“Aviation has a plan to decarbonise – but we need to communicate better”

7,000 people watched worldwide as EUROCONTROL DG Eamonn Brennan went to the heart of the sustainability debate: the gap between aviation’s sustainability plans, and public perception of them and of the industry. “Aviation is responsible for 2% of global emissions, but the perception is that it is 22%”. This special edition of the EUROCONTROL Aviation Sustainability Briefing highlights the key Aviation Sustainability Summit takeaways.

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If we need to remember only one key message from the EUROCONTROL Aviation Sustainability Summit, I would keep this very inspiring sentence from Mr Bertrand Piccard: “Many people have told me things are impossible. But the impossible exists only in the mindset of people who believe that the future is an extrapolation of the past.”

Reaching net zero emissions by 2050 is challenging, yes, but not impossible. We have a plan requesting the collaboration of all partners within the aviation sector and if we are to overcome this historic challenge of aviation decarbonisation, innovative solutions may also come from outside our sector. We need to embrace change and new ways of thinking.

Our aviation decarbonisation roadmap also includes very concrete steps and I am delighted that EUROCONTROL Director General Eamonn Brennan has made this very clear in his intervention to our high-level audience at the Summit. The different speakers and panellists have explained some of the economic, technical and operational challenges we need to overcome and presented a variety of concrete solutions. Now, we need to focus on implementing these solutions all together.

Therefore, we have dedicated this special edition of our EUROCONTROL Aviation Sustainability Briefing to the discussions and interventions at our Summit. I hope you will find it as interesting as I do and I wish you a great and peaceful start into the holiday season!

Best regards,

Marylin

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Marylin Bastin
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Dynamic views on the way forward for aviation from Swiss explorer, psychiatrist and environmentalist Bertrand Piccard at the EUROCONTROL Aviation Sustainability Summit, 22 November 2021
Addressing aviation leaders and more than 7,000 people who joined the EUROCONTROL Aviation Sustainability Summit online, EUROCONTROL Director General Eamonn Brennan pointed out the gap between aviation’s public perception and the reality when it comes to sustainability.

“Aviation is responsible for 2% of global emissions, but the perception is that it accounts for 22%. Everybody thinks we are a far greater polluter than we actually are”, he said. “We have lost the PR battle!”

Other growing industries, such as shipping or technology, emit more than aviation, yet do not experience the same kind of public criticism. “And even though we have a plan to decarbonise aviation, people don’t know we have a plan, and we are very late to the party compared to other industries”, he said. “As aviation grows, we will see our share of emissions grow before they decrease.

This is a very difficult message to sell. But people will continue to fly to go on holiday and do business. It is our job to make it sustainable.” Eamonn explained there are four very concrete approaches to reduce emissions from aviation:

- sustainable aviation fuels (SAF),
- new aircraft technology, carbon offsetting, carbon capture schemes and more efficient use of airspace through optimising ATM.

This plan already has substantial support from the aviation industry that has committed to become climate-neutral by 2050 with many organisations - such as airports - aiming for an even more ambitious timeline. Yet for the plan to succeed and successfully decarbonise aviation, it will be crucial to change public perception and reach the necessary level of support and collaboration, including the cooperation of other sectors such as energy, incentives and regulatory support from policymakers.

Eamonn Brennan, Director General
EUROCONTROL reacts to climate campaigners’ criticism of aviation at the EUROCONTROL Aviation Sustainability Summit, 22 November 2021
At EUROCONTROL’s Aviation Sustainability Summit in November 2021, aviation leaders shared their insights on just how European aviation plans to deliver on the European Green Deal goals, and how they see transport and mobility evolving in the years ahead.

Following EUROCONTROL Director General Eamonn Brennan’s thought-provoking introduction, Ryanair Group CEO Michael O’Leary kicked off the morning sessions with a presentation on Ryanair’s strategy for sustainability, stressing that to reduce the environmental impact of aviation, Ryanair is counting on new technology: “We regard ourselves as one of Europe’s greenest, cleanest airlines but we are not content with that. We continue to invest and improve.”

“We are investing heavily in new technology. We are spending $20 billion over the next five years taking delivery of 210 new Boeing 737 MAX which will reduce fuel by 16% and cut noise by 40%.”

In addition, Ryanair Group has set itself an ambitious target aiming to reach 12.5% use of sustainable aviation fuel (SAF) by 2030. Michael O’Leary agrees that climate taxation is necessary but he sees as a key regulatory shortcoming that European governments have not committed to investing tax revenue into decarbonising aviation through promising solutions such as SAF: “In 2019, we paid 613 million EUR in environmental taxes for the Emissions Trading System. Not one cent was spent on environmental measures.” He also regrets the lack of progress on the Single European Sky, and thinks that European governments should agree to allow Europe’s air traffic control providers to compete against each other: “If Europe is serious about reducing the environmental footprint of aviation, deregulate Europe’s ATC providers. If one ANSP is not capable of providing a service, allow the others to do it for them. We estimate that would reduce fuel consumption between 10 and 20%.”

Aviation’s biggest challenge: becoming climate-neutral

Ryanair’s commitment to the potential of sustainable aviation fuels was echoed by the speakers that followed to discuss Europe’s role as a global leader for aviation sustainability: Lufthansa’s Group’s Chief Customer Officer Christina Foerster, IATA’s Director General Willie Walsh and environmental NGO Transport & Environment represented by William Todts.
In his view, SAF is the sole solution that can not only reduce CO2 emissions but also tackle non-CO2 emissions. While sustainable aviation fuels have considerable advantages such as being able to be used in existing airport infrastructure and significantly reducing emissions, SAF come with a hefty price tag. As Christina explained, “currently SAF is five to eight times as expensive as kerosene. E-fuels are considered to be 15 times as expensive as conventional kerosene.” Putting that on a long-haul flight would result in a very high ticket price which may cause European passengers to reconsider their travel options and make it likely that they transfer at one of the Eastern hubs such as Istanbul or Dubai to a non-European flight that does not charge for blending in SAF.

Willie Walsh agreed with Christina on SAF as the priority solution to decarbonise:

“If we can significantly upscale the production we will get a lower cost. It will be at a premium to kerosene today, but we can deal with this as an industry.”

Quoting Etihad’s recent plan to fly on 50% SAF from London to Abu Dhabi, Walsh highlighted that “the demand for SAF is already there today, but it is simply not available. They were only able to get to 38%. The airline industry is committed to improving the environmental footprint. There is no question about it that we have to do it.” IATA’s members recently committed to achieving Net Zero emissions by 2050.

Lufthansa Group has been Europe’s largest purchaser of SAF this year, and recently announced their plans to acquire at least 25,000 litres of Power to Liquid fuel (PtL) annually over the next five years and make it available to customers. So far the Group has already offered customers the possibility to purchase SAF through the Lufthansa compensation platform Compensaid to offset the CO2 emissions of their air travel.

William Todts welcomed the dialogue that was made possible at the EUROCONTROL Aviation Sustainability, stressing that decarbonising aviation is “a challenge that can only be solved collectively with the support of governments”. However, he urged caution to his co-panellists on seeing the attention aviation has received from climate change campaigners largely as a PR problem, saying

“the reason why emissions from aviation need to be addressed is because aviation is one of the few sectors that is consistently increasing its emissions. That’s why you are in the spotlight. Your emissions have to go down. Anything else is not acceptable.”

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Aviation pioneers Bertrand Piccard and André Borschberg achieved the first flights around the world in a plane solely powered by the sun, demonstrating that flying without a drop of fuel is possible.

At EUROCONTROL’s Aviation Sustainability Summit Bertrand Piccard spoke about the challenge of making this pioneering adventure a reality by creating a revolutionary aircraft capable of taking energy from the sun and storing it in batteries to fire the electric engines of the Solar Impulse plane. He said: “Airplane constructors laughed at me, saying it takes one minute to calculate that the sun will not give enough energy to have a plane fly day and night. That’s the paradigm in terms of energy today: We only speak of production and not of efficiency.” It took the Solar Impulse team three years to master this challenge. They solved it by making the wings very wide – wider than a jumbo jet – and the aircraft lighter than a family car.

“The aeroplane industry thought it was impossible. So we had to find someone who did not know it was impossible. And that was a shipyard. When we don’t know something is impossible we have no filter to reinforce our previous certainties. We are completely open for absolutely new solutions and technologies.”
Not only did the technology solution come from outside the sector, so too did the budget of EUR 170 million. When Piccard speaks about the 15 years of work it took to raise the budget and his initial disappointment that no aircraft manufacturer was on board, the audience could really feel the enormity of the challenges Piccard and his team needed to overcome along the way. For Piccard, the environmental challenge of aviation needs to be addressed without compromising economic growth: “Everything we use has been invented more than a hundred years ago at the beginning of the oil era. This has to change and it will only change if it is profitable, otherwise people will resist and we will go deeper and deeper into the climate crisis. This is why I launched the “Take it Further Challenge” to identify everywhere in the world 1,000 clean solutions that will protect the environment in a financially profitable way." One of the most important criteria for these solutions is that they need to exist today, they cannot just be a plan for the future. So far, only a few solutions (such as Skybreath – a software program to reduce fuel consumption) selected by the Solar Impulse Foundation can be used for aviation, but Piccard stresses that there are a lot of decarbonisation solutions that can be used that are not purely about in-flight technology: “There are many things on the ground that can be done and are financially profitable – such as ‘APU OFF”, whereby power is provided to aircraft on the apron enabling them to continue to run their electrical systems during turn-around without using their own fuel-powered Auxiliary Power Unit (APU).

Food for thought for everyone in the room was Piccard’s warning to all the sceptics who have questioned the feasibility of hydrogen, electric or other new aircraft technologies: “When the Wright brothers built the first aircraft in Dayton, Ohio, the mayor of the town said “I hope these two young boys will take a serious job instead of wasting their time with stupid toys.” Let’s not make the same mistake in aviation today!”
Aviation technology and the energy transition: How are we going to adapt?

How will the aviation sector adapt in light of new fuels and evolving aviation technology? This was the key question addressed in the afternoon discussions at the EUROCONTROL Aviation Sustainability Summit.

European airports, their infrastructure and their commitment to sustainability are going to play a crucial role here. ACI Europe DG Olivier Jankovec stressed the commitment of European airports to decarbonise as manifested in “Destination 2050 – the common European aviation industry roadmap to achieve zero CO2 emissions by 2050”. He also highlighted the success story of ACI’s airport carbon accreditation programme: “182 European airports covering 71% of European passenger traffic are part of the programme and work on reducing emissions. 46 airports are already carbon-neutral and a further 96 are committed to becoming carbon neutral by 2030.”

Aviation leaders share insights into their decisions to make aviation sustainable

Asked by aviation journalist Cathy Buyck about when to decide on future aircraft powered by sustainable power sources such as hydrogen or electric, CEO of low-cost carrier Wizz Air József Váradi said: “The best technology is the technology that is available. We have decided to innovate with what is on the market now.” Váradi referred to Wizz Air’s recent order of up to 196 Airbus A321 aircraft. He said: “We want to bring the latest technology to our fleet – not only in terms of economic performance but also in terms of environmental performance.”

“Almost the entire industry stepped back from investment during COVID-19. We kept investing into aircraft, into markets and into people. Decarbonisation will happen on the basis of technology.”

However, he also explained that Wizz Air is sharing its operational experience with Airbus in an ongoing pilot project on hydrogen technology. “We are absolutely committed to innovation”, he said mentioning also close cooperation between EUROCONTROL and Wizz Air to optimise operations – especially continuous descent operations to reduce emissions.

Are SAF the answer to the question how do we decarbonise aviation?

“There is no doubt SAF in the form of e-fuels will play a significant role in the mid to long term for mid-haul to long-haul flights.”

“For easyJet, SAF are an important interim solution in our decarbonisation pathway, while we are supporting the development of zero-emission technology such as hydrogen, which will be the most sustainable solution for short-haul networks such as our own in the long term,”

said Johan Lundgren, CEO of easyJet. “However, biofuels based on feedstock is not the sustainable, long-term solution.
We have to move to the more efficient e-fuels such as power-to-liquid. My concern is that if we set up capacity and supply of biofuels that does not remove the resources to set ourselves up for e-fuels.”

Arjan Meijer, CEO and President of Embraer Commercial Aircraft, sees SAF as one of the solutions the aviation sector needs to embrace to reduce emissions. Embraer’s product segment is in aircraft with up to 150 seats – a segment he reckons will see change first:

“We recently revealed our Energia family of sustainable aircraft, inviting partners and customers around the world to join the challenge to meet net zero by 2050. We are also working on an eVTOL, and we believe we could see smaller electric or hybrid aircraft by 2030.”

“It would create complexity for sure. The difficulty is on the side of the supply chain, and logistics, and how to provide SAF to different types of users. I am not even talking about the supply chain of hydrogen, which would have to be completely different in terms of volume and safety procedures. There would be risks, there would be complexity, but these are technical issues that can be solved.”

For EASA, it is clear that in order to assess any risks that may come with the use of hydrogen technology, the expertise and knowledge about hydrogen need to be built up.

What’s the European Commission’s view?

The proposals of the European Commission’s Fit for 55 package that directly concern aviation received strong attention during the Summit debates. Henrik Hololei, Director-General of DG MOVE, European Commission, welcomed the aviation industry’s commitment to innovation, and IATA’s resolution to achieve net-zero carbon emissions by 2050. He agreed with other Summit speakers that SAF should receive high priority as one of the viable solutions to reduce significantly emissions from air traffic:

“We very much rely on fuel producers to deliver SAF. This is a challenge for the aviation value network. Every component has to deliver to make the sector more sustainable.”

Hence, the pressure of the Commission’s SAF mandate proposal is on the fuel producers: “I believe in the market. If it is economically viable, there will be many producers. With our proposal I think the signal to them is there.”
EUROCONTROL has published an updated version of its map on pioneering use of sustainable aviation fuels: the following airports now regularly offer SAF: Le Bourget (France) and two Spanish airports - Madrid Barajas and Barcelona El Prat - offer SAF on demand through the Avikor platform which allows travellers and companies to take direct responsibility for sustainable flights. Three further airports have received batches of SAF: Nice (France), Seville and Saragoza (Spain). National blending mandates and other national policy measures will also be introduced as part of the map as they develop. For instance, Norway requires aviation fuel suppliers to blend 0.5% biofuel into their jet fuel and is considering a 30% target by 2030. Neighbouring Sweden has introduced a greenhouse gas reduction mandate for aviation fuel sold in Sweden in 2021. The reduction level will be 1% in 2021, and gradually increase to 30% in 2030. Stakeholders wishing to report their SAF initiatives to EUROCONTROL can use the dedicated button on the map.
EUROCONTROL’s Maastricht UAC and DFS air traffic control centres implement airspace changes for more efficient and sustainable operations

As part of their international cooperation agreement signed in 2020, EUROCONTROL’s Maastricht Upper Area Control Centre (MUAC) and DFS Deutsche Flugsicherung GmbH (DFS) have introduced the first package of their large-spectrum airspace optimisation plan – the Cooperative Optimisation of Boundaries, Routes and Airspace (COBRA). Three COBRA airspace design changes in the airspaces controlled by MUAC, the Karlsruhe Upper Area Control Centre and the Langen Area Control Centre have been active since 7 October 2021. Thanks to COBRA, airlines can plan shorter routes in advance and therefore reduce fuel consumption and CO2 emissions. Further adjustments have been implemented to reduce complexity and increase air traffic management efficiency in the complex and dense cross-border area between Belgium, France, Germany and Luxembourg.
Emirates and GE Aviation commit to test flight programme using 100% Sustainable Aviation Fuel to reduce CO2 emissions

Emirates and GE Aviation have signed a Memorandum of Understanding to develop a programme that will see an Emirates Boeing 777-300ER, powered by GE90 engines, conduct a test flight using 100% Sustainable Aviation Fuel (SAF) by the end of 2022. Currently, SAF approved for use is a blend of petroleum-based jet fuel and a SAF component with a maximum blend limit of 50%. The 100% SAF test flight is expected to demonstrate how widebody commercial aircraft using jet fuel entirely made from alternative sources can fly safely with no operational impacts, thereby lowering significantly lifecycle CO2 emissions compared to petroleum-based fuels.


Embraer recently announced Energia, a family of concept aircraft that it is exploring to help the industry achieve its goal of net zero carbon emissions by 2050. Energia is comprised of four concept aircraft of varying sizes that incorporate different propulsion technologies – electric, hydrogen fuel cell, dual-fuel gas turbine, and hybrid-electric. Although the Energia airplanes are still on the drawing board, Embraer has already made advances in reducing emissions from its existing aircraft. It has tested drop-in sustainable aviation fuel (SAF), mixes of sugarcane and camelina plant-derived fuel and fossil fuel on its family of E-Jets. The company is targeting to have all Embraer aircraft SAF-compatible by 2030.
Volotea joins VINCI Airports’ forest carbon sink programme

Volotea and VINCI Airports have signed a partnership agreement that enables Volotea to join VINCI Airports’ recently launched forest carbon sink programme, in order to offset its residual carbon emissions and those of its customers and partners. This agreement sets out guidelines for implementing high-quality, certified forest carbon sink projects, which will draw on Volotea and VINCI Airport’s local operations and which will be developed in partnership with regional stakeholders, so as to drive local development. Recently initiated at Lyon Saint-Exupéry airport, where Volotea opened a new base in June 2021, these projects will benefit from VINCI Airports’ international network, which consists of 45 airports in 12 countries, allowing for a greater variety of projects.

Outcome of COP26: International Aviation Climate Ambition Declaration

23 nations signed the International Aviation Climate Ambition Declaration. The Declaration recognizes the need for aviation to “grow sustainably” and reiterates ICAO’s role to implement short, medium and long-term climate goals for the industry. Ensuring the maximum effectiveness of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), and the development and deployment of sustainable aviation fuels (SAF) are key aims of the Declaration.