

AVIATION CO₂ REDUCTIONS



STOCKTAKING SEMINAR

TECHNOLOGY · OPERATIONS · SUSTAINABLE AVIATION FUELS



Air Operations



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A TRULY SINGLE EUROPEAN SKY TO SUPPORT GREENER AVIATION

&

SESAR AND THE ATM MASTER PLAN

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- ♦ European Commission - Single European Sky (SES) Unit of the Directorate-General for Mobility and Transport (DG MOVE)
- ♦♦ EUROCONTROL, Aviation Sustainability Unit

Single European Sky

Two legislative packages (SES 1 in 2004 and SES 2 in 2009) aimed for a **harmonised regulatory framework** and a **level playing field** for air navigation services
 2020: Ongoing further modernisation of the SES



Economic regulation

a **performance scheme** and **charging scheme** to ensure that air navigation services meet defined safety, capacity, cost-efficiency and environmental targets

Operations

Definition of network functions under the responsibility of the Network Manager
 Executed by Eurocontrol until 2029



Safety

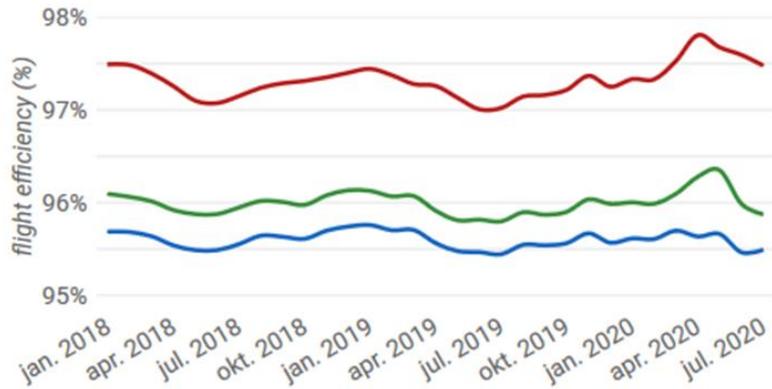
The competence of the European Aviation Safety Agency (EASA) was also extended to cover ATM safety and related rules.

Technology

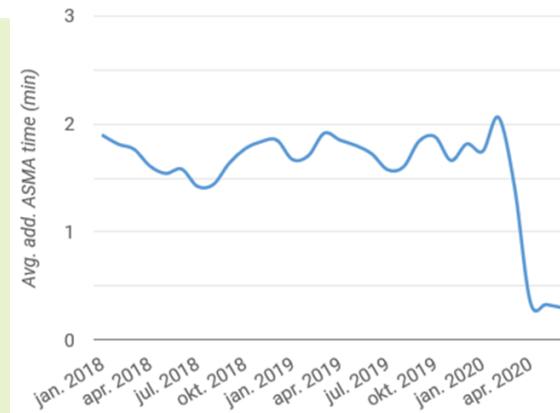
Modernising and harmonising European ATM infrastructure through the **SESAR project & SESAR Deployment Programme**



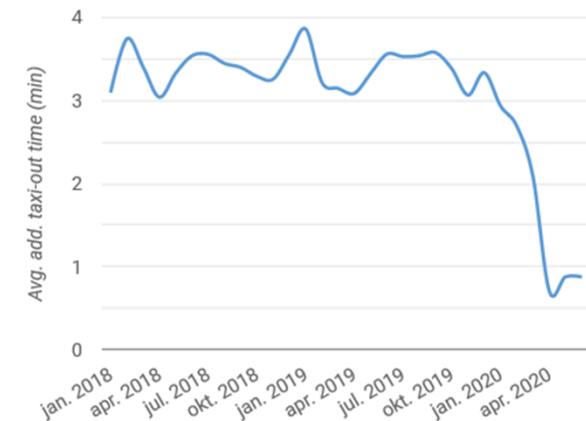
Evolution of horizontal en-route flight efficiency by trajectory type (%)



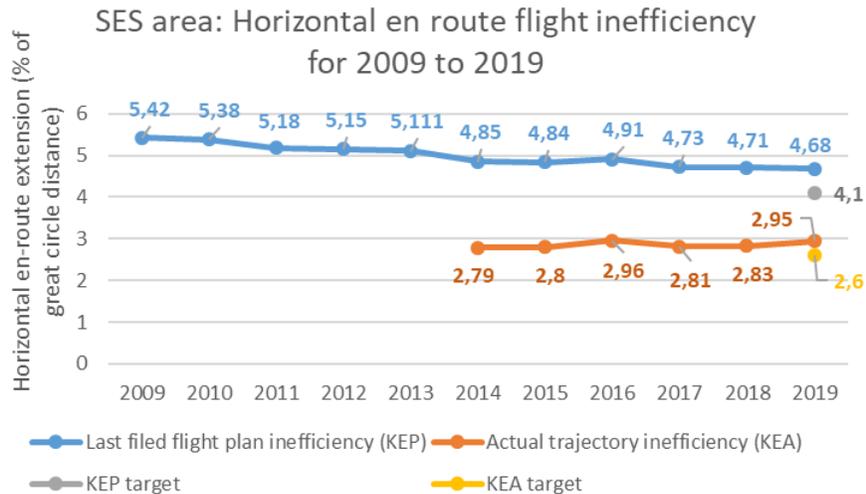
Average additional ASMA time (minutes per arrival)



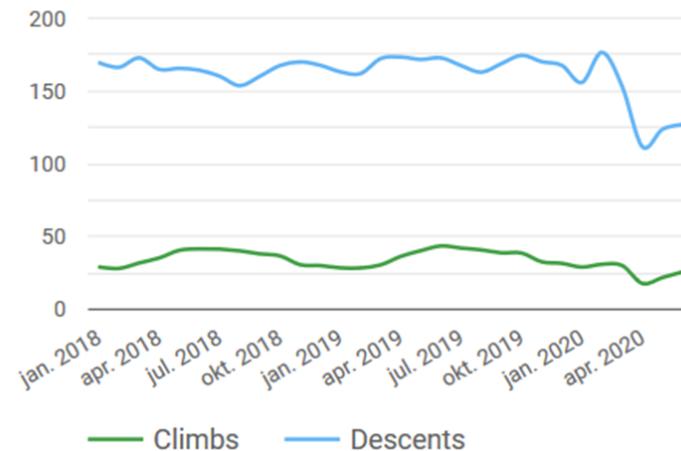
Average additional taxi-out time (minutes per departure)



SES area: en-route performance RP1 (2012-14) & RP2 (2015-19)



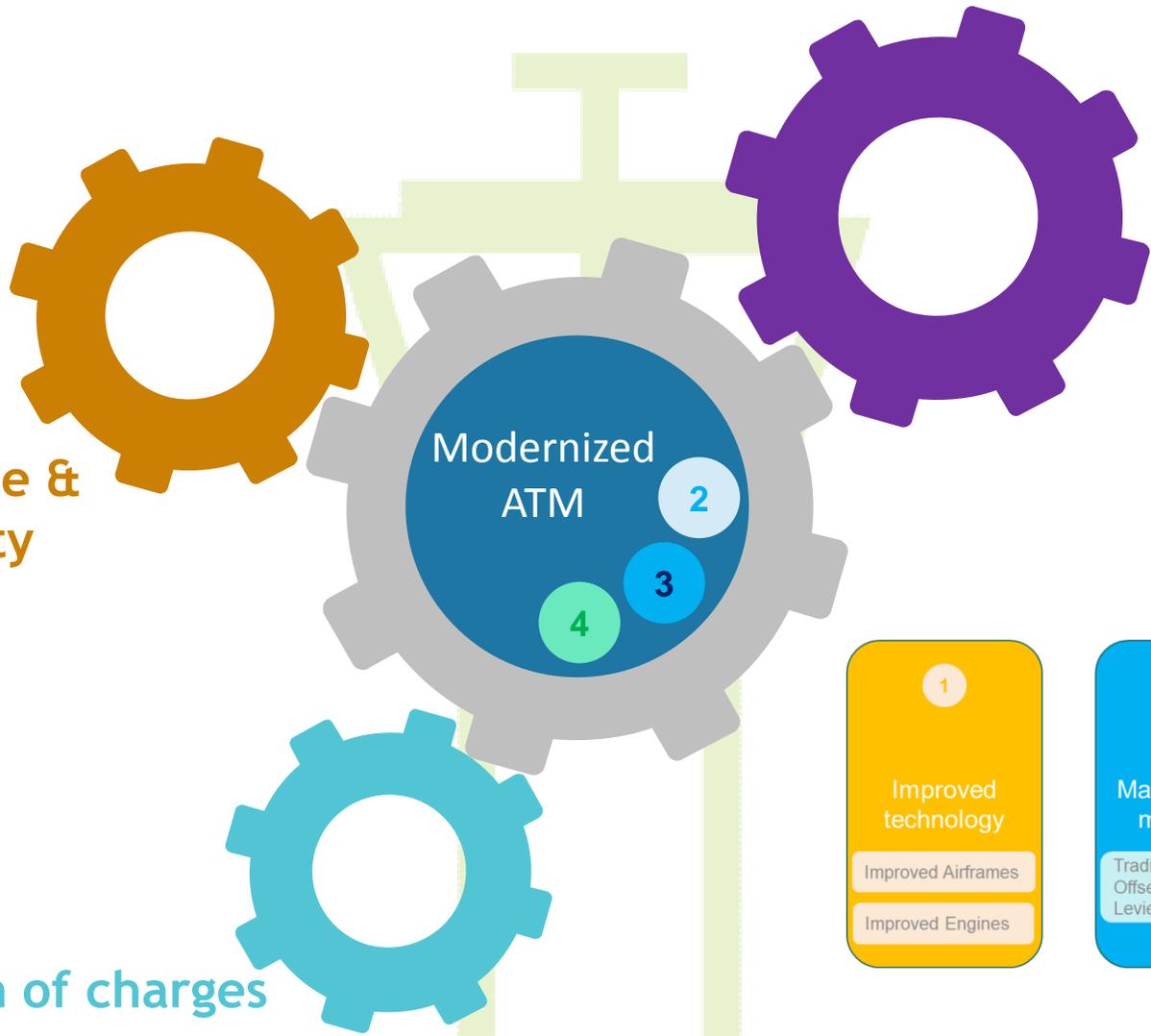
Average time flown level (seconds)



Emissions reduction – elements of a modernized air traffic management for a truly SES

Further digitalization enabling scalable & resilient capacity provision

Network centric approach to airspace, flow, capacity management & infrastructure deployment



Modulation of charges mechanisms

1
Improved technology

- Improved Airframes
- Improved Engines

2
Market-based measures

- Trading
- Offsetting
- Levies

3
Improved Infrastructure & Operations

- Optimized Airspace Network
- Optimized Airports

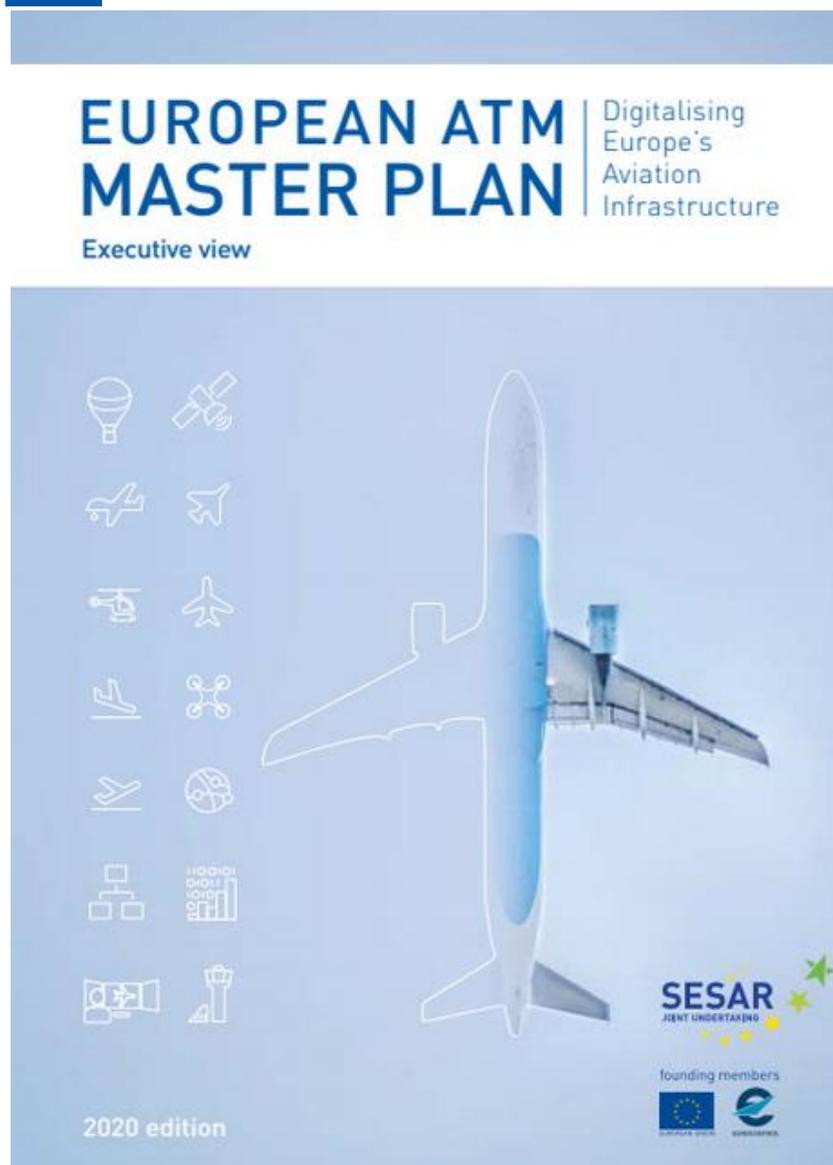
Modernized ATM

4
Sustainable Fuel

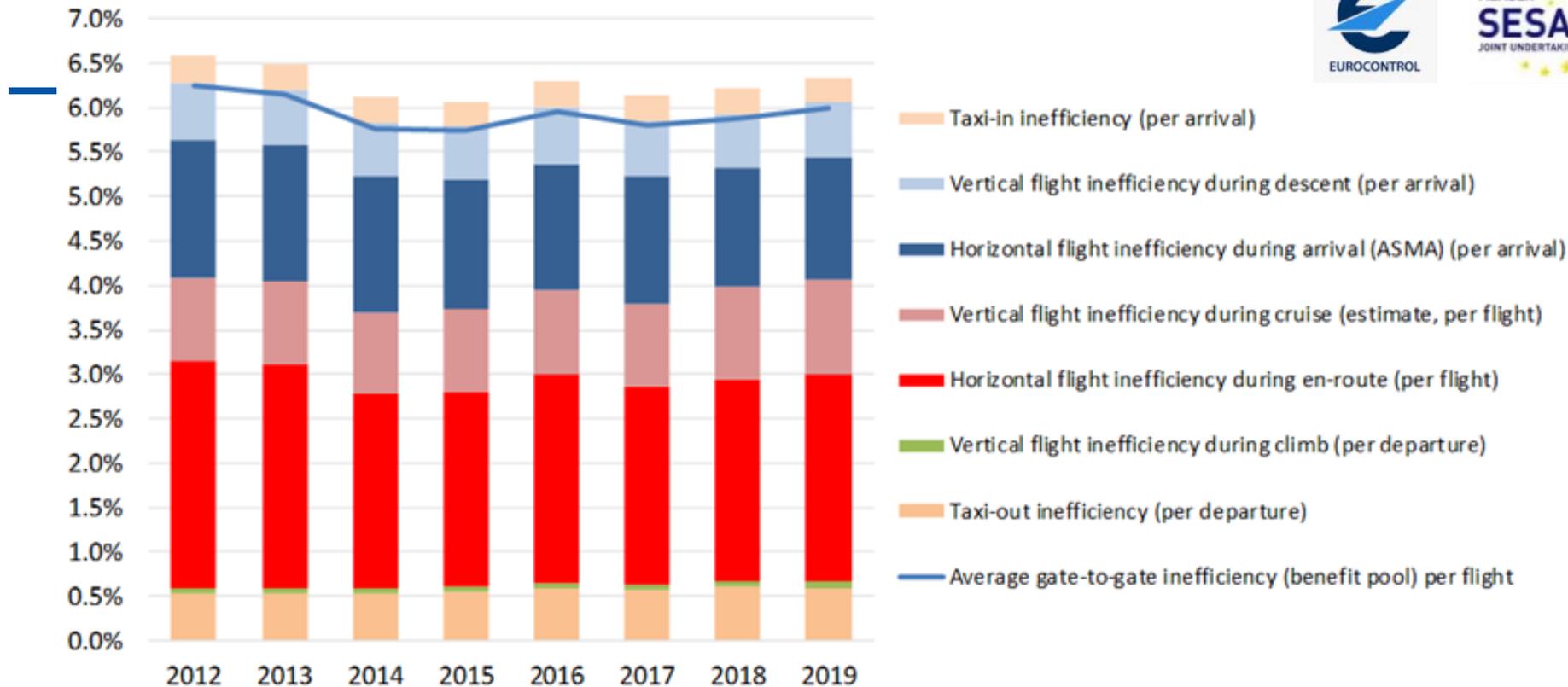


ATM Master Plan: the European Roadmap that connects ATM research and development

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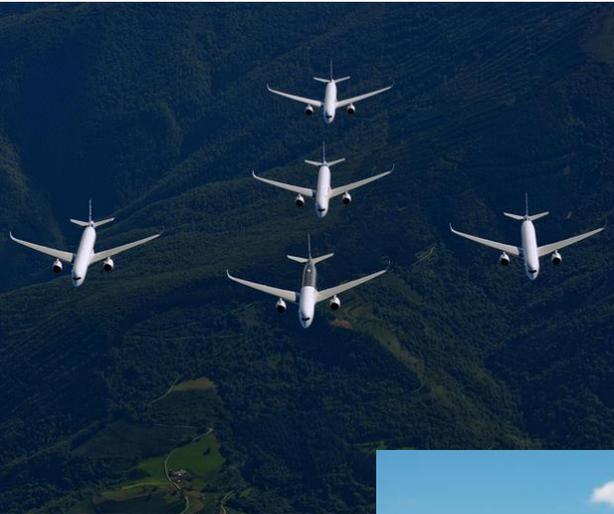
- Performance ambitions for IFR traffic in the ECAC area in the year 2035.
- Current ANS-related gate-to-gate fuel burn inefficiency is estimated to be 6% of the unimpeded trajectory fuel burn.
- The ambition is to reduce this to 2.3% by 2035, a reduction of 3.7 percentage points.



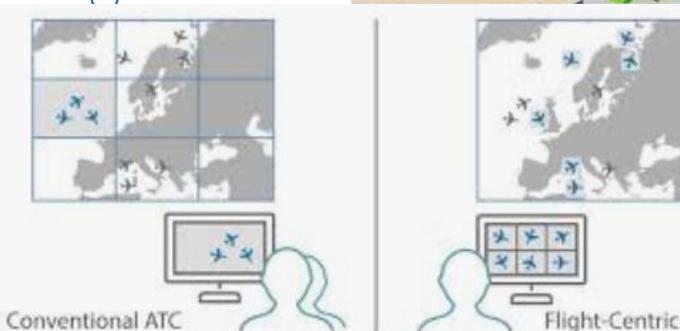
Source: EUROCONTROL/AIU

- ATM KPIs / PIs Aligned with GANP KPIs - Targets for 2035 e.g. Additional taxi-out time (GANP KPI02)
- Average ANS-related gate-to-gate fuel burn inefficiency - ~6% of unimpeded trajectory fuel burn
- Unimpeded trajectory may not represent the optimum profile (lowest fuel / CO2) due factors e.g. wind
- Further inefficiencies could be identified by the use of indicators that concentrate directly on CO2 emissions as opposed to operational proxies
- Estimated inefficiencies are in the range of **6-10%**

What concepts in the ATM Master Plan will reduce emissions?



STOCKTAKING 2020



- Optimization of existing concepts and deployment through the network
- New / disruptive ATM concepts (e.g. formation flights, advanced taxi operations (engine-free taxiing), flight-centric operations etc.)
- New indicators (fuel consumption and emissions) allowed by the age of “big data” and artificial intelligence
- Data sharing frameworks and harmonized sources



Modernized ATM as part of the European Green Deal



Operations

...Challenges and opportunities

- Resuming the legislative process on an amended proposal for the Single European Sky (SES)
- Performance plans achieving performance targets
- Optimizing Europe’s airspace (Airspace Architecture Study (AAS))
- SESAR Master Plan / ACARE SRIA Exploratory Research
- Augmented emission performance framework together with increase data sharing (directly related to fuel consumption and CO₂): possibly going beyond the 6-10% range

	CO ₂ reductions ¹	6-10% ²
	Level of finance required ³	€585m ⁴ €1.3b ⁵
	Timeframe	2035
	Main challenges	...

1. Emissions of all IFR flights controlled in the ECAC area against their unimpeded trajectories
 2. Emission reduction considering current performance framework and ATM paradigm
 3. Not including yet Horizon Europe and SESAR RTD until 2035
 4. Horizon 2020 funds allocated SJU for SESAR 2020
 5. CEF funding for PCP functionalities (2014-2020 period)



Thank You



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