

PATTO PER LA
DECARBONIZZAZIONE
DEL TRASPORTO **AEREO**



POLICY PROPOSALS

The pact was conceived in 2022 on the initiative of Aeroporti di Roma to channel best practices, foster and accelerate the sustainable transition of air transport, considering objective of both the European Union and ICAO¹ to achieve climate neutrality by 2050. The pact therefore brought together institutions, associations and companies representing the sector, launching an initiative open to all those interested in contributing and sharing their experiences.

The primary objective of the pact – through the coordination of the main industrial players involved, institutional stakeholders and associations – is to facilitate and accelerate the achievement of the sustainability objectives of air transport.

The Steering Committee's work to compare and find solutions is a best practice at international level that demonstrates the maturity of a sector that – thanks to the guidance of the Minister of Infrastructure and Transport and the ministries of reference, in particular the Ministry of the Environment and Energy Security, the Ministry of Economy and Finance, the Ministry of Enterprise and Made in Italy, and ENAC's constant support – ensures its solid contribution to Italian and European decision-makers, especially in view of the complexity of the public policies to be adopted.

The aim of the first year of work was to identify the most functional path to achieve the European targets whilst safeguarding the sector, encouraging investment through measures that reduce emissions such as the use of sustainable fuels, research into new technologies for aircraft propulsion and the development of intermodality.

Air transport is vital to the national and global economy: it supports the tourism sector and trade, it provides jobs and the connectivity helps improve productivity by encouraging investment and innovation, enabling the development of economic networks. The sustainability of air transport is clearly a collective concern, not just of industry operators.

We must ensure the sustainable development and decarbonisation of the entire industry while continuing to guarantee people's access to mobility. To do this, the contribution of individual companies alone is not enough. These are fundamental opportunities to compare and summarise

¹ International Civil Aviation Organization

proposals. We are convinced that a net-zero aviation sector is possible with the contribution of all stakeholders, and by continuing the dialogue with institutional players at Italian and European level.

What emerged from the working groups was the need to define a regulatory framework that favours the growth and development of air transport by pursuing the decarbonisation of the sector, achieving the binding objectives at European level, thanks to the coordinated contribution of all players to provide credible and reliable answers.

The suggestion and recommendation for institutions is to adopt cross-cutting policies to accompany the sector towards a sustainable transition. In particular:

- a) it is essential to define a stable regulatory framework with a long-term horizon, which safeguards the competitiveness of this sector that is so important for the economic development of the country, enabling and facilitating the necessary investments, also by private parties, thus leveraging immediately available solutions, guaranteeing flexibility to operators in the initial period of application of European regulations;
- b) it is essential to extend the scope of aviation activities included in the European Taxonomy classification system, safeguarding the possibility of investing in the transition by outlining just sustainability criteria;
- c) it is imperative to safeguard the sector – which already has to make significant investments in the decarbonisation process – by avoiding the imposition of new taxes that would burden the resources to be allocated towards competitiveness, sustainable growth and the achievement of the sector's net-zero emission targets;
- d) in the changed European context aimed at facilitating state aid in favour of the transition to sustainability and net-zero industry, it is more urgent than ever not to dispel the lines of action already adopted, as well as to identify new support instruments, in order to preserve effectively Italy's competitiveness in the transport sector. We must rework the time allocation of the €2 billion in resources from the Sustainable Mobility Fund for the period 2023-2034, established in the budget of the Ministry of Infrastructure and Transport (MIT) to support the transition to sustainability of the transport sector, by providing in the next Budget Plan for a different annual distribution of the sums allocated, so that more resources are available in the short term, central to the interim targets for 2030. This is all the more important if we consider that the National Recovery and Resilience Plan (NRRP) does not include funding for the air transport sector;
- e) lastly, there is the central role of partnerships between private individuals, but even more so between the public and private sectors;
- f) it is important to promote the inclusion of decarbonisation technologies for air transport at the European level within the Net Zero Industry Act in order to support the transition.

AIRCRAFT AND SUSTAINABLE AVIATION FUELS

Sustainable Aviation Fuels (SAFs) are an immediately-available solution for significantly reducing carbon emissions in air transport.

Sustainable fuels can be produced by processing biogenic raw materials (“biofuels”) or can be synthetic (“synthetic fuels” or more commonly “e-fuels”).

SAFs have almost identical chemical-physical characteristics to traditional aviation fuels, which allows them to be mixed with fossil fuels for refuelling aircraft, without the need to alter the distribution infrastructure or the aircraft. To date, international production standards stipulate that SAFs can be mixed in ratios up to 50% with conventional fuels without requiring substantial modifications to aircraft engines. However, supply chain operators are committed to making the first flights using 100% SAF possible.

The rules set out in the ReFuelEU Aviation Regulation, part of the “Fit for 55” package, envisage increasing ratios of SAF in jet fuel (2025: 2%; 2030: 6%; 2035: 20%; 2040: 34%; 2045: 42%; 2050: 70%) and sub-targets for synthetic fuels (2030-2031: 1.2% e-fuel with a minimum of 0.7% per year; 2032-2033: 2% e-fuel with a minimum of 1.2% per year; 2034: 2%; 2035: 5%; 2040: 10%; 2045: 15%; 2050: 35%.)

- **Biogenic SAF:** this fuel is created by transforming biomass or feedstock into aviation fuel to be mixed with Jet A-1. The raw materials used to produce SAFs can come from a variety of sources, including used cooking oil (UCO), animal fats, oils extracted from raw materials grown on marginal land, municipal waste and waste from the agri-food and agroforestry industries.

The national decision-maker should support the demand for SAF supply over varying timeframes to encourage the evolution of incorporation targets.

In order to avoid negative impacts on traffic volumes, such incentive measures will have to be applied to various elements of the value chain (production, blending, distribution, airports and airlines) so as to minimise the increase of the final cost on the passenger.

In this regard, some policies/mechanisms emerge that can be implemented:

Measures to support production and distribution

1. Tax credit mechanism for the production of biogenic SAFs
2. Stimulating and facilitating trade networks to connect supply and demand for feedstock and SAFs
3. Fund to support infrastructure development (reservoirs, pipelines, mixing plants, etc.)
4. Financial incentives for national SAF blenders

Measures to support demand

5. Introduction of a SAF certification transfer system (e.g. book and claim and guarantee of origin for SAFs)
 6. Government incentives for SAF users (for example, EUR per tonne of SAF used)
 7. Tax credit mechanism for the use of SAF (for example, EUR of tax credit per tonne of SAF used)
 8. Additional measures based on the level of sustainability of the SAF used (thus differentiating them by carbon footprint conferred by the different feedstocks and production technologies, following ETD regulatory developments)
- **Synthetic fuels:** synthetic fuels are produced by converting renewable energy into liquid hydrocarbons through the electrolysis of water to obtain green hydrogen, followed by synthesis with CO₂ (possibly with CO₂ captured from the air to maximise emission savings).

We need to promote the research and development of production technologies and the construction of plants in Italy.

To support the development of the synthetic fuels market, initially by trying to bring down the high production costs and subsequently by consolidating technologies and feedstock to target large-scale production, some policies/mechanisms emerge that can be implemented:

1. Fund to support the development of technologies with lower levels of maturity, such as those for the production of synthetic SAFs
 2. Incentives for the development of a system for the production/supply of hydrogen and CO₂ – including through international governmental supply agreements and financial and fiscal support measures for the production of hydrogen and CO₂ to accompany the development of synthetic aviation fuels
 3. Mechanisms to support the production of synthetic SAFs (e.g. EUR of tax credit per tonne of SAF produced)
 4. Government incentives for synthetic SAF users (e.g. EUR per tonne of synthetic SAF used)
- **Hydrogen-powered aircraft:** hydrogen will play a decisive role in the decarbonisation of short- and medium-haul air transport, used both directly as a fuel in direct combustion engines and to power electric engines using fuel cells.

We must support the development of hydrogen-powered aircraft, and commercial aviation will have to create specific rules and regulations for the use of commercial aircraft that run on hydrogen. Therefore, the national decision-maker needs to support the European strategy on hydrogen-powered aircraft, encouraging possible investments in research and development, for example for the development of “regional” aircraft, which moreover form part of Italy's industrial heritage.

In order to support the development of hydrogen-powered aviation, the future needs of air transport must be included in the national hydrogen strategy.

- **Electric aircraft:** we must help to accelerate the process of developing and certifying aircraft with electric and hybrid (electric + hydrogen in fuel cells) propulsion, which will be used for short to medium-haul flights, given the characteristics of the technology. Therefore, the national decision-maker needs to support the European strategy on the deployment of electric aircraft, favouring possible investments and pilot projects.
- **Renewable energy production:** it is essential that we encourage investment in renewable energy production in order to meet a range of needs in the aviation sector. These needs include powering electric aircraft, producing synthetic fuels (e-fuel) and hydrogen. In particular, hydrogen is among the most promising decarbonised fuels because it can be created from renewable energy, produces no emissions and can be used for both e-fuel production and direct combustion. It is also predicted that the cost of hydrogen will decrease over the next decade.
We must consider that aviation is one of the most difficult sectors in terms of decarbonisation, known as hard-to-abate; therefore, logically, it should be prioritised in the allocation of renewable electricity and hydrogen incentive schemes.

AIRPORT INFRASTRUCTURE AND OPERATIONS

- **Airports as energy hubs:** we should support pilot projects for the research, authorisation and development of national Smart Energy Hubs, envisaging the optimisation of energy networks in overall airport logistics and the identification of future end uses of energy mixes (renewables, storage systems, energy carriers, hydrogen). It is essential that we finance investments both to upgrade the electricity infrastructure and to create the hydrogen distribution chain. We must enable airport infrastructure to launch renewable energy sharing projects, in order to generate and manage green energy independently, reducing CO₂ emissions, energy waste and contributing to the energy needs of the community in which they are located, also facilitating the installation of storage systems.
- **Efficiency and innovation in airport infrastructure:** we must encourage the energy efficiency of airport infrastructure, facilities and real estate assets instrumental to aviation activities, for example through the introduction of new technologies and innovative digital systems. In particular, it will be increasingly important to reduce energy consumption through smart management of air conditioning in buildings with increasingly advanced sensors, the energy retrofitting of existing buildings, the installation of latest-generation heat pumps and replacement of methane boilers, and the adoption of LED lighting systems. Naturally, airports are obliged to embrace as good practice infrastructural development according to the highest sustainability protocols, including international systems such as LEED, BREEAM and Envision.
- **Decarbonisation of ground handling equipment at airports:** we must support the deployment of sustainable propulsion technologies for the vehicle fleet operating at airports, prioritising energy carriers such as electricity, sustainable fuels (especially pure fuels) or hydrogen. We must also support the adaptation of infrastructure and logistical supply systems.
- **Air traffic management efficiency and innovation:** we should accelerate further the optimisation of national and European air traffic management procedures, in accordance with the SESAR projects².
- **CO₂ offsetting:** as far as CO₂ offsetting projects are concerned, we need consolidated European (and ICAO) guidelines that must be adopted at national level, which clarify the mechanisms, impact assessment criteria and certification systems for possible CO₂ absorption from the atmosphere. This must be followed by facilitating and stimulating projects for absorbing CO₂ from the atmosphere: such offsetting initiatives are crucial for achieving climate neutrality targets, given that part – albeit minimal – of emissions will have to be provided for due to a lack of alternatives or technologies; therefore, we urgently need to define a clear, uniform and internationally competitive framework to encourage the transition to sustainability of the aviation sector.

INTERMODALITY

- **Priority to works favouring intermodality:** it is increasingly important and desirable to

² Single European Sky ATM Research

encourage greater interconnection of air transport with other forms of collective transport. It is essential to launch shared projects and strategic agreements between all players for the development of sustainable mobility and transport, which will enable us to devise new solutions for implementing all aspects of intermodality: from infrastructure to commercial and passenger services. It is also essential that we facilitate and speed up the project authorisation procedures and implementation of works.

- **Synergy between the air transport sector and the rail sector:** this can contribute positively in terms of decarbonisation of the aviation sector. Intermodality needs a critical mass of services of adequate quality and frequency at the main trade airport hubs and this critical mass has not yet been achieved. In this sense, we must work towards the integration of infrastructure, adequately connecting airports to the railway network (high-speed rail in particular), to cities and the surrounding area, improving and developing the frequency of rail and air services in line with current and future connectivity needs, meeting criteria of lower environmental impact, and focusing on the quality of the experience for passengers and sustainability for the national economic system.
- **Integrated ticketing:** we must promote the use of collective transport in airport connections by means of subsidised and competitive pricing policies compared to the use of private vehicles, in order to make accessibility more sustainable. In addition to the integrated train-planer tickets already offered by some airlines, we should promote single plane-bus tickets to connect users in areas not served by the rail network, at least to and from provincial capitals.
- **Facilitated accessibility between airports and ports** through the development of connections between hubs, recognising their strategic importance in facilitating the development of cruise tourism in particular.
- **Integration of soft mobility** with airport infrastructures to promote the sustainable mobility predominantly of airport operators to the benefit of local accessibility and road systems.
- **Urban or Advanced Air Mobility:** the air mobility of the future will inevitably include forms of electric air transport, and therefore with minimal or no environmental impact, to meet short-haul, urban and regional mobility needs. eVTOL³ aircraft are a promising development in urban mobility and could help reduce traffic congestion and carbon emissions in metropolitan areas. However, their large-scale adoption requires certain technological developments, appropriate regulations and infrastructure for refuelling and recharging. We need to define a special regulatory framework that foresees facilitated pathways for obtaining approvals both for the planning, design and construction of vertiports, and for the flight paths of the aircraft used, which will mainly fly over urban areas.

³ eVTOL: Electric Vertical Takeoff and Landing