



2024 ICAO LTAG STOCKTAKING

7 — 10 OCTOBER 2024

ICAO HEADQUARTERS, MONTREAL, CANADA

Special Session on Hydrogen use in aviation



Marc Hamy

AIRBUS

Why hydrogen?



Climate credentials: H₂ emits no CO₂* & has the potential to reduce non-CO₂ emissions (i.e. NOx) & persistent contrails
(*if generated from renewables via electrolysis)

Light and Energy dense: H₂ is 3X lighter than jet fuel but has a lower volumetric density, thereby requiring a different storage solution on aircraft



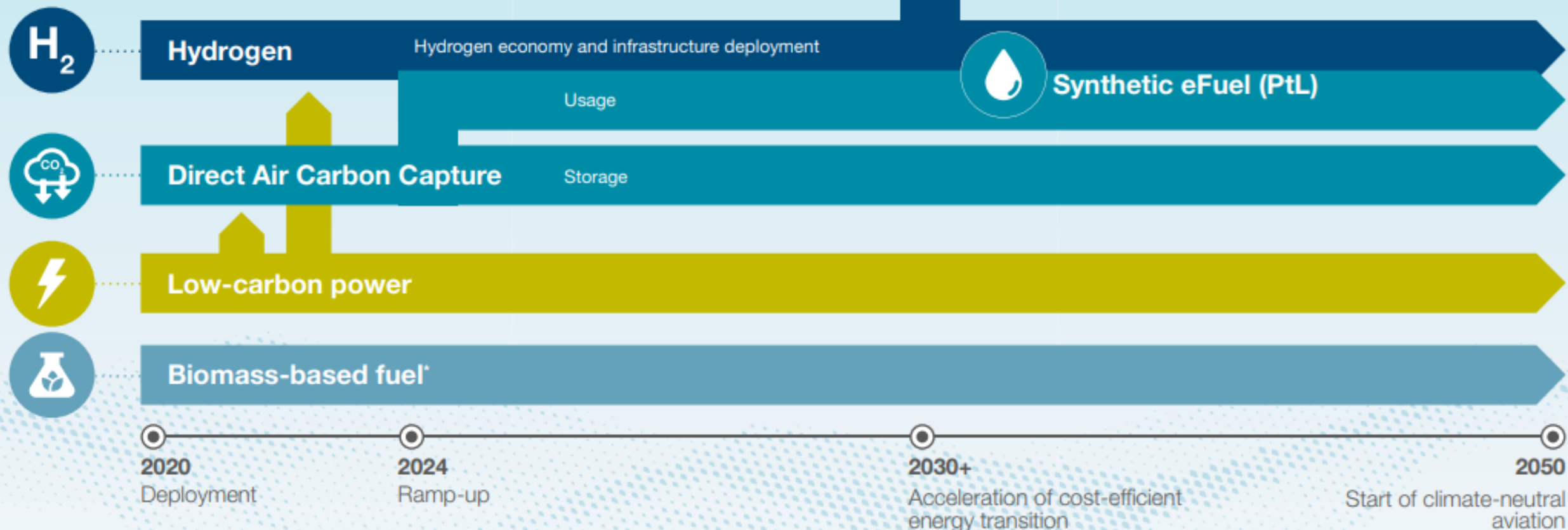
Declining costs: the cost of producing H₂ is likely to decline over the next decades as it gets widely adopted by various industries. This will make hydrogen-powered aviation increasingly economical



Versatility: H₂ could be used as an ingredient of Sustainable Aviation Fuel* or directly on-board an aircraft through direct combustion or Fuel Cells
(*combined with captured CO₂ to produce Power-to-Liquid synthetic fuel)

The road to zero: aviation's energy roadmap

Multiple energy pathways must be accelerated simultaneously to achieve significant emissions reduction. Their success depends on their availability, affordability and scalability.



*A type of Sustainable Aviation Fuel (SAF) made of renewable feedstock (i.e. used cooking oil, waste, residue, etc.)

Airbus partnerships on e-SAF



[France] MoU signed Jan. 2024
FT pathway



zero

[UK] MoU signed May. 2024
FT pathway



[USA/Global] MoU signed Jul. 2024
MtJ pathway



[Oman] JSA signed May 2024
eFuels (eSAF & eGasoline)

Several partnerships on-going with several objectives:

- Accelerate new SAF production pathways development & feedstock eligibility
- Coordinate industry efforts on approval to use 100% SAF
- Support Final Investment Decisions of new SAF plants

Hydrogen needed to produce 1L of e-fuel

0.5_{KG}

PtL Carbon intensity reduction vs fossil fuels

90%

Looking at Hydrogen powered aircraft

Introducing Airbus ZEROe

Turboprop



<100
Passengers



1,000+nm
Range

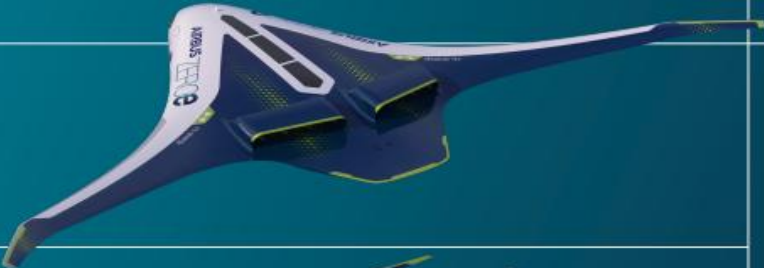


Hydrogen
Hybrid Turboprop
Engines (x 2)



Liquid Hydrogen
Storage & Distribution
System

Blended-Wing Body



<200
Passengers



2,000+nm
Range



Hydrogen
Hybrid Turbofan
Engines (x 2)



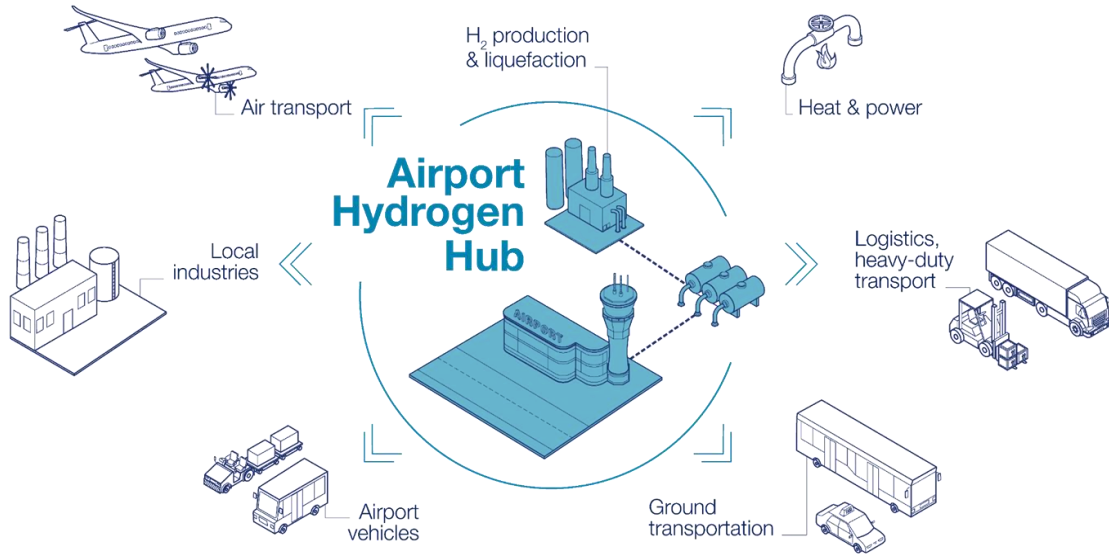
Liquid Hydrogen
Storage & Distribution
System

Turbofan



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Hydrogen Hubs at Airports



Why Airports as Hydrogen Hubs?

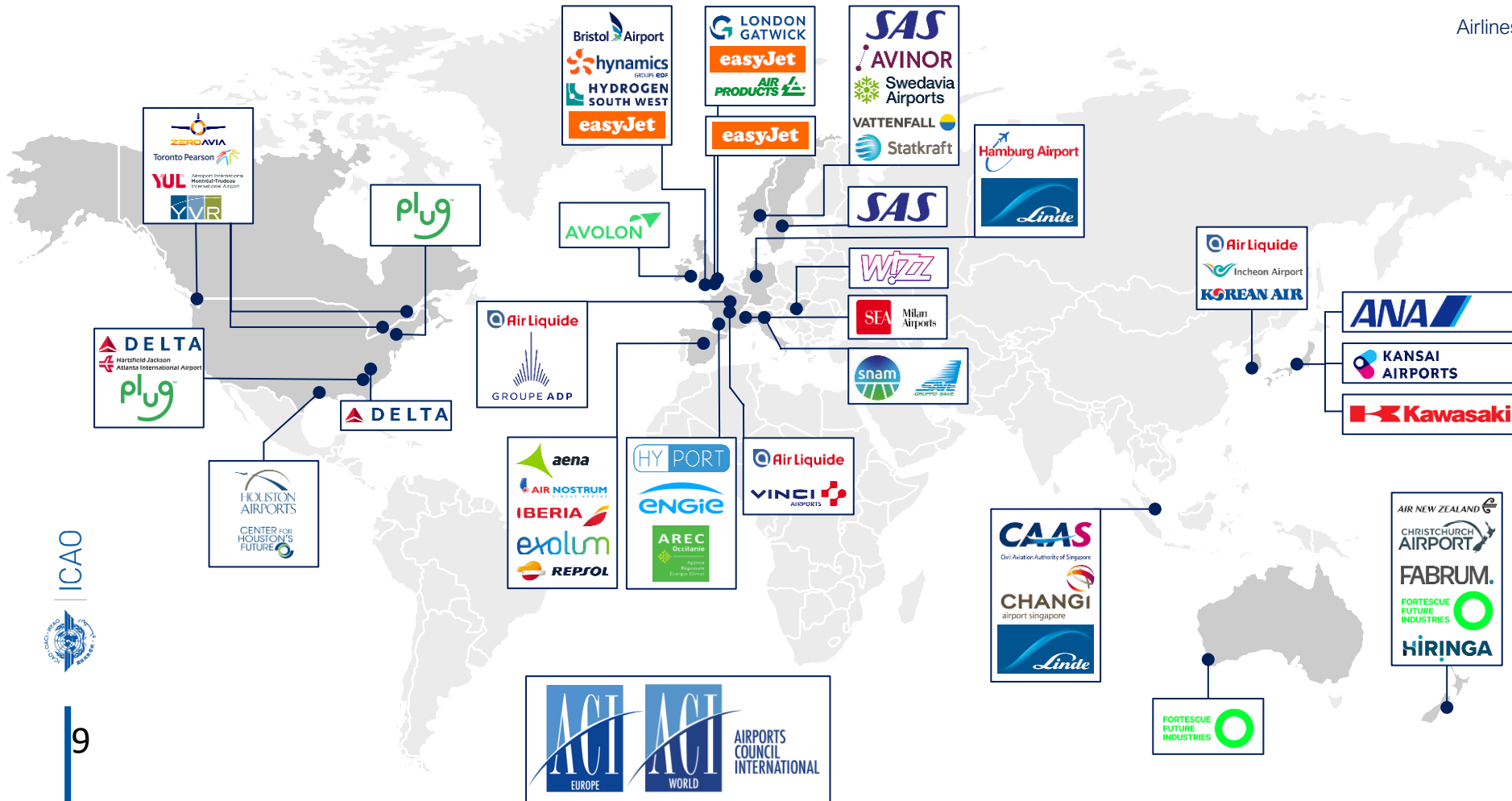
- Airports are heavy goods transport hubs (buses, trucks.... and aircraft)
- Heavy transport requires hydrogen for decarbonisation
- Local industries could benefit from H₂ hubs at airports
- Airports hydrogen hubs will also prepare for decarbonised aviation

Airport hydrogen hubs will:

- Prepare regulations and standards for the handling of H₂ at airports
- Ensure that a large number of airports worldwide are supplied with liquid H₂ by 2035
- Foster efficiency improvements and cost reductions in hydrogen liquefaction, storage and distribution

Airbus building a global hydrogen network through multi-parties strategic partnerships

Key actors of the hydrogen ecosystem



215
airports

18
H2 Hubs
at airports

9
Partnering
customers

Thank You

