

ishka View

EXTRA

ESG AND SUSTAINABLE AVIATION

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This is the ninth in a series of supplements delivering ‘The Ishka View’ on aviation’s Environmental, Social, Governance (ESG) and other Sustainability developments, including regulatory changes, green finance, sustainable aviation fuel (SAF), hydrogen propulsion, and other decarbonisation efforts.

This September 2023 issue covers developments during September and October 2023. Ishka Insights subscribers can access more regular updates through the weekly *ESG Five* series.

ESG issues permeate every aspect of aviation finance and the industry’s long-term strategies have a duty to improve in all three areas. At the same time, the worsening climate crisis has made environmental sustainability a key priority. The global share of greenhouse gas (GHG) emissions from flying has increased steadily, with global aviation emissions doubling since the mid-1980s. The industry has a responsibility to reduce its environmental impact whether through technological innovation and voluntary decarbonisation commitments, or regulator-led initiatives like green finance taxonomies, SAF mandates, taxes, or emissions criteria.

For feedback and news tips, please email eduardo@ishkaglobal.com.

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KEY TAKEAWAY: EU COUNCIL APPROVES REFUELEU AVIATION

THE ISHKA VIEW

- The final approval of the **ReFuelEU Aviation** legislation is a major development, not just for Europe but the world at large. While the debates over whether ‘carrot or stick’ are unlikely to subside as the industry ponders how to best mobilise private and airline investment into the SAF scale-up, one thing is clear: the energy majors can, and should, contribute more to facilitating that ramp up in SAF capacity, and a blending mandate as large as the one introduced by the EU should help achieve this.
- The effects of European mandates already in existence are already being felt in the speed of SAF adoption by major carriers. A *Bloomberg* [article](#) in early October called into question the SAF market leadership of **United Airlines**, to-date the largest SAF offtaker by volume, by comparing its current SAF usage with that of airlines in Europe, “which have to prepare to meet new requirements that don’t exist in the US.” The article notes that Air **France-KLM** (which, in France, is already having to comply with the French SAF mandate) has more than quadrupled United’s total of SAF used in 2022, making it the world leader by volume. **Scandinavian Airlines**, on the other hand, used 0.96% SAF, the highest percentage among passenger airlines and more than 10 times United’s percentage.
- Nevertheless, without further investment into SAF facilities, it appears that the European mandate will be impossible to meet beyond 2030, putting the onus on the European Commission to offer more and better conditions to enable the construction of new production facilities. The **Net-Zero Industry Act (NZIA)**, now in development, has the potential to tackle

The EU legislative process for the approval of **ReFuelEU Aviation** – the critical decarbonisation initiative that will mandate escalating SAF blending ratios in the EU – reached its final stage on 9th October with its [approval](#) by the **Council of the EU**. The new [regulation](#) is expected to be published in the EU’s official journal at any moment and will enter into force the twentieth day after this publication.

ReFuelEU Aviation shall apply from 1st January 2024. However, articles 4, 5, 6, 8, and 10 (relating to the SAF mandate) shall apply from 1st January 2025, when fuel suppliers will be required to blend at least 2% SAF in jet fuel sold at ‘Union Airports’ – airports where passenger traffic was higher than 800,000 passengers or where the

freight traffic was higher than 100,000 tonnes in the previous reporting period, and which are not situated in outermost regions. SAF will need to be “green” (excluding feed and food crop-based feedstocks), and its blended share will increase (including sub-targets for e-kerosene) every five years: 6% in 2030, 20% in 2035, 34% in 2040, 42% in 2045, and 70% in 2050. An EU label for the environmental performance of flights will also be introduced in 2025.

The finalisation of ReFuelEU Aviation followed a vote of [overwhelmingly approval](#) at the **European Parliament** on 13th September. A press conference on the legislation hosted by the European Parliament the day before its approval can be [watched here](#) (questions by journalists included the risk of fraudulent feedstock imports and whether the scarce e-fuels available should be limited to aviation). MEP Jose Ramon Bauza (chief rapporteur for the law) also announced prior to the vote that **in 2027 the European Parliament will evaluate its performance**. “Rest assured, we will request the European Commission to adopt any extraordinary measure necessary if **SAF prices** remain a barrier for its economic and efficient use,” Bauza [told parliament](#) (link in Spanish).

Some good reflections on the process leading to its approval are available in this *Euractiv* [article](#) published in early October.

Linkages drawn to upcoming ICAO CAAF/3 conference

The five leading European aviation **associations** [welcomed the adoption](#) of ReFuelEU Aviation and called on the November 2023 **ICAO Conference on Aviation Alternative Fuels (CAAF/3)** to follow its example and deliver the right global “milestones” and “targets” for SAF adoption – for more details on A4E’s position ahead of CAAF/3, see the SAF section below. In parallel, **ICAO** via its *Uniting Aviation* publication shared the analysis by one of the five European associations, marking the “significant milestone” of ReFuelEU Aviation’s adoption.



Source: *European Parliament*

Those interested in following CAAF/3 conference taking place on 20th to 24th November in Dubai can do so via registering for free access to [ICAO TV](#). Ahead of the conference, the local airline association – the **Arab Air Carriers' Organization (AACO)** – also called on a [series of tweets](#) for ICAO to encourage government to adopt policies to incentivise the use of SAF.

The reaction by industry and stakeholders

NGO **Transport & Environment** commended cross-partisan support for the legislation but warned that at current growth rates the renewable energy requirements to deliver on the SAF mandates would be “immense.”

SAF production forecasts shared during **Argus SAF Focus Day** in London – attended by Ishka – on 11th October by **Argus** and **SkyNRG** suggested the EU’s SAF mandate will be achievable this decade but there will be production shortfalls from 2030 (when the blending ratio jumps from 2% to 6%) unless more projected production facilities reach FID in the near-term. Weeks earlier, **Lufthansa** CEO Carsten Spohr also [cast doubts](#) over whether the SAF mandate could be met. "From today's point of view, it won't work to have even the availability of the quantities that are demanded of us, not to mention the high costs that in the end the passenger will have to bear," Spohr said in a briefing with reporters according to *Reuters*.

Repsol's SVP of Global Aviation, Oliver Fernandez, commented at the event that further clarifications from the European Commission on the practical implementation of ReFuelEU Aviation would be needed “in a short period of time.”

Separately, a presentation by Italian oil and gas firm **Eni** in September also delivered a few useful projections on worldwide SAF capacity for the next few years, including a comprehensive map of SAF policy initiatives ([slides 19 to 25](#)).

More to come: SAF support in the NZIA

The European Parliament’s Industry, Research and Energy committee on 25th October [adopted](#) the **Net-Zero Industry Act (NZIA)**, an initiative to bolster climate tech investment tabled by the European Commission earlier this year. The NZIA, which is broadly seen as a response to the **US Inflation Reduction Act (IRA)**, will now include support for “nuclear fission and fusion technologies, **SAF**, and specific industrial technologies” following amendments by committee members. According to *Euractiv*, technologies covered by the law will be eligible to **receive faster permits and looser state aid oversight** from EU competition authorities. The legislation will now be put to a vote by the full House during the 20th to 23rd November plenary session, paving the way for the EU Parliament and Council (which is yet to adopt its position) to begin final negotiations.

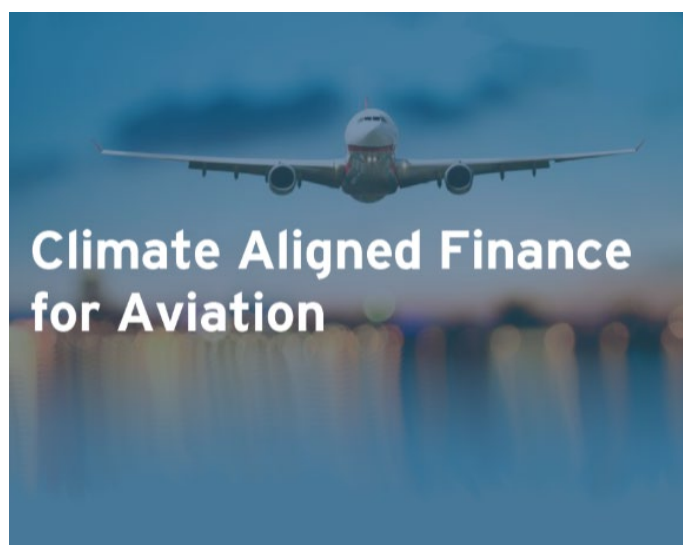
SUSTAINABLE FINANCE

THE ISHKA VIEW

- The **Aviation CAF** is a tool for lenders, but its significance has a broader reach: together with the Milestones concept being developed by Impact*, it is the first example of aviation finance decarbonisation commitments being put into action. It will also increase emissions disclosures and compatibility within aviation finance. Although primarily an accounting framework, annual disclosures by the Aviation CAF will enable comparisons between lenders’ portfolio climate alignment scores.
- At the same time, it is worth noting that while **Impact** and the **Aviation CAF** have overlapping similarities – both are bank-led associations aiming to harmonise airline and lessor Scope 1 / Scope 3 emissions reporting – they take potentially complementary approaches. Whereas Impact’s Milestones Concept proposes a scoring system that encourages the decoupling of emissions from capacity growth, the Aviation CAF will be more concerned with equipping financial institutions to measure carbon intensity of their aviation portfolios and enabling independent target-setting by each signatory.

Ishka takes an early look at the Aviation Climate-Aligned Finance (CAF) initiative - The **Aviation Climate-Aligned Finance (CAF)** standard has entered its final stages of drafting and is expected to launch on 30th January 2024, delivering on an 18-month

aspiration spearheaded by six of the world's largest lenders to create an aviation equivalent to shipping's Poseidon Principles. Like Poseidon, the Aviation CAF framework will equip financiers to evaluate the emissions intensity of their aviation portfolios relative to an established decarbonisation trajectory. For the financiers using the Aviation CAF, the soon-to-be-launched methodology will enable (although will not require) aviation portfolio alignment with a 1.5° C scenario and - in many cases - support them in fulfilling their commitments under the Net Zero Banking Alliance (NZBA). As Ishka highlighted last July, [at least 14 banks](#) have now fulfilled NZBA requirements of setting 2030 emissions intensity reduction targets for aviation but many more are yet to do so, mainly due to insufficient data, lack of guidance, and absent methodology. In a [report](#) published on 24th October, Ishka speaks with the **RMI Centre for Climate-Aligned Finance** and one of the Aviation CAF Working Group members, **Crédit Agricole CIB**, to distil the progress of the past 18 months and what lies ahead.



Source: RMI Centre for Climate-Aligned Finance

A leasing first: SMBC Aviation Capital closes \$150m sustainability-linked loan - **SMBC Aviation Capital** on 16th October [announced](#) it closed a \$150 million five-year unsecured bilateral loan facility with **Bank of Communications (Hong Kong) Limited**. It is the first sustainability-linked financing instrument established by SMBC Aviation Capital, and Ishka understands that it is also the **first sustainability-linked debt raise by any investment-grade lessor**. The only other sustainable finance debt raised by a lessor that Ishka is aware of are China Aircraft Leasing Group's (CALC) two low-carbon transition bonds in October 2022 and June 2023. The SMBC AC loan is linked to the company's future performance against two Key Performance Indicators (KPIs) - carbon intensity of its owned fleet and gender diversity across currently under-represented levels of seniority in the business. Morningstar Sustainability, a globally recognized provider of ESG research ratings and data, reviewed SMBC's linked loan and provided an assessment of the alignment with the Sustainability-Linked Loan principles. Separately, for a look back at trends within 38 sustainable finance deals involving aircraft, airlines or lessors (excluding the SMBC Aviation Capital loan), see [this report](#) by Ishka on 12th September.

Useful EU Taxonomy resources – Wondering how are other sectors and corporates faring in terms of EU Taxonomy eligibility and alignment? The latest *EY EU Taxonomy Barometer 2023* analysing fiscal year 2022 reporting and practices is [now available](#). While aviation is not yet covered by this update given the recent introduction of criteria, it nonetheless serves as a useful reference for banks and corporates in aviation working to estimate their eligibility and alignment. Separately, **Airbus** in September presented on the EU Taxonomy criteria for aviation at the Deutsche Bank Aircraft Finance & Leasing [conference](#) with [two slides](#) breaking down the implications for airlines and lessors.

Learn more about CSRD and other reporting framework impacts for lessors - In a [guest report](#) for Ishka on 28th September, Paul Sheridan, Leader, Aviation Finance Advisory Services at **PwC Ireland**, breaks down some of the regulated sustainability disclosure requirements aircraft lessors and asset managers are set to face in the coming two years.

SUSTAINABLE AVIATION FUEL (SAF)

-- For details on SAF policy and regulation, see 'Policy and Regulation' section below --

European airlines set expectations for ICAO CAAF/3 - The **ICAO Conference on Aviation Alternative Fuels (CAAF/3)** to take place in November will bring together high-level officials from ICAO member states to generate global SAF scale-up policy recommendations. European airline association **Airlines for Europe (A4E)** also unveiled a series of [SAF policy recommendations](#) ahead of the CAAF/3 meeting. On **targets**, A4E proposes establishing a quantified and collective ICAO vision, such as a **4-5% CO2 emission reduction** from the use of SAF by 2030, which it says would be consistent with the effort level required for ICAO's Net Zero 2050 Long-Term Aspirational Goal (LTAG). On **policies**, guidance so that every state can (in fact, "should") implement policies encouraging SAF development within their territory. A4E also makes other recommendations such as for ICAO to define e-fuel objectives or harmonise feedstock eligibility regulations.

White House announces \$300 million in SAF and low-emission tech grants - The US **Federal Aviation Administration (FAA)** on 25th September [announced](#) nearly **\$300 million in funding**: \$245 million in SAF infrastructure projects and \$47 million in low-emission aviation technology projects. The funding comes from the **Inflation Reduction Act (IRA)**, which also contains the more publicised blenders tax credits for SAF producers. The new Fuelling Aviation's Sustainable Transition (FAST)-SAF grants could be obtained by airports, air carriers, universities, aviation and aerospace companies, state and local governments, and nonprofit organizations. The competitive process is now open with the first round of grant awards in mid-2024.

SAF firsts: Korean Air Cargo, Garuda Indonesia, and more...

- In recent SAF 'firsts', a **Korean Air Cargo** was [supplied](#) in early September with SAF from **Neste** via local supplier GS Caltex, the first time for imported SAF to become available domestically in South Korea. Separately, Indonesian flag carrier **Garuda Indonesia** [conducted](#) its first commercial flight powered by SAF in early October with SAF supplied domestically by **Pertamina**, which produces SAF at the PT Kilang Pertamina Internasional Green Refinery, namely Kilang Cilacap, using the co-processing HEFA method. In Singapore, **Changi Airport** has [completed](#) a 20-month pilot to validate the process of incorporating SAF to the airport's operations and it found that no "modification to existing airport infrastructure" will be needed. Meanwhile, in the Middle East, **SATORP**, a platform jointly owned by Aramco (62,5 %) and TotalEnergies (37,5 %), on 30th October [announced](#) that for first time in the region it had successfully converted used cooking oil through coprocessing into ISCC+ certified SAF last August in Saudi Arabia.



Source: Pertamina

Velocys funding challenges results in share price collapse – SAF producer **Velocys** saw its share price drop 72% in late October after a negative update on its funding plans, highlighting the financial instability that some companies in the emerging sector may be navigating or yet to navigate. According to a [report](#) by *ShareCast*, The London-traded company announced on 21st September that the longstop date for a convertible loan notes (CLN) transaction, initially detailed on 18th May, had been extended to 31st October contingent on certain conditions, including a commitment by Carbon Direct Capital to invest \$15 million via the convertible loan notes, subject to a minimum aggregate raise of \$40m. It confirmed at the end of October that those conditions had not been met. "As detailed in its recent interim results, Velocys still anticipates that funding will be required before the end of this calendar year and therefore the board is prudently exploring near-term funding options as discussions with the strategic investors continue," the Velocys board explained.

An NGO-backed guide for SAF corporate purchases – **NGO Transport & Environment (T&E)** on 24th October [published](#) an all-you-need-to-know 36-page [guide](#) for corporate buyers of SAF, covering guidance on feedstocks, origin, price, emissions calculation methods, certifications, offtaking pathways, and much more.

Ishka SAF Tracker update – The past two months have been particularly busy with SAF offtake announcements, with three agreements in September and another seven in October, including SAF certificates. Notable announcements included a partnership between **Airbus** and **DG Fuels** in the wake of one of the largest SAF offtake deals announced to date (**Qantas'** access to 400,000 tonnes of SAF annually from Airbus and Boeing from 2028, mainly in the US, tied to Qantas' new widebody orders) – which Ishka understands that, due to its magnitude, is likely to remain a one-off among OEM orders. The European OEM announced on 12th September that the [partnership](#), which supports DG Fuels in reaching final investment decision by early 2024, contains an agreement "for a portion of the production of the first plant to benefit Airbus' customers." Separately, in a single week in October **Emirates**, **DHL**, and **Ryanair** announced SAF deals. The [largest](#) involves book & claim SAF certificates for 668 million litres (534,400 metric tonnes) between **Deutsche Post DHL** and **World Energy**, for SAF to be delivered to Los Angeles area airports between 2024 and 2030. It followed a [similar agreement](#) by World Energy with **Microsoft** earlier in October. The DHL-World Energy agreement is the 27th largest in **Ishka's SAF Tracker** and the 6th largest so far in 2023. Meanwhile, **Ryanair** will take delivery of 500 metric tonnes of SAF at Vienna Airport in 2023 as part of an existing MoU with Austrian energy firm **OMV**, the producer [announced](#) on 19th October. Separately, long-haul behemoth **Emirates** has [signed](#) a two-year agreement with **Neste** for around 3,000 metric tonnes of SAF which. Although far from the size of purchase agreements by other major carriers, it would reportedly be the largest amount of SAF uplifted of any airline based in the Middle East and Africa to date.

Meanwhile, **KPMG Ireland** in its recently published 'Who pays for aviation's decarbonization?' [report](#) looks at SAF production certainties from the perspective of SAF offtakes, using Ishka's SAF Tracker data. Another recent interesting piece of research by KPMG in the past two months is [this report](#) looking at the opportunities and challenges for the development of SAF in Asia-Pacific.

For greater **access** to SAF offtake deals via Ishka's SAF Tracker, get in touch with chris@ishkaglobal.com .

POLICY AND REGULATION

THE ISHKA VIEW

- The advent of the 2024 European elections was earlier this year portended to bring less emphasis on taxing aviation or limiting consumer choices, as parties opposing the EU's recent green agenda appeared likely to secure support from voters amid a cost-of-living crisis. However, recent developments across several EU member states show that in national agendas aviation continues to climb places for its adverse effects – from the Netherlands' move to tax air passengers, to France's 'ecological' measures to limit aviation's growth, and Spain's renewed interest in introducing a French-style partial domestic flight ban.

- For developments on ReFuelEU Aviation, see Key Takeaway section at the start of this report -



German aviation policy recommendations unveiled at national conference

– German chancellor Olaf Scholz [opened](#) the **3rd National Aviation Conference** in Hamburg on 25th September, highlighting in a speech the country's role at the forefront of "climate-neutral technology." The event, which was also attended by two federal ministers, served as a backdrop for the unveiling of strategic recommendations by the **Working Group on Climate Neutral Aviation** under the auspices of the Federal Ministry for Economic Affairs and Climate Action (BMWK) – which first convened in November 2022 and Germany's equivalent of the UK's Jet Zero Council. The full set of recommendations is available in [this 22-page document](#) (in German) and includes 'quick win' proposals that can be implemented at short notice: contrail minimising legal requirements, available climate-positive retrofit solutions for the existing fleet, or new air traffic control systems. **Non-CO2 effects** are also an area that the working group is taking action on, influenced in no small measure by the German Aerospace Center (DLR) - a global reference on contrail science. A summary of the working group's interim recommendations on non-CO2 by one of its members (Jan Lueckhof of **Deutsche Post DHL Group**) is available in [this LinkedIn post](#). On **SAF**, some of the recommendations include considering support measures mirroring the US IRA subsidies or "contracts for difference" revenue certainty mechanism, provision of low-interest loans by state-owned development bank KfW, and public-private partnerships for SAF investment or guarantees for offtake agreements. The group also proposes an EU SAF levy for passenger flights and the introduction of CO2 compensation mechanisms for passengers taking journeys via non-EU hubs, which will not be subject to the EU's SAF mandate, including a possible levy to be enshrined by the European CO2 Border Adjustment Mechanism (CBAM). Other developments on the slides of the conference include **Deutsche Aircraft** [delivering](#) the **D328 UpLift** hydrogen flight laboratory aircraft, and [an agreement](#) between **DHL**, energy firm **HH2E**, and South African petrochemicals firm **Sasol** on the expansion of SAF production in Germany. Airbus also intends to join the consortium, which aims to realise e-SAF production in 2030 of 200,000 tonnes per year with the potential to scale to 500,000 tonnes.



German Federal Chancellor Scholz at the National Aviation Conference in Hamburg. Source: German Federal Government

Dutch lower house approves new environmental passenger taxes, angering KLM - A majority of Dutch lawmakers in the parliament's lower house late on 21st November [approved](#) measures aimed at raising funds to lower the energy bill for households in the Netherlands, including taxes on passenger flight tickets. According to **KLM**, if the measure is introduced, ticket prices would rise by about €80 (\$85) to €100 (\$105) from January 2024, with the impact also to be felt by transit passengers, which make up most passengers at Amsterdam Schiphol Airport. Earlier analysis commissioned by the government and conducted by CE Delft concluded that it could lead to the loss of as many as 34% of transfer passengers. The proposal still needs to be approved by the Dutch Senate. Meanwhile, US carrier **JetBlue Airways** said on 24th October that it had asked the US Department of Transportation to ban **Air France-KLM** from New York's John F. Kennedy International Airport, if planned curbs of flights take place at Amsterdam's **Schiphol Airport**. [Reuters reports](#). Arguing that the flight curbs would violate the US-EU Air Transport Agreement, Jetblue warned that without consequences for the Franco-Dutch airline, "other governments may decide to follow suit." The Dutch government in September said it would move ahead with plans to cap the number of flights at Schiphol in 2024 amid environmental pressures. JetBlue is in the middle of a transatlantic expansion leveraging the longer range of its Airbus A321neo aircraft.

France proposes 'minimum price' ticket for EU flights – A controversial but environmentally-lauded [proposal](#) by French Transport Minister **Clément Beaune** to introduce a minimum price on flights in Europe in a bid to reduce air travel demand was ultimately not set to be discussed during a meeting of EU Transport Ministers on 21st and 22nd September. The Spanish presidency of the Council of the EU "[did not foresee](#)" (link in French) for the proposal to be discussed – as previously intended by Beaune – with Spanish Transport Minister Raquel Sánchez further [commenting](#) (link in Spanish) that the measure would need to be "analysed in depth" to understand its legality. Beaune's proposal would target cheap airfares mainly offered by European LCCs which are often

orders of magnitude cheaper than ground-based transport alternatives. **Ryanair** [said](#) the proposal would be “politically impossible” for the EU to introduce in the next five to 10 years. Meanwhile in France, European airport association **ACI Europe** has [urged](#) the French government to reconsider taxing revenues earned by major airports in the country amid an ‘ecological’ push to levy the industry. According to a [recent survey](#) (link in French) by polling agency **CSA**, 64% of French adults favour reducing flights for environmental reasons with 41% agreeing with a hypothetical proposal to limit flying to four flights in a person’s lifetime. France’s heightened environmental awareness contrasts with the UK, where according to a [recent poll](#) by **NATS** fewer people across all demographic groups in 2023 assigned importance to reducing emissions versus 2022.

European Parliament reaffirms support for Scope 3 mandatory disclosures – In a vote in the European Parliament on 18th October, MEPs rejected a resolution (see [page 170](#)) calling for limitations to be introduced on the **European Sustainability Reporting Standards (ESRS)**, which will apply to 50,000 companies including many aircraft lessors from 2024. The resolution [tabled](#) by 40 center-right MEPs called for reporting of Scope 3 emissions to be voluntary rather than mandatory. The Global Reporting Initiative (GRI) was among organisations [welcoming](#) the European Parliament’s decision.

EU calls on aviation stakeholders to join expert climate group – The European Commission’s Directorate-General for Climate Action (**DG CLIMA**) is [calling](#) (see ‘Additional Information’ tab) on **aviation stakeholders** to apply to join an expert group on climate change policy formation by **7th November**. DG CLIMA aims to obtain a comprehensive view of all stakeholders affected by the EU ETS aviation requirements and to benefit from their sectoral knowledge. Up to 25 organisations with expertise on the aviation sector (industry associations as well as NGOs, universities and research institutes) with an EU coverage are encouraged to apply.

Incoming Spanish government zeroes in on short-haul flight ban – The Spanish Socialist Workers' Party and left-wing electoral platform Sumar reached [an agreement](#) (in Spanish) to form a new government at the end of October and as of writing the proposed coalition is expected to secure parliamentary approval between 8th and 10th November, extending their tenure for another four years. The new government’s coalition agreement includes a pledge to seek a partial **short-haul flight ban** for city pairs for which there are alternative rail journeys of 2.5 hours or less – “just as other countries around us have done,” the agreement says in a veiled reference to the [French example](#). The proposal, however, includes an exception for “cases of connection with airport hubs that link with international routes,” which creates questions as to whether feeder routes for Madrid and Barcelona international departures (a large share of domestic routes) may be cut at all. **MEP Jose Ramon Bauza**, a member of Spain’s liberal Citizens party, [criticised](#) (video in Spanish) the proposed short-haul ban during an EU Parliament hearing in late October. “[Short-haul flights] are the test lab for new technologies. We will never see an Airbus A320 fly on hydrogen if we don’t previously see a Bombardier CRJ200 with 50 passengers fly on hydrogen – that’s simply impossible,” Bauza remarked, in seeming allusion to one of the world’s largest CRJ operators: Spanish regional carrier **Air Nostrum**. Bauza, the chief rapporteur for ReFuelEU Aviation (i.e., the EU’s SAF mandate), is an influential voice on aviation sustainability policy at the EU Parliament.

The pledge by the incoming government follows [a study](#) (in Spanish) on 18th October by NGO **Ecologistas en Accion** estimating that a short-haul flight ban for routes with rail alternatives under four hours could eliminate 50,000 flights and 300,000 tonnes of CO2 per year – broadly similar estimates to those [shared separately](#) in mid-October by Luis Delgado, an aviation research fellow at the University of Westminster. According to Ecologistas en Accion, the potential measure (broader in scope than the 2.5-hour rail threshold proposed by the incoming government) would eliminate 13.1% of all domestic flights and reduce domestic aviation emissions by 9.71% in what is **Western Europe’s largest domestic air market by seats**. In the NGO’s calculations, a large share of the reductions would have stemmed from the Madrid – Barcelona city pair, once Europe’s busiest domestic air route. The city pair is now widely considered the most price-competitive high-speed rail connection in Europe, with four high-speed train operators competing for passengers. A Spanish **partial domestic flight ban** was previously proposed under the Sustainable Mobility Law, but legislative progress on the bill was halted by Spain’s early general election in July 2023.

**US**

California becomes first US state with ESG disclosure mandate - California will become the first US state to impose a corporate climate disclosure mandate, following the steps of the EU’s Corporate Sustainability Reporting Standards (CSRD). Both the California State Assembly and Senate recently passed two new bills as part of a ‘**Climate Accountability Package**’ and according to [news reports](#) in early October Governor Gavin Newsom [intends](#) to sign off the rules into law. They comprise two bills: [SB 253, the Climate Corporate Data Accountability Act](#), and [SB 261, Greenhouse Gases: Climate-Related Financial Risk](#). According to an [analysis](#) by *Manifest Climate*, SB 253 will require large businesses operating in California to **disclose their greenhouse gas emissions** (including Scope 3 emissions by 2027). On the other hand, SB 261 asks companies to disclose their material climate-related financial risks. Public and private companies that do business in California and exceed a total annual revenue of \$1 billion will be required to report under SB 253, even if they’re not headquartered in the state. Under SB 261, companies with total annual revenue of more than \$500 million that do business in California will be required to comply. SB 253 would apply to more than 5,300 companies, while SB 261 would cover over 10,000 companies. Ishka expects **large aircraft leasing companies** headquartered in California to be covered by these regulations.

Biden to delay corn-based ethanol SAF decision to December – US President Joe Biden was expected to delay until December a decision on whether to make it easier for SAF made from **corn-based ethanol** to qualify for subsidies under the **Inflation**

Reduction Act (IRA), two sources [told Reuters](#) on 6th September. The White House has been divided over the issue, which has prompted a fierce lobbying push from farming stakeholders that see SAF as crucial for the ethanol market's growth. US SAF producers have been waiting on specific guidance for the lifecycle assessment of eligible fuels: should the US only use the internationally recognised ICAO CORSIA methodology, or “any similar methodology” that satisfies criteria in the Clean Air Act, including the Greenhouse Gases, Regulated Emissions, and Energy Use in Technologies (GREET) methodology that appears to be favoured by some in the aviation biofuel industry. In a significant development, **US airlines** in early November [sent a letter](#) to the US government backing the GREET methodology. The **ICCT** [in a new briefing](#) looks at the advantages and disadvantages of using GREET from an environmental standpoint.

Other countries

Australian government publishes aviation green paper – The Australian government in September [published](#) a 224-page **Aviation Green Paper** to stimulate feedback among stakeholders on the requirements to develop an updated Aviation White Paper to enable “long-term investment, and the maintenance and improvement” of Australia’s air connectivity. The green paper has a particular focus on sustainability, ponder directions out to 2050 and chapters of maximising its contribution to net zero as well as looking at emerging aviation technologies including SAF.



Aviation Green Paper. Source: Australian Federal Government

India’s SAF push goes global with alliance launch on G20 sidelines – Government leaders of India, Singapore, Bangladesh, Italy, US, Brazil, Argentina, Mauritius, and UAE [launched](#) the **Global Biofuel Alliance (GBA)** on 9th September on the sidelines of the **G20 Summit** in New Delhi. The alliance reportedly contains 19 nations and 12 international organisations, including ICAO. According to a statement by the White House, the alliance is [focused](#) on “securing the supply of biofuels, ensuring these biofuels remain affordable and are produced sustainably.” The members will continue outreach to add other countries to the effort. SAF is expected to be an area of focus, with [hopes by India](#) to become a **SAF export hub**.

Japan to allocate \$200 million in aviation decarbonisation R&D grants – Japan has joined Europe and North America in recent efforts to up research and development funding for aviation decarbonisation solutions. According to a [report](#) by *Nikkei* on 9th October, the Ministry of Economy, Trade and Industry (**METI**) is planning a total of **30.6 billion yen** (\$205 million) in aid via the **Green Innovation Fund**, overseen by the ministry's New Energy and Industrial Technology Development Organization. Of this, 17.3 billion yen will go toward developing hydrogen fuel cell systems for aircraft, while 13.3 will go toward applications including fuel-saving engine control technology. Japan is a major supplier to the leading OEMs.

Rishi Sunak scales back climate policies, but aviation unaffected – UK Prime Minister **Rishi Sunak** [announced](#) a U-turn on the government’s climate commitments on 20th September, announcing a [scale-down of targets](#) such as the phase-out of gas boilers or delaying an end to sales of gasoline and diesel vehicles. The decision has major implications for the UK’s decarbonisation targets and undermines efforts by Sunak’s predecessors to establish the UK as a global climate leader. For **aviation**, however, Sunak’s announcement **means little** with regards to existing policies. Sunak made commitments not to enact higher taxes on aviation, but such a plan was never official policy – in fact, [domestic flight taxes were halved](#) in 2021 when he was finance minister. SAF investment also looks unaffected, with Sunak himself [defending funding for SAF](#) just seven days before the 20th September announcement.

UK government seeks views on whether to mandate Scope 3 reporting – The UK government on 19th October [opened](#) a **call for evidence** seeking views on whether to mandate Scope 3 reporting requirements. The call for evidence is designed to inform the UK government’s decision on whether to endorse the **International Sustainability Standards Board (ISSB)** standards in the UK. UK businesses, members of the investment community, and trade associations are welcome to provide evidence. The emissions of aircraft owned by investors and lessors and operated by airline customers are likely to be categorised as Scope 3 emissions.

UK government heeds industry and pledges SAF revenue certainty mechanism by 2026 - The UK government on 4th September [committed](#) to introducing a **revenue certainty mechanism** to support SAF production in the UK by the end of 2026, heeding [demands by industry](#) for a ‘Contracts for Difference’-style scheme. Although the mechanism has not been defined, in a CfD-style system SAF producers would tentatively compete for fixed-price, long-term contracts for their product when selling to

Milestone	2023		2024				2025				2026			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Develop and launch consultation	█													
Consultation period on SAF policy			█											
Analysis of consultation responses, writing and publication of Government response			█											
Report to Parliament on policy progress							◆							

*Milestones to deliver a revenue certainty mechanism by 2026
Source: Department for Transport, UK government*

airlines, with the government paying the difference between a volatile wholesale price and a fixed strike price (see this [Conservative Environment Network manifesto](#) for possible clues). DfT will launch a consultation on the design and delivery of the scheme following the below timeline (see Figure 1). A delivery plan is [available here](#). UK SAF producers welcomed the development including the [Renewable Transport Fuel Association \(RTFA\)](#) as well as SAF producers [Firefly Green Fuels](#) and [Velocys](#). The revenue certainty mechanism should be complemented by a [UK SAF mandate](#) (in its final stages following a second consultation) and other [government grant funding](#).

UK clears Brexit setback to rejoin Horizon Europe, unlocking aviation R&D funds - The UK has finally cleared a three-year exclusion caused by Brexit disagreements from the EU's flagship scientific research scheme, **Horizon**, the UK government [announced](#) on 7th September. The €95 billion (\$101 billion) Horizon fund is relevant to aviation sustainable technology research, supporting for instance the flagship **Clean Aviation** public-private initiative co-led by the European Commission. Hydrogen-electric propulsion developer **ZeroAvia**, which is partly based in the UK, was among the first aviation companies to [welcome the news](#). To understand how the UK rejoining Horizon Europe can make more support available to UK organisations, consider joining [this upcoming webinar](#) by KTN-UK. On a related note and on the same day, Clean Aviation [approved €380 million](#) (\$407 million), including €152 million (\$163 million) in EU funding, for an additional eight projects dedicated to hydrogen-powered aircraft, hybrid-electric regional aircraft, and short and medium-range aircraft.

CO2 EMISSIONS

-- For details on CORSIA or EU ETS, see Policy and Regulation section below --

What's up with SAPs: ICCT examines State Action Plans covering 80% of aviation emissions – Countries around the world have submitted **State Action Plans (SAP)** to ICAO since 2013, but SAPs have taken on a whole new importance since ICAO adopted a long-term aspirational goal (LTAG) to decarbonise aviation in October 2022. The **International Council on Clean Transportation (ICCT)** in a new [briefing](#) has analysed 17 SAPs comprising seven high-income countries including the EU (representing 55% of the world's aviation emissions) and 10 upper-middle, lower-middle, and low-income countries representing 25% of the emissions. The ICCT finds stark differences in the amount of climate measure details across these groups of countries, and makes recommendations for details to be added by all member states by **June 2024**, including SAF policies and mitigation measures.

Potential hike in UK aviation pollution price with reduction of ETS allowance – The UK government on 5th October [announced](#) that energy-intensive industries including aviation will face a lower supply of UK Emissions Trading Scheme (ETS) allowance through to 2030, a measure which could result in increasing pollution costs. The 2024 calendar for the UK ETS will limit the number of carbon allowances for companies to buy **in 2024 to 69 million** – 12.4% fewer than in 2023. By 2027, this will fall to around 44 million – a 45% reduction on 2023 - before reaching around **24 million by 2030**. UK ETS prices [reportedly jumped 3%](#) after markets opened on the Friday following the announcement. The UK ETS, which replaces the UK's participation in the EU ETS post-Brexit, compels high-polluting companies including airlines to buy allowances for every unit of carbon they emit. With fewer available to buy, these sectors will need to take further steps to cut their emissions, or face competing for increasingly scarce pollution allowances. Earlier in 2023, the UK ETS also aligned with its EU counterpart in [announcing](#) a gradual phase-out of free emission allowances for aviation.

IEA unveils updated Net Zero Roadmap, including aviation expectations – The **International Energy Agency (IEA)** on 26th September [unveiled](#) an update to its landmark Net Zero Roadmap which showing “greater ambition and implementation.” The roadmap incorporates significant changes to the energy landscape in the past two years, including the post-pandemic economic rebound and the extraordinary growth in some clean energy technologies - but also increased investment in fossil fuels and stubbornly high emissions. For [aviation and shipping](#), it notes that the industries were badly hit by the Covid-19 crisis and their R&D spending “has not increased much since.” “In the absence of energy demand reductions from behaviour change, achieving the same emissions reductions in end-uses would require ramping up low-emissions technologies at staggering speed. In aviation, the use of SAF would need to increase more than twice as fast as in the NZE Scenario, reaching about 4 exajoules (EJ) **by 2030** and accounting for about **25% of the aviation fuel market**,” the report says. On a related note, Brussels-based economic think tank **Bruegel** on 25th September published an [analysis](#) on the struggle to cut emissions from international aviation and shipping.

T&E counters claims that European policies could cause carbon leakage – Environmental NGO **Transport & Environment (T&E)** has [published](#) a new briefing assessing the impact of EU climate measures on the competitiveness of the EU's aviation industry. The NGO analysed a study commissioned by industry and published in March 2022 to address claims that climate measures in Europe (higher EU ETS cost, SAF blending mandates, etc...) will harm their competitiveness and will result in emissions being exported overseas, a phenomenon referred to as ‘carbon leakage’. The analysis reveals that risks of carbon leakage are limited to 3% of the total emissions savings brought by European measures by 2035, there will still be 24% more passengers travelling through airports located in the European Economic Area (EEA) in 2035 compared to 2018. Ahead of the March 2022 report, T&E [also analysed](#) the potential of carbon leakage for European aviation.

EasyJet signs up to Airbus' carbon capture offer – Airbus [announced](#) on 9th October that **EasyJet** has become the first airline to sign a contract with Airbus for its carbon-removal initiative. Available through the Airbus Carbon Capture Offer, the technology uses Direct Air Carbon Capture and Storage (DACCS), to offer airlines worldwide carbon removal credits to advance their decarbonisation

goals. The UK policy manager for NGO **Transport & Environment (T&E)**, Matt Finch, [accused](#) the two companies of “greenwashing” as the carbon removal facility that would enable the carbon capture does not exist and the agreement simply commits EasyJet to engage in negotiations to “potentially buy” removal credits.

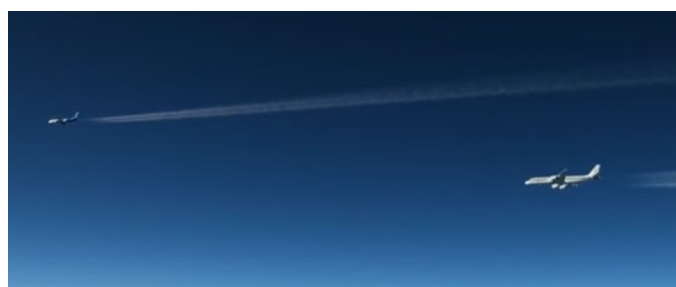
PACE research: Airlines reporting emissions declined since 2017 – New [research](#) published in September by PACE reveals that the number of airlines reporting emissions in 2022 stood at 88, down from 108 in 2017. In total, the 88 airlines represented less than 5% of the world’s AOC’s flying in 2022. The decline in reporting is one of the challenges facing emissions reporting frameworks applicable to aviation finance stakeholders.

Austrian Airlines loses greenwashing lawsuit – Lufthansa subsidiary Austrian Airlines was found guilty of misleading climate-conscious travellers by suggesting its flights were sustainable, even though they were largely powered by fossil fuels, [Bloomberg reported](#) on 25th September. An Austrian consumer-protection association filed the suit against airline earlier in 2023 over advertisements featuring SAF. The airline claimed flights to an art show in the Italian port of Venice would be fuelled with 100% SAF when, in fact, only 5% derived from renewable resources, according to a copy of the decision posted by Austrian Airlines on its X (Twitter) account.

One for football fans: What expanded games mean for aviation emissions – The world of football is no stranger to being scrutinised about its aviation-related emissions impact – French superstar Kylian Mbappe [among them](#). The *BBC Sport* crossed into sustainability reporting in late October with an [analysis](#) of emissions impacts of European football in light of UEFA’s plans for expanding three major tournaments. The BBC calculated total air miles between fixtures and projected emissions from both team and fan travel. For those teams travelling by private jet, a new survey by **openDemocracy** published in September [suggests](#) that climate impact information by private aviation operators is often “disjointed, confused and contradictory.”

NON-CO2 EMISSIONS

United’s new MAX ‘sniffed’ by DC-8 to test SAF contrail reduction – Boeing partnered **NASA** and **United Airlines** for in-flight testing to measure how SAF affects contrails and non-CO2 emissions. The OEM [announced](#) on 12th October that its second ‘ecoDemonstrator Explorer’, a 737-10 destined for United Airlines, flew (as seen in [this video](#)) with 100% SAF and conventional jet fuel in separate tanks and alternate fuels during testing. NASA’s DC-8 Airborne Science Lab flew behind the commercial jet and measure emissions produced by each type of fuel and contrail ice particles, while satellites will capture images of contrail formation as part of the testing. A summary of the [tests](#) was published by NASA on 30th October, while results by researchers will be published within a year. The test is partly funded by the FAA and GE Aerospace while the German Aerospace Center (DLR) is providing experts and instrumentation. Flight tracking website **Flightradar24** provided a [glimpse](#) into the tests, which were scheduled through the end of October. Meanwhile, across the Atlantic, the **UK Research and Innovation** agency on 13th October made £10 million (\$12 million) [available](#) in funding for researching non-CO2 impacts.



Source: NASA

AIRCRAFT LESSORS AND ASSET MANAGERS

-- For details on SMBC Aviation Capital’s sustainability-linked loan, see **Sustainable Finance** section above --

German fund manager KGAL invests in e-SAF - German fund manager **KGAL**, a prominent name in aircraft investment through its Core Aviation Portfolio Funds (APF) and in-house lessor GOAL (German Operating Aircraft Leasing), has made a leap into SAF via a new Article 9* green hydrogen impact fund (KGAL ESPF 6) which is [investing](#) in **Arcadia eFuels**, a climate-neutral e-kerosene production facility in Vordingborg, Denmark. From mid-2026, the plant is expected to produce approximately 68,000 tonnes of climate-neutral synthetic aviation fuel (eSAF) per year using self-produced green hydrogen. **Watson Farley & Williams (WFW)** [advised](#) KGAL on this investment. **In the EU, an Article 9 Fund under the Sustainable Finance Disclosure Regulation (SFDR) is defined as “a Fund that has sustainable investment as its objective or a reduction in carbon emissions.”*

Leasing-backed SAF feasibility study unveiled in Ireland – A lessor-backed feasibility study into Ireland’s potential for SAF production was [unveiled](#) on 25th October one year after it was first announced. According to [the study](#), which was supported by **Avolon**, **Boeing**, and **Orix Aviation**, Ireland has the potential to develop a SAF industry capable of €2.55 billion (\$2.69 billion) annual revenues by 2050 and providing up to 1,000 high-skilled jobs. The study was compiled by SAF producer **SkyNRG** and Irish consulting firm **SFS Ireland**. To meet EU-mandated SAF volumes alone, Ireland will require approximately 10 SAF plants of 80 kilotonnes production capacity each, with power-to-liquid (PtL) fuels having “the biggest opportunity” among available pathways, as it could benefit from Ireland’s offshore wind renewable energy initiatives. **Avolon** CEO Andy Cronin published an [opinion piece](#) based on the study on *The Irish Times* on 30th October.

Lessor Willis announced UK site for SAF plant - Willis Lease Finance Corporation together with its subsidiary **Willis Sustainable Fuels (UK) Limited** on 2nd October [announced](#) the selection of Teesworks in Tees Valley, England, as the intended location for a SAF plant focused on developing and producing power-to-liquid (PtL) SAF. Teesworks is the UK's largest industrial zone. The planned PtL SAF refinery will be designed to convert feedstocks, sourced from industrial-waste carbon dioxide and green hydrogen (produced from water by electrolysis using renewable electricity) into aviation turbine fuel.

ALI launches inniu ESG education platform – As this report is finalised, **Aircraft Leasing Ireland (ALI)** on 2nd November had [announced](#) the launch of its **inniu** ESG learning platform with Aviation Skillnet. Designed and built for the aircraft leasing and broader aviation community, the 12-module web-based sustainability learning program is centred on the ALI Sustainability Charter and is designed to help raise awareness of the sustainability challenges and opportunities facing our sector. Multiple industry experts worked with the ALI sustainability team to produce the programme. inniu is expected to go live ahead of the **ALI Global Aviation Sustainability Day** on 20th November, but is already open for sign-up from today via the Aviation Skillnet/ICBE team.

ISTAT audience bearish on tech's ability to achieve Net Zero by 2050 – The **ISTAT EMEA 2023 conference** took place in London in early October, with hundreds of aircraft investors and lessors gathering under one roof. Sustainability was once again a major theme through the conference, with a sustainability panel on the first day also tackling emissions reporting or SAF investment, among other topics. One **audience poll** held during the panel also provided a sample of views on decarbonisation among ISTAT's aircraft investor-heavy audience. It showed pessimism for aviation's technologies to help it achieve Net Zero by 2050, with 67% of the audience expressing technology will not be able to deliver on this promise. The vast majority (56% of the audience) believed some technology would be capable of making meaningful emissions reductions, but it is over 10 years from implementation.

OEM FUTURE PROGRAMMES

Pratt & Whitney's GTF to power NASA X-66A demonstrator – **Pratt & Whitney's GTF engines** have been [selected](#) by **Boeing** to power the **X-66A flight demonstrator**, which is widely seen as a precursor to a potential Boeing 737 replacement next decade, offering a projected 30% lower fuel burn and emissions. **Collins Aerospace** (a sister company of P&W under the RTX group) will also provide nacelles and engine accessories. Ground and flight tests of the X-66A demonstrator are slated to take place in 2028.

Electric

New electric propulsion technology developments – **CleanTechnica** on 5th October [published](#) a detailed analysis of the technical progress by Wright Electric in developing an electric and battery-retrofitted Bae 146 regional quad-jet. The same week, Wright [announced](#) that it is currently pursuing the development of batteries targeting 1,000 watt hours per kilogram (wh/kg) pack density, more than four times the energy density that the best batteries had when the company was founded. Separately, on 21st September hybrid-electric aircraft developed **VoltAero** [announced](#) it has performed the world's first flight of an electric-hybrid aircraft with 100% SAF. Separately, **GKN Aerospace** and **Pratt & Whitney Canada** have [announced](#) an agreement to collaborate on the development of the High Voltage High Power EWIS for the **RTX hybrid-electric flight demonstrator** project.

Eviation reaches \$5 billion in orders after lessor commitment – **Eviation** on 6th September [announced](#) that **Solyu**, a leasing company based in South Korea, has signed a LOI for 25 all-electric commuter **Alice** aircraft with options for 25 additional aircraft. With the commitment, Eviation has now reached \$5 billion in aircraft orders. Meanwhile, **Solyu** joins the list of aircraft lessors focused on zero-emissions aircraft. [As many as 13 other leasing firms](#) have partnerships or commitments in the clean propulsion regional and subregional fixed-wing aircraft sector (Abelo, ACIA Aero Leasing, AELIS, Amedeo, Avmax Aircraft Leasing Inc., Bristow Group, Jetstream Aviation Capital, MONTE, Rockton, Rose Cay GP, Skye Aviation, Aerolease, and Green Aerolease). Later in October, Eviation announced a letter of intent with German-based regional airlines **flyVbird** for 25 Alice aircraft. Seaglider developer **REGENT** also made new order announcements in the past two months. **REGENT** [announced](#) in October it has raised \$60 million in a Series A funding round with **Japan Airlines Innovation Fund** among the investors. JAL also [signed](#) a comprehensive partnership for the deployment of REGENT's electric seaglidars in Japan. Separately, REGENT on 16th October [announced](#) a deal with **Surf Air** to establish a seaglider service in Miami by 2027. Surf Air, separately, confirmed an order on 26th September for 100 **Cessna Grand Caravan EX** aircraft from Textron to support its development of an electrified Caravan targeting FAA certification in 2026.

Chinese e-VTOL eHang receives certification in world first – Although Ishka's coverage of electric aviation is generally limited to fixed wing aircraft, a noteworthy [development](#) in the e-VTOL space is EHang's EH216-S **approval** in October **for commercial flights** by the Civil Aviation Administration of China (CAAC). This is the first such approval, both for an e-VTOL as well as for an autonomous passenger aircraft. In related news, a newly published [literary review](#) of research into urban air mobility (UAM) predicts that e-VTOLs may have an opportunity to develop along reserved transportation corridors to limit some of their externalities.

Hydrogen

Airbus invests in ZeroAvia, two years after Universal Hydrogen investment – **ZeroAvia** on 18th September [announced](#) that **Airbus**, Barclays Sustainable Impact Capital and NEOM have co-led the company's latest financing round together with seven other entities including **Alaska Airlines**. The combined investment (size not announced) will "enable ZeroAvia to accelerate progress towards certification" of its first hydrogen-electric engine. Airbus (which sees hydrogen as a major

component for its future aircraft concepts) and ZeroAvia also agreed to collaborate on certification approaches for hydrogen power systems. With this investment, Airbus has now invested in two of the largest hydrogen-retrofit OEMs, following an [investment](#) by Airbus Ventures in **Universal Hydrogen** in 2021.

Universal Hydrogen inches past 250 orders – **Universal Hydrogen** on 27th September [announced](#) an unnamed customer pushed the total order book for its regional hydrogen-electric retrofit product (targeted for the **ATR72** aircraft) to 250 aircraft. The company's order book is in the form of customer letters of intent, with approximately half the orders including customer deposits or cancellation penalties. Separately, **Universal Hydrogen** [announced](#) it has now achieved 10 test flights with its ATR72 retrofitted testbed in the Mojave Desert. In September, **Universal Hydrogen** achieved a pivotal breakthrough in its road to certification. On 14th September the company [announced](#) that the US FAA issued the **G-1 Issue Paper**, a key step in establishing the certification criteria, including tailoring of applicable airworthiness and environmental standards, required by the FAA to ultimately certify the Universal Hydrogen design for ATR72 conversion to hydrogen power. The FAA also accepted Universal Hydrogen's application for a Supplemental Type Certificate (STC) for the conversion of ATR 72.

CAeS reaches 1,300 powerplant commitments – **Cranfield Aerospace Solutions (CAeS)**, which is developing a hydrogen retrofit solution for the Britten-Norman Islander, [announced](#) on 12th October that its pipeline of hydrogen-electric drivetrains has surpassed 1,300 following an MoU with **Dronamics** to power its Dronamics Black Swan cargo drone. Days earlier, UK subregional aircraft manufacturer **Britten-Norman** [announced](#) on 21st September that the production of Islander aircraft has returned to UK after being manufactured in Eastern Europe since 1968. Britten-Norman in April 2023 announced it was to merge with CAeS. In related news, CAeS on 28th September [announced](#) a three-party agreement with lessor **MONTE** and Australian air charter **Torres Strait Air** to convert up to ten Islanders to hydrogen power.

H2FLY completes first piloted liquid hydrogen-electric flight - In another hydrogen highlight, Germany-based **H2FLY**, a wholly-owned subsidiary of Joby Aviation, [completed](#) on 7th September the world's **first piloted flight of a liquid hydrogen-powered electric aircraft** (video [available here](#)).

A comprehensive guide to hydrogen-powered aircraft – Two researchers supported by the US Department of Defense and NASA published a **comprehensive guide** to hydrogen-powered aircraft in the August issue of *Progress in Aerospace Sciences*. The academic paper, now [available in full online](#), explains the fundamental physics and reviews current technologies and discusses the impact of these technologies on aircraft design, cost, certification, and environment. The paper is one of several on a [Special Issue on Green Aviation](#). In the long term, the abstract notes, "hydrogen aircraft appear to be the most compelling alternative to today's kerosene-powered aircraft." Separately, credit rating agency **DBRS Morningstar** on 4th October [published](#) an eight-page commentary on the challenges and opportunities of aviation's alternative propulsion technologies.

OTHER DEVELOPMENTS

UK and NZ launch hydrogen initiatives, new report by aviation-shipping coalition - A **Hydrogen in Aviation (HIA)** alliance of major aviation players ([EasyJet](#), Rolls-Royce, Airbus, Ørsted, GKN Aerospace, and Bristol Airport) was [launched](#) on 5th September aiming to assist the UK government and policymakers by mapping out the milestones to ensure infrastructure, regulatory and policy changes keep pace with the technological developments in hydrogen-powered carbon-free flight. On 7th September, and also backed by **Airbus**, a similar plan was put forward: the **New Zealand Hydrogen Aviation Consortium** [launched a new report](#) 'Launching green hydrogen-powered aviation in Aotearoa New Zealand' which [demonstrates](#) how New Zealand is "ideally suited" to the transition to hydrogen-powered aviation. The report also addresses technical and commercial challenges to be addressed, models green hydrogen demand, explores wider benefits for the electricity market, and lays out the role government should play. Meanwhile, a new report by the **Skies and Seas Hydrogen-fuels Accelerator (SASHA) Coalition** warns that the legislation does little to drive the uptake of "truly sustainable fuels" - green hydrogen or green hydrogen-derived fuels. *The Green Hydrogen Gap*, [published](#) in September and produced by [engineering consultant Arup](#), makes a case for EU and UK policies and regulations to prioritise the use of hydrogen and carbon dioxide from DAC in applications where there is a lack of alternative routes to decarbonisation, such as shipping and aviation. It calls on regulators to do more as well as for first-mover companies to ramp up demand for these fuels.

IATA hosts first major sustainability symposium – The International Air Transport Association (**IATA**) hosted its [first World Sustainability Symposium \(WSS\)](#) in Madrid in early October with a focus on actions needed to achieve the aviation industry's commitment to net zero CO2 emissions by 2050. A list of event takeaways produced by IATA is available [here](#). During the event, IATA [announced](#) that a number of airlines have agreed to contribute CO2 emissions data to its CO2 Connect emissions data platform. The event was preceded by [a letter from 70 Spanish and international NGOs](#) (in Spanish) calling on the airline industry to reduce flights to cut emissions. Earlier in September, IATA published an [article](#) on its recently launched EcoHub, a platform for airline environmental data management, reporting, and compliance.

From cradle to grave: considering lifecycle impacts of aircraft – Although the operational phase of aircraft is often the one that (rightly) receives the most attention from a sustainability perspective, two announcements in the past two months served as a reminder that broader lifecycle impacts are also relevant. On 25th October, **Airbus** [announced](#) that from By 2030, the new Atlantic fleet will generate 50% fewer CO2 emissions compared to 2023. 2026 three new fuel-efficient cargo ships will start transporting aircraft

components across the Atlantic to final assembly. Separately, part-Airbus-owned aircraft dismantling and recycling company **Tarmac Aerosave** on 18th October [announced](#) it had been double-accredited by the **Aircraft Fleet Recycling Association (AFRA)** for dismantling and recycling, with "diamond" level for key performance indicators. According to AFRA's website, Tarmac Aerosave becomes one of only four companies to have the double accreditation.

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