

Supporting  
European  
Aviation



# ICAO ENVIRONMENT TASK FORCE

## ICAO Environment Capacity building activities

Session 3 - Regional initiatives to address CO2 emissions from international aviation



Marylin Bastin  
Head of Aviation Sustainability Unit  
Virtual Meeting, 21 March 2023



NETWORK  
MANAGER



# EUROCONTROL MEMBERS

## 41 x Member States

+ Iceland from 2025

**EUROCONTROL and EU**

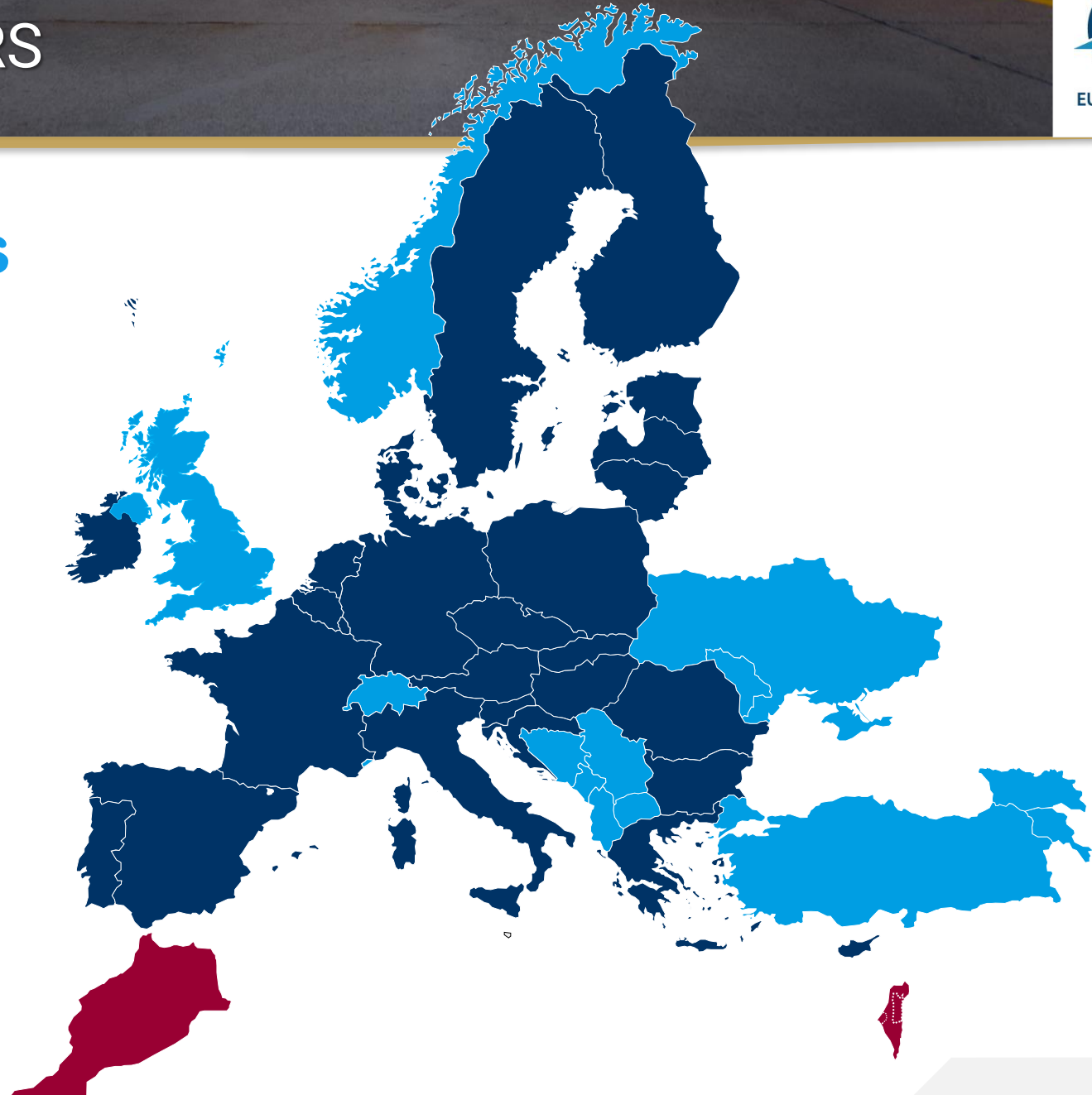
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**EUROCONTROL but not EU**

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**Two Comprehensive Agreement  
States: Israel and Morocco**

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\*The designations employed and the presentation of the material on maps in this presentation do not imply the expression of any opinion whatsoever on the part of EUROCONTROL concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.\*

# EUROCONTROL locations



## **BELGIUM**

Brussels (HQ & Network Manager)



## **NETHERLANDS**

Maastricht (MUAC ANSP)



## **FRANCE**

Brétigny-sur-Orge (Innovation Hub)



## **LUXEMBOURG**

Luxembourg (Aviation Learning Centre)



# Boosting EUROCONTROL's support to aviation transformation



## RAISING THE BAR: BUILDING "EUROCONTROL 2030"

Technology, innovation, international engagement, and people are the key drivers that will allow us to achieve our goals and keep delivering tangible added value to the aviation community.

## Flying Green

The decarbonisation of the aviation sector has been underway for several decades but still, the pressure to speed up decarbonisation has never been so high. Our latest traffic forecasts show that demand is still increasing, making the transition to net zero emissions even more challenging. Different decarbonisation roadmaps have been published and the recent long-term aspirational goal (LTAG) adopted during ICAD Assembly 41 shows the commitment of the whole aviation ecosystem. EUROCONTROL aims to play a central role by developing a brand-new platform of green services, **FlyingGreen** to support ECAC Member States and operational stakeholders to decarbonise.



Besides the need to decarbonise, other challenges have also been identified. The recent inclusion of non-CO<sub>2</sub> into EU-ETS shows that climate optimised trajectories need to be further addressed. New entrants such as zero emission aircraft need to be integrated in our European network. The environmental footprint of the ATM infrastructure (e.g. CNS) needs to be optimised. Climate change financing, Sustainable Aviation Fuels and associated renewable energy, market-based measures such as ETS and CORSIA remain high on our agenda. The societal acceptance of a growing aviation sector also needs to be addressed. To this end, EUROCONTROL aims to provide even more studies, analysis, educational material, training, articles, and webinars targeting a broader audience.

Due to increased extreme weather conditions, understanding climate change impacts on our operations is also a key priority. The risks related to climate change need to be better assessed to mitigate or to adapt to those risks, and to avoid disruption of service. Together with our stakeholders, EUROCONTROL will further develop guidance and recommendations for climate change adaptation.

Ultimately, EUROCONTROL will further develop its Corporate Social Responsibility (CSR) strategy by developing ESG guidance and reporting, by decreasing the carbon footprint of its infrastructure and operations.

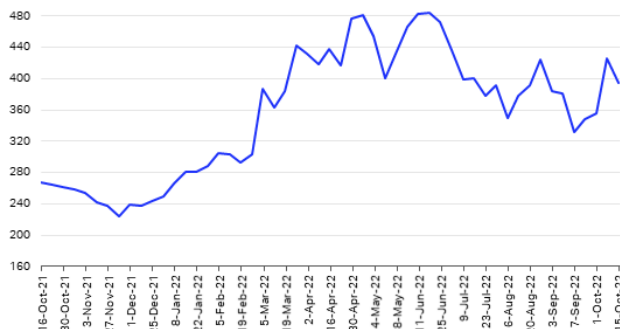
To address these challenges, EUROCONTROL will use its operational and technical expertise, working transversally inside the Agency, and will support the European Commission, ECAC Member States and the stakeholders to decarbonise aviation both through specific initiatives and through the Network Manager with the optimisation of flight profiles, airspace design and relaxation of measures with fewer flight restrictions.



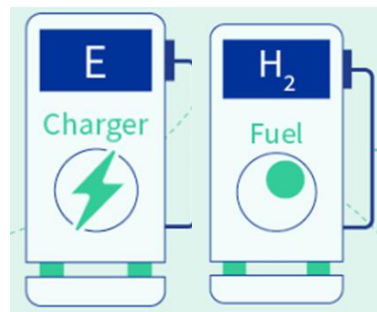
# Aviation has a Plan: it comes at a cost & with challenges

## INCENTIVE

Jet Fuel Price Index (2000 = 100)



Source: S&P Global



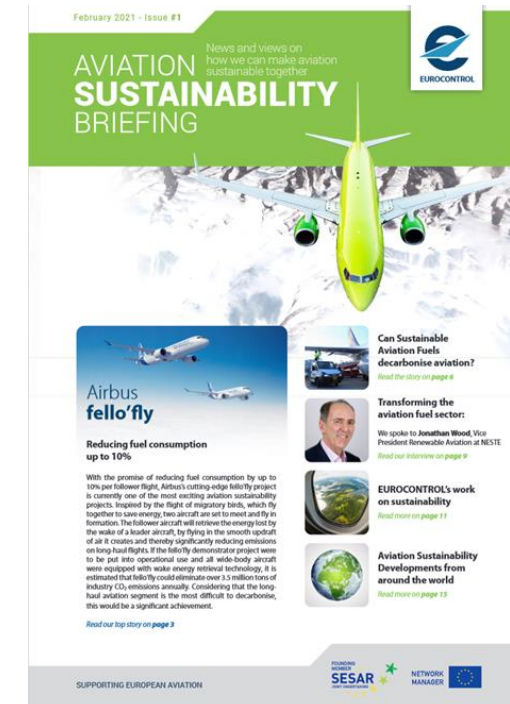
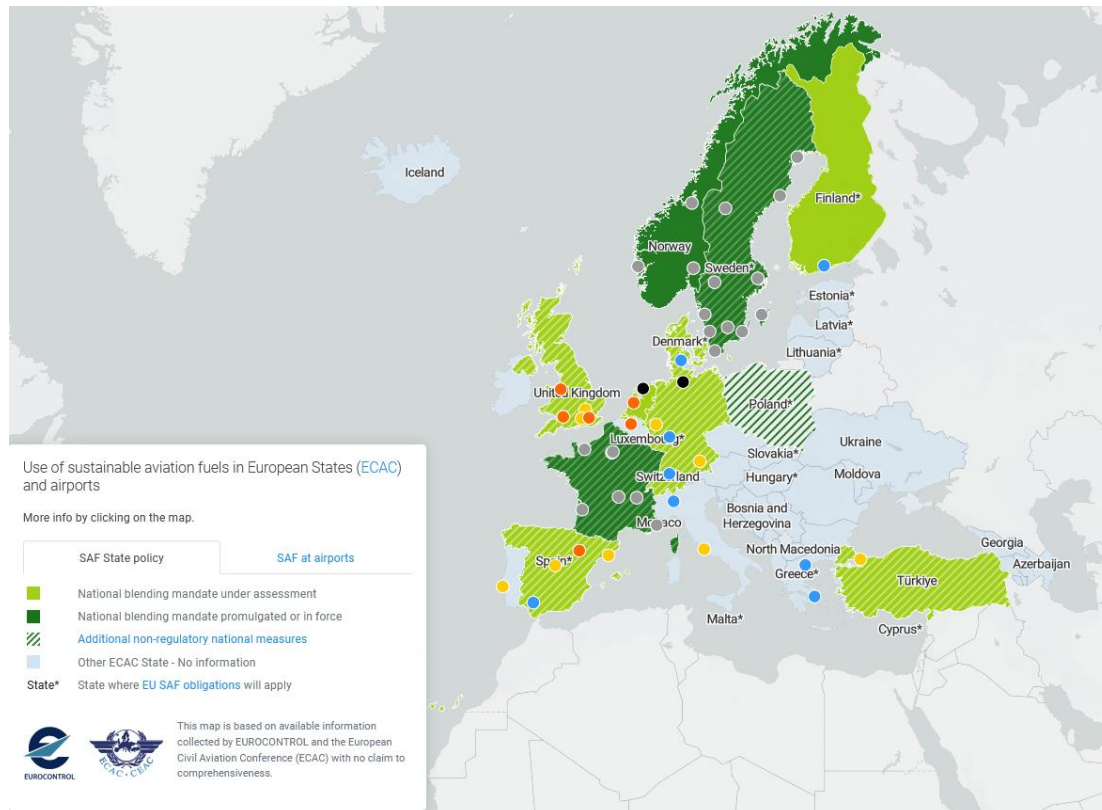
## A European Green Deal

Striving to be the first climate-neutral continent



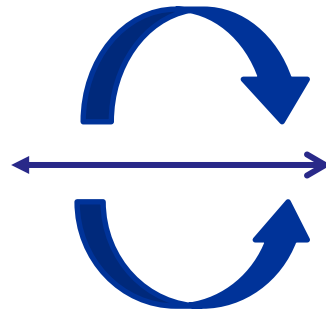
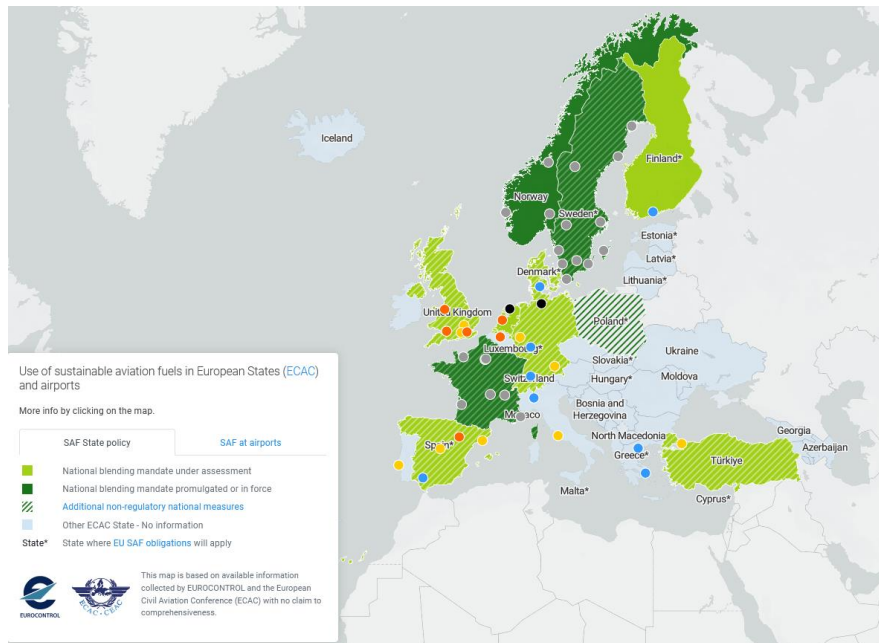
# European Sustainable Aviation Fuel (SAF) Map Evolution

- Introduced on 18 February 2021 in EUROCONTROL's first Aviation Sustainability Briefing
- [Joint product with ECAC](#)



# European Sustainable Aviation Fuel (SAF) Map Evolution

- ICAO website to refer to the European SAF map





Alliance for Zero Emission Aviation (AZEA) will

**Bring all actors  
involved in an  
holistic approach**

**Turn  
prototypes  
into  
commercial  
successes**

**Prepare the aviation ecosystem  
to the earliest possible  
entry into commercial service  
of hydrogen and electric aircraft**

**Concentrate on  
disruptive a/c  
configurations**



# Alliance for Zero Emission Aviation (AZEA)

*EUROCONTROL is actively involved in each WG*

**WG1: Rollout scenarios /  
network evolutions**

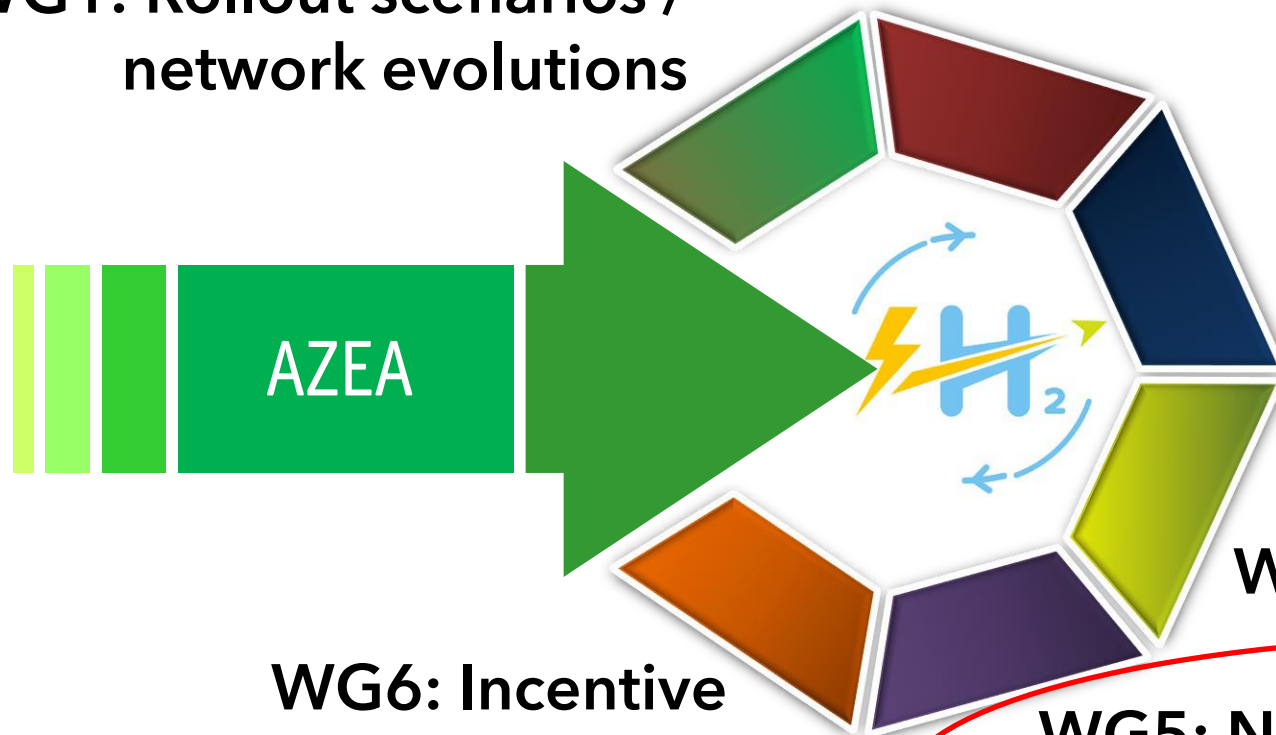
**WG2: Energy infrastructure**

**WG3: Energy distribution,  
constraints and operational  
integration**

**WG4: non-CO<sub>2</sub> requirements**

**WG6: Incentive  
mechanisms**

**WG5: Network integration and  
efficiency of incentive mechanisms**



*EUROCONTROL/ASU is co-leading this working group*

# Our support in Working Group 5 as co-leader



Forecast (number of a/c, types, traffic, routes)

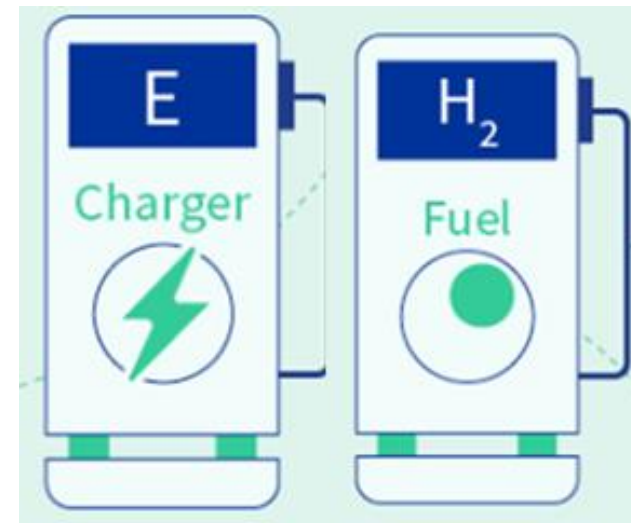


Airport operations



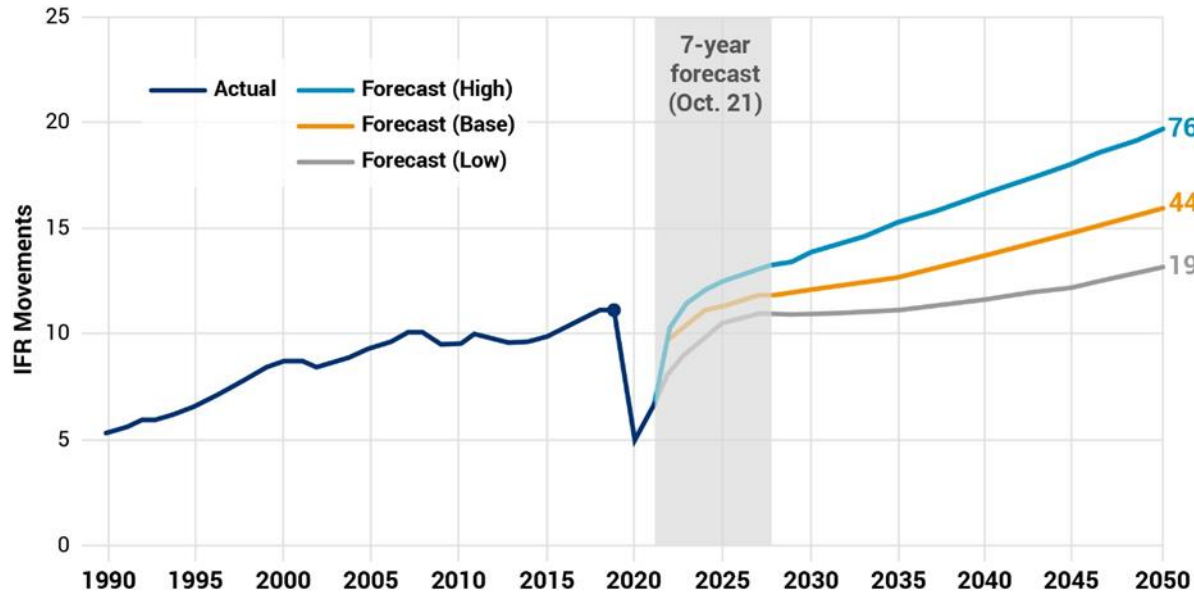
Integration into the European network

Operational and financial incentives (ATFCM, trajectories, pricing, modulation of charges)

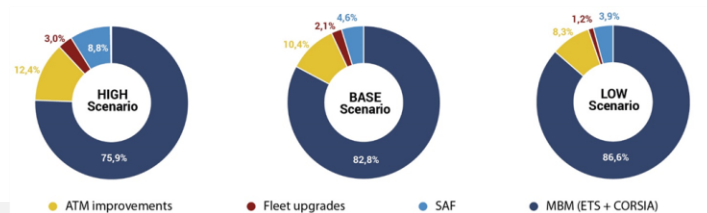


Fueling requirements and energy needs

# Objective Skygreen: the role of ATM to reduce costs of decarbonisation



	High	Base	Low
Savings from ATM improvements	25.5 MtCO <sub>2</sub> / 12.4%	18.3 MtCO <sub>2</sub> / 10.4%	13.0 MtCO <sub>2</sub> / 8.3%
Savings from fleet upgrade	6.1 MtCO <sub>2</sub> / 3%	3.8 MtCO <sub>2</sub> / 2.1%	1.9 MtCO <sub>2</sub> / 1.2%
Savings from SAF	18.0 MtCO <sub>2</sub> / 8.8%	8.1 MtCO <sub>2</sub> / 4.6%	6.1 MtCO <sub>2</sub> / 3.9%
Emission Reduction Potential	49.6 MtCO <sub>2</sub> saving / 24.1%	30.2 MtCO <sub>2</sub> saving / 17.2%	21.0 MtCO <sub>2</sub> saving / 13.4%



## Objective Skygreen Think Paper #16 - 9 May 2022

EUROCONTROL Think Papers – designed to inform, stimulate debate & present alternative approaches



### Reducing aviation emissions by 55% by 2030: Can it be done – and if so, what are the extra costs of decarbonisation measures?

European aviation is determined to achieve carbon-neutrality by 2050, with the EU proposing an intermediate target of a 55% reduction by 2030 compared to 1990 levels. This Think Paper assesses what this would mean for aviation in practical terms, looking at the various strategies – new technologies, implementation of the Single European Sky as well as other operational improvements, increased production and uptake of sustainable aviation fuel (SAF) – and their cost. We find that merely reducing flying is not the solution: reducing emissions by the required amount is possible, but will require investment, and that needs a buoyant aviation sector. We also outline a number of additional options that could further accelerate Europe's aviation decarbonisation journey.

This Think Paper provides answers to the following questions:

1. With Sustainable Aviation Fuel (SAF) currently costing up to 16 times that of kerosene, exactly how much will flying with 4%, 5% or 10% SAF add to airline operating costs by 2030 – and how does that compare against long-term emissions by 2030?
2. How will the phasing out of airlines' free emissions allowances from 2024 onwards impact on the balance sheet?
3. By how much can industry-driven measures (fleet renewal, new technology, operational improvements, increased SAF usage) contribute to achieving the 55% reduction target?
4. Which decarbonisation pathways have the greatest potential for emissions reduction at a quickly and as cost-effectively as possible?
5. Could policymakers take additional measures that would further accelerate decarbonisation?
6. The high costs with the most traffic is counterintuitive: the most efficient to reach net zero emissions by 2050 at lower cost, at higher revenue will also incur additional investment in new technology.
7. Policy-driven decarbonisation measures will add €14.5-€15.3 billion to additional costs across the EUROCONTROL Network Member states over the period 2022-2030 if all industry-driven actions are included, such as ATM operations (including 30% fleet update renewal, and increased SAF usage).
8. ...but applying industry-driven measures can drastically reduce the cost of decarbonisation measures by €12.9 to €46.3 billion over the same period.
9. The most important industry-driven measure is increasing SAF usage: for this to become a reality, the full-scale aviation initiative is essential in enabling a swift ramp up of SAF production and usage.
10. For the period 2022-2030, the extra cost of a 5% SAF blending share compared to 100% kerosene is estimated to be €10 billion to the base scenario, reaching €1.5 billion in 2031.
11. Industry-driven measures can deliver 12.4%-24.1% of the net emissions savings, depending on the pace of decarbonisation.
12. To reduce CO<sub>2</sub> emissions further, airlines should accelerate the pace of fleet renewal by 3-7 years to ensure they operate the most efficient air technology.
13. We need to accelerate aviation decarbonisation by prioritising actions, fostering the transition (e.g. by offering financial support and encouraging alliances), and balancing location with the need for aviation freedom.

#### KEY FINDINGS OF THIS THINK PAPER

1. A 55% CO<sub>2</sub> emissions reduction target by 2030 is achievable in all scenarios, but this also heavily on market-based measures.

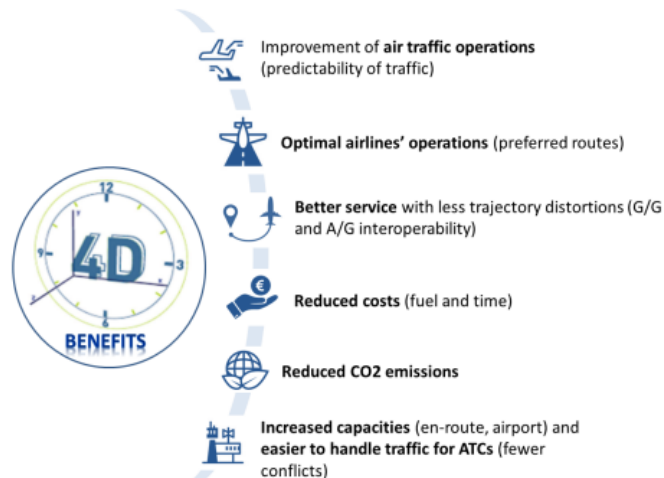
SUPPORTING EUROPEAN AVIATION



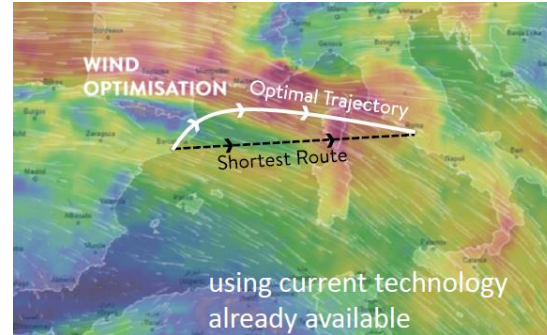
Cost savings from industry-driven measures 2022-2030 (€ billion)	High (with 10% SAF uptake in 2030)	Base (with 5% SAF uptake in 2030)	Low (with 4% SAF uptake in 2030)
Fuel cost mix savings (SAF/kerosene)	€-30.6	€-21.4	€-26.7
ETS cost savings	€-10.9	€-8.3	€-5.9
CORSIA cost savings	€-0.7	€-0.5	€-0.4
Taxation cost savings	€-3.5	€-2.6	€-1.9
Cumulative cost savings	€-45.7	€-32.9	€-34.8



# Important Flagships for ATM transformation



Ref: 4D and Space Communication



An optimised network to accommodate future demands

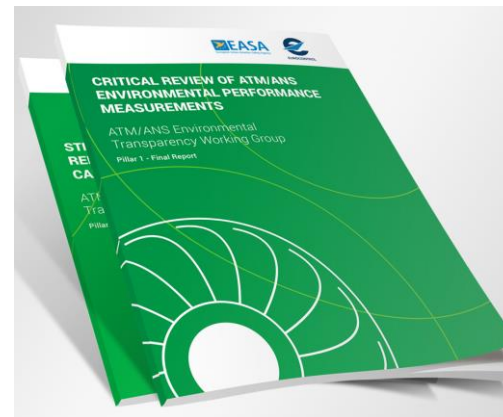
2.48%

G2G operational measures to reduce fuel consumption

4.32%

Aircraft operators to enhance their procedures

2.14%



8.94%



# Connecting the Network to deliver Improved Performance



## **SAFETY**

Safety alerts, Operational  
Safety Hazards



## **AIRSPACE DESIGN & CAPACITY PLANNING**

European Route Network



## **NM OPERATIONS CENTRE**

ATFCM, Airspace data, Flight  
planning, post-ops



## **INFRASTRUCTURE MONITORING**

Communications, Navigation  
and Surveillance



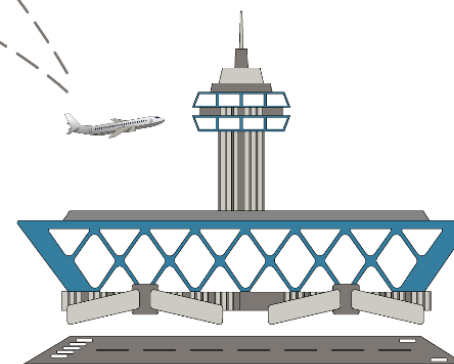
## **CIVIL MILITARY COORDINATION**

Flexible Use of Airspace



## **NETWORK PLANNING**

NSP - NPP - NOP



## **AIRPORTS IN THE NETWORK**

Full integration



## **SCARCE RESOURCES**

Radio Frequencies  
Radar transponder codes



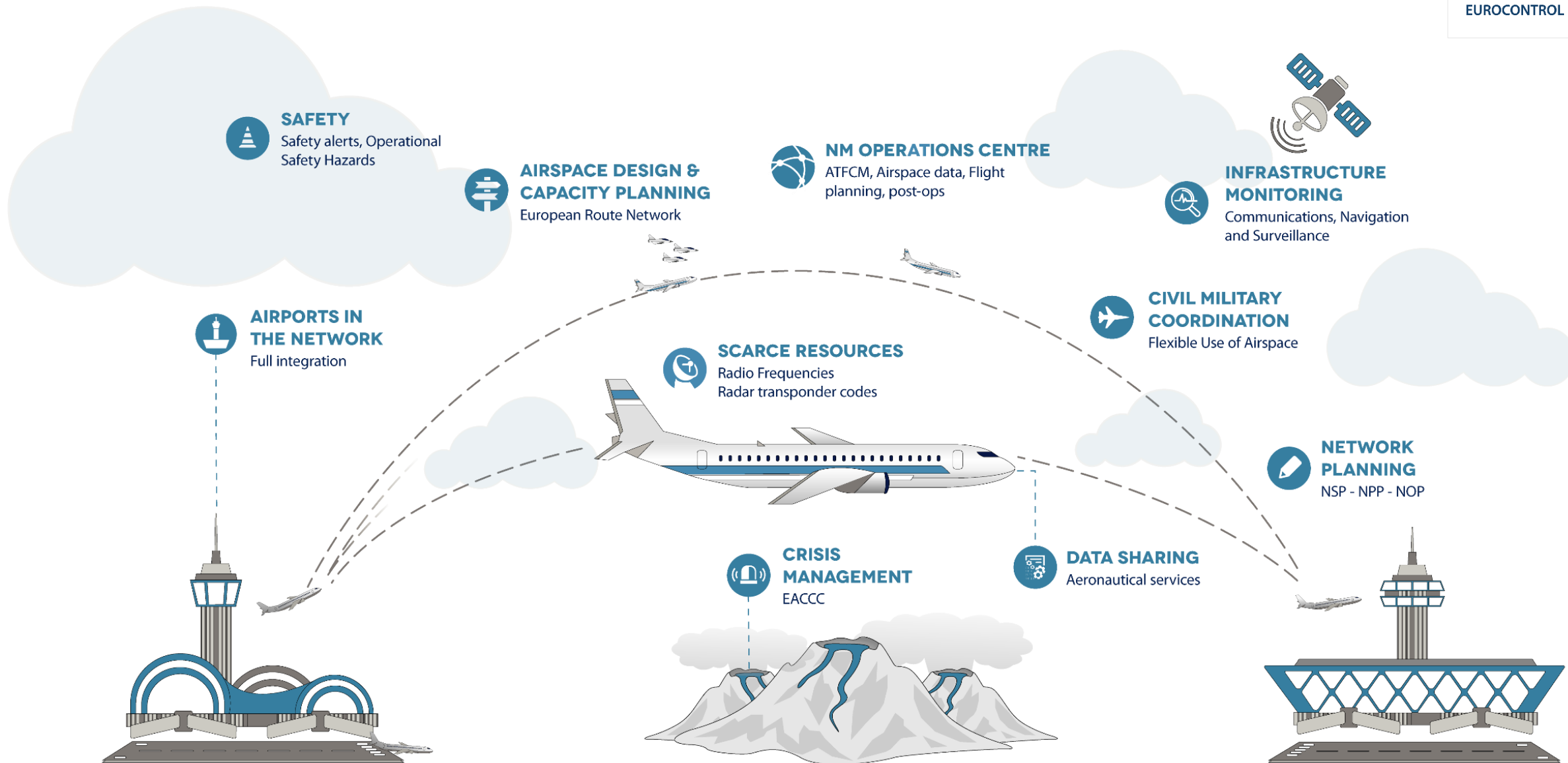
## **CRISIS MANAGEMENT**

EACCC



## **DATA SHARING**

Aeronautical services



# Getting from Good to Excellent Flight Efficiency

*Making savings through improved flight planning*

significant **economic** and **environmental** impact



key component in the sustainable growth goal.

The NM flight efficiency - focus on the improvement of the quality of flight planning.

OPTIMUM  
FLIGHT  
PLANNING



OPTIMUM  
(Network)  
OPERATIONS



# SUPPORTING EUROPEAN AVIATION

