

Enabling Europe's Competitiveness in the Skies

A competitive and secure Europe needs a more modern air traffic management (ATM) system. SESAR is Europe's collaborative engine delivering the technologies that will make our skies smarter, more resilient, and better protected. But this transformation will only happen if we invest boldly today.

- + Recent high-level reports have served as a wake-up call for decisive action at the EU level to spark sustainable growth. In the decade ahead, our skies must safely manage an increase in daily flights from today's peaks of **35,000 to a projected 50,000**, while also integrating new civil and military aircraft types (from drones to the next-generation aircraft) – all within an increasingly complex and contested geopolitical environment.
- + The cost of inaction is high. Inefficiencies already drain **billions of euros per year** from Europe's economy, eroding competitiveness, frustrating passengers, and generating **millions of tonnes of unnecessary CO₂ emissions**. Without modernisation, congestion and fragmentation will worsen.
- + As the EU shapes its future budget, investing in ATM research and innovation (R&I) through SESAR is essential not only to keep Europe competitive, but also to ensure secure and resilient skies, economic vitality, and technological sovereignty.



SESAR is modernising the critical infrastructure supporting one of Europe's key competitiveness pillars – a connected, safe and sustainable air transport system – enabling Europe's airspace to be managed as a single smart system for growth and security.

¹ Source: ATAG, Aviation Benefits Beyond Borders, 2024, p. 11

Europe's competitiveness is built on an efficient and well-connected sky

Investing in SESAR boosts Europe's connectivity and its competitiveness

+10%
Air connectivity

+0.5% GDP per capita

+1.6% jobs

+9% education

+8.5% research & development

-9%

Today's air connectivity compared to pre-pandemic levels.²

² Source: ACI EUROPE, *Synopsis – Benefits of Airports and Air Connectivity, 2024 and Airport Industry Connectivity report 2025.*

Cities and regions thrive when they are well-connected, driving collaboration, trade, and innovation. Aviation is the backbone of this connectivity, but it is only as strong as Europe's air traffic management (ATM) system, a system under continuous and growing strain from rising demand and supported by an infrastructure built for another era.

Although the demand for air transport and the number of passengers continue to rise, **air connectivity remains 9% below pre-pandemic levels**, holding back economic growth. At the same time, **traffic is forecast to grow by nearly 30% by 2030**, with new civil and military aircraft entering into service. Without modernisation, Europe risks worsening congestion, growing economic losses, and declining passenger trust.

Innovation is therefore essential. **Europe's leading ATM industry players already invest over 5% of their revenues in R&D**, going beyond the EU's goal to invest 3% of GDP in R&D. But much more needs to be done by all public and private actors in the sector.

This is where SESAR comes in. As Europe's collaborative engine for ATM innovation, SESAR accelerates the R&I process, delivering measurable gains in competitiveness, security, connectivity and sustainability across Europe's skies.

Productivity

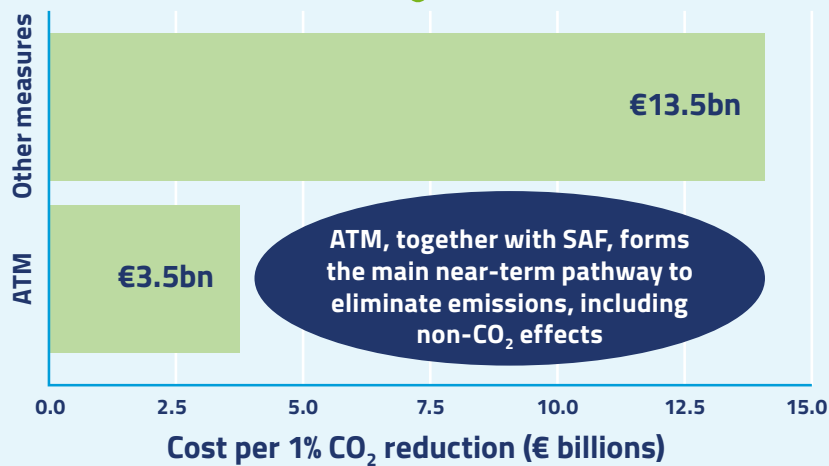
- + Around **15 million jobs** in Europe are supported by aviation, comparable to the workforce of major European countries.
- + Aviation contributes EUR **1.1 trillion to European economic activity**, accounting for **6% of all jobs and 5% of GDP**.
- + Without SESAR, delays due to ATM would be nearly **twice what they are today**. Looking ahead, SESAR will **reduce passenger delays by half**, which translates into more than **EUR 80 billion in economic benefits**.

Innovation

- + **SESAR accelerates time-to-market**, halving the development time from 10 years to around 5 years, speeding up the deployment of vital improvements.
- + Over **1 in 4 participants in SESAR projects are SMEs**, demonstrating the involvement of Europe's wider ATM innovation ecosystem.

Digitalisation of Europe's sky is a fast and cost-effective path to cleaner aviation

SESAR is Europe's fastest route to cleaner skies – delivering real climate gains this decade at a relatively modest cost.²



³ Source: Calculation based on Destination 2050 figures

Europe has set ambitious climate goals – cutting emissions by at least 55% by 2030 and 90% by 2040 and achieving full decarbonisation by 2050. Aviation, responsible for around 2-3% of global CO₂ emissions, will continue its path to decarbonisation while also addressing non-CO₂ effects, which may greatly increase its overall climate impact.

While sustainable aviation fuels and new aircraft are essential, they will take considerable time to reach full scale. Modernising ATM is the fast and cost-effective step Europe can take now. Through digitalisation, SESAR enables more direct routes, fewer delays, and smoother operations, reducing both fuel burned and contrails, and lowering total climate impact.

The **investment represents less than 2% of what is estimated for other measures**, yet it delivers significant gains in the short to medium term. In 2030 already, improvements in ATM will account for **nearly 30%** of the aviation sector's CO₂ emissions reductions achieved through technology-based measures. By 2045, they are expected to **cut fuel burn by around 9%**.

The potential is significant. In 2019, the remaining inefficiencies in Europe's ATM system, also driven by fragmentation, added 11.6 million tonnes of CO₂, equivalent to the annual emissions of 5 million cars. With SESAR, by 2035, Europe could **save 100 million tonnes of CO₂**, equal to the annual emissions of about **43 million cars**, and double the amount by 2040. Already **90%** of SESAR's 130+ solutions (ATM technological improvements) contribute directly or indirectly to decarbonisation.

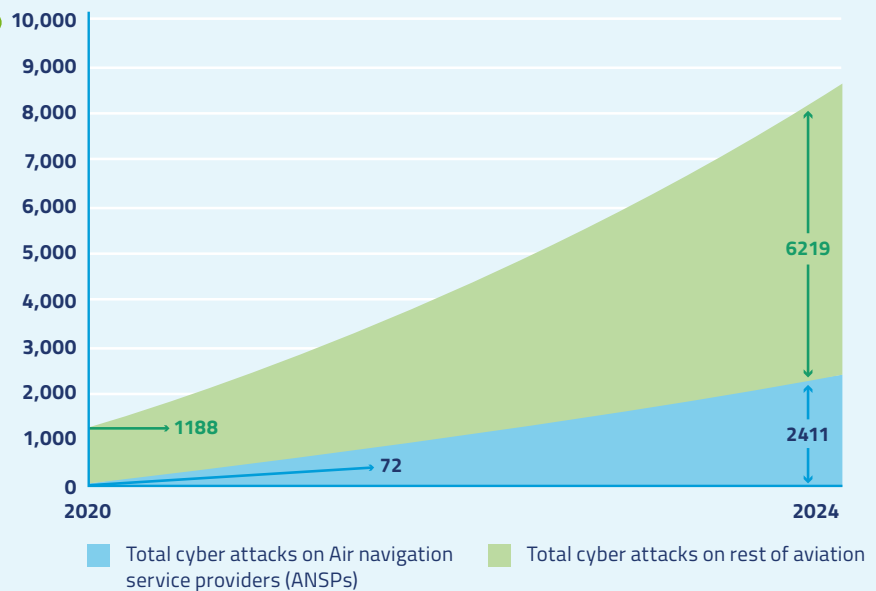
The economic case is equally strong. With the cost of carbon projected to reach EUR 315 per tonne by 2050 – **over four times today's level** – operational inefficiencies will only become more expensive, reinforcing the urgency of ATM modernisation. By avoiding these costs, SESAR's environmental benefits could deliver **EUR 87 billion in monetised value** by 2050, turning climate action into economic gain.

The aviation sector is determined to play its full part in the climate transition. SESAR's digitalisation of the European sky is therefore essential, cutting CO₂ and non-CO₂ impacts alike, and ensuring Europe remains competitive and a global leader in sustainable aviation.

A safe, secure and resilient sky is a pillar of Europe's competitiveness

Cyber-attacks on aviation surged by almost 600% between 2020 and 2024. Air navigation service providers (ANSPs) are a growing target. Cyber-attacks against them in 2024 represented 29% of all aviation attacks, up from 6% in 2020.⁴

Cyber attacks in the aviation sector



⁴ Sources: EUROCONTROL EATM-CERT, *Cyber in Aviation 2025* report. EUROCONTROL, *Think Paper #12*

The security of Europe's skies is under growing pressure. Airspace sovereignty is increasingly contested. Cyber-attacks on aviation have surged in the past few years. At the same time, GPS spoofing incidents have risen fivefold in 2024 alone, up from **300 to 1,500 per day**. These figures underline a stark reality: ATM is not just a service, it is a strategic civil-military European infrastructure that must be protected, modernised and made resilient.

The vulnerability is real. The war in Ukraine forced the closure of **20% of EU airspace**, leading to longer routes, higher fuel burn, and increased CO₂ emissions. Extreme weather events are more frequent and now cause nearly **30% of delays**, up from 11% in 2012, increasing disruption and costs.

This is the time to reinforce our focus on security and resilience in the interest of European sovereignty.

SESAR strengthens the ATM infrastructure against new threats and complexity, with dynamic civil-military airspace management, cyber-resilient data

services leveraging European space and terrestrial assets, and the safe integration of drones and new airspace users.

SESAR is building a proactive and systemic response to strengthen resilience over time. The ambition is clear: by 2030, Europe's skies should be cyber-resilient; by 2035, be "antifragile" and improve after each threat; and by 2045, able to predict and stop attacks before they happen.

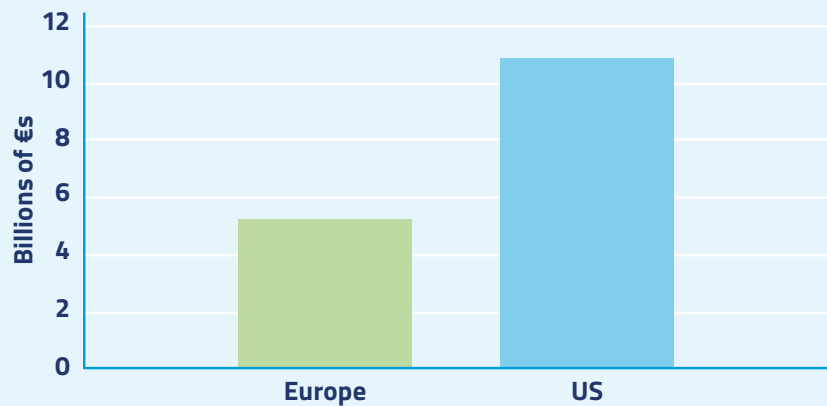
Europe's safety record is strong: **since 2013 no fatal accidents** occurred in which ATM was a contributing factor. Yet safety must also keep pace with new pressures. Without sustained investment, both the strong safety record and the trust it inspires could be at risk.

Investing in SESAR keeps the European sky not only efficient and sustainable, but also safe, secure, resilient, and sovereign – the foundation for competitiveness in a turbulent world.

Technology made in Europe runs 70% of the world's skies

Europe plans to invest roughly half as much as the United States in ATM modernisation.

Planned investment in ATM by 2029⁵



⁵ Sources: DG MOVE, PRB assessment of the draft performance plans for RP4, 2025, and U.S. Department of Transportation, "U.S. Transportation Secretary Sean P. Duffy Unveils Plan to Build Brand-New State-of-the-Art Air Traffic Control System," Press Release, 8 May 2025.

ATM is more than infrastructure – it is industrial strength. European firms are global leaders: 70% of the world's airspace is managed using European ATM technology. In a highly concentrated international market, this leadership underpins both Europe's competitiveness and its strategic autonomy. SESAR has been instrumental in anchoring this position.

- + The global ATM automation market is dominated by fewer than 10 players, **half of them European** (Frequentis, Indra, Leonardo, Saab, Thales), and all are SESAR partners.
- + SESAR projects have shaped more than **100 standards**, embedding European approaches globally.
- + Over half of SESAR research publications are **international co-publications**, highlighting its scientific leadership.
- + SESAR has cooperation agreements with partner countries such as the US, Japan and Singapore. It is active at the international level (particularly at the International Civil Aviation Organization) and has been able to orientate/influence international aviation policy effectively. This achievement has solidified the SESAR global brand, which is synonymous worldwide with European innovation leadership in ATM.

But Europe's lead is at risk. Europe's competitors are investing heavily in modernising their own ATM systems. The **US is investing EUR 10.7 billion in ATC modernisation by 2029. Europe's planned EUR 5.2 billion investment represents less than half that level of ambition.** Without decisive investment at home, Europe risks losing ground abroad – weakening its industrial base and ability to export technology globally.

SESAR is the bridge between industrial leadership and infrastructure modernisation. By uniting industry, SMEs, research labs, and civil and military operators, SESAR delivers scale, coordination, and drives new standards. It is transforming Europe's airspace into the most efficient and environmentally friendly sky to fly in the world, strengthening both our economy and our global influence.

The choice is clear. Investing in SESAR means modernising Europe's ATM infrastructure, while reinforcing its global industrial lead – ensuring its skies remain not only safe and connected, but also a driver of competitiveness and sovereignty in the decades ahead.

The choices made in the next years will shape Europe's sky for decades

With SESAR



17.5 million flights per year by 2050, with average delay below one minute per flight – thanks to doubled air traffic controller productivity



All flights/missions (crewed or uncrewed) operate in a way that maximises, to the fullest extent, aircraft capabilities to reduce the overall climate impact of aviation (in terms of CO₂ and non-CO₂ emissions)



Passengers can expect flights that run on time, are fuel efficient, and have environmental footprints as low as ATM technology can make them



Safest and most secure airspace in the world

Without SESAR

Only 9.8 million flights possible per year by 2050, with delays of up to 20 minutes per flight

Network performance deteriorates further, with growing flight path inefficiencies and congestion

Widespread cancellations and delays disrupt mobility across Europe, eroding trust in aviation

European ATM struggles to sustain current safety levels and remains exposed to security threats

ATM is not just a critical technical infrastructure; it is a strategic enabler of Europe's competitiveness, security and technological sovereignty. With SESAR as its driving force for modernisation, Europe can ensure seamless connectivity, safe skies, resilience, and climate leadership. Without it, inefficiency and congestion will escalate, costing billions and eroding public trust.

The next EU Multiannual Financial Framework is Europe's moment to act. Investing in ATM modernisation is not just a transport choice; it is a strategic decision about Europe's competitiveness, security, and technological sovereignty.

The Aviation R&I Strategy leaves no doubt: Europe must invest boldly in aviation R&I. It estimates that **EUR 66 billion** will be needed for aviation between 2028 and 2034, also covering ATM and the Digital

European Sky. Within this, a commitment of **EUR 5 billion for SESAR** is not an isolated request: it is the catalyst to unlock the entire vision. It will accelerate technology maturation, bridge the innovation "valley of death," and ensure that Europe leads in building the world's most advanced and sustainable airspace.

The economic case is undeniable. **Every EUR 1 invested in SESAR delivers EUR 54 in benefits** for the wider economy. In total, this could unlock **up to EUR 1.4 trillion in socio-economic gains by 2050**.

SESAR has shown that when Europe invests together, it delivers. Investment in SESAR strengthens Europe's economy, protects its citizens and connects its regions. Now is the time to scale up this success, to turn ambition into action and ensure that Europe continues to lead the world in safe, sustainable and secure aviation.

Now is the time to invest in our digital European sky.



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