

Sustainability of the Aviation Industry

Introduction

In November 2021, the International Civil Aviation Organization released the first edition of its publication, *Innovation Driving Sustainable Aviation*. The publication highlighted work on the development of aircraft technologies, the improvement of aviation operations and infrastructure, and the development of environmentally friendly fuels. Indeed, the aviation industry has made great strides advancing sustainability initiatives. However, key developments in aviation technology designed to improve sustainability, such as the electrification of aircraft, may not see large scale implementation for many years. With aviation's focus on safety, and given the industry's regulatory oversight, new technologies and improved systems often take decades to implement.

There is, however, increasing public pressure on aviation to move more quickly to sustainable practices. The substantial reduction in aviation activities during the Covid-19 pandemic has led environmentalists to call for a permanent reduction in aviation activity. Consequently, the industry needs to develop short term solutions to significantly improve sustainability. With this thought in mind, leading aviation bodies were asked by the Hermes Air Transport Organization to address the following questions:

1. What are the regulatory impediments to increasing sustainability and how can regulations be improved to make the industry more efficient and sustainable?
2. How can industry participants cooperate to improve sustainability, especially over the next five years?
3. What are the industry's best practices, already in place, that improve sustainability and how can these best practices be implemented throughout the industry?

Briefs were received from representatives of ten leading aviation organizations. The major points cited in these briefs are discussed below. Recommendations are then advanced based on a consensus view of the industry organizations.

What Constitutes Sustainability?

In his interview in *The Magazine* published by the Hermes Air Transport Organization, ICAO Secretary General, Juan Carlos Salazar, uses the Brundtland Report definition of sustainability as, "meeting the needs of the present without compromising the ability of future generations to meet their own needs." He further defines sustainability as, "an integrated approach that takes into consideration environmental and social concerns along with economic development."

This idea that sustainability must incorporate social conditions and economic development, along with environmental considerations, is highlighted in the position paper presented by the African Airlines Association. The AFRAA brief warns that the aviation industry should not solely define sustainability based on curtailing environmental impacts. The brief states that this, “is a narrow view of what appears to be a pervasive matter in every facet of human existence.” Conversely, AFRAA states that sustainability should focus on the survival and success of airlines, airports, and all players in the aviation value chain. This focus is especially important in developing areas of the world, including Africa and Latin America, where industry participants are most at risk.

A wide view of sustainability is echoed in the position paper advanced by the European Regional Airlines Association. ERA notes that regional carriers are important in connecting remote areas to the rest of the world, and that regional routes are necessary to the sustained economic well-being of remote communities. The ERA brief states: “Recent European national Government announcements to ban short-haul routes in Europe could ultimately hinder, rather than help efforts for a more sustainable air transport future.”

The International Air Cargo Association also takes a wide view of sustainability. TIACA discusses the role that air cargo operators played during the Covid-19 pandemic when air passenger operations were restricted and maritime operations constrained. Air cargo operators were called upon to deliver cargo around the world to sustain international supply chains. As noted in the position paper:

For many, the term sustainability is often limited to the environmental aspects, which are critically important for protecting the planet however TIACA believes that true sustainability can only be achieved when you look holistically at how we individually and collectively impact People, Planet and enhance global Prosperity, the three Ps.

In summary, there is belief among key industry organizations that sustainability encompasses economic and social development, in addition to environmental concerns.

Key Initiative – Sustainable Aviation Fuels

The initiative outlined most often as a means for achieving short term sustainable outcomes is the increased use of sustainable aviation fuels. These sustainable fuels include biofuels and synthetically manufactured aviation fuels. Mr. Salazar, in the ICAO brief, states: “SAF are available now ... In 2021 ICAO adopted the first-ever internationally harmonized SAF sustainability criteria that cover all three pillars of sustainability, with environmental, economic and social themes.”

The ERA notes that SAFs are, “a relatively established technology and are ready to be used as drop-in fuels,” but cautions that production is extremely limited with current capacity only sufficient for 0.1 percent of demand. Moreover, SAF costs are high at between 3 and 5 times the cost of conventional jet fuel.

The brief submitted by the European Union (DG MOVE) states:

Sustainable aviation fuels (SAF) are fully compatible with current aircraft technology and already certified up to 50% of the fuel used in a flight. Although they have the potential to make an important contribution to tackling GHG emissions in aviation (emission savings can go up to 80% compared to conventional jet fuel), this potential is still largely untapped.

The Airports Council International position paper states that, “incentives to reduce aviation emissions are still underprioritized” and notes: “Creating SAF policies that will provide certainty to investment in production and will support bridging the gap of SAF premium prices—one of its main barriers—is an immediate action that governments can pursue and a point in common on which aviation stakeholders can collaborate.”

Finally, the Joint Aviation Authorities Training Organization cautions: “Uneven access and distribution in the deployment of Sustainable Aviation Fuels (SAF) or charging infrastructure for electrified aircraft operations is and will become a challenge,” to the implementation of sustainable policies in aviation.

In summary, there is belief across the aviation industry that the increased use of sustainable aviation fuels is an effective method to the short run reduction in carbon emissions. The technology is already developed. However, current policies do not incentivize the use of sustainable fuel and access is currently limited and unevenly deployed.

Other Key Initiatives

Several other initiatives were advanced to improve the sustainability in the aviation industry:

- JAA TO cites improved air transport management, such as the Single European Sky (SES) initiative, as a “safe, cost efficient and environmentally friendly way” to improve sustainable aviation. According to JAA TO: “The benefits of the SES could potentially be huge; tripling the airspace capacity, reduce ATM cost by 50%, improve safety tenfold and reduce environmental impact by 10%.” Other initiatives outlined in the JAA TO position paper include improved manufacturing design that “allows for quicker and more flexible production, reduces material waste compared to traditional approaches and it also results in much lighter parts reducing aircraft weight and fuel use,” better aerodynamic technology that can, for example, increase effective wingspan, better fuel efficiency, for example by using new turbofan technology, increased thermal efficiency, and improved noise standards.
- DG MOVE cites several ways to increase sustainability: Environmental conditions could be better incorporated into the determination of airline charges at airports; slot allocation rules could be aligned more closely with environmental goals; and groundhandling operations could be accomplished with reduced environmental impacts. DG MOVE also points to increased coordination and cooperation in air traffic management as a means to achieving sustainable outcomes: “The local approach to Air Navigation Services provision is less

effective and leads to congestion and capacity crisis whereas experience shows that more effective network coordination decreases delays and congestion.”

- Based on its view that sustainability implies economic success for firms in the industry, AFRAA identifies “access to affordable and competitively priced capital; provision of infrastructure to support the growing industry; better connectivity and market access; facilitating mobility and cost competitiveness” as keys to sustainability. Important to the development of air transport in Africa is a competitive regulatory environment that improves connectivity across the continent.
- ERA cites voluntary carbon offsetting programs as a means for airlines to reduce their CO2 emissions. According to the ERA position paper: “These programs can either be used by the airlines themselves or by their passengers and allow the customer to compensate for their emissions by buying projects that reduce or remove CO2 emissions elsewhere (e.g., forestation or renewable energy projects).”
- ACI discusses continuous climb operations (CCO) and continuous descent operations (CDO) as methods for reducing carbon emissions. According to ACI: “CCO and CDO allow aircraft to use a flexible and optimum flight path that can deliver significant environmental and economic benefits—reduced fuel burn, gaseous emissions, and fuel costs—without any adverse effect on safety... The use of these techniques results in time being spent at more fuel-efficient higher cruising levels, hence significantly reducing fuel burn, and lowering emissions and fuel costs.” In addition, ACI lists several best practices for airports in increasing sustainability including installing solar panels and electrifying ground service equipment.
- TIACA believes that regulatory reform is key to increasing the efficiency of cargo operations and, thus, improving sustainability. TIACA believes that a reformed regulatory regime, “must include the whole range of traffic rights, including fifth and seventh freedoms, so as to allow all-cargo operators the ability to optimize the use of their fleets by picking up cargo where and when there is demand for the service and transporting it to where and when the client requests it.”
- The submission by the International Federation of Air Traffic Safety Electronics Associations (IFATSEA) also cites needed changes to the regulatory environment as a means of promoting sustainability. The brief states: “The regulatory environment, including Standardization activities are crucial activities and enable the promotion of requirements and Safety standards that in turn promote Sustainability ... The lack of standards for the CNS/ATM systems and their interoperability requirements of the future concepts ... if it is overcome, will , undoubtedly constitute a significant enabler, together with the Human pillar, for sustainability.”
- The brief of the Arab Civil Aviation Organization is concerned with actions that can be taken to recover from the unprecedented disruptions to the aviation system that occurred during the Covid-19 pandemic. ACAO supports harmonized approaches to restore the health of the aviation industry, such as the continued digitization of passenger and cargo data. Among the specific initiatives proposed include, “strengthening the ICAO system of standards, particularly those associated with the Unified Electronic Passenger Transport Database, by including health data and establishing a similar database for cargo transport.”

Coordination of Efforts

Several of the position papers cite the importance of coordination of efforts across the industry and, indeed with stakeholders outside aviation, to improve the sustainability of the aviation industry. These stakeholders include destination management and marketing organizations; that is, organizations that facilitate travel and tourism. In its brief, AFRAA states: “The importance of collaboration for the success and sustainability of the industry is not in doubt. What is, however, missing is the aviation sector to collaborate with industries that are not directly related to aviation but impact it.” Along these lines, AFRAA says that it intends, “to change the narrative and establish broader consultation with all stakeholders for the industry's good.”

These views are echoed in the ERA brief. ERA states that collaborative efforts promoting sustainability are needed: “Collaboration is key. To be successful, support from European and national policy makers is needed to create the right policy frameworks and, in some cases, to provide financial assistance to develop and apply new technologies.” ERA provides the example of the Toulouse Declaration of February 2022 – “the first-ever public–private initiative supporting aviation’s decarbonization goals signed by 35 European countries and more than 100 industry stakeholder groups in Toulouse, including the five leading European aviation associations.”

Recommendations

As the aviation industry moves beyond the Covid-19 pandemic, it faces unprecedented pressure to increase sustainable practices. Although the industry has been progressing steadily on increasing sustainability through the use of new technologies and the implementation of best practices, many future developments will take considerable time to implement given the industry’s regulatory oversight and focus on safety. With this in mind, Hermes asked leading industry associations to provide recommendations for improved sustainability with a focus on short-term initiatives. Based on the position papers submitted, Hermes Air Transport Organization makes the following recommendations:

1. Develop incentives to roll out the use of sustainable aviation fuels. The technologies have been developed; however, the supply is currently very limited. Governments need to develop incentives that will increase capacity and drive down production and distribution costs. Efforts should be made to distribute the sustainable fuels in an equitable manner so that all industry participants can benefit from its use.
2. Reform economic regulations to increase the sustainability of aviation. Although there has been much talk of reform, there are still many impediments to efficient and equitable aviation operations. In the short run, it may be advantageous to engage in reform on a regional basis or within industry sectors. In particular, regulatory reform could be put into place to allow air cargo operators to operate efficiently with international hubs that facilitate global supply chains.

3. Facilitate air traffic management and control to improve efficiency in air operations. For example, efforts should be paid to procedures that increase operating efficiency and the reduction in fuel usage.

4. Increase the dialog among aviation organizations and other stakeholders. It became clear during the Covid-19 pandemic of the importance of aviation to sustaining supply chains. Moreover, the limitations placed on air travel imposed precipitous losses to both tourism and business sectors. Clearly, it would be beneficial for a consortium of organizations interested in promoting best practices and sustainability in the aviation industry to work together towards these objectives.

2022 Hermes Recommendations Committee

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