

Hydrogen aircraft: Transforming aviation towards Net Zero

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Manager New Technologies, IATA



H_2

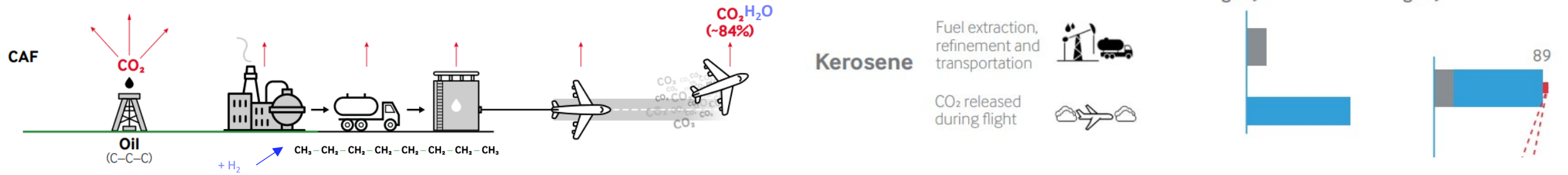
Hydrogen for aviation:

- ❖ The fuel
- ❖ The aircraft
- ❖ The airport

State of the industry & other sectors

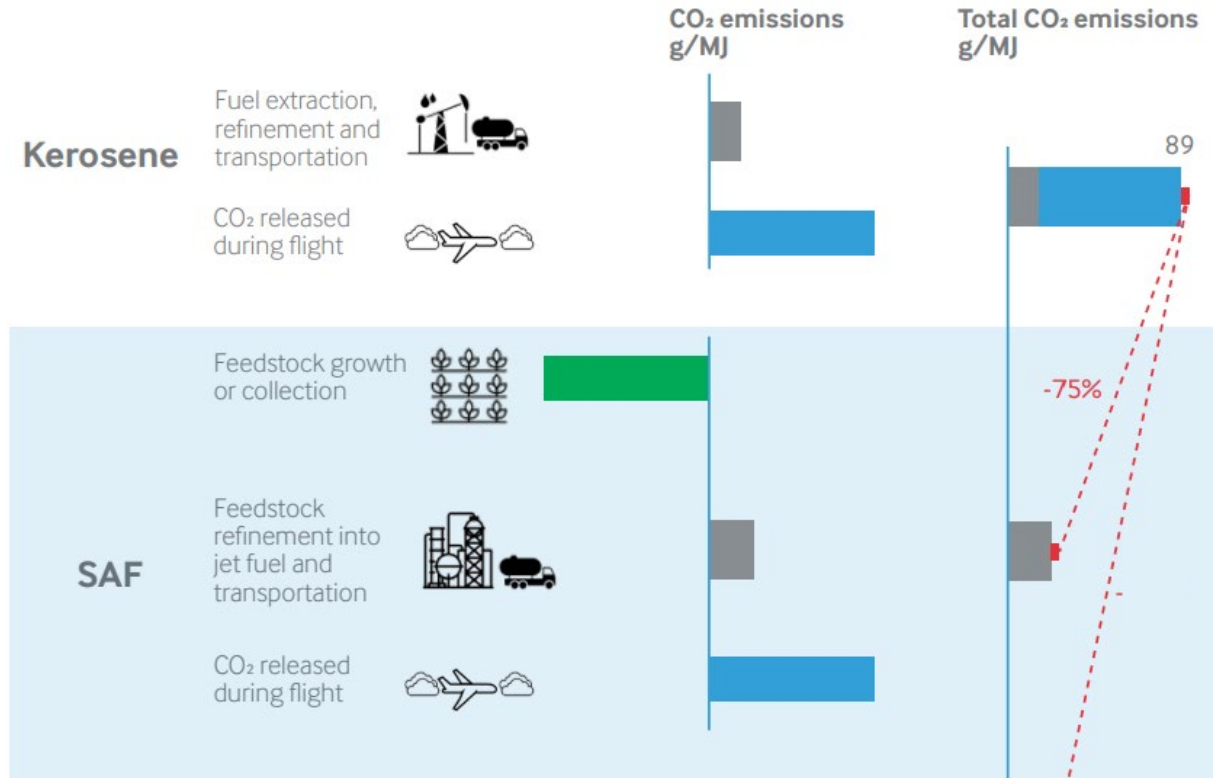
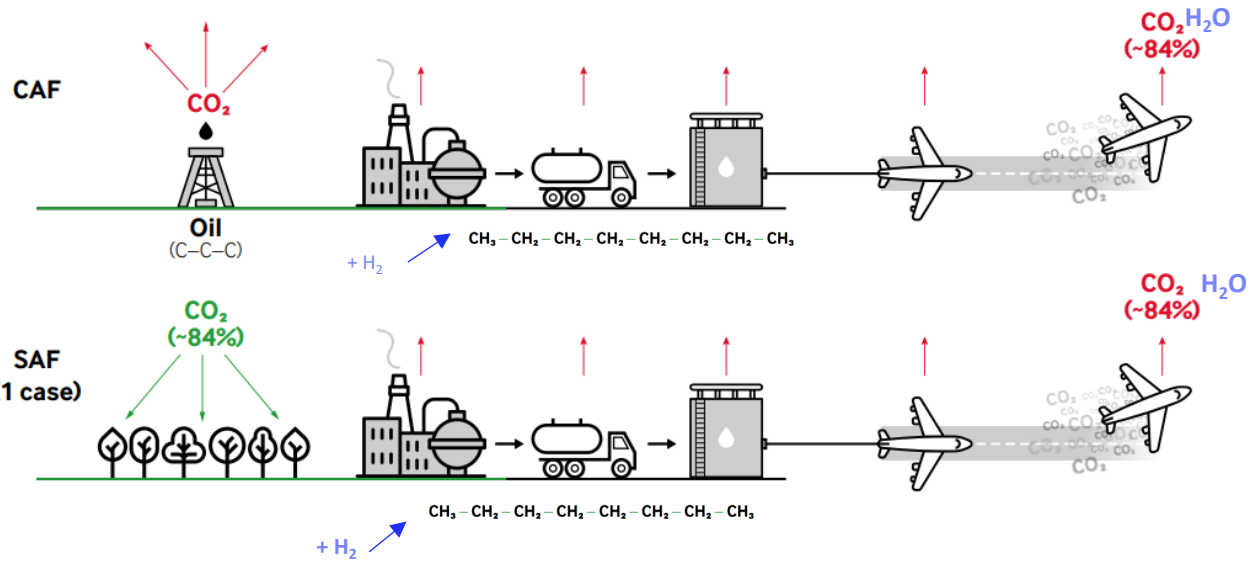


Energy transition for aviation, a,b,c



Source: ATI - "Integration of SAF into the air transport system", Block et al. 2022
 ATI- "Aviation Emissions, modelling the road to net zero 2050", Block et al. 2022

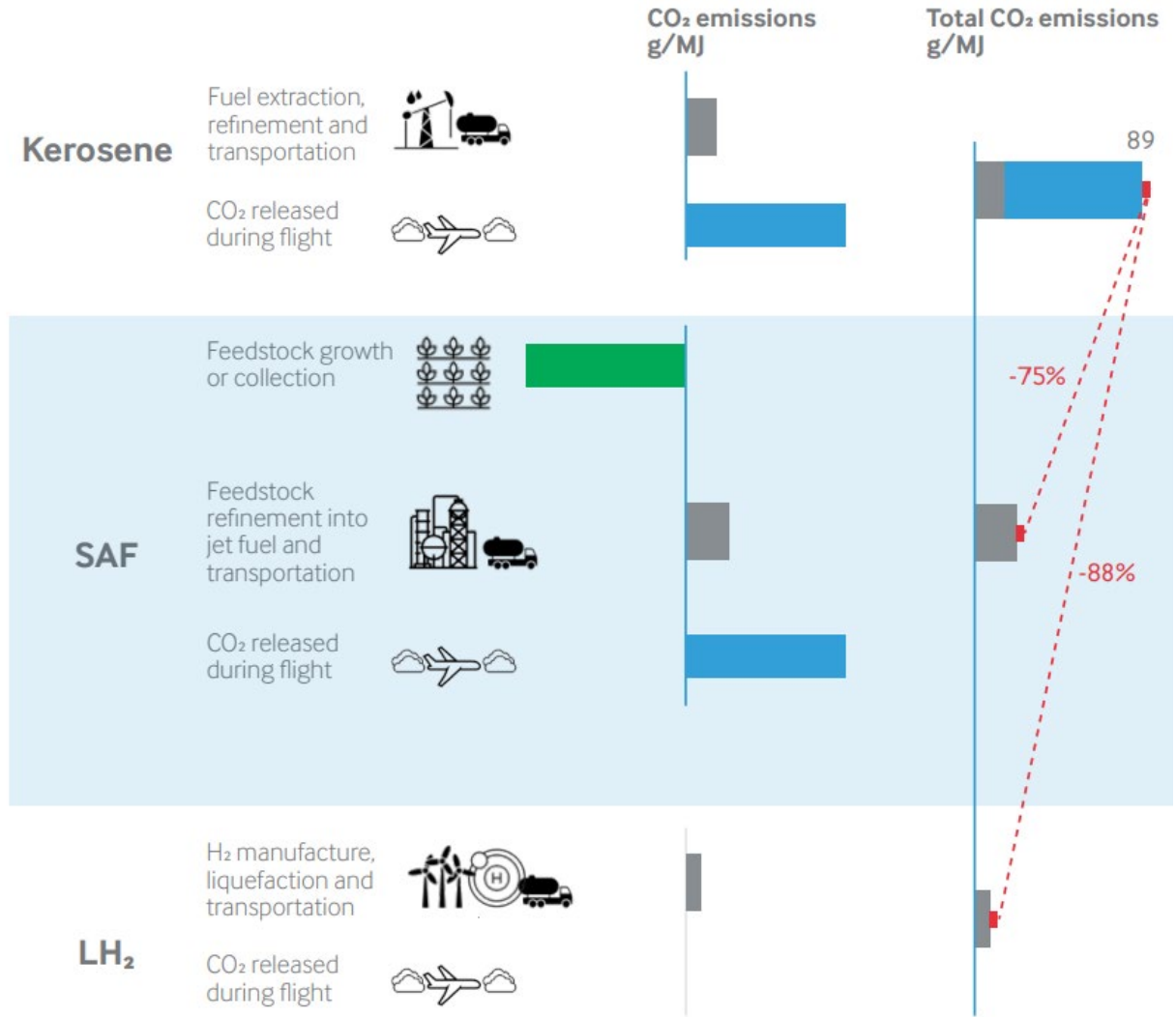
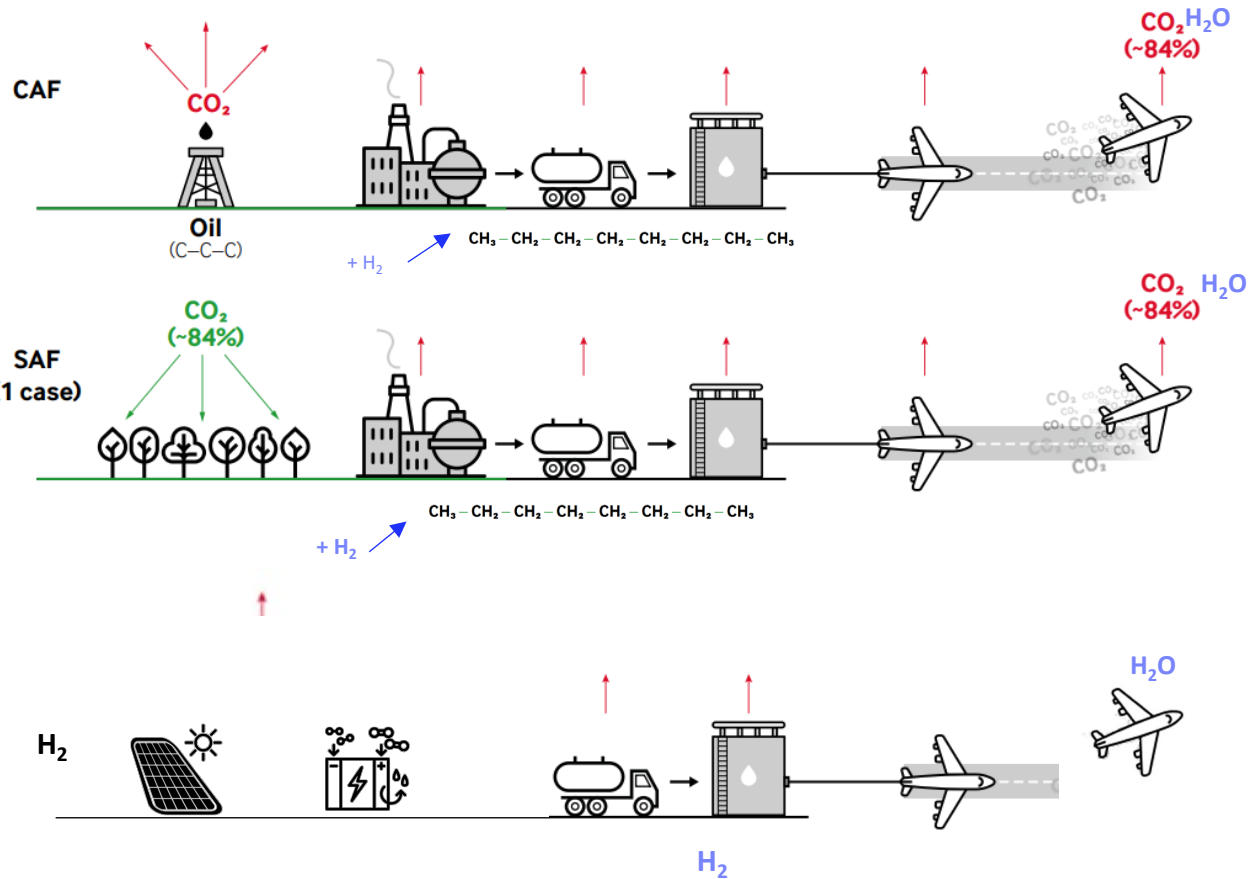
Energy transition for aviation, a,b,c



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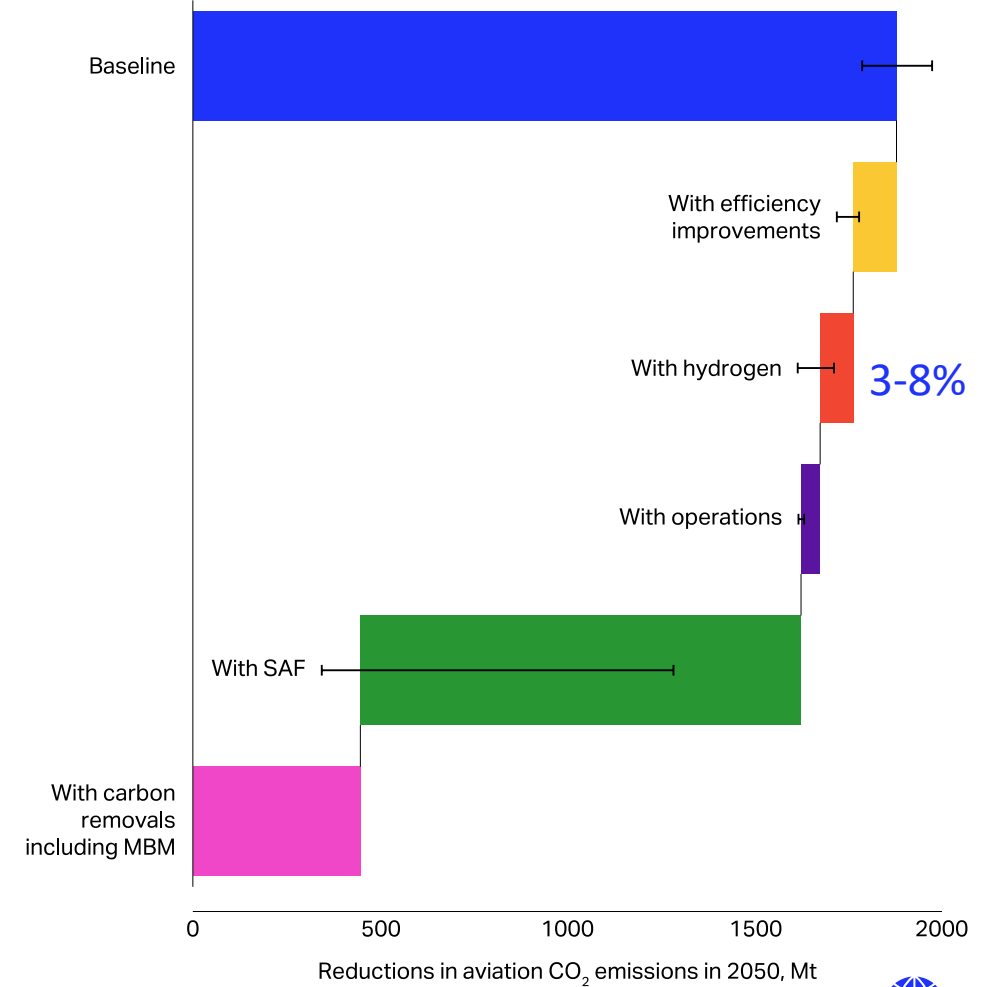


Energy transition for aviation, a,b,c

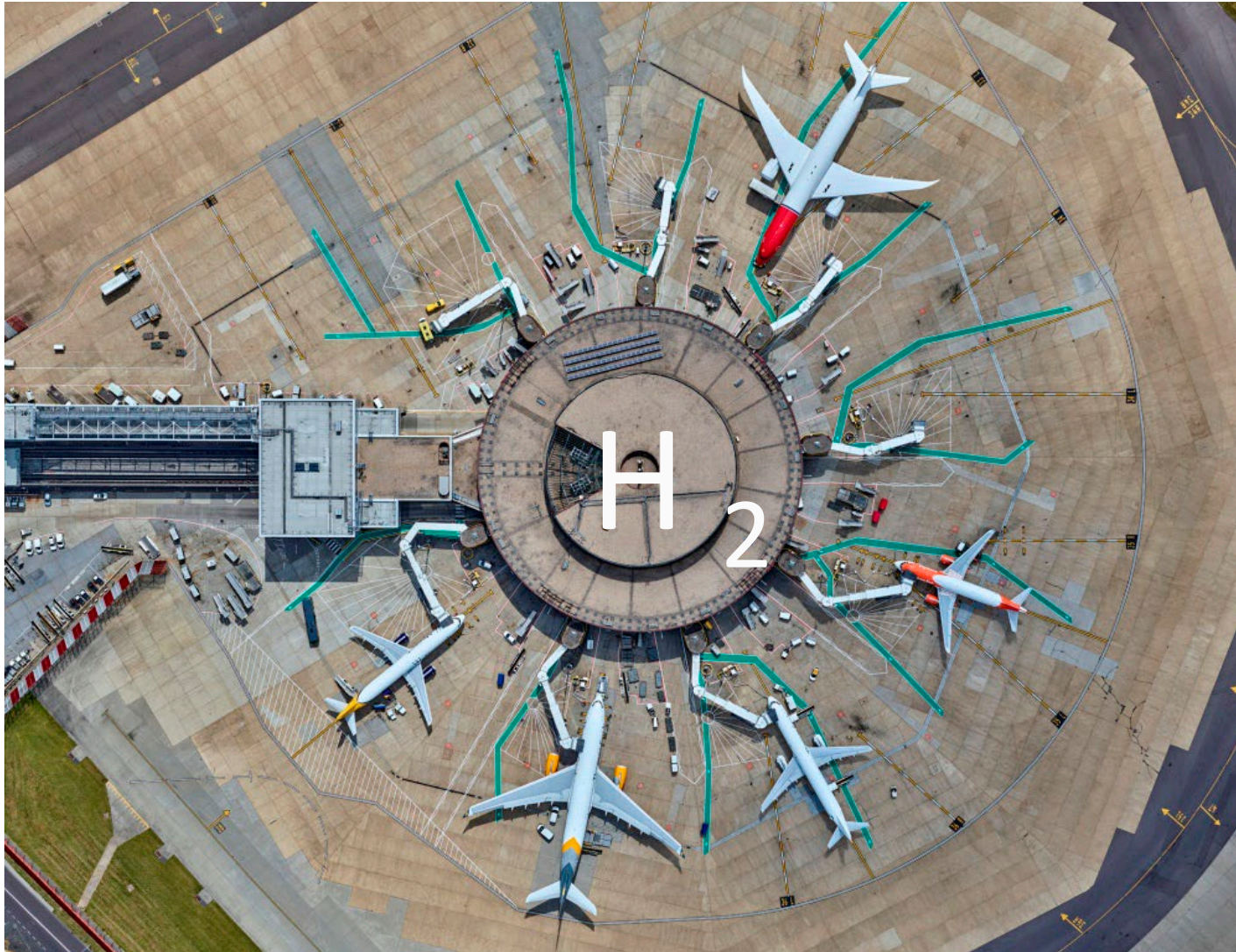


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H₂ contribution by 2050 and beyond



Chapter 1: The airport



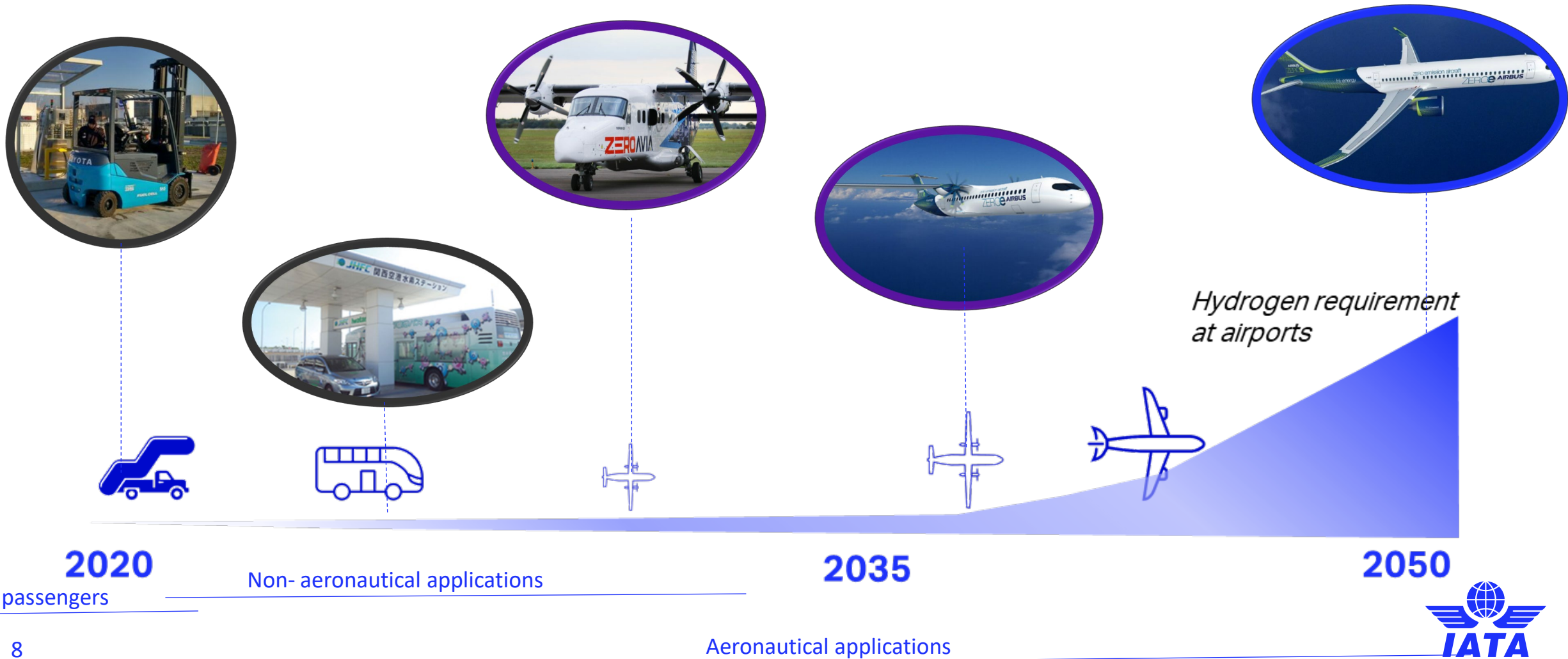
ZeroAvia & Edmonton International Airport Tie Up to Bring Hydrogen-Electric Flights to Canada

SUSTAINABILITY
AIR LIQUIDE AND GROUPE ADP ANNOUNCE THEIR AMBITION TO CREATE THE FIRST JOINT VENTURE TO FACILITATE THE DEVELOPMENT OF HYDROGEN INFRASTRUCTURE AT AIRPORTS
JUNE 15TH, 2022

Kansai International Airport's cutting-edge hydrogen experiment

Hamburg & Rotterdam airports sign hydrogen cooperation

(R)evolution of H₂ use at airports



Hydrogen pathways to airports

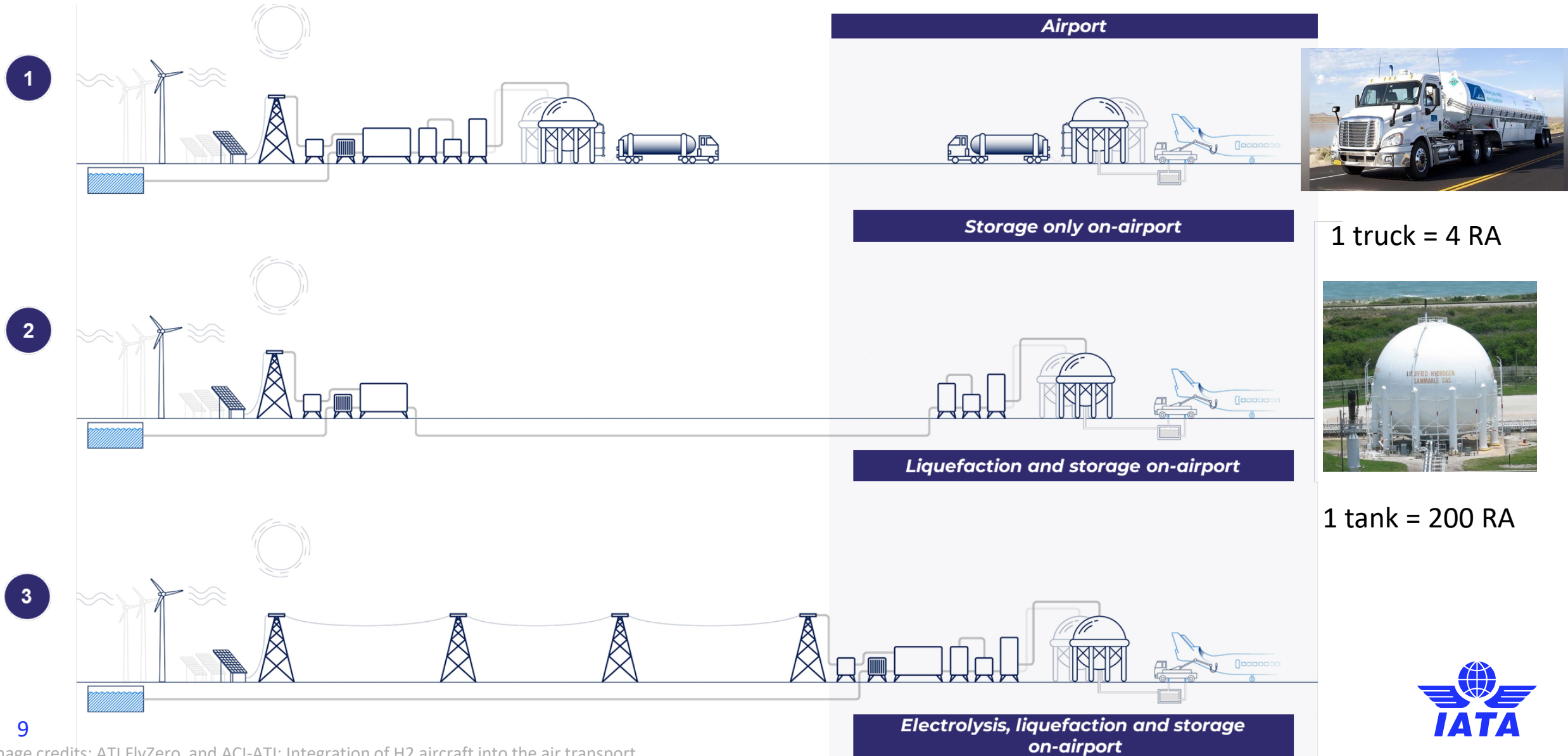
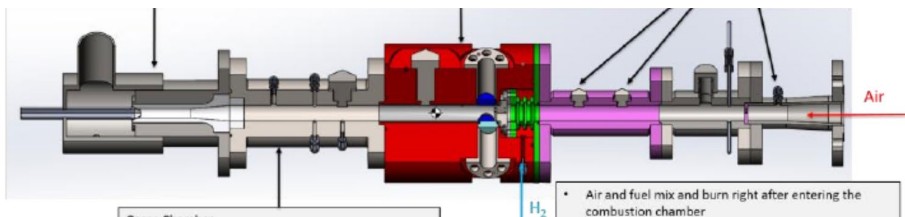
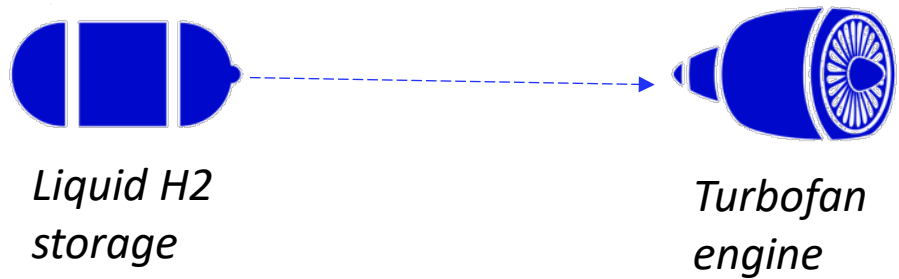
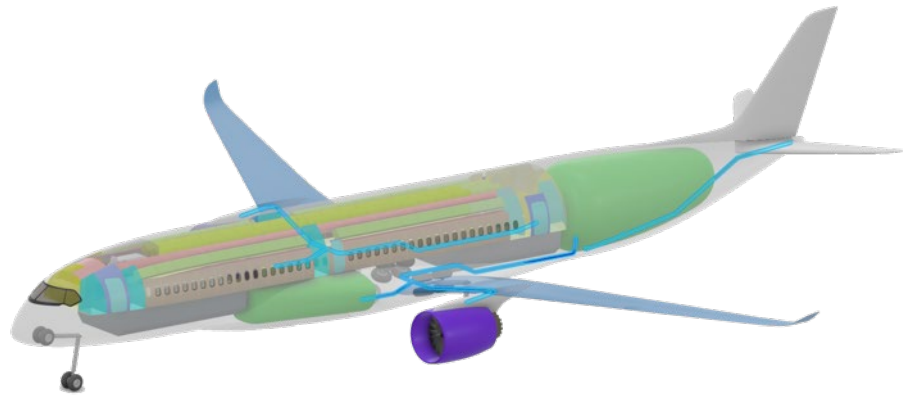


Image credits: ATI FlyZero and ACI-ATI: Integration of H2 aircraft into the air transport system

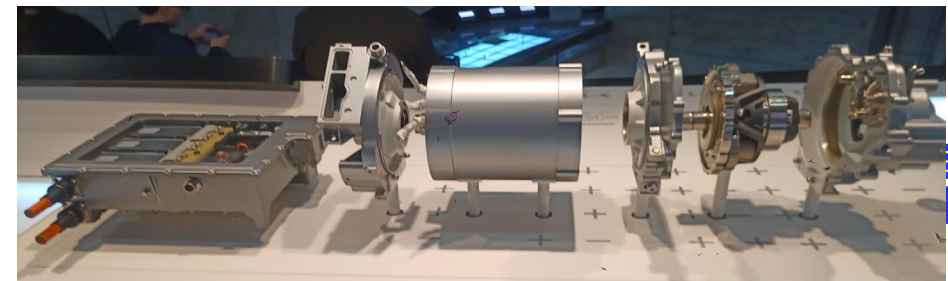
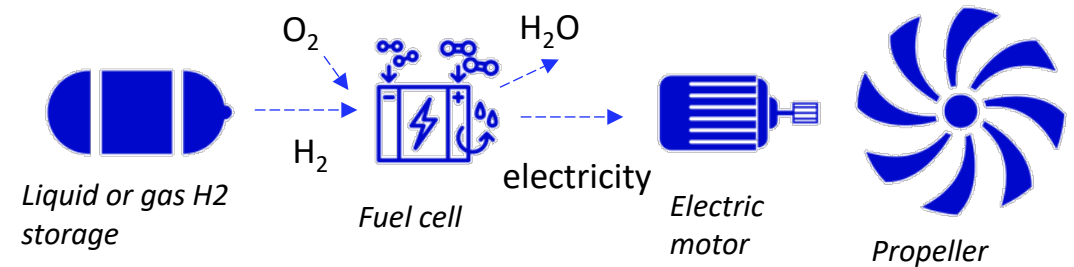
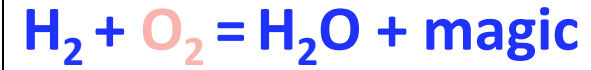
Chapter 2: The aircraft



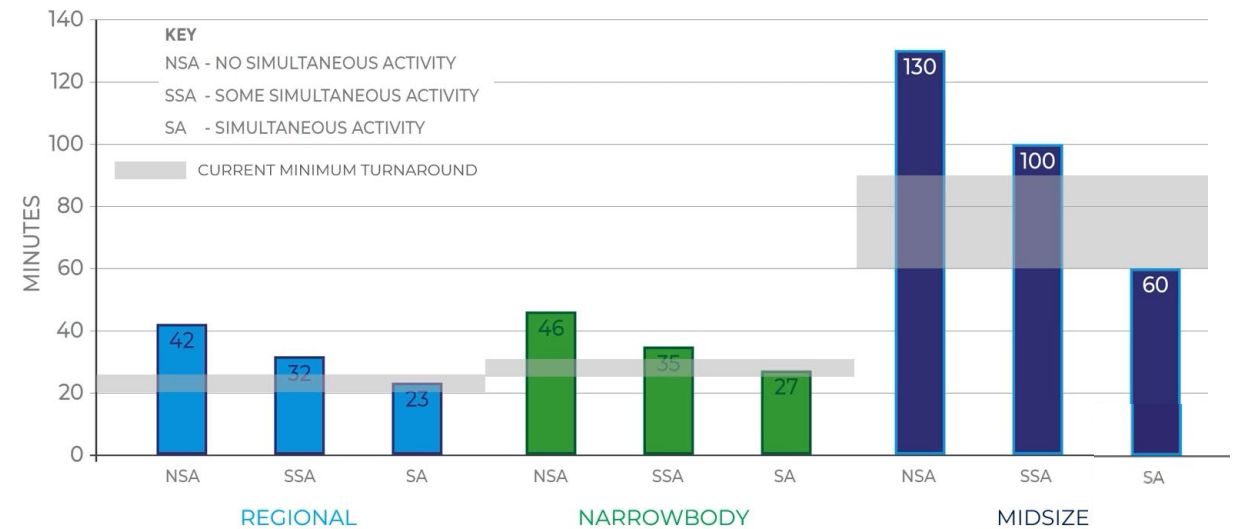
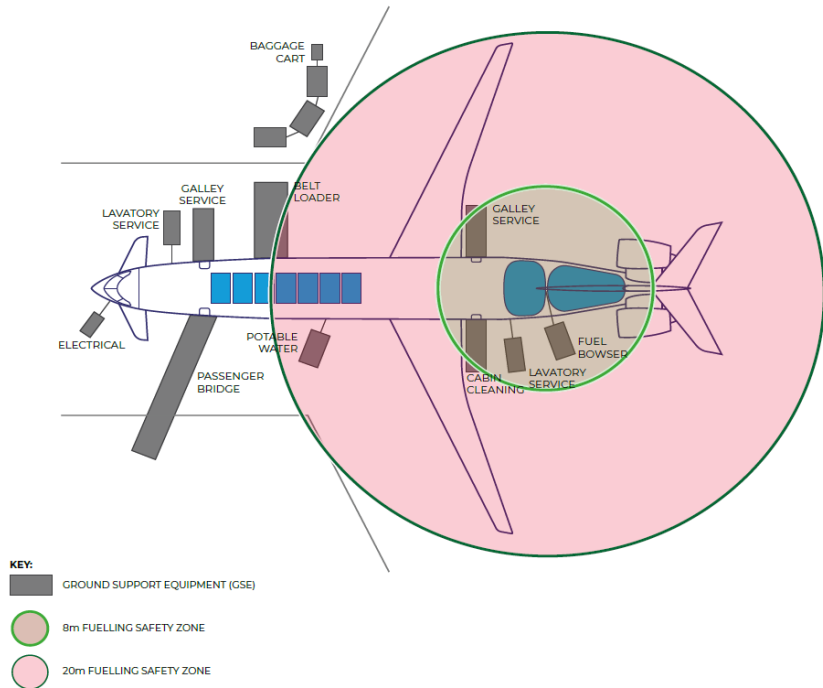
“Conventional” aircraft: Jet engine



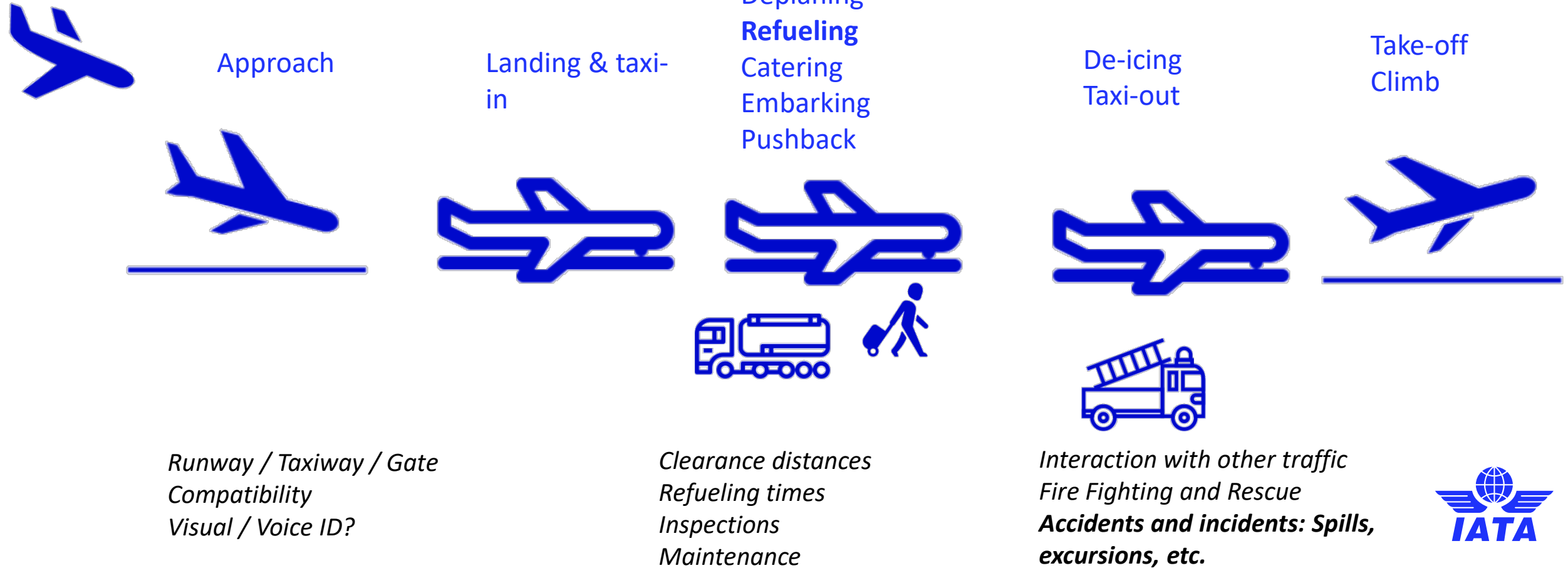
Electric aircraft: Fuel cells



Turnaround procedures

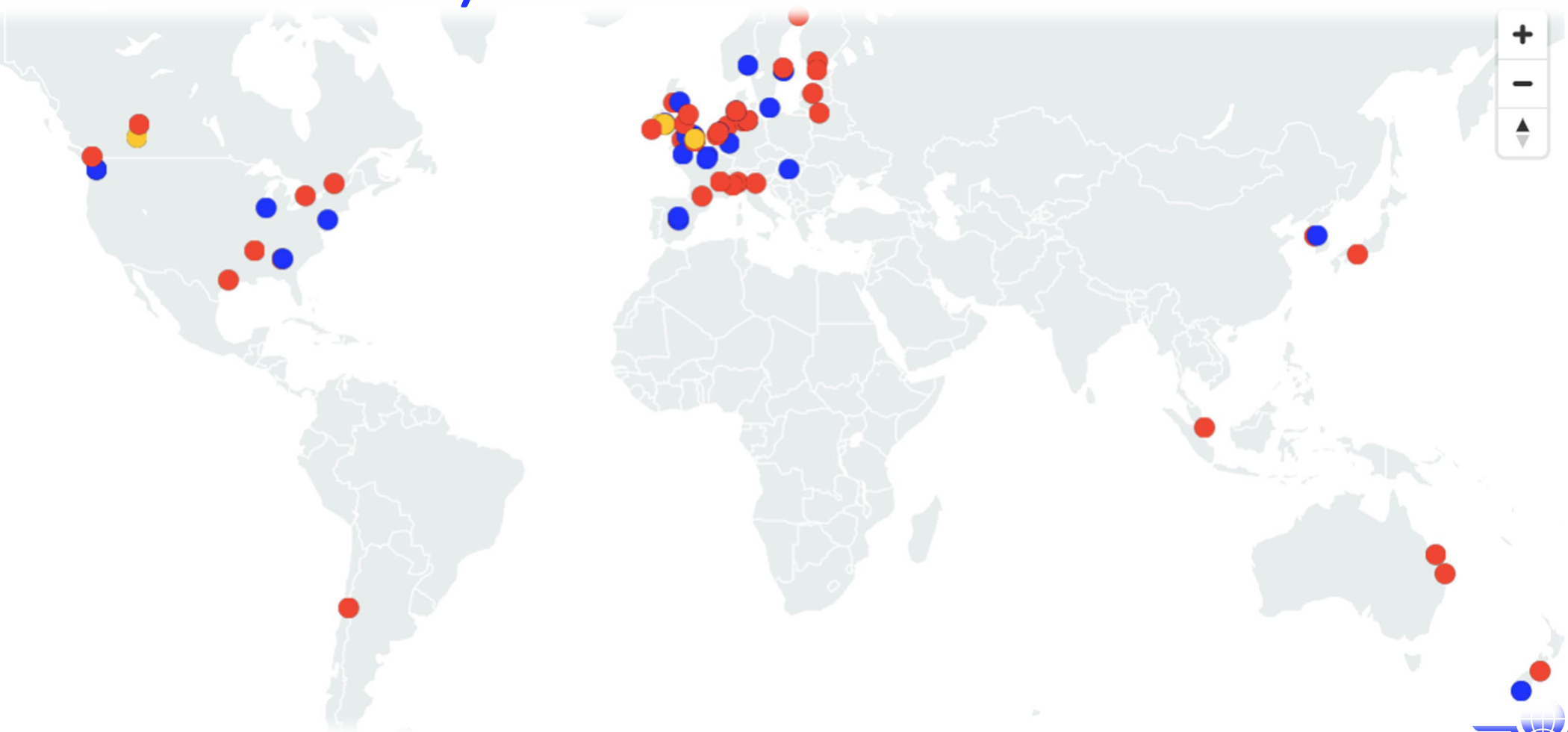


International Industry Working Group: CONOPS



Hydrogen and aviation announcements (that we know of!)

- Airline 35
- Airport 44
- Lessor 1



Hydrogen developments in other sectors

📍 Paris



📍 Glasgow



📍 Germany



📍 Japan



📍 London



📍 Toulouse

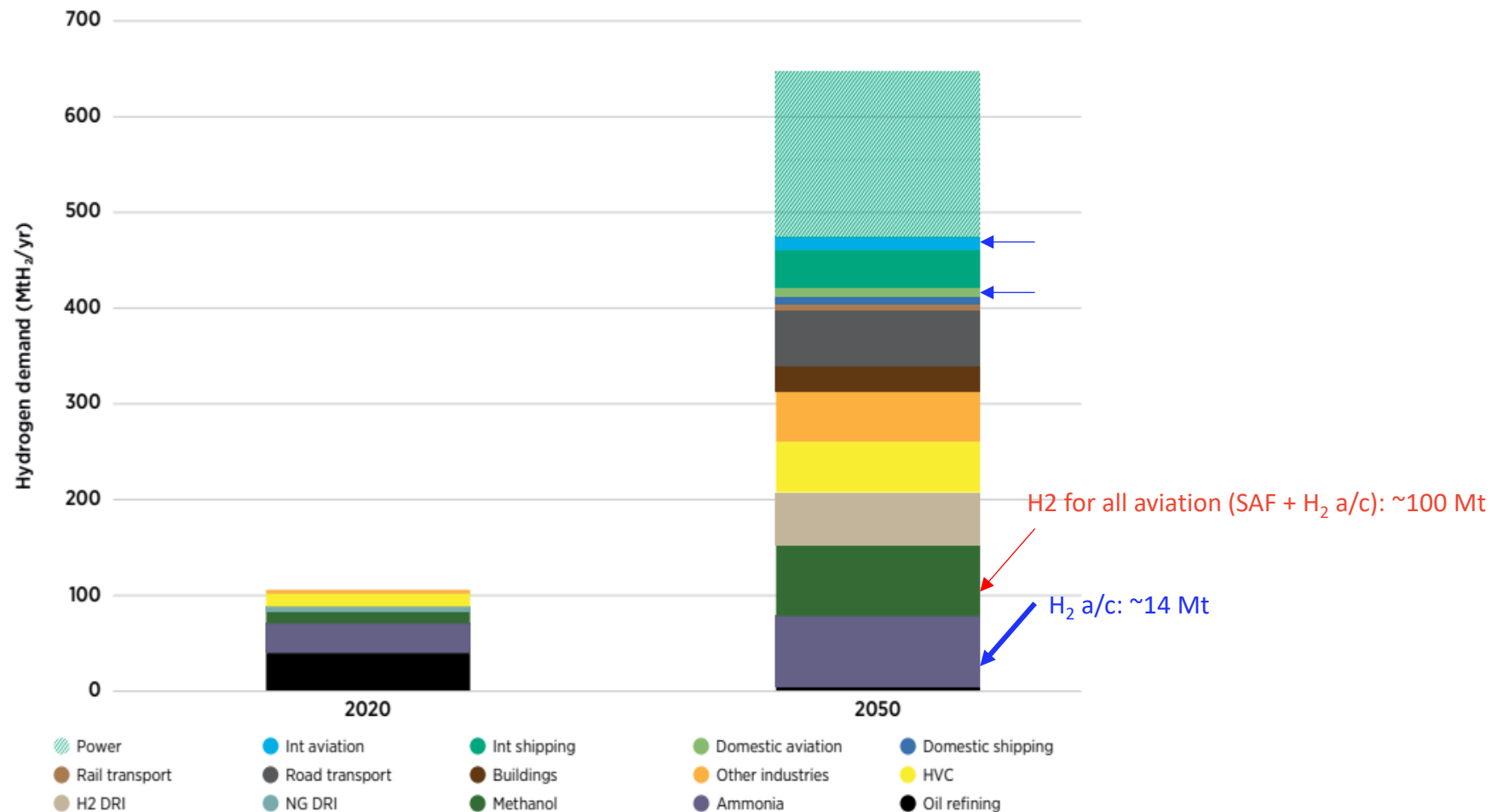


📍 Canada



The global context - Hydrogen

FIGURE 2.1. Hydrogen demand by application in 2020 and 2050



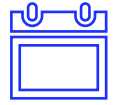
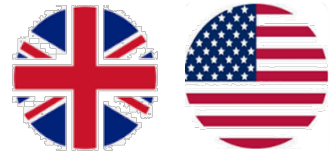
Note: Hydrogen demand for 2020 excludes hydrogen as part of the mix of off-gases for steel production. DRI = direct reduced iron; HVC = high-value chemicals; Int = international; NG = natural gas.

Thank you!
Questions? blocka@iata.org

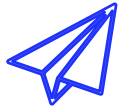


Back up slides below

ZeroAvia



Founded: **2017**



First Flight (6-seat): **September 2020**



First Flight (19-Seat): **19 January 2023**



No. of employees: **319**



HQ: **California, United States**



Dornier 228 // 19 pax // 600kW

Universal Hydrogen



Founded: **2020**



First Flight (19-Seat): **2 March 2023**



No. of employees: **80**

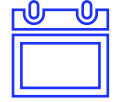


HQ: **California, United States**



Dash-8 // 40 pax // 650 kW

H2Fly



Founded: **2015**



First Flight ever: **September 2016**



First Flight (LH2): **August 2023**



No. of employees: **75**



HQ: **Stuttgart, Germany**



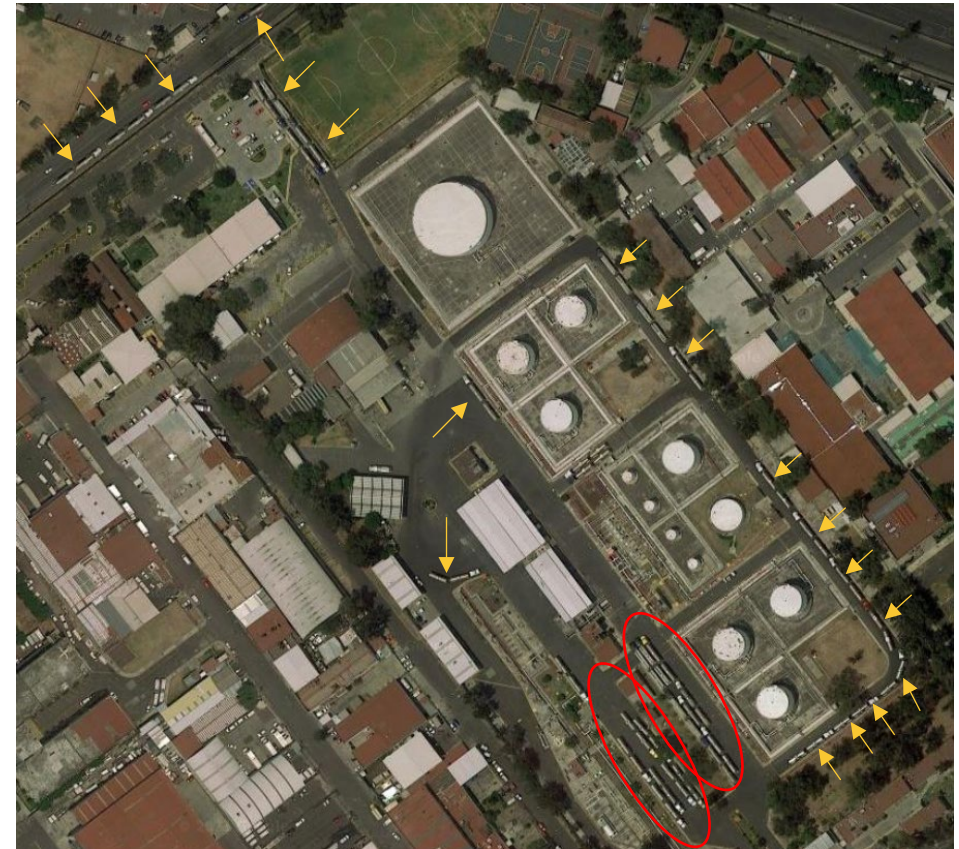
Transporting liquid hydrogen into airports



3- 4 tonnes = 1 NBA or 4 RA



7-8 tonnes = 2 NBA or 8 RA



~28 trucks above!