherance of the objectives of (iii) sustainable use and protection of water and marine resources, (iv) transition to a circular economy, (v) pollution prevention and control, and (vi) the protection and restoration of biodiversity and ecosystems (so called *'Environmental Delegated Act'*)

The environmentally sustainable economic activities are split among (a) taxonomy *aligned*, (b) taxonomy *eligible*, (c) *transitional*, and (d) *enabling* activities. This technically stems from the so-called Disclosures Delegated Act, which operationalizes Article 8 of the EU Taxonomy Regulation. That provision mandates all undertakings subject to the annual ESG (non-financial) information reporting regime to include in that ESG (non-financial) report (which, as of the 2024 reporting year, is always a part of the annual financial statement or consolidated statement) also reflection of the coverage by the respective entity of environmentally sustainable economic activities in its business practices.
ESG (non-financial) information reporting is outlined in the EU Accounting Directive, in particular in its Articles 19a and 29a. For financial years having commenced in 2024, first type of entities (with respect to annual non-consolidated statements including, in particular, large listed entities; insurers; and credit institutions, all with the average number of employees exceeding 500) will need to report the ESG (non-financial) information in accordance with the principles of the Corporate Sustainability Reporting Directive (*'CSRD'*) regime. The novelty, besides the extension of the scope of reporting entities, is also that, in contrast to the legacy ESG (non-financial) reporting standard is that the reporting now shall be made according to the specific standards (*'European Sustainability Reporting Standards (ESRS)'*), the first batch of which has been adopted.
Getting back to the Disclosures Delegated Act:

- taxonomy *aligned* activity is the one that fully complies with the definition of the environmentally sustainable economic activity under the EU Taxonomy Regulation
- taxonomy *eligible* activity is any activity, described in *generic* details (normally, through reference to the concrete NACE code (such as Leasing of aircraft, and Passenger and freight air transport, under Sections 6.18 to 6.19, respectively, of Annex I to the Climate Delegated Regulation)) in the delegated legislation adopted by the Commission and for which technical screening criteria has been stipulated in details there. See also the Commission Notice 2022/C 385/01 of October 6, 2022, question 3 *'What is a Taxonomy-eligible economic activity?'*.

- *transitional* activity is the one existing under the climate mitigation objective, for which there is a foreseeable future lack of a technological or economical low carbon alternative, with major tenets that the activity (i) assists in reaching the 1,5°C (2,7°F) temperature pathway under the Paris Agreement and SR15, and (ii) depicts a best-in-class approach in terms of the overall industry or sector. For instance, under the Climate Delegated Act (Annex I, Section 3.21), the manufacture of aircraft (other than business aviation aircraft) which complies with all other technical screening criteria, except the requirement of causing zero direct emissions, is specified to be a transitional activity.
- *enabling* activity, finally, is the one that makes the environmental contribution indirectly, through incentivizing another activity, which in its turn, creates that direct significant impact. For instance, under the cited Climate Delegated Act (Annex I, Section 3.17), low carbon airport infrastructure catering for zero direct emissions aircraft is one such type.

All enumerated types of activities, except those defined as taxonomy eligible (by virtue of it being simply a nomenclature denomination for which the compatible activities are specified), are subsets of an environmentally sustainable economic activity.

Because of direct exclusion of business aircraft from the relevant categories of environmentally sustainable aircraft related activities (Sections 3.21., 6.18., and 6.19. in Annex I to the EU Climate Delegated Act), business aviation is, for now, out of scope of environmentally sustainable economic activities, and so, beyond the current eligibility for environmentally sustainable investments.

Disclosures Delegated Act also enhances the SFRD with respect to the credit institutions. Both financial and non-financial undertakings must report under taxonomy, and such report covers full plethora of the respective exposure by an undertaking with reference to the environmentally sustainable economic activities. As long as the entity complies with the definition of an undertaking subject to the Article 19a (or Article 29a, in case of a consolidated reporting) of the EU Accounting Directive, the entity must observe the relevant portions of the Disclosures Delegated Act (in addition to submitting the annual ESG report under the EU Accounting Directive, of which the taxonomy report forms part). For determining entities other than the first batch subject to the CSRD *(the whole chain of gradual introduction of the CSRD is set out in Article 5(2) of the CSRD)*, one shall refer to the EU Accounting Directive *version without the amendments introduced by the CSRD*.

Disclosures Delegated Act splits the EU Accounting Directive's covered undertakings into financial and non-financial roles as follows: the financial undertakings, for the purposes of the Disclosures Delegated Act, are (i) an asset manager (AIFM, UCITS management company, or UCITS as an investment company), (ii) credit institution, (iii) an investment firm (within confines of the *Markets in Financial Instruments Directive (MiFID)*), or (iv)

insurance or reinsurance undertaking. The others are deemed 'non-financial' undertakings. Financial undertakings particularly disclose the whole level of their exposures and investments, to the extent necessary to reflect the percentage of the environmentally sustainable economic activities, as required by the respective provisions of the Disclosure Delegated Act. Banks, specifically, shall reflect the green asset ratio (*'GAR'*) in their asset range. The assets to be reported upon include both on- and off-balance sheet items. For on- balance sheet items, banks shall include lending activities, while for off-balance sheet items, banks shall reflect on financial guarantees and assets under management in respect of non-financial undertakings. As a result, the SFDR reporting, in respect of banks, inherently involves only the portfolio management activity, while the coverage under the taxonomy reporting extends to lending and financial guarantees.

The overall conceptual 'trademark' of the EU Taxonomy Regulation – in regards to the deployment of two related terms *'environmentally sustainable economic activity'* and *'environmentally sustainable investment'* – is to be observed by the (i) financial market participants (as defined in the SFDR) and (ii) issuers of listed securities or securities under public offering, concerning (iii) financial products (as defined in the SFDR) and (iv) corporate bonds, respectively.

Corporate green bonds are more specifically regulated by the European Green Bond Standard. Additional term is 'trademarked': that of the *'European Green Bond'* (*'EuGB'* as an abbreviation). To catch up with that designation, the use of proceeds (of bonds) by issuer shall demonstrate the allocation to the specified objects in a *gradual* fashion or to the *portfolio* of specified fixed or financial assets (debt or equity instruments). While direct issuance of corporate bonds by airlines is a popular capital raising choice, airlines are also heavily involved in the asset-based financing, namely, securitization arrangements. Securitization is traditionally invoked by operating lessors when they (re-)finance the (pool of) aircraft or engines through transferring lease receivables to a special purpose entity (*'SPE'*), which, in its turn, issues bonds to investors, who are secured by those lessor (now transferred to the SPE) assets (exposures to airlines under the lease agreements). For such securitization bonds to be treated as EuGB, the issuer obligations in respect of use of proceeds are now applied to the originator (operating lessor) in respect of the sales proceeds from the lease receivable transfers to the SPE. The standard also applies to the so-called sustainability linked bonds, where the financial (such as coupon (interest) rate) or structural (such as a required collateral) elements of the issuance depends on the issuer reaching certain preset environmentally sustainable goals.

The collective assessment of the 'trademarked' items under the EU Taxonomy system exhibits that the issuers or financiers are still able to use other terms to denote certain

beneficial (in their good faith prudent assessment) environmental improvements regarding the airline *overall* or the financed aircraft *in particular*. You can, for instance, use the term 'green bond', since the 'trademarking' covers only the designation of the *European* Green Bond. The apparent logic is to allow global or regional financial associations to come up with their preferred *transitional financing routes*, in light of the specificities of the financing products concerned, to achieve the Paris Agreement goal of 1,5°C (2,7°F) temperature increase. The financiers are, generally, reflecting on both financed (through loans and investments) and facilitated emissions (any traditionally off-balance-sheet significant assistance the financiers render in respect of (i) capital raising activities in markets, such as, advising on issuance structure or negotiating with investors, or (ii) private investments and credits). While the financiers are frequently taking part in various cross-border cooperation platforms which devise specific low carbon transition finance matrices, it mainly depends on the financier itself to design its own concrete approaches it applies toward existing or potential clients. There would be broad portfolio targets and specific sector targets that the financiers may wish to accomplish distinctly.
If a financier insists on delivering a solid environmental performance, that will normally involve the borrower (airline) to:

- set up the GHG monitoring, reporting, and verification system (usually, under the eponymous Greenhouse Gas Corporate Protocol standard). For non-listed borrowers or investees, which are normally smaller companies and where compliance costs may play a fundamental impact, it is advisable to launch a prior financial impact assessment to determine the preferable route for carrying out such MRV system, the potential sources being in-house, software based, or external specialist service.
- setting concrete credible carbon reduction targets and monitoring the accomplishment of those. For aviation, potential sources could be the likes of:
    - Science-Based Target Setting for the Aviation Sector (version 1.0 adopted by the Science based Targets initiative (*'SBTi'*) (a non-profit collaboration among NGOs and business platforms) in 2021). The pathway shall be read in the light of the overall SBTi Corporate Net-Zero Standard (version 1.1 as of April, 2023). Also, one shall consult the February 2023 interim pathway that bridges the gap between the original aviation sector guidance developed by the SBTi (that technically catered for the well below 2°C (3,6°F) approach) and the need to clearly focus on the pursuit of the 1,5°C (2,7°F) goal. That interim pathway is called *'Technical Report: The SBTi Interim 1.5°C Sector Pathway for Aviation'* and is modeled on basis of the *Breakthrough scenario* described in the aviation roadmap *'Vision 2050 Aligning Aviation with the Paris Agreement'* prepared by the *International Council on Clean Transportation (ICCT)*, an environmental research NGO.

Under criteria C35 of the SBTi Corporate Net-Zero Standard, a company must comply with the sectoral guidance requirements within 6 months of its adoption.

A company may choose to set a near-term (encompassing 5 to 10 years) or long-term target (accomplishment of the net zero by 2050 latest, under a general rule). If the expected net-zero result is to be achieved in a period exceeding 10 years, a company must set both target types. The aviation sector guidance is an intensity-based model, so the output for the targets will be generated in the format of gCO_2/RTK. On account of the interim pathway (devised for the 1,5°C (2,7°F) goal), it is now advised to focus also on the corresponding absolute reduction metrics. The emissions reduction is measured in respect of the aggregate lifecycle emissions factor calculated from the moment of the production of fuel (including, feedstock generation) and lasting right up to the direct combustion on the aircraft, the so called *Well-to-Wake (WTW)* approach (a combination of *Well-to-Tank (WTT)* and *Tank-to-Wake (TTW)*).

The SBTi system envisages verification *(validation)* of the targets set by a company on part of the SBTi itself, which is paid service. After the validation is successfully accomplished, a company may utilize the credit publicly in accordance with the rather strict *SBTi target communications guidelines*.

The nuance is that the said aviation guidance, as part of the SBTi Corporate Net Zero Standard framework, is catered for large companies (with number of employees exceeding 500). While there is a simpler, more catered route for small and medium sized enterprises (SMEs) established under the SBTi, airlines would be ineligible, by virtue of the SMEs preconditions, since there is already a dedicated sector decarbonization path developed.

- 2022 *Making Net-Zero Aviation Possible. An industry-backed, 1.5°C-aligned transition strategy* prepared by the *Mission Possible Partnership*, a private-public environmentally oriented cooperation platform
- 2022 *Global Sector Strategies: Investor Actions to Align the Aviation Sector with the IEA's 1.5°c Decarbonisation Pathway* prepared under the auspices of the *Climate Action 100+*, global investor cooperation platform

Upon an expectant incorporation of the two elements in their business profile, the (business) airlines can approach their financiers with a firmer expectation of a prospective financing approval (in terms of environmental performance) under various green finance regimes. For 'use of proceeds' lending and capital markets, this would include:

- *Loan Market Association's Green Loan Principles* and *Sustainability-Linked Loan Principles*
- *International Capital Market Association's Green Bond Principles (GBP)* and *Sustainability-Linked Bonds*

Quite a large chunk of European business airlines, due to the individual level of their activities and the ensuing emissions, fall below the major EU ETS and CORSIA annual threshold (10,000 tCO2). A hint to reflect on the flight extent needed to reach such threshold can be found on the *IBAC's website concerning offsetting explanation* (slide 11). Another intrinsic aspect of business airlines is that many of those are deemed SMEs, noting the EU's general criteria for determining such entities: (i) 249 as the maximum number employees *and* (ii) EUR 43 million as the maximum balance sheet value *or* EUR 50 million as the maximum annual turnover amount.
When devising environmental policies, it is crucial to come up with realistic and commensurate scenarios, always noting an inherent error possibility in extremely complex 'first time' calculations, as would be the case with all types of global emissions attribution and potential future scenarios assessment. Cancel culture, due to its highly subjective nature, has no place in business, and sustainable future overall. So, to automatically exclude a portion of generic subindustry – in this instance, business aviation (as part of the overall aviation industry) – would be tantamount to satisfying some desires or stereotyped preferences rather than securing a sensible future through 'having found' a true solution to the whole chain of underlying issues behind the *attributed* problem. Yet, the environmental 'creativity' performances and even proposals appearing on a national scale in the EU occasionally pop-up with such brief and slogan type suggestions, with an effect to outrightly ban or fundamentally limit business aviation.
Business aviation is, to a certain extent, part of a luxury lifestyle, and that is good, contrary to the perceptions that may portray this as a source for shaming. In democracies, a correlated incentive for business efforts (and the ensuing drive to succeed) is an increased *material* wellbeing.
Monetary value exchanges form a significant part of the overall societal *emotional* wellbeing. Let's then put more *emotional IQ* to use rather than technically follow mathematical cuts, *and* without losing a sense for life and the overall 'picture' of the historical progress.

There are more important initiatives to appear soon under the EU environmental care regime for the aviation generally, including:

- *the July 1, 2024* Commission's review, under the ReFuelEU Regulation, concerning the state of the SAF production and supply in the EEA, with a potential to introduce, among other elements, a type of *book and claim system*.

'Book and claim' approach means, in the aviation context, that the SAF environmental benefit can be administratively disentangled from the physical fuel batch and then, transferred as a credit to interested buyers (for instance, airlines) who would then credit the purchased environmental benefit towards their overall emissions compliance obligations for a particular reporting period (rather than airlines who would use the actual physical batch).
That disentangled unit is usually called a *book and claim unit (BCU)*. The approach stems from a chain of custody related *ISO standard 22095:2020 'Chain of custody. General terminology and models',* which conceptually works across all industries and businesses. For the aviation and maritime sustainable fuel perspective in particular, *RSB - Roundtable on Sustainable Biomaterials*, a non-profit environmental collaboration platform, has devised a dedicated manual to ensure the feasibility of the system, such as avoidance of double counting. That manual also reflects on so called Scope 3 emissions, with respect to corporate travel carbon footprint management.
Even if the price for SAF be acceptable for particular operators, the physical availability in EEA is currently overall scarce, due to diverse reasons, starting from the limited feedstock (on account of the largest chunk manufactured for now being biofuel). Conceptually, the only feasible approach, at least in a near term, is to enhance this through market-based measures, namely, enabling the contractual credit purchase of the BCUs and ensuing crediting towards the blending mandate. 'Book and claim' approach by an operator, in principle, is permissible under the CORSIA.

- *the December 31, 2027* Commission's review, under the EU ETS Directive, over potential extension of the EU ETS to cover not only the current six GHGs, but also four other contributors to the so called *'aviation non-CO_2 effects'*. The covered elements are: (i) oxides of nitrogen (NO_x), (ii) water vapour, (iii) soot particles (*black carbon*), and (iv) oxidised sulphur. The aircraft engine, upon combustion of the kerosene, emits, besides the CO_2, also other greenhouse gases, aerosols, or particles. These elements, in combination, are potentially causing additional effective radiating force impact, yet there is also a cooling effect occurring, so the matter is still pending under a fuller grasp in terms of research. The Commission is working, in part, upon the 2020 report generated by the EASA. Overall conceptual difference with the CO_2 generation in kerosene combustion is that only a portion of all flights are triggering a significant climate impact. Most intensive in their activity are nitrogen oxides and the water vapor. The latter one is predominantly responsible (together with soot) for the formation of the otherwise easily recognizable beautiful white lines in the sky, scientifically called *contrails*. Contrails are generally considered enhancing the warming effect.

The whole picture is still far from being endowed with sufficient certainty, and there lacks a clear confirmatory acknowledgment of the need to cope with these non-CO_2 effects (considered to be short term in contrast to the direct CO_2 effects), besides the general air quality requirements which are normally already dealt with under the airworthiness standards.

A risk is that the relevant EU level policy could be simply reiterated along the already implied possibility that flights in EEA less than 1,000 km (620 mi) could be subject to limitations or imposition of additional significant burdens (by virtue of the Commission's assessment in its annual carbon market report, to be delivered under the EU ETS in 2026). If by 2026/2027, further research would even *suggest* of any *new* uncertainty with a *potentially* huge climate effect, that may play as one more impetus for indeed creating EU wide limitations ('cautious stop') towards business aviation (*unfairly narrowly* viewed as lacking an essential societal use) or short-haul flights more broadly. Instead, the policy instruments should rather be modeled on the *broad and firm* scientifical consensus, avoiding the references to *generalizations* of potential risky scenarios.

- *carbon tax introduction* to incentivize sustainable fuels use, under the EU Energy Taxation Directive revision process forming part of the 'Fit For 55' package. The major reshuffle of the 2003 document proposes introduction of taxation system of the energy products based on their energy *contents* and *environmental* performance. Incentives will be provided to facilitate increased adoption of sustainable fuels. For the intra-EEA flights, there would be specified (i) generally lower excise duty rates for SAF and electricity than for fossil-based counterparts, and (ii) while initially all aviation related fuel and electricity will be taxed at zero excise duty rate, for the consecutive transitional 10 years period SAF (except sustainable food and feed crop biofuels and biogas) and electricity will retain that zero rate, while other fuel types will incur a gradual annual 1/10th increase right up to the final minimum excise duty rate. The total exemption from the excise duty will be retained for (i) non-commercial business aviation and (ii) private flights. All-cargo flights will also be exempted, but the Member States may choose to subject those flights to the general regime applicable to aviation fuel.

  The Commission's legislative proposal of July 14, 2021 is being processed under the consultation procedure, a form of a special EU legislative process. It requires the opinion of the European Parliament to be delivered (amendments may be suggested), and, considering the current proposal's nature, also the unanimous vote by the Council of Ministers. The Commission's draft is currently beyond the initially planned final adoption schedule. For business aviation, the risk may lurk from a proposal to enhance the carbon taxation for business aviation in particular. Such ideas have been rather regularly voiced by various prominent environmental

NGOs as a proposed solution to disincentivizing the use of business aviation jets for short-haul flights, for which train or car alternatives exist. Yet, such ideas are still isolating a dedicated aviation subindustry on purely assumptive and stereotyped grounds bearing little with the actual impact the business aviation causes. *Relative* carbon footprint and the *potential* of train or car as an alternative mode is insufficient to factually *cancel* an otherwise healthy economic subsector, of which large part is formed from the SMEs. The taxation shall be applied to the aviation as a whole, without, in fact, distinguishing the subsectors on basis of the affluence of the clientele.

The European business aviation sector is taking a healthy acknowledgment that environmental care is a genuine and continuing effort. The business aviation collective is also taking steps to constantly improve the environmental performance. In an (aviation) industry, where overall profit margin is quite low, an additional pressure arising from the ambient effect of various suggestions disincentivizing financiers to assist certain groups of (aviation) market players would be tantamount to demand an excellence in an outcome, while closing the doors to the operators to earnestly upgrade their fleet.