Sustainability of the aviation industry

(Presented by A4A)

Introduction

The aviation industry is a critical engine of prosperity for national and international communities and airlines recognize that continued progress depends on protecting the environment and strengthening the sustainability of our economies. We acknowledge and embrace our responsibility to address environmental impacts associated with aviation, including reducing aircraft noise as well as greenhouse gas (GHG) and other emissions. Much continues to be done by airlines, aircraft, engine manufacturers and other industry stakeholders to transition aviation into an ever more sustainable industry. The efforts airlines are undertaking are designed to limit fuel consumption and continually improve environmental performance, responsibly and effectively, while allowing commercial aviation to continue serving as a key contributor to global, regional, national and local economies.

For several decades, the aviation industry has been keenly focused on reducing environmental impacts by driving and deploying technology, operations, infrastructure and sustainable aviation fuel (SAF). Airlines have dramatically improved their fuel efficiency and reduced their CO2 and other emissions by investing billions in fuel-saving aircraft and engines, innovative technologies such as winglets and cutting-edge route-optimization software. At the same time, airlines have dramatically reduced aircraft noise. Government data shows that from 1975 to 2019 the number of people in the U.S. exposed to significant levels of aircraft noise decreased by 94 percent even as the number of passenger volumes quintupled and cargo traffic septupled.

Since 2009, Airlines for America (A4A) and our members have been active participants in a global aviation coalition committed to 1.5 percent annual average fuel efficiency improvements through 2020, with goals to achieve carbon-neutral growth beginning in 2020 and a 50 percent net reduction in CO2 emissions by 2050, relative to 2005 levels. In March 2021, A4A and our carriers announced a significant strengthening of our goals, pledging to work in close partnership with all aviation stakeholders and government leaders to achieve net-zero carbon emissions by 2050. And on October 4, 2021 the International Air Transport Association (IATA) and its member airlines announced their commitment to achieve net-zero carbon emissions by 2050. With every credible analysis showing that achieving net-zero emissions will require transitioning to SAF, A4A carriers also pledged to work with the government and other stakeholders toward a rapid expansion of the production and deployment of commercially viable SAF to make 2 billion gallons available to U.S. aircraft operators by 2030. On September 9, 2021, as a complement to the federal government's announcement of a SAF "Grand Challenge," A4A and its members increased the A4A SAF "challenge goal" by an additional 50 percent, calling for 3 billion gallons of cost- competitive SAF to be available to U.S. aircraft operators by 2030.

These commitments continue a long history of working constructively and proactively to improve sustainability and address climate change. A4A, a founding member of the Commercial Aviation Alternative Fuels Initiative (CAAFI) established in 2006, helped launch the nascent SAF industry together with our member carriers. We have also strongly supported international efforts on sustainability, including ambitious international agreements and increasingly stringent aircraft and aircraft engine standards addressing noise and emissions under the auspices of the International Civil Aviation Organization (ICAO). These include the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), a market-based measure designed to "fill the gap" should we not be able to achieve carbon-neutral growth in international aviation through industry and government investments in other measures, the ICAO Aircraft Carbon Dioxide (CO_2) Emissions

Standard and ICAO's aircraft engine standards to control oxides of nitrogen and particulate matter emissions.

There is no single solution to unlock the full potential of sustainable aviation. It is clear, however, that the aviation industry must continue its efforts to work proactively over the next five years to ensure we remain on a path to achieving a sustainable long-term future. This requires an industry-wide effort in strong partnership with governments to adopt changes across a number of areas, each delivering benefits that together bring us to the shared goal of sustainable aviation globally.

Discussion

Below is a summary of existing industry best practices, followed by an analysis of current regulatory obstacles and potential solutions to ensure improved sustainability practices over the next five years.

Existing Industry Best Practices

A4A and our members have long been active participants in a global aviation coalition that committed to addressing climate change and pledged to work in partnership with all aviation stakeholders and government leaders to achieve net-zero carbon emissions by 2050 and make 3 billion gallons of cost-competitive SAF available to U.S. aircraft operators by 2030. Notably, these goals represent collective minimums and several A4A member carriers have individually announced even more ambitious climate and SAF goals. Moreover, these ambitious goals were adopted in the midst of the most severe economic crisis the commercial aviation sector has ever faced, demonstrating the strength of the airline industry's commitment to the environment and depth of our recognition that environmentally responsible growth is essential to the vitality of our sector.

We will continue to support efforts to establish technologically feasible, environmentally effective and economically reasonable aircraft and aircraft engine standards. As technology evolves, we will also embrace the increased stringency of such standards, including the ICAO effort to develop an "integrated" noise and CO2 emissions standard for aircraft.

A4A will also stand behind additional development of evolutionary and revolutionary airframe and engine technology advances. Improved engines and aircraft have been critical to the great strides airlines have made in addressing environmental impacts and we have devoted hundreds of billions of dollars to acquire and deploy these technologies. To ensure access to ever-improving technology, we will continue to work in close partnership with airframe and engine manufacturers and governments to aid ongoing research and development programs that are critical to advancing such technology.

Similarly, optimizing air traffic management systems globally is not only critical to ensuring aviation safety but also to increasing efficiencies and further reducing emissions and noise. This will be especially important as the industry recovers from the COVID-19 crisis and returns to growth. Airlines will continue to work in partnership with other aviation stakeholders and governments to support improvements to the air traffic management system.

We also strongly support the work ICAO is doing to position the ICAO Assembly in 2022 to adopt a Long-Term Aspirational Goal for international aviation climate action and, as demonstrated by our

own members' commitments, urge that such a goal reflect governments' agreement to work with industry on positive measures to support achieving net-zero carbon emissions by 2050.

Finally, as a member of the Air Transport Action Group (ATAG) A4A strongly supported the ATAG as well as the IATA commitments announced last year for the global air transport industry to achieve net-zero carbon emissions by 2050. As part of those announcements, both ATAG and IATA called for ICAO Member States to support the adoption of a Long-Term Aspirational Goal that is reflective of the aviation industry's commitments.

Regulatory Impediments to Increasing Sustainability

Governments must implement supportive policies and programs that enable innovation, scale-up, cost competitiveness and deployment in the key areas – technology, operations, infrastructure,

and SAF -- while avoiding the implementation of policies that would limit the aviation industry's ability to invest in emissions-reducing measures. Thus, government actions hold many of the keys to unlocking innovation and increased sustainability and efficiency within the industry.

The successful scale-up of the SAF industry is perhaps the most important development that needs to occur. Simply put, the commercial aviation sector needs the SAF industry to scale up rapidly so that it can become a reliable provider of exponentially larger quantities of reasonably priced fuel to airlines. Successfully scaling up production of SAF in the quantities necessary to meet the aviation sector's climate goals will require government to take bold, ambitious steps and provide steadfast support.

This should include (but not be limited to) sustained implementation of positive incentives like a SAF-specific blender's tax credit, grants and loan guarantees to ensure that existing and prospective SAF producers can confidently devote the capital necessary to rapidly increase production from current levels, as well as enhanced support for SAF research and development.

In the European Union, there are concerns surrounding the "Fit for 55" package of measures aimed at driving sustainable transport, including aviation. The proposed SAF blending mandate in the RefuelEU Aviation proposal is--in our view--premature and not commercially viable when measured against available SAF production. There is strong demand for reasonably priced SAF, yet only prohibitively priced SAF is currently available on the market. Ultimately, while we believe it is premature to impose a mandate, if one is to be imposed we maintain it needs to be accompanied by positive measures that will enable the SAF industry to meet both volumetric and price requirements, including positive incentives to support the expansion of commercially viable SAF production at scale and encourage robust competition, particularly on prices.The RefuelEU Aviation proposal may also interfere with airlines' freely negotiated fuel purchasing arrangements and, more importantly, effectively grants SAF producers monopolistic pricing power. The blending mandate that has been proposed will create undue costs for the airline industry and hamper the adoption of SAF.

The mandate comes at a time when the aviation industry is working hard to recover from the impacts of a global pandemic and resuming the air transportation services critical to enable a full economic recovery. Considering this, avoiding the implementation of policies that would limit the aviation industry's ability to invest in emissions-reducing measures is essential in the progression of effective sustainability within the industry.

The COVID-19 pandemic hit aerospace manufacturers particularly hard, constraining available resources and the risk appetite for research and development investment. The availability of government resources and positive government support will determine whether the aviation industry can achieve the airframe and engine technology improvements needed to reach our aggressive climate goals.

Recommendations for Improving Aviation Sustainability Over the Next Five Years

Achieving sustainability ultimately rests upon the cooperation of several actors both within and outside the field of aviation. Governments, for instance, play a pivotal role in supporting this transition: it is paramount that they implement supportive policies and programs that enable innovation, scale-up, cost-competitiveness and deployment in aviation while avoiding policies that would limit the aviation industry's ability to invest in emissions-reducing measures. Within this framework, government support is needed for cooperative programs, deployment of electric Ground Support Equipment (GSE), ensuring cross-sector synergistic innovation and optimizing air traffic management systems.

Again, rapid scale-up of cost-competitive SAF production is critical. Achieving net-zero carbon emissions by 2050 will require that all or virtually all of aviation's energy needs are fulfilled with SAF. This requires getting on a trajectory of exponential growth in SAF production now, and that, in turn, requires that governments support the nascent SAF industry with positive, bold actions of the type described above. Historically, airframe and engine technology advancements by industry have been the primary contributor to improved environmental performance in aviation and further advancements will be required, however government resources are crucial to support foundational research and mitigate risk to spur manufacturer investment in cleaner technologies. Examples of necessary policy support include, for instance, support for the U.S. Federal Aviation Administration's (FAA) Environmental Research and Development Programs; a new grant program administered by DOT/FAA for projects that develop, demonstrate, or apply low-emission aviation technologies; and, lastly, establishing a new NASA initiative, additional to existing programs, to build upon and accelerate previous or ongoing work to develop and demonstrate new technologies in aircraft propulsion concepts.

Electrification is also a proven means of lowering emissions for many types of airport GSE. The deployment of electric GSE requires access to reliable electric infrastructure and in some cases other infrastructure improvements. Thus, government funding to support the acquisition of eGSE and enabling the installation of the necessary airport infrastructure would help accelerate deployment. Funding to support commercialization of eGSE and other low/zero-carbon GSE in more demanding applications would also support sustainability. Complementary to this, support for necessary airport infrastructure is essential. This could be done through the provision of funding to airlines to acquire low-carbon GSE and install infrastructure that displaces traditional GSE.

While the focus must remain on the aviation sector, synergistic innovations in other sectors to support deployment of cleaner energy and carbon removals that can be leveraged by airlines are also critical. These include emerging technologies and proven nature-based solutions that remove and sequester carbon. For instance, emissions avoidance and sequestration opportunities must be maintained in the short to medium term, with aviation's use of them tied to ensuring environmental integrity through, for example, rigorous emissions unit criteria, such as those established under CORSIA. Indeed, due to the emissions levels required to meet aggressive carbon emissions

reduction goals, sources of removals associated with aviation activity and offsets from other sectors will need to evolve dramatically.

Finally, the network of airspace routes is vital for moving people and goods around the world safely and securely. For this reason, airspace modernization and efficiency is pivotal to the green transition. Airspace modernization will enable airspace capacity increases, which can serve a number of purposes: help reduce traffic delays in periods of high demand, provide scope for integration of new airspace users, and/or provide the opportunity for mitigating noise impacts on the ground. Lastly, airspace modernization will also have a positive environmental performance inasmuch as it will aid in lowering carbon emissions and noise levels.

Conclusion

The aviation industry has already established practices aimed at reducing the environmental impacts of aviation and achieving net-zero emissions, but further measures are necessary to ensure sustainability in the long-term.

Airlines have worked diligently across this portfolio, as active participants in global aviation coalitions committed to addressing climate change as well as establishing concrete goals to achieving net-zero carbon emissions and working to make substantial quantities of cost-effective SAF available. While working to achieve these goals, A4A will continue to support the development of airframe technology advances, improvements to the air traffic management system, and ICAO's work to adopt a Long-Term Aspirational Goal for international climate action. However, these actions cannot meet our global needs in isolation. While existing regulatory impediments, tied to the global need for greater governmental support and resources for infrastructure and innovation, such as an inefficient airspace, the scale-up of SAF, the need for a SAF-specific blender's tax credit and the lack of positive incentives for the aviation industry remain, there will, ultimately be insufficient emissions reductions.

For this reason, modernization of airspace and cooperation among both industry and governmental actors is imperative to achieve the ambitious climate goal that we have committed to. This must be interlinked with synergistic innovation across all sectors.

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