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CLIMATE PROTECTION AND INNOVATION

Proposals from the civil aviation industry for implementation in the upcoming legislative period

CIVIL AVIATION “MADE IN GERMANY” — INNOVATION FOR CLIMATE-NEUTRAL AVIATION

BDLI
German Aerospace Industries Association

Learn more:

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Germany's successful and innovative aviation industry requires political activity that makes the industry the technology leader for next-generation climate-neutral aviation.

Flying connects. Cultures and nations as well as families, friends and business partners. Business travel and air freight are essential for the economy of Germany as an export nation.

The aviation of the future will be climate-neutral. The conversion of air traffic to climate neutrality is part of a major transformation process in which German aviation, as a key industry, can play a leading role in the years to come. Over the past decades, it has already played a central role in the development of increasingly energy-efficient aircraft. Airbus, the European world market leader, is firmly rooted in Germany. Together with the German engine and supplier industry as well as a comprehensive research network, this high-tech sector encompasses well over 70,000 high-spec industrial workplaces in Germany and boasts outstanding competencies. Although the industry is currently in deep crisis due to the coronavirus pandemic, it is among the technology industries with long-term growth in sight.

Only with the help of concrete political measures, the change to climate-neutral flight will succeed. State-of-the-art aircraft, the Single European Sky, new technologies and sustainable aviation fuels improve the climate footprint, but only if the industry increasingly invests and there are concrete political measures and initiatives, the step toward a climate-neutral future of flight will succeed.

Sustainable air transport ensures mobility and jobs. Targeted investments not only foster the climate-neutral air transport of the future, they also sustainably strengthen Germany as a business and high-tech location and thus enable German and European companies to remain innovative and competitive on the global market. We can only achieve this if favorable framework conditions are provided and substantial public funds are made available for research and development in order to support strategic, future-oriented and innovative projects for the purpose of climate-neutral aviation and the targeted development of a hydrogen economy.

Recommended measures:

1. SUPPORT FOR THE AVIATION INDUSTRY TO OVERCOME THE CORONAVIRUS CRISIS

The coronavirus pandemic is causing the most severe crisis in the history of the aerospace industry. A quick recovery is not to be expected. Now companies must be protected from losing their well-educated and trained skilled workers. If social security contributions come due and short-time work ends,

mass redundancies may occur. The restart of production after the crisis will expose many small supplier companies in particular to further financial challenges.

WHAT IS NECESSARY?

- Supportive measures, in particular short-time work, for the civil aviation industry, in line with the duration of the coronavirus crisis

2. SUPPORT NEW CONCEPTS FOR NEXT-GENERATION CLIMATE-NEUTRAL AIRCRAFT

The German aviation industry is focusing its research and development activities on conceiving a new generation of civil commercial aircraft. In doing so, it is committed to its climate policy responsibility and taking advantage of the opportunities revealed by the crisis. These new generation of aircraft, in combination with renewable and thus sustainable energy sources, enable climate-neutral flying. The entry into service of a first climate-neutral "green" aircraft type is planned for 2035. A prerequisite for this is the development of new technologies, specifically with regard to:

- Further development of existing evolutionary propulsion concepts (e.g., GTF)
- Development of revolutionary propulsion concepts (e.g., water-enhanced turbofan)
- Realization of electric/hybrid propulsion concepts as a technological preliminary stage for all-electric flying with fuel cells
- New materials

The future of the aerospace industry requires the decarbonization and defossilization of the industrial system. This encompasses the entire value chain from the development of products to production, from the creation of materials to recycling. Digitalization helps with allocating resources more efficiently and remaining competitive in a globally extremely challenging market. This covers:

- The development of state-of-the-art flight controls and digital, hygiene-optimized cabins
- The end-to-end digitalization of industrial processes with the highest requirements, so that air transport remains the safest means of transport in the future
- The *cyber dimension*, with its security-critical challenges, which needs to be increasingly addressed. Cybersecurity is an indispensable prerequisite of global supply chains

Aviation research must be increasingly supported to achieve this. At the national level, the federal government's aviation research program (LuFo) could receive funding from the energy and climate fund. Every euro from tax revenues invested here generates five times the value added. Above all, this support is essential for the global competitiveness of the aerospace industry.

At the EU level, an increase in funding quotas within the framework of Horizon Europe is necessary, as well as an appropriate structure for the governing board, with Germany participating in the *Clean Aviation* partnership.

A demonstrator program needs to be set up and budgeted for. This technology demonstrator program, which complies with WTO and EU subsidy rules, is essential for the targeted development of a hydrogen economy. This is because the development of a climate-neutral next-generation single aisle (NGSA) is not a further development of existing concepts but a technological leap. The use of hydrogen as aircraft fuel is challenging in terms of tank design, integration, ventilation, insulation and test procedures. In order to understand the interaction of these revolutionary technologies in an aircraft and to bring them to market, demonstrators are indispensable. Working alongside politicians, creative solutions must be developed to bring Germany on par with the USA, France and China, which are already investing heavily in subsidies to cement or achieve their technological leadership.

WHAT IS NECESSARY?

- Fostering of aviation research with a focus on climate-neutral flight
- Organization and budget for a suitable technology demonstrator program that is compliant with WTO and EU subsidy rules

3. ESTABLISH THE SUPPLY OF SUSTAINABLE AVIATION FUEL

There is no alternative to liquid fuels for aviation. To replace the fossil fuel kerosene, biogenic and non-biogenic (PtL kerosene) aviation fuels and hydrogen must be produced and made available for supply in sufficient quantities. The sufficient availability of green primary energy and the deployment of carbon capture mechanisms are indispensable prerequisites for this.

Aviation fuels of biogenic origin will be available in larger quantities in 3–4 years at the latest, electricity-based fuels such as PtL aircraft fuel in 10–15 years at the earliest. The petroleum industry sees the global raw material potential to replace 100% of the fossil kerosene needed in 2050 with sustainable aviation fuels.

For hydrogen, not only the production must be ensured but an autonomous overall system must be developed and built. This ranges from the cost-efficient industrial production of liquid (green) hydrogen based on regenerative energies to storage and transport to hydrogen hubs at airports.

The federal government must swiftly implement the funding models and concepts already adopted. Recently, the responsible federal ministries BMVI, BMWi, BMU and BMZ as well as the associations of the aerospace industry BDLI and BDL agreed on a road map for the market ramp-up of sustainable aviation fuels (SAF). This must be fostered on a political level.

A minimum quota of electricity-based aviation fuel, preferably at the European level, should be pursued. Until larger quantities of power-to-liquid aviation fuels

are available, incentives should be established for the use of available sustainable biogenic aviation fuels.

WHAT IS NECESSARY?

- Quick implementation of the PtL road map

4. ACCELERATED MODERNIZATION OF AIRCRAFT FLEETS

Investments in state-of-the-art and highly efficient aircraft of the latest generation make an immediately effective contribution to sustainability and noise reduction. The aviation innovation premium included in the economic stimulus package to boost the modernization of aircraft fleets must therefore be implemented swiftly. In addition to positive climate protection effects, consistent fleet renewal serves to preserve value creation and jobs in the aviation industry.

WHAT IS NECESSARY?

- Establishment of an innovation premium for aviation

5. EXPANDING GERMANY'S LEADING POSITION IN AIR TAXIS

As the first climate-neutral aircraft, air taxis are a true contribution to the mobility mix of the future. Not just in private passenger transport but also in emergency medicine, *eVTOLs/STOLs (electric vertical/short takeoff and landing)* can be used. They represent an important intermediate step on the way to climate-neutral flying for larger aircraft. German companies are technology leaders in this field. Therefore, the know-how must be secured in Germany and the business must be supported through the establishment of an adequate physical and digital infrastructure.

WHAT IS NECESSARY?

- Establishment of infrastructure and associated air traffic management (UTM)
- Acceleration of the planning and approval procedures

6. COORDINATING NATIONAL AND EU-WIDE EFFORTS TOWARD CLIMATE-NEUTRAL AVIATION

The industrial policy agenda for aviation, with its complexity and interdepartmental nature, requires that the federal government's Coordinator of German Aerospace Policy position be maintained and strengthened (at least as Parliamentary State Secretary to the Federal Minister for Economic Affairs and Energy).

WAS IST NOTWENDIG?

- Strengthening the position of the federal government's Coordinator of German Aerospace Policy

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