



U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON
SCIENCE, SPACE, & TECHNOLOGY

Opening Statement

Chairman Don Beyer (D-VA)
of the Subcommittee on Space and Aeronautics

Space and Aeronautics Subcommittee Hearing:
Examining R&D Pathways to Sustainable Aviation

March 24, 2021

Good morning, and welcome to our distinguished witnesses. Thank you for being here.

I also want to welcome our new and returning Subcommittee Members to our first Space and Aeronautics hearing of the 117th Congress.

These are exciting times. From returning humans to the Moon in preparation for Mars to advancing scientific discovery and transforming the future of aviation, there is much that lies ahead of us. I look forward to working with you and Ranking Member Babin on supporting a strong and bright future for America's space and aeronautics programs.

Today we're considering the future of aviation and how we can ensure that the U.S. remains the leader for next generation aircraft and what R&D it will take to get us there.

With the climate crisis and as countries move to create parameters for permissible aircraft – like Norway determining that all short-haul flights will be entirely electric by 2040 – being a participant in the global marketplace of the future will require sustainable aviation.

That means U.S. aviation won't have a competitive future without addressing climate impacts.

Currently, aviation contributes about 2 1/2 percent to global CO2 emissions. In the U.S., transportation is the most greenhouse gas intensive sector and in 2018 aviation accounted for 5 percent of all U.S. emissions.

Pre-pandemic global air travel was growing at average annual rates of 3-5 percent and is expected to rapidly return as we get the pandemic under control.

It should come as no surprise that aviation's global CO2 emissions increased from 710 million tons in 2013 to 905 million tons in 2018, with a projected tripling by 2050.

And that's just looking at CO2.

According to the United Nations Intergovernmental Panel on Climate Change, aviation's total climate change impact could be from two to four times that of its past CO2 emissions alone.

To its credit, the aviation industry has taken consistent steps to improve aircraft efficiencies, in part to reduce fuel costs. Aircraft engines are 70-80 percent more efficient today than the turbojet aircraft of the 1950s, and efficiencies are expected to continue at 1-2 percent annually.

But on their own, these improvements, while important, are not sufficient to meet aviation's future challenge.

In 2009, the industry adopted goals to reduce aviation's carbon emissions by 50 percent of 2005 levels by 2050.

Meeting even modest sustainability goals will require new technologies, increased efficiencies, and cleaner sources of energy. Federal government R&D is essential for testing, demonstrating, and maturing solutions.

Today, potential approaches include electrified aircraft, alternative airframe designs, more efficient engines, and alternative jet fuels. Some companies are investing in one or more of these options. Europe is betting on hydrogen as a cleaner aviation solution.

How do these approaches compare and how would they contribute to meeting aviation's climate challenge? What are their potential impacts on noise, air quality, cost, infrastructure, and reliability and safety?

The R&D opportunities are many, but it's important we get the priorities right.

Because unlike cars or cell phones, changes to aircraft and aviation require long timelines to develop, test, demonstrate, certify, and scale throughout the system.

A 2016 National Academies report on "Commercial Aircraft Propulsion and Energy Systems Research, Reducing Global Carbon Emissions" recommended priorities in aircraft-propulsion integration; improvements in gas turbine engines; development of turboelectric propulsion systems; and advances in sustainable alternative jet fuels.

Where does that research stand today? What more needs to be done?

Bottom line: we need the cold, hard facts on the strengths, limitations, feasibility, and timelines of the pathways to sustainable aviation.

In short, we need smart and strategic R&D.

Sustainable aviation is not only essential for our climate, it's a competitive advantage and a cooperative opportunity. And given the devastating impacts of the pandemic to the industry, it's more important than ever that we build back better.

Thank you and I look forward to our witnesses' testimony.