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CLEAN AVIATION
Info Session

26th April 2022 Toulouse FR

PROGRAMME OVERVIEW AND CONTEXT – IN A NUTSHELL

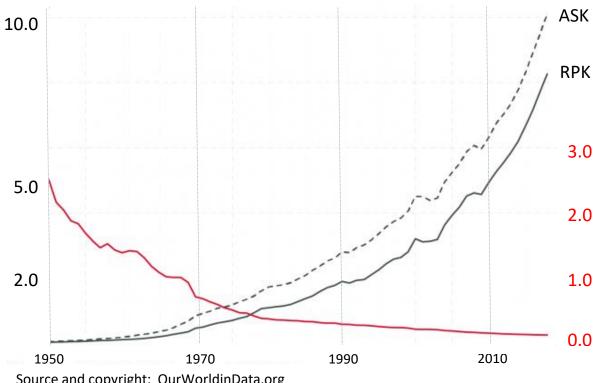




THE CRUX OF THE ISSUE

Phenomenal progress in efficiency. But growth has consistently outpaced these gains.

Seat-km / Passenger-km (1012)



1989 - 2019:

- Air transport system quadrupled
- **Emissions doubled**
- Superb efficiency gains but absolute emissions growth = *exponential*...

kg CO₂ per RPK

2018: 0.125kg CO₂ per RPK

Source and copyright: OurWorldinData.org





WHAT IS CLEAN AVIATION?

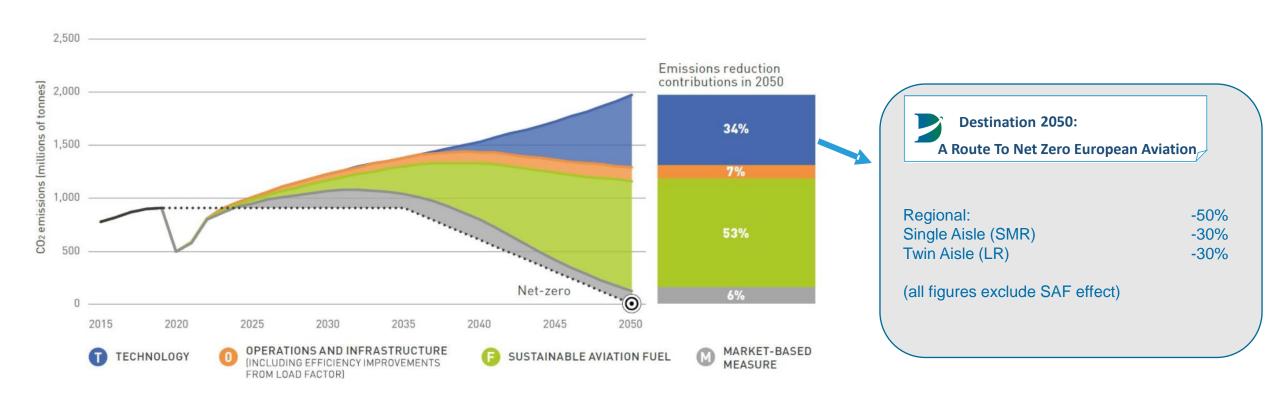
- Ambitious goals set on EU-Level (European Green Deal) iaw Paris Agreement
 - 2030: "cut emissions by at least 55%"
 - 2050: "Europe to become the world's first climate-neutral continent"
- New fuel/energy options, disruptive technology and innovative aircraft architectures needed to pave the way towards climate-neutrality
- Clean Aviation is an Institutionalised European Partnership [Art 187
 TFEU] that can pull together the required resources and commitments,
 and adequately reduce the industrial risk for transformative research
 and innovation





EUROPEAN AVIATION SECTOR AND THE EUROPEAN GREEN DEAL

Committed to work towards a climate-neutral European aviation system by 2050.



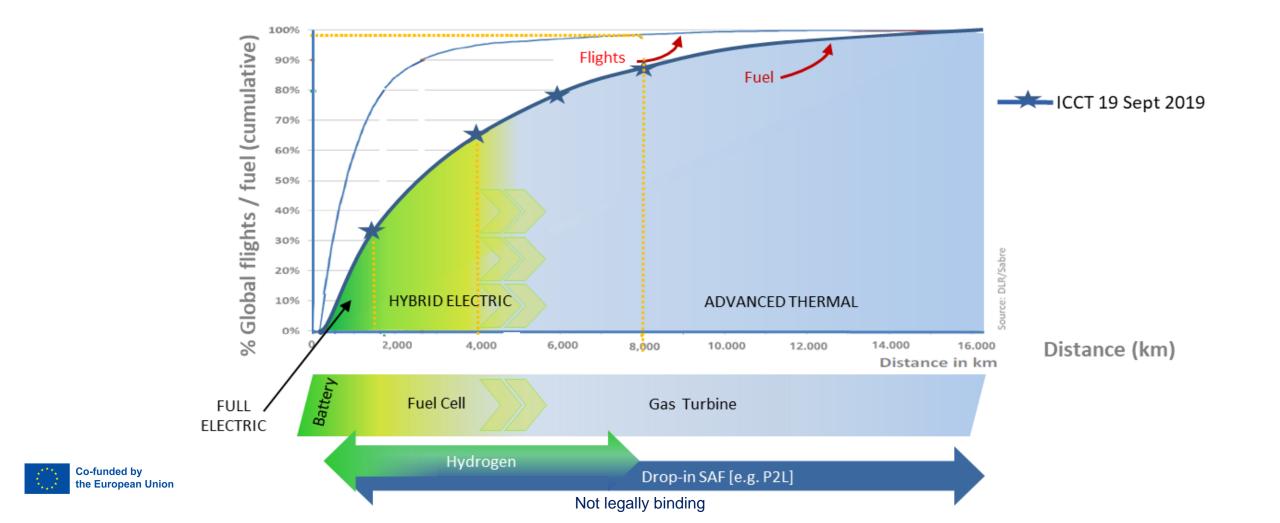
Source: ATAG report 2021





MORE DIFFERENTIATION WILL PROVIDE SCOPE FOR DISRUPTION

1/3 of global emissions are from flights <1500km. 2/3 of global emissions from flights <4000km.





INNOVATION ARCHITECTURE BUILDING ON PREVIOUS ACHIEVEMENTS

Mobilising talent and expertise across Europe and non-aviation sectors

Clean Sky

Open Rotor
Laminar Flow
ALPS

RACER



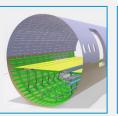




Clean Sky 2

MFFD
UHPE
NextGen Tilt Rotor









Clean Aviation >

(Hybrid) ElectricHydrogen PropulsionUltra-efficiency







CLEAN AVIATION – LINCHPIN IN EUROPE'S R&I FOR THE TRANSITION

Hybrid-electric and full electric architectures

Disruptive technologies to enable H2- powered aircraft

Ultra-efficient aircraft architectures

Low Emission Hybrid-Electric Regional Aircraft

Zero Carbon Hydrogenpowered **Short Range** Aircraft

Low Emission Short /
Medium Range
Commercial Aircraft

Long Range Aircraft Concepts progressing towards climate neutrality

Flight demonstration JU and Clean Aviation 2035

Development of disruptive pevelopment of disruptive





SKIP-A-GENERATION TECHNOLOGY LEAP,

together with new fuels/energy

The MOST EXCITING EXCITING TECHNOLOGICAL DECADE for AERONAUTICS IS BEGINNING

'traditional' aeronautical sciences

Will need to bring key enablers

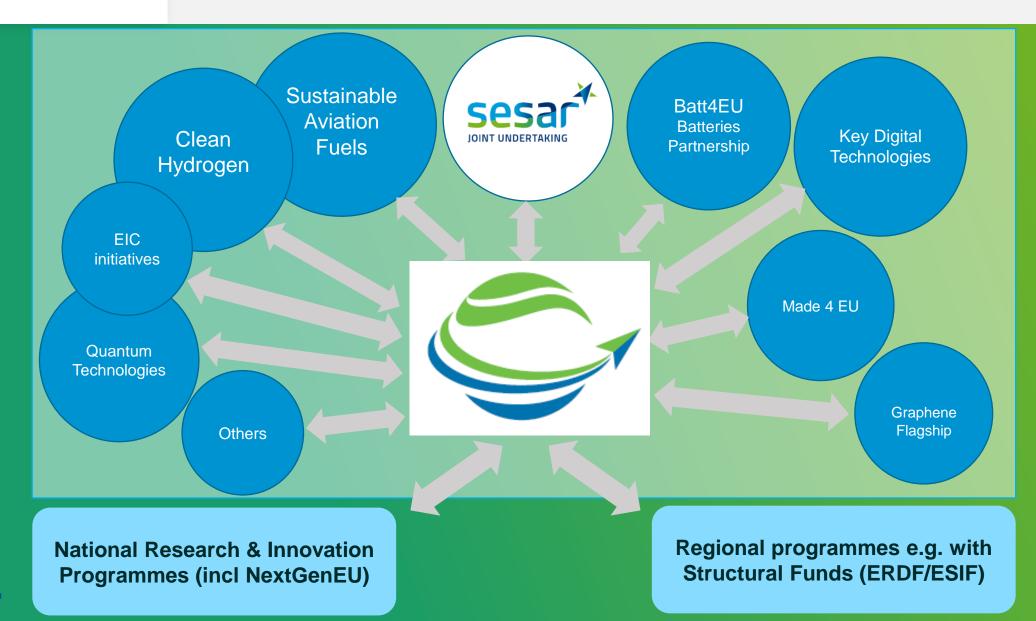
******* Revolutionised production system

certification methods

Life-cycle aspects and recyclability



INTEGRATED INNOVATION ARCHITECTURE NEEDED

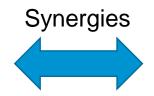




THE PROGRAMME SETUP IN A NUTSHELL

EU Funding 1.7bn€¹

Private Funding >2.4bn€



Other EU Partnerships & Programmes and National/Regional R&I

2022 2025/2026 2028 2030

PHASE I:

Develop concepts, technology options and trade studies

~45% of total budget Large 'big bang' 1st Call Q1/2022 CEI for additional members in 2023 Further (modest) complementary 2nd Call Q1/2023 Configuration of PHASE II to emerge by Q4/2024

PHASE II:

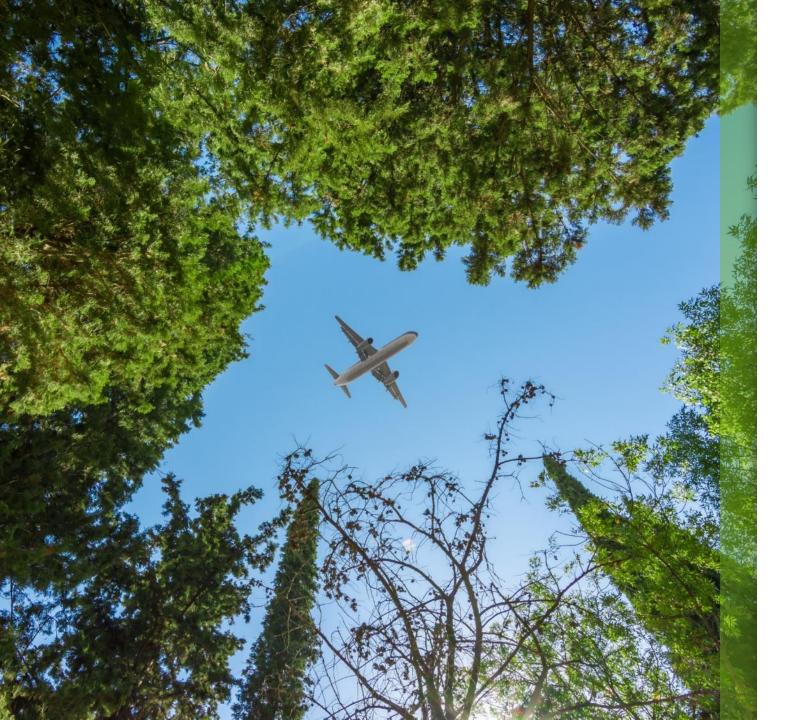
Accelerate technology maturation through integrated demonstration

~55% of total budget

Large Call ~Q1/2025 (projects to launch w/in 2025) CEI may be considered for demo prep/build phase Further (modest) Calls 2026 up to max. 2027 (TBD) Target maturity to enable EIS 2035: TRL6 ~2028?



¹ Revision possible in case of additional associations to Horizon Europe





ENGAGE with US!

www.clean-aviation.eu

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