



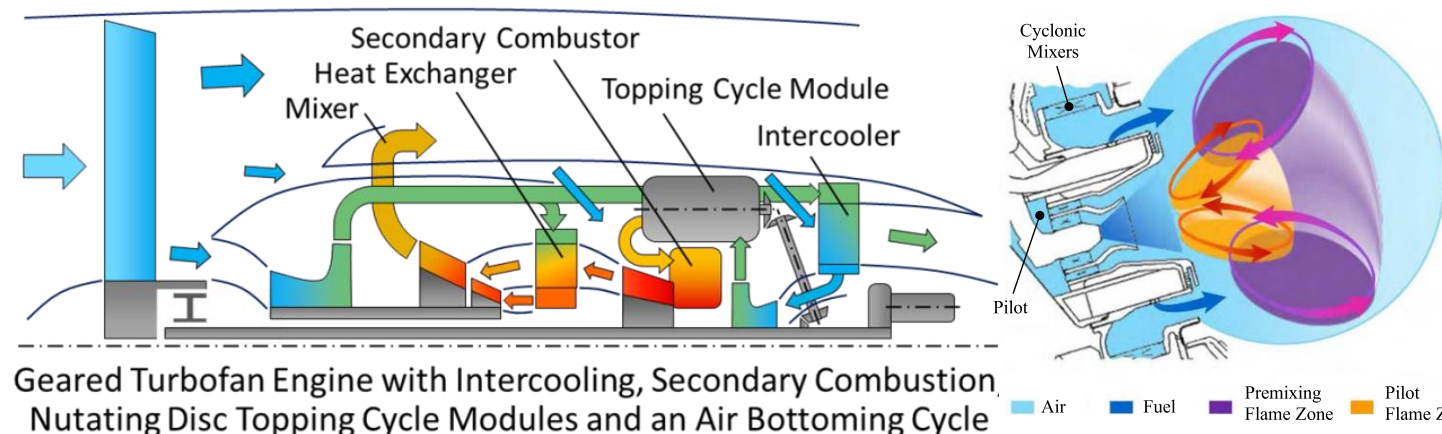
# Enabling Cryogenic Hydrogen-Based CO<sub>2</sub>-free Air Transport (ENABLEH2)



## ENABLEH2 Strategic Importance



Disruptive propulsion, aircraft and electrical technologies to improve propulsive efficiency and overall airframe and engine integration



Geared Turbofan Engine with Intercooling, Secondary Combustion, Nutating Disc Topping Cycle Modules and an Air Bottoming Cycle

Disruptive propulsion core technologies for enhancing thermal efficiency and reducing NOx



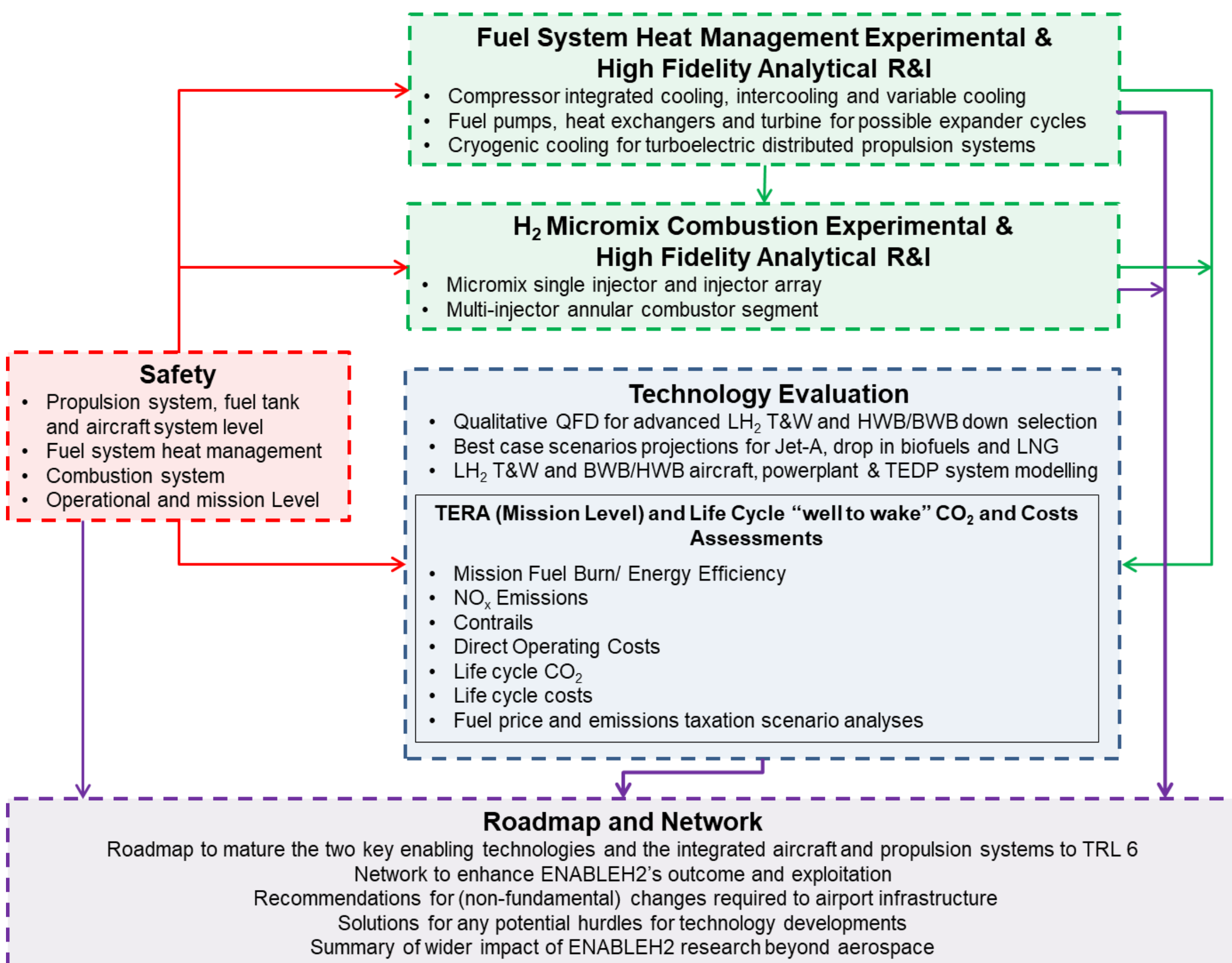
LH<sub>2</sub> is a key ENABLER for many of these advanced aircraft, propulsion system and more electrical disruptive technologies

CO<sub>2</sub> ↓, CO ↓, UHC ↓, Soot ↓  
NOx ↓, Environmental Impact ↓

CO<sub>2</sub>, CO, UHC, Soot, NOx ↓ ↓ ↓  
Energy Efficiency ↑ ↑ ↑  
Environmental Impact ↓ ↓ ↓

Images courtesy of NASA, Airbus Operations SAS and EU H2020 ULTIMATE Project

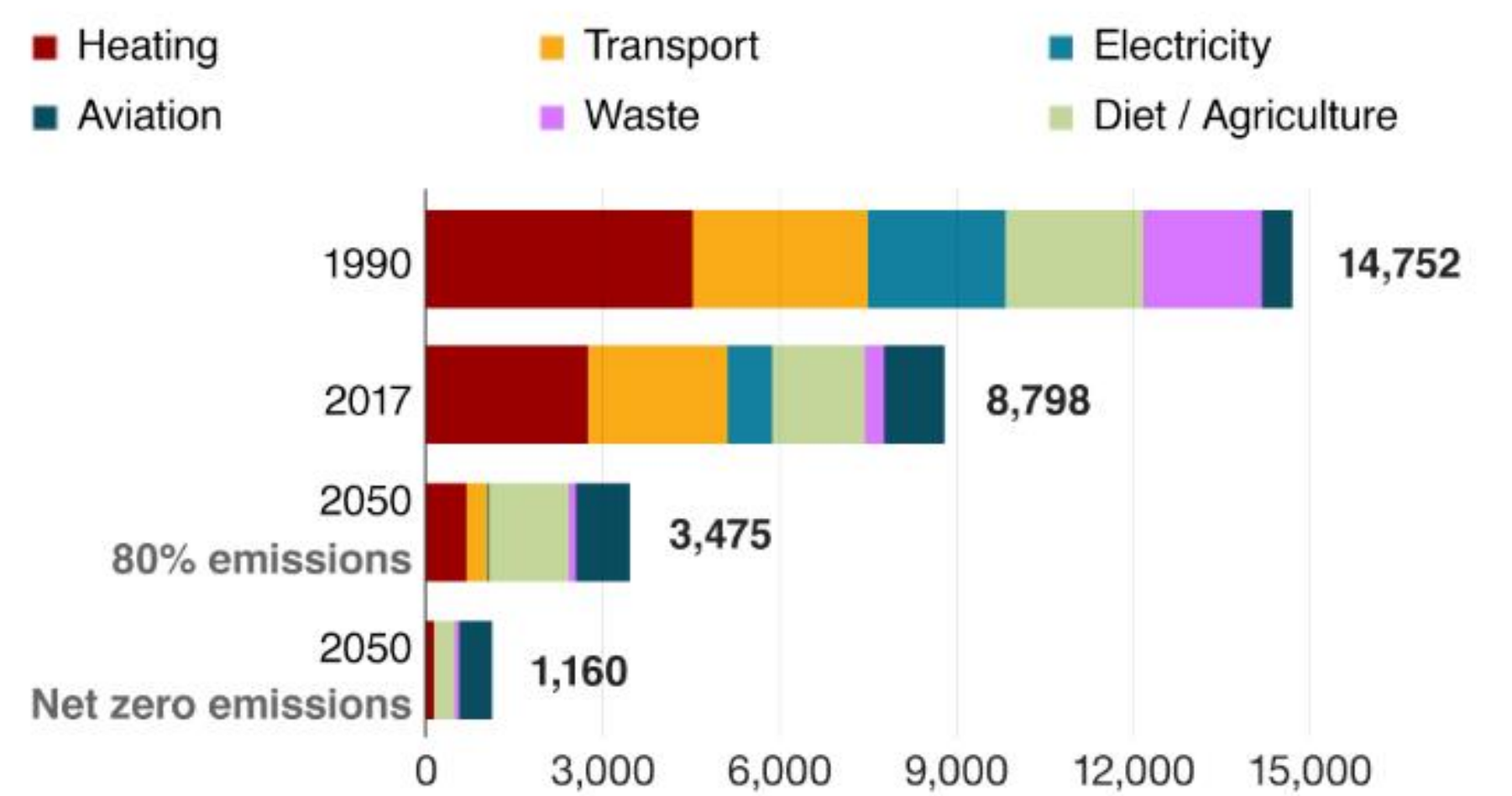
## ENABLEH2 Project Scope



## The Need to Decarbonise Aviation

### Household emissions in 1990, 2017 and 2050

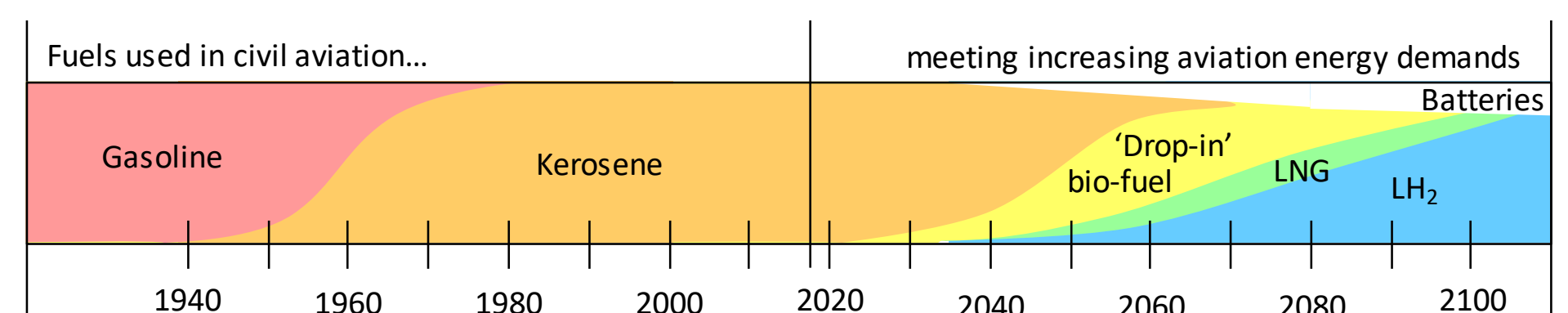
Annual emissions, kilograms of CO<sub>2</sub>



Source: Climate Change Committee/BEIS (2019)



## Proposed Timeline for LH<sub>2</sub>



## ENABLEH2 Network and Community

### Project Consortium



### Industry Advisory Board



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