

Welcome to the 7<sup>th</sup> webinar of the series on

# Sustainability - EU/SEA CCCA CORSIA Project

The webinar will start @

- 15h Bangkok/Jakarta/Hanoi Time
- 16h Singapore/Manila Time
- 09h Brussels/Cologne Time

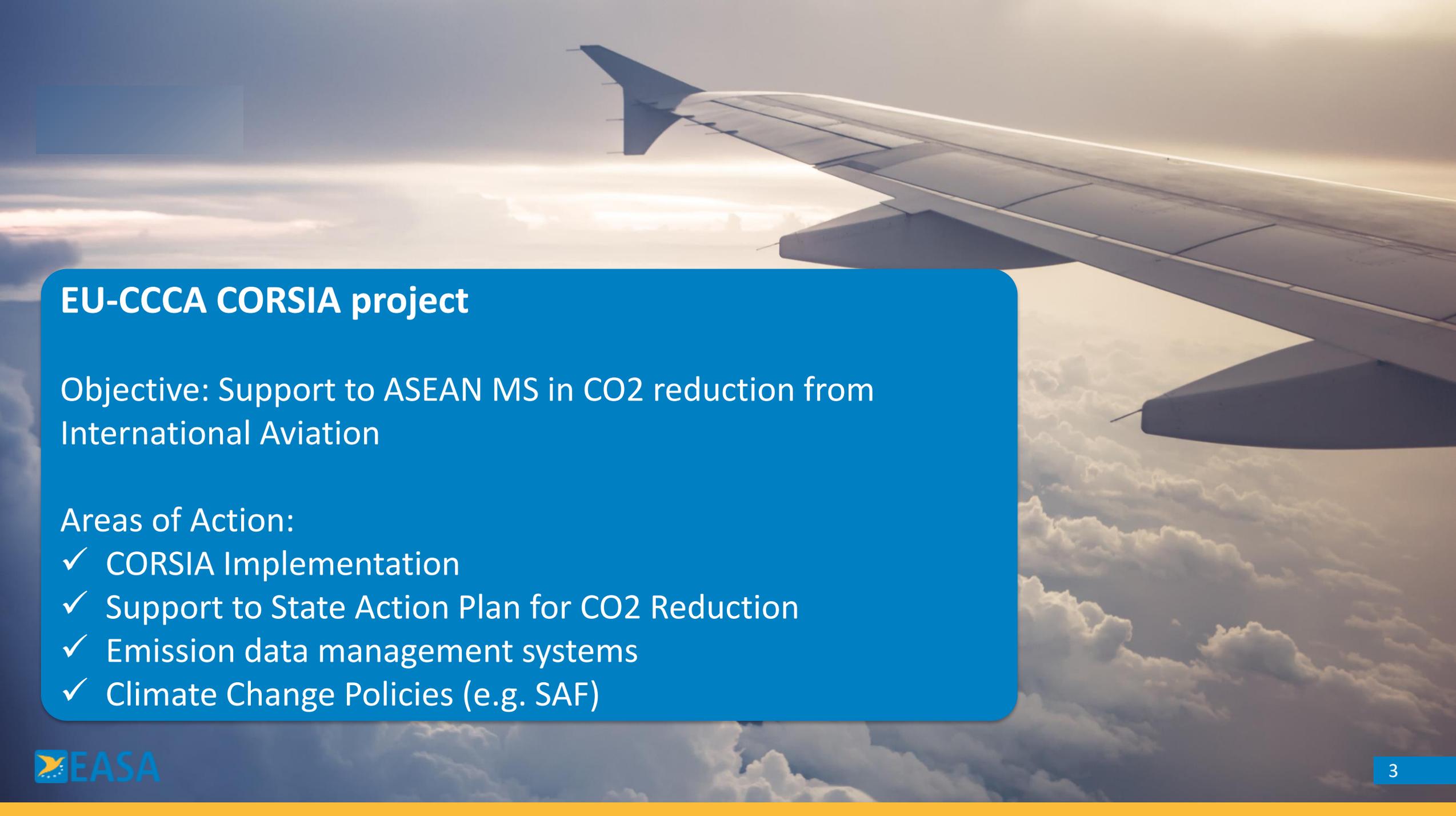


**Your safety is our mission.**

# Webinar 07: Environmental Reporting

## EUROPEAN AVIATION ENVIRONMENTAL REPORT 2022



A photograph of an airplane wing in flight, viewed from a passenger's perspective. The wing is white and extends from the top right towards the center. Below the wing, a layer of white clouds is visible against a bright, hazy sky. The overall lighting is warm, suggesting a sunrise or sunset.

## EU-CCCA CORSIA project

Objective: Support to ASEAN MS in CO<sub>2</sub> reduction from International Aviation

Areas of Action:

- ✓ CORSIA Implementation
- ✓ Support to State Action Plan for CO<sub>2</sub> Reduction
- ✓ Emission data management systems
- ✓ Climate Change Policies (e.g. SAF)

# Some practicalities & moderators



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 EU-SEA CCCA CORSIA Project Assistant / Communications

- **Q&A** after the speaker
  - Use Q&A section (Slido)
  - Vote up/down questions
- **Free chat**, please express yourself live

Join at  
**slido.com**  
**#SAF7**

 Passcode: **fkxk4u**



## Webinar 07: Environmental Reporting

What is the current state of play of Environmental Reporting in Europe? How is environmental performance of the aviation sector measured? What actions are put in place to drive forward sustainability ambitions?

What is needed for monitoring the performance of the SAF sector and how can this be related to the ASEAN market?



# Our key speakers for today!



**Steve Arrowsmith**

@ [steve.arrowsmith@easa.europa.eu](mailto:steve.arrowsmith@easa.europa.eu)

 European Union Aviation Safety Agency

 EASA Chief Expert - Environmental Protection

*As EASA Chief Expert, Steve has led work in developing global environmental standards on aircraft NOx and CO2 emissions, as well as market-based measures where he is currently co-Rapporteur of the ICAO CAEP Working Group 4 on CORSIA. Over the past 7 years, he has instigated the EASA European Aviation Environmental Report. Most recently, he has been supporting the development of SAF initiatives to facilitate their uptake within Europe.*



**Joonas Laukia**

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 European Union Aviation Safety Agency

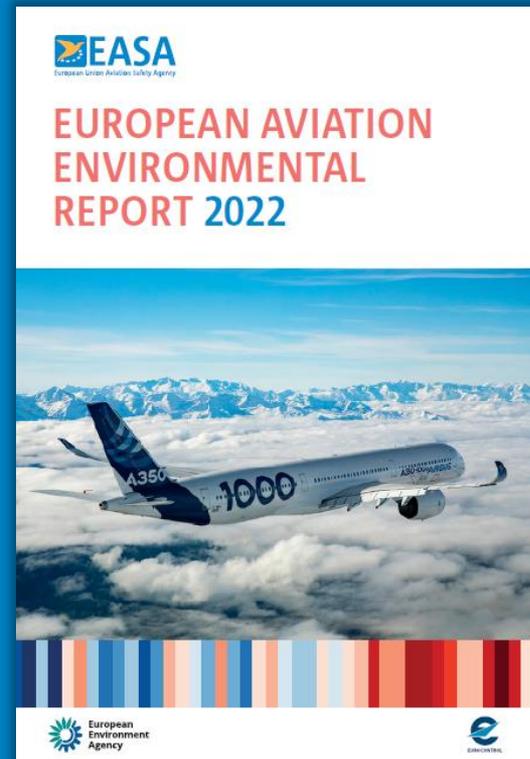
 Environment Expert

*As EASA Environment Expert, Joonas is mostly covering climate change-related topics, in particular market-based measures and carbon pricing mechanisms. His responsibilities also comprise monitoring the developments in the sustainable climate financing sector, including the EU green investment taxonomy that is being put in place to accelerate sustainable investments. Joonas' provides Market based Measures-related technical support to the European Commission, participates in ICAO working groups, oversees MbM-research projects and supports international cooperation projects.*

# European Aviation Environmental Report 2022

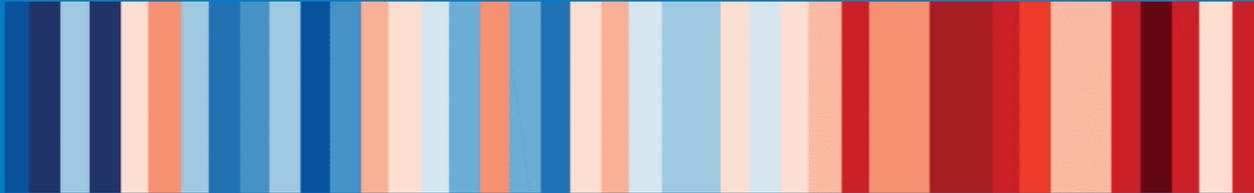
Steve Arrowsmith  
Chief Expert – Environmental Protection  
Joonas Laukia  
Environmental Expert

3 November 2022



**Working for sustainable aviation.  
Your safety is our mission.**

# Background



**Working for quieter and cleaner aviation.**

**Your safety is our mission.**

[easa.europa.eu/connect](https://easa.europa.eu/connect)



An Agency of the European Union 

# EAER History

- Work on the European Aviation Environmental Report (EAER) was **initiated in 2014**.
- **First EAER published in 2016** *with the support of the European Environment Agency and Eurocontrol* ([www.easa.europa.eu/eaer/](http://www.easa.europa.eu/eaer/)).
- Subsequently integrated into EASA's remit in 2018 (Basic Regulation Art. 87) requiring the EAER to be produced **every 3 years**.
- Latest version published on **21 September 2022**.



# EAER Content

- Content and structure has gradually **evolved over time** based on lessons learnt and capabilities.
- **Historic and forecasted environmental performance** of the aviation sector.
- Latest scientific understanding on **aviation environmental impacts**.
- **Main impact mitigation areas** (Technology and Design; Sustainable Aviation Fuels; Air Traffic Management - Operations; Airports and Market-Based Measures).
- **Recommendations on how to further improve** the level of environmental protection (from EAER 2022).

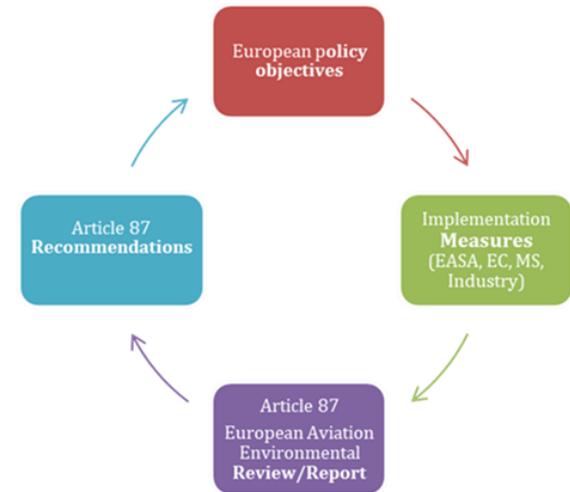
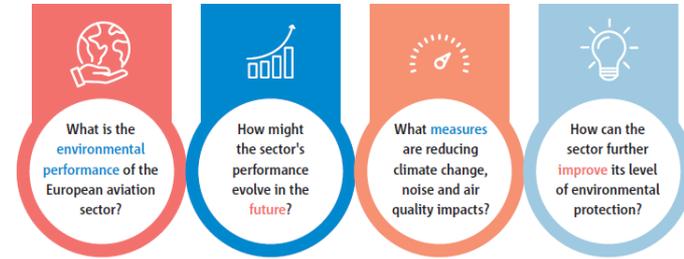
# EAER Objectives

- Facilitate coordination at a **European regional level** (EU27+EFTA), building on national initiatives.
- **Independent, objective and accurate** source of information to ensure transparency, accountability, credibility and trust that the measures in place will meet the agreed targets.
- Written in **‘plain English’** to accommodate wide range of audiences (e.g. public, policymakers).
- **Support communication** on European initiatives to mitigate the impact of aviation sector on the environment.



# EAER Objectives

- Provide **input into international level processes** (e.g. International Cooperation, ICAO State Action Plans and LTAG monitoring).
- Develop and use **modelling capabilities and data streams** to support performance indicators.
- Overview of the **historic and forecasted** environmental trends of the aviation sector at the European level.
- Support **performance based** regulation by acting as an enabler/facilitator focusing on **measurable outcomes**.



# EAER Governance

- Collaboration with a diverse set of organizations ensures that the report provides a **comprehensive and balanced perspective**.
- **Steering Group**
  - EASA, European Environment Agency, Eurocontrol, European Commission, Clean Sky, SESAR and Member States
- **Advisory Group**
  - Airline operators, airports, airport local authorities, ANSPs, passengers, fuel producers, manufacturers, NGOs and research organisations.

# EAER 2022



**Working for quieter and cleaner aviation.**

**Your safety is our mission.**

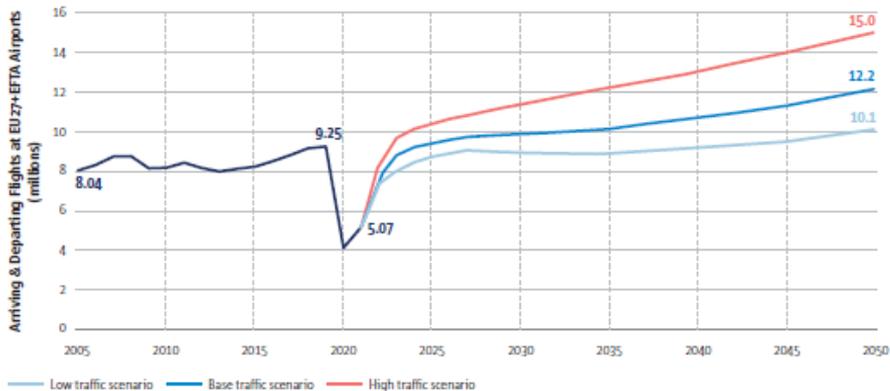
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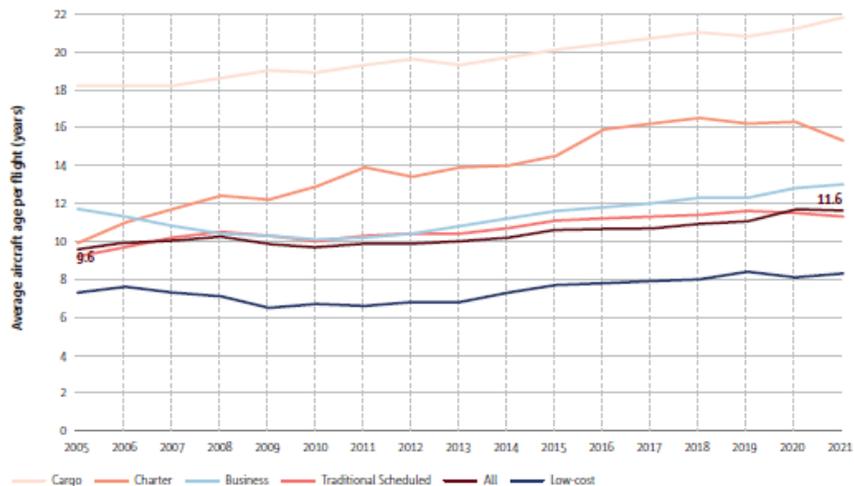
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# Sector Overview – Air Traffic and Fleet

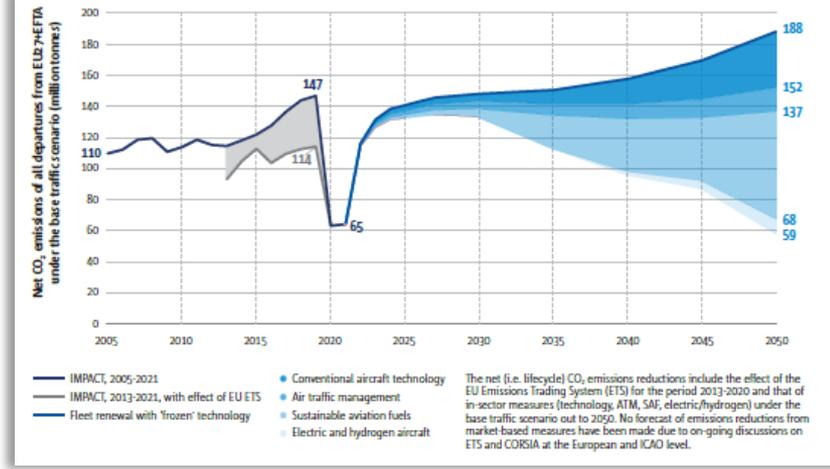
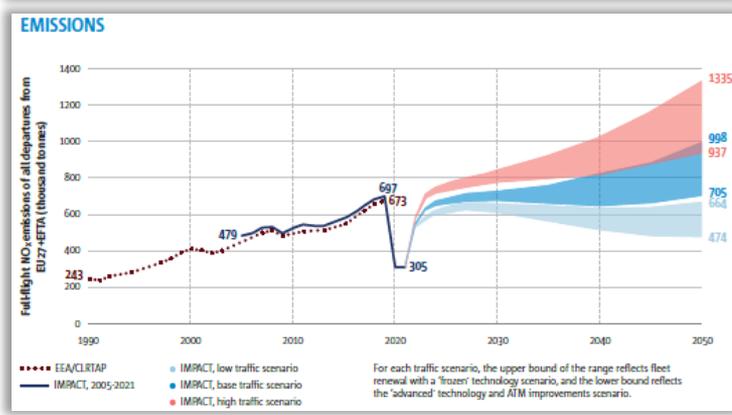
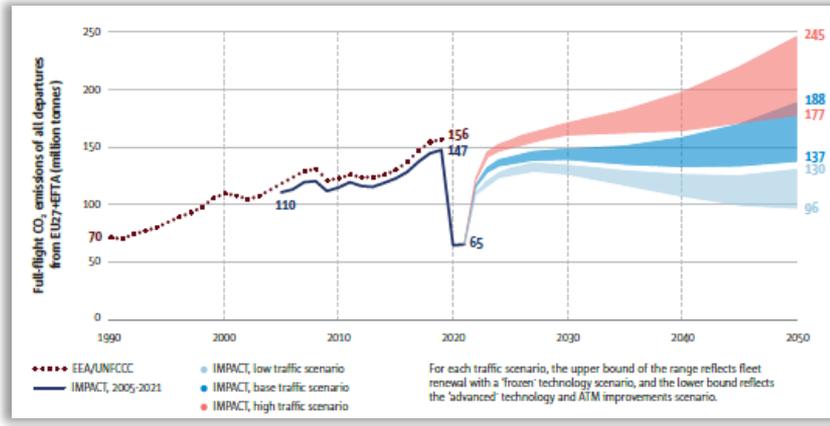
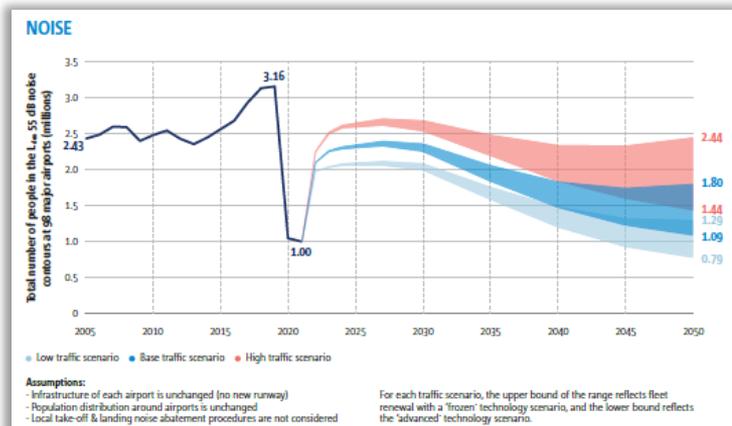
**Figure 1.3** Following the recovery from the COVID-19 pandemic, numbers of flights are predicted to grow slowly out to 2050



**Figure 1.5** The average aircraft age per flight has increased to 11.6 years



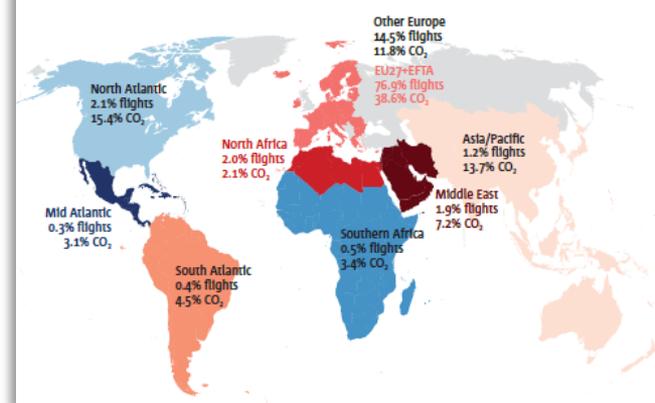
# Sector Overview – Environmental Impact



# Sector Overview – Key Messages

- During 2020, 50% of operations in Europe were by aircraft compliant with the **latest Chapter 14 noise standard**.
- Fleet renewal could **reduce total noise exposure** at European airports over the next 20 years.
- In-sector measures could **reduce CO<sub>2</sub> emissions in 2050 by 69%** compared with a “technology freeze” scenario.
- Long-haul flights (above 4,000 km) accounted for **6% of departures during 2019 and 50% of all CO<sub>2</sub> and NO<sub>x</sub> emissions**.
- Single aisle jets represented **64% of total noise energy**.
- Average grams CO<sub>2</sub> per passenger kilometre reduced to 89 grams in 2019 (**3.5 litres fuel per 100 passenger km**).

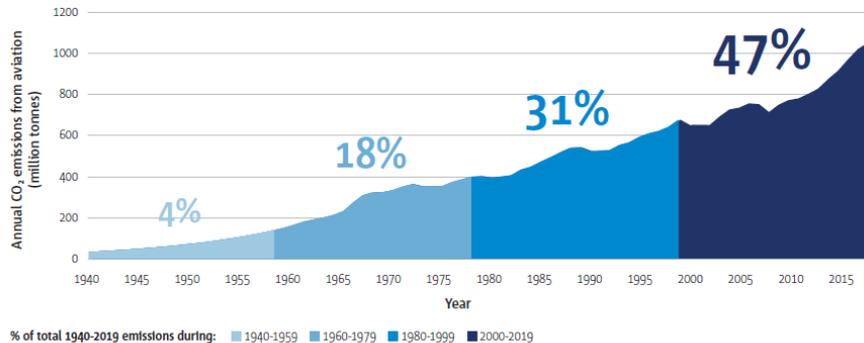
Figure 1.14 Share of flights and CO<sub>2</sub> emissions by destination region in 2019



# Environmental Impacts – Key Messages

- Aircraft noise affects far fewer people than road or rail traffic noise, but is regarded as more annoying.
- Non-CO<sub>2</sub> emissions account for **approx. 66% of the aviation net warming effect**, although **uncertainty from non-CO<sub>2</sub> effects is 8 times larger than that of CO<sub>2</sub>**.
  - Existing mitigation policies include **engine NO<sub>x</sub> and nvPM standards**, as well as use of **SAF**.
  - Robust policy assessments needed to assess **CO<sub>2</sub> / non-CO<sub>2</sub> trade-offs** to ensure reduction in climate impact.

**Figure 2.3** Annual global CO<sub>2</sub> emissions from aviation (1940-2019) with % of total cumulative emissions broken down into 20 year periods

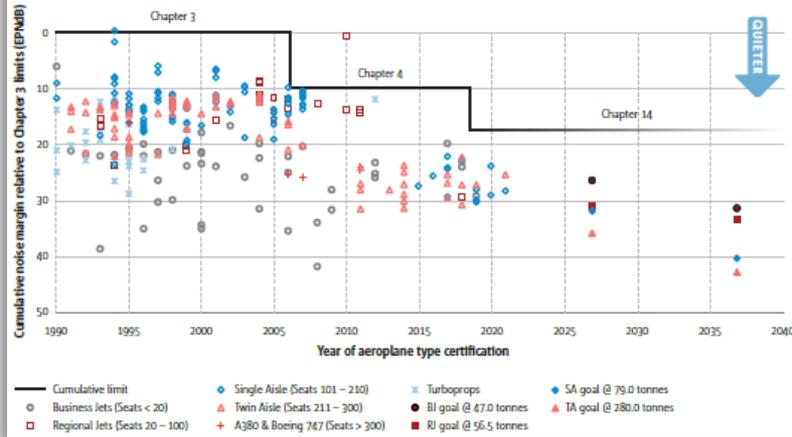


- Growth in CO<sub>2</sub> emissions accelerating, with **half of global CO<sub>2</sub> emissions between 1940 and 2019 having occurred since 2000**.
- IPCC noted need for rapid and large-scale emissions reductions and that **aviation is still in earlier stages of adaptation to climate hazards**.

# Technology / Design – Key Messages

- New aircraft designs are **5 to 15 EPNdB** below the latest Chapter 14 noise standard.
- **Increased new market segment certification activities** (e.g. Drones, Urban Air Mobility).
- Engine NO<sub>x</sub>/nvPM standards, and the aircraft noise/CO<sub>2</sub> standards, define the **design space for products** to address noise, air quality and climate change.
- **Pipistrel Velis Electro** was first electric aircraft to be certified by EASA in 2020.
- **Airbus A330-900neo** was first aircraft approved worldwide in 2021 against new CO<sub>2</sub> emissions standard.

Figure 3.2 Reduction of certified aircraft noise levels over time in relation to the cumulative margin to Chapter 3



# Sustainable Aviation Fuels – Key Messages

- SAF supply remains low at **less than 0.05% of total EU aviation fuel use**.
  - ReFuelEU SAF blending mandate proposed for fuel supplied to EU airports, with minimum shares of SAF increasing to 63% in 2050 with sub-mandate for PtL (2.3, 14.8 and 28.6 million tonnes of SAF by 2030, 2040 and 2050 respectively).
- Drop-in SAF is key to decarbonising aviation as can be used within the **existing global fleet and infrastructure**, and will remain the main contributor for long-haul flights in the long-term.
- Current certified SAF are subject to a **maximum blending ratio of 50%** with fossil-based fuel, but industry and fuel standard committees are **aiming to approve 100% SAF by 2030**.
- SAF certified by **Sustainability Certification Schemes** against criteria defined at EU level in the Renewable Energy Directive and at global level in the CORSIA framework.
- SAF more expensive than fossil-based jet fuel, but **cost savings expected through economies of scale**. Price depends on production pathway, costs and fluctuations in energy market.

# ATM/Ops – Key Messages

- European Green Deal requires an ambitious and **holistic approach involving all stakeholders to reduce fragmentation** of ATM systems and accelerate solutions for greener operations.
- ATM Master Plan goal to **reduce average CO<sub>2</sub> emission per flight by 5-10% (0.8-1.6 tonnes) by 2035**, compared to 2017.
  - SES union-wide environment performance targets not reached during Reference Period 2 (2015-2019).
  - In 2019, excess fuel burn on an average flight within the Network Manager area was estimated to be approx. 8.6% (XFB10 metric), with excess fuel burn decreasing as the flight distance increases.
  - In 2020, several Member States did not achieve their environment targets despite the dramatic drop in traffic due to the pandemic.
  - HFE KPI reflecting relationship between flight and environmental impact is considered inadequate and needs to be re-evaluated, taking into account environmental indicators based on actual CO<sub>2</sub> emissions (e.g. XFB).

Figure 5.1 Horizontal en route flight inefficiency for 2009 to 2021

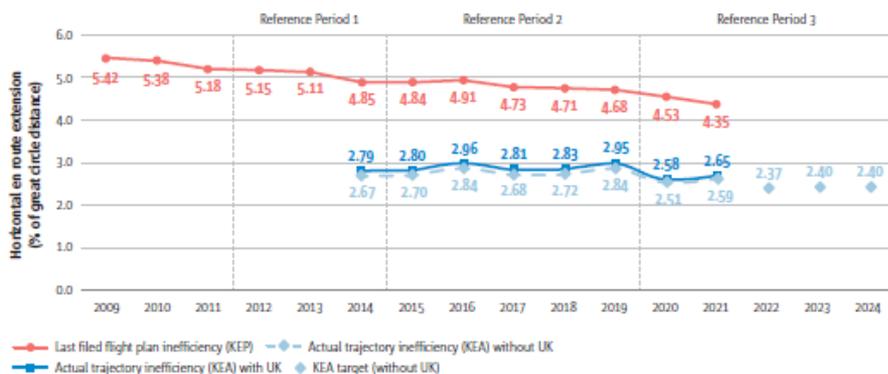
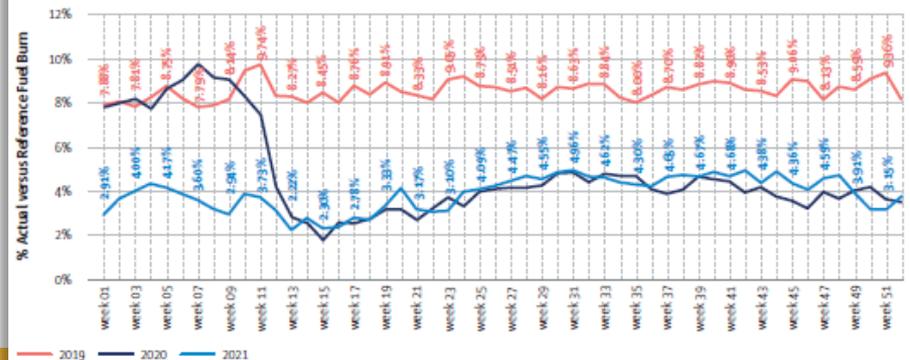
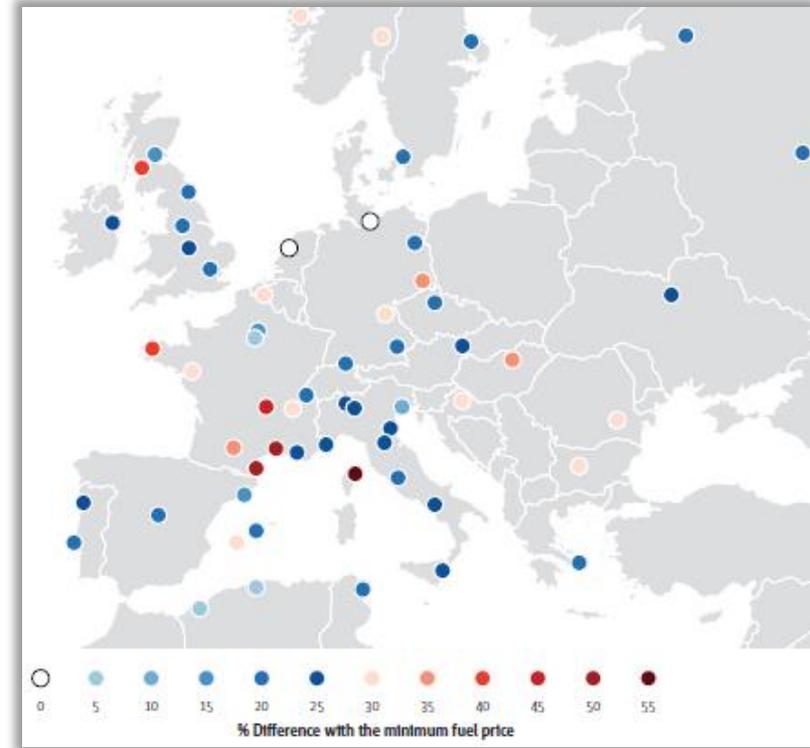


Figure 5.5 Intra-NM Area<sup>43</sup> proportion of excess fuel burn (kg) – XFB10



# ATM/Ops – Key Messages

- As traffic returns to pre-COVID levels, **efficiency improvements should be maintained** such as dynamic use of airspace constraints and use of optimised flight planning.
- In 2018, approx. **21% of ECAC flights performed fuel tankering**, representing a net saving of €265 million per year for the airlines, but burning an unnecessary 286,000 tonnes of additional fuel (equivalent to 0.54% of ECAC jet fuel used).
- **€1.6 billion of the SESAR 3 budget** will be dedicated to a flagship programme on the Aviation Green Deal that should bring crucial environmental improvements in the system.



# Airports – Key Messages

- In 2020, the **EASA Environmental Portal** was launched to facilitate sharing of Aircraft Noise Certificates and Aircraft Noise and Performance data used to produce airport noise contours.
- There are **significant delays in approving and implementing the Performance Based Navigation transition plans**.
- **Collaboration of all stakeholders** is critical in identifying optimum solutions to mitigate environmental impacts.
- As the aviation sector evolves to respond to environmental challenges, **airport infrastructure** needs to adapt accordingly.
- By 2030, the European Green Deal's **Zero Pollution Action Plan** aims to reduce people chronically disturbed by transport noise by 30% and reduce the number of premature deaths caused by air pollution by 55% (compared to 2017).
- In 2020, the **Airport Carbon Accreditation Programme** added Levels 4 (Transformation) and 4+ (Transition) to support airports in achieving net zero CO<sub>2</sub> emissions and align with Paris Agreement objectives.
- More than 90 European airports are already set to achieve **net zero CO<sub>2</sub> emissions** by 2030, with 10 airports managed by Swedavia having already achieved this target.

# MBM – Key Messages

- During 2013-2020, the **EU ETS** reduced aviation net CO<sub>2</sub> emissions of 159 Mt (equivalent to annual emissions of the Netherlands in 2018) through funding of emissions reductions in other sectors.
- MRV of CO<sub>2</sub> emissions under **ICAO CORSIA** began in 2019. 88 States volunteered to participate in the CORSIA offsetting pilot phase from 2021, including all EU and EFTA States. This has increased to 107 States in 2022 and represents a majority of ICAO Member States.
- **Environmental integrity of offsets** depends on their ability to demonstrate that the emissions reductions would not have occurred in the absence of the market mechanism that funds the offset.
- At COP26 in 2021, accounting rules under the Paris Agreement were agreed for **international transfers of carbon market units**, including avoidance of double-counting of emission reductions in respect of CORSIA and NDCs.
- **International cooperation is key in building capacity** to address global aviation sustainability challenges. EU funded action in this area has enhanced the relationship with partner States.

# EASA – Areas of Action

EAER recommendations will inform future actions under the **EASA Sustainable Aviation Programme**

- Assess long-term **aviation noise and emissions reduction pathways and goals** for aviation sector to support Green Deal objectives.
- **Enhance the EAER process** to support oversight of progress towards Green Deal objectives.
- Implementation of ReFuelEU remit to establish a **monitoring system of SAF supply and use** in Europe and **annual report on evolving SAF market**.
- Set-up of a **SAF Clearing House** to ensure successful introduction of new SAF production pathways.
- Prepare for further **research action on mitigation of climate impact from non-CO<sub>2</sub> emissions**, including through fuel standards.
- Engage with EASA Scientific Committee to evaluate long term trends of **hazards and risks from climate change** and consider future **adaptation / resilience measures**.

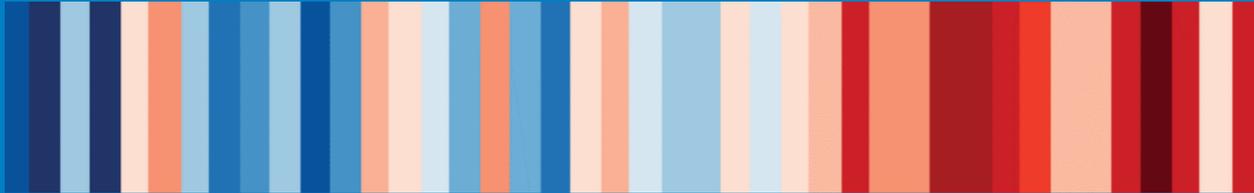


# EASA – Areas for Action

- Develop **new noise requirements** to support ongoing certification applications of European **Drones and eVTOL aircraft**.
- Support CAEP/13 work on **new aircraft dual CO<sub>2</sub>/noise standards**.
- Initiate discussions on **airport infrastructure needs for green technologies** (*2022 EASA Safety Conference*).
- **ATM/ANS environmental transparency working group** under EASA-Eurocontrol Joint Work Programme to investigate new metrics and indicators.
- Review **credibility of voluntary carbon credit market** in comparison with compliance-based markets.
- Provide technical support on **integration of aviation into the Taxonomy system**.



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# Questions and Answers

# Thanks for joining!

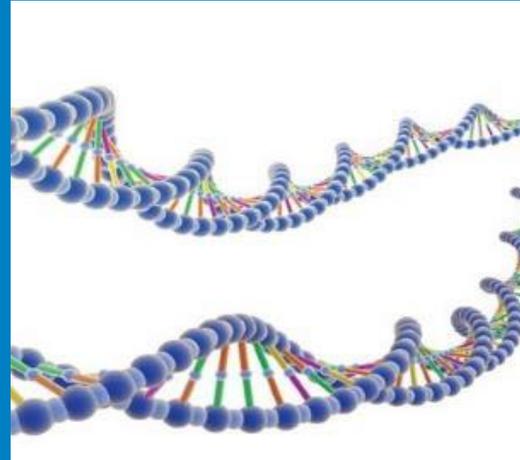
Stay tuned for additional sessions planned for the coming weeks & months!

- # SAF hub - the **role of the Airport**
- # SAF **Financing** / Clean Skies for Tomorrow
- # SAF **Sustainability Certification** Schemes





45 years of ASEAN -  
EU relations



Shared ambitions



Shared challenges



Shared opportunities

# Thank you for your attention

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