



**Ron VAN MANEN**  
**Head of Strategy**

**CLEAN AVIATION**  
**Info Session**

**26th April 2022**  
**Toulouse FR**



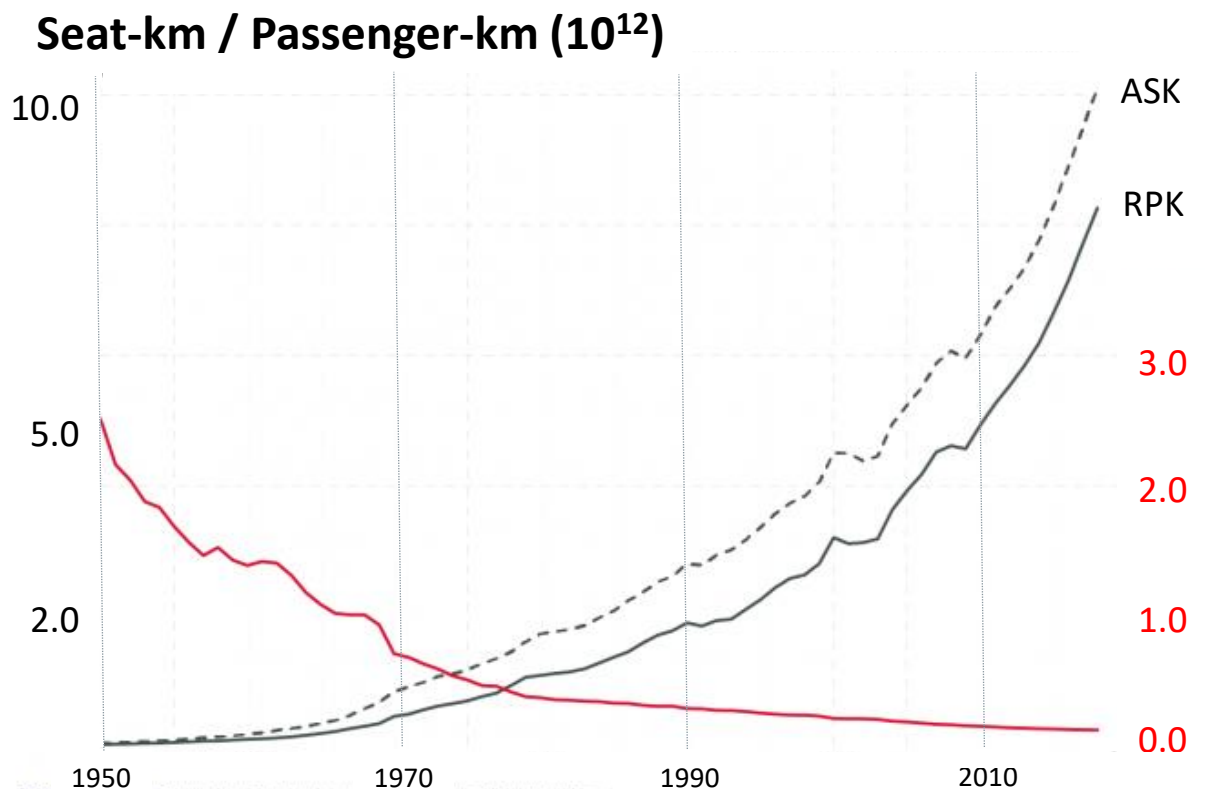
**CLEAN AVIATION**

**PROGRAMME OVERVIEW  
AND CONTEXT – IN A  
NUTSHELL**



**Co-funded by  
the European Union**

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



1989 – 2019:

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

**kg CO<sub>2</sub> per RPK**

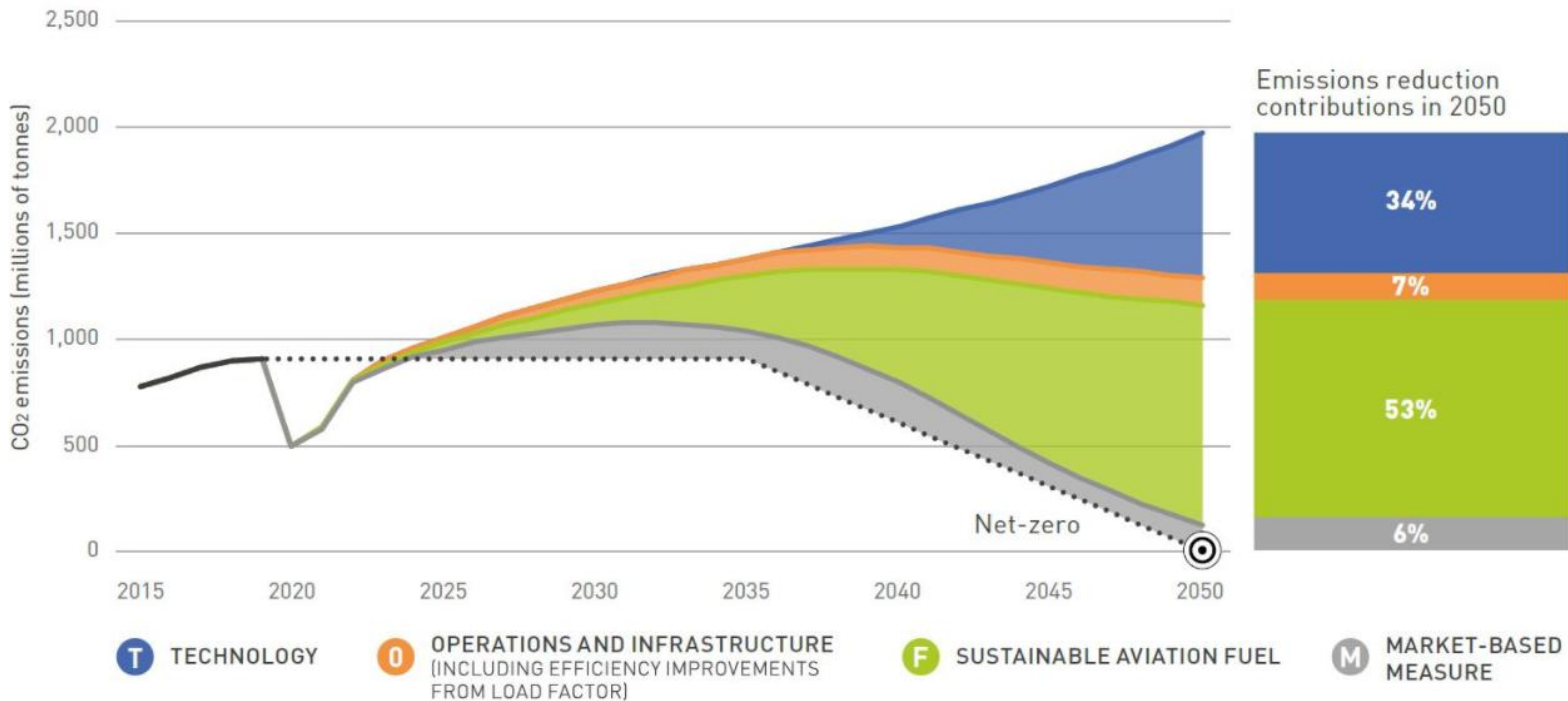
2018: 0.125kg CO<sub>2</sub> per RPK

Source and copyright: OurWorldinData.org

- **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.



**Destination 2050:**  
A Route To Net Zero European Aviation

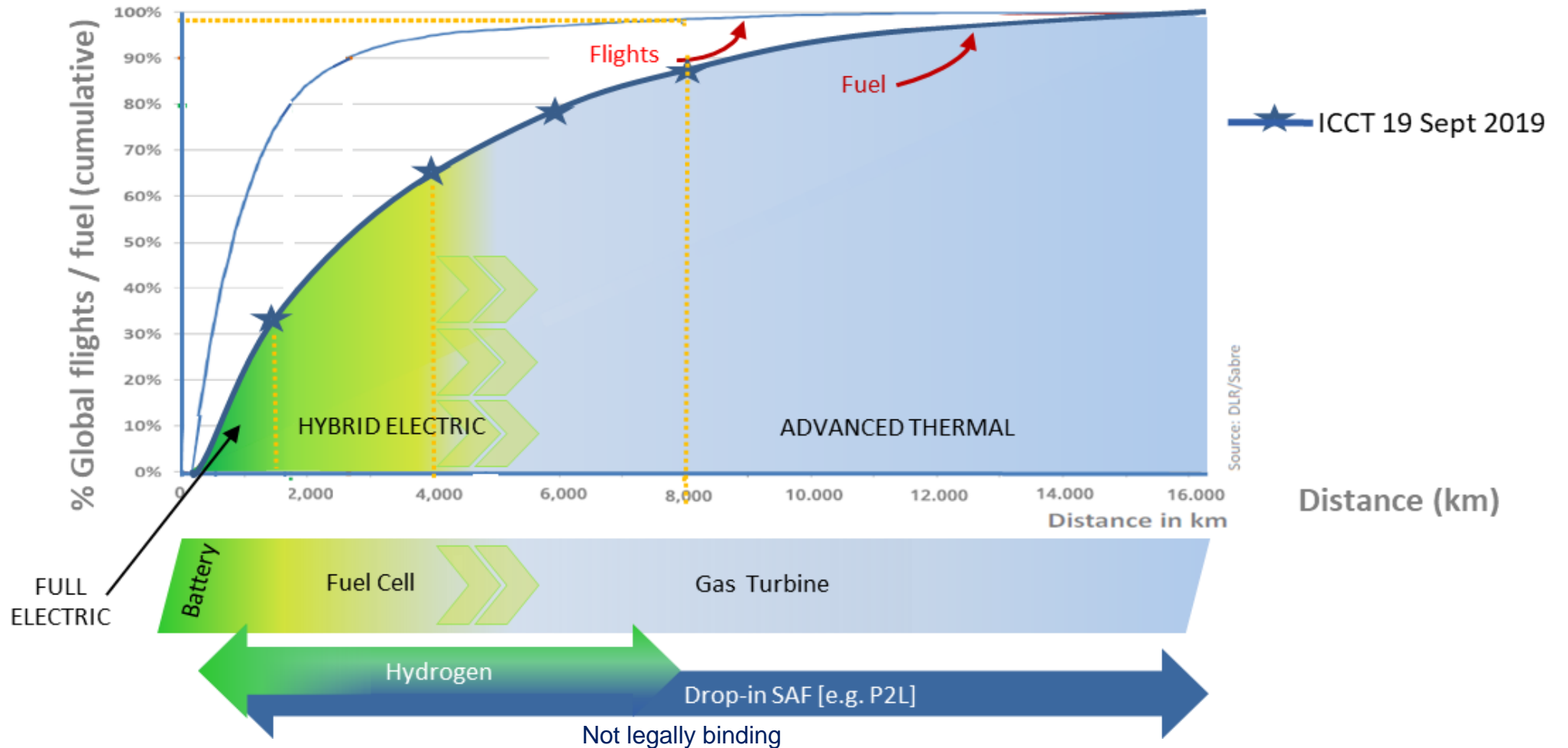
Regional:	-50%
Single Aisle (SMR)	-30%
Twin Aisle (LR)	-30%

(all figures exclude SAF effect)

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



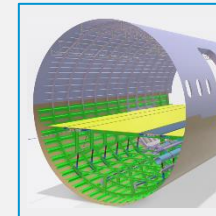
Open Rotor  
Laminar Flow  
ALPS



Clean Sky 2



RACER  
MFFD  
UHPE  
NextGen Tilt Rotor



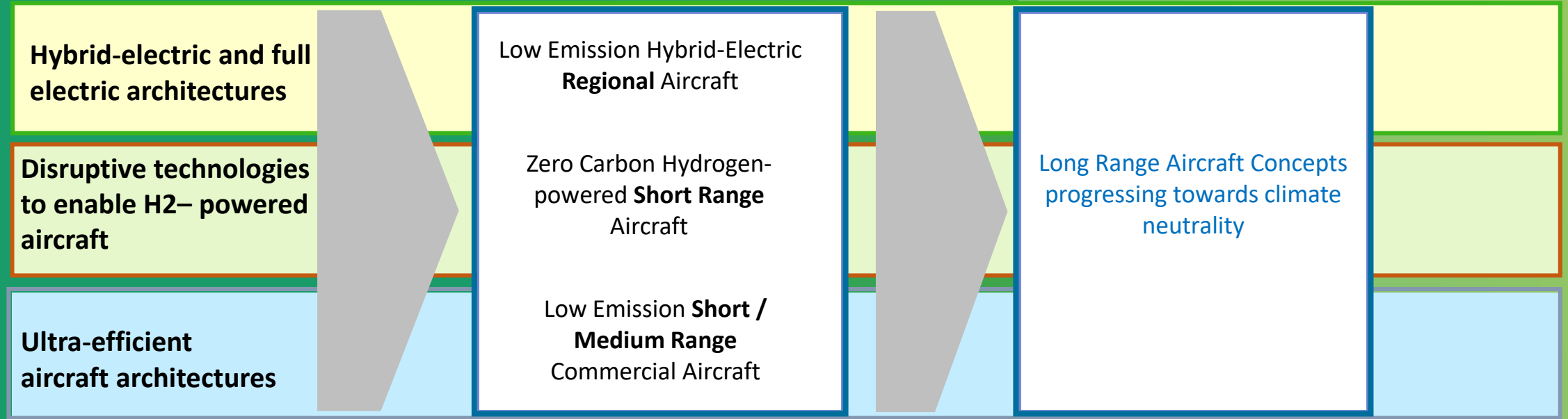
Clean Aviation



(Hybrid) Electric  
Hydrogen Propulsion  
Ultra-efficiency



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



Flight demonstration in Clean Aviation JU and Impact by 2035

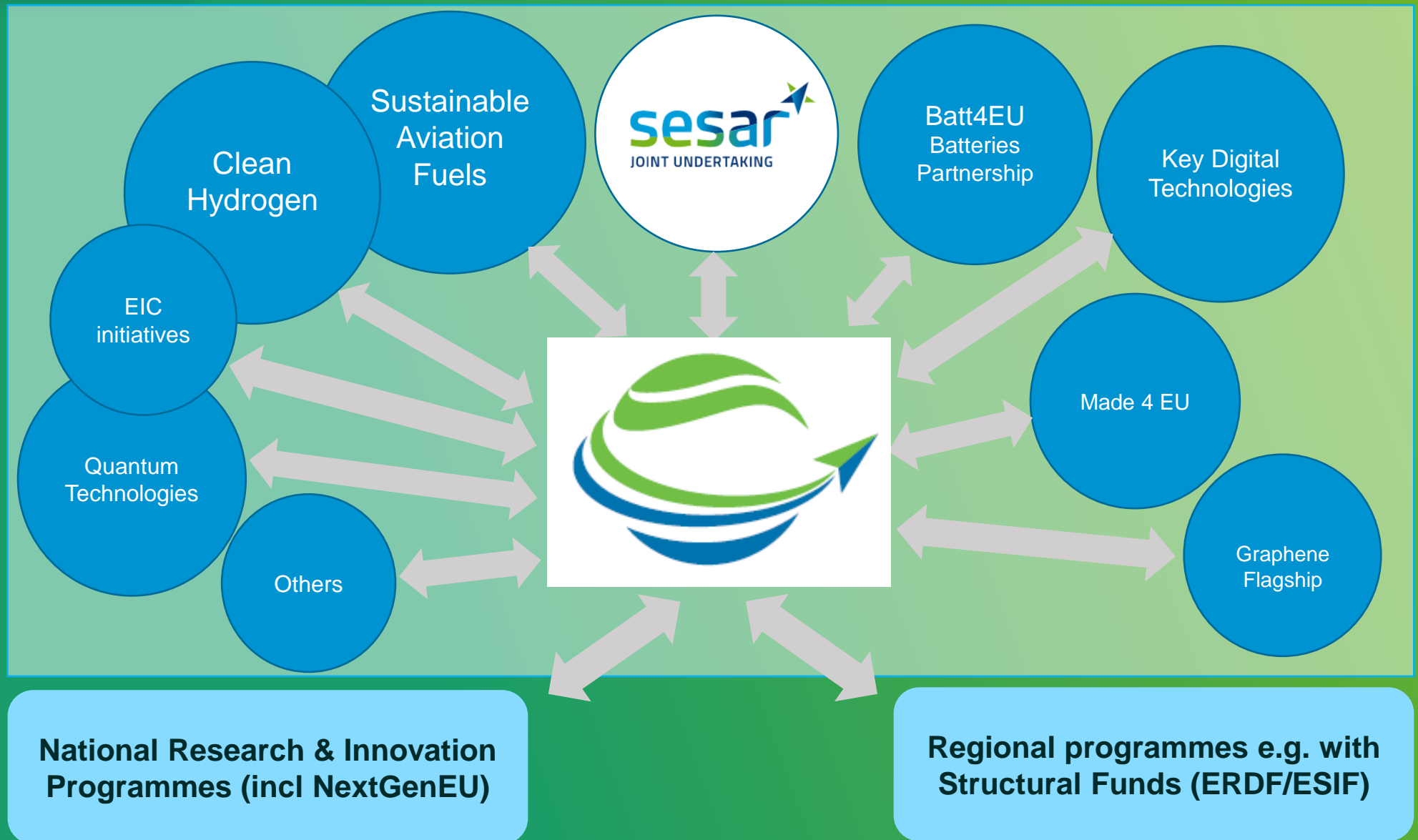
Development of disruptive technology options

The  
**MOST  
EXCITING  
TECHNOLOGICAL  
DECADE  
for AERONAUTICS  
IS  
BEGINNING**

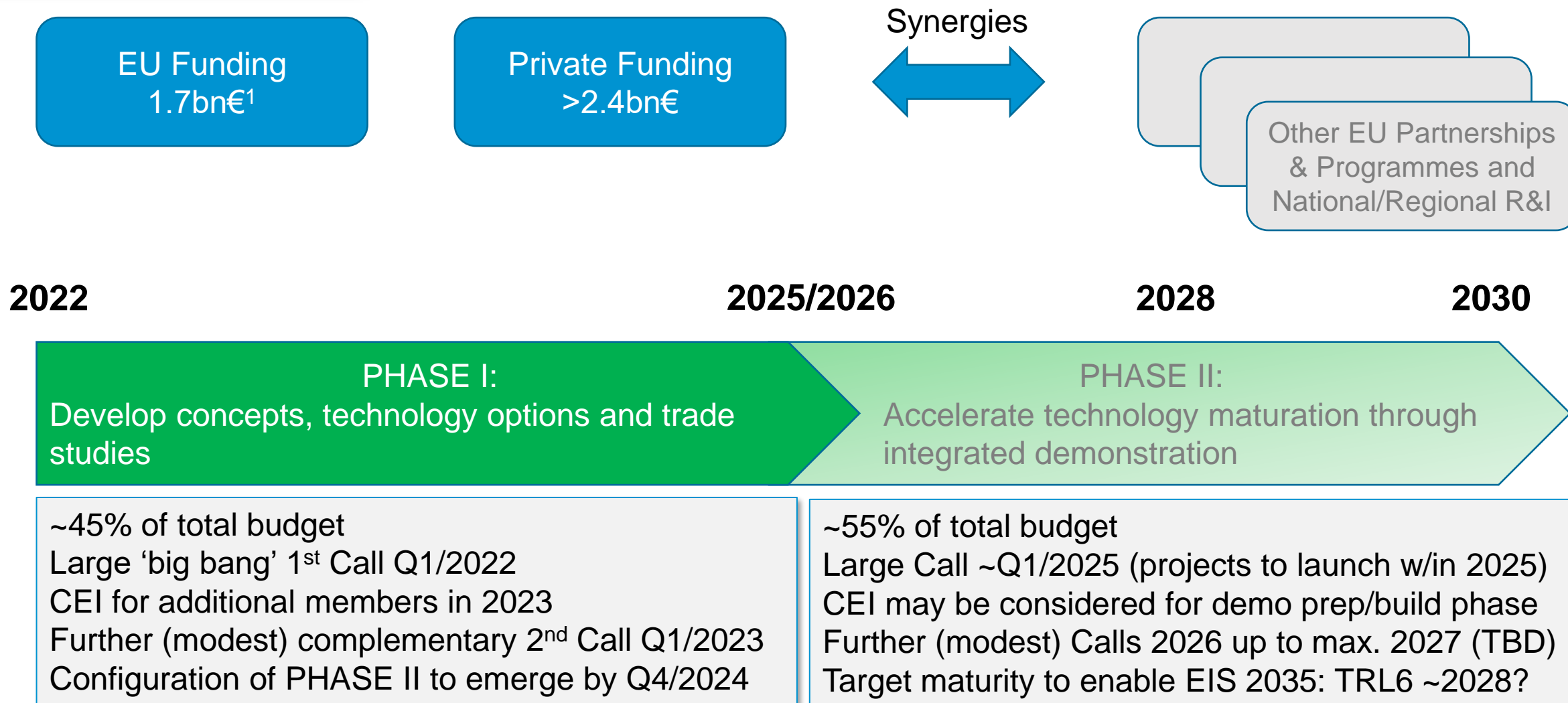
- »»»»»»» **Keep pushing the envelope in all ‘traditional’ aeronautical sciences**
- »»»»»»» **Non-traditional sciences and disciplines will need to bring key enablers**
- »»»»»»» **Revolutionised production system**
- »»»»»»» **Simulation, digital twin and innovative certification methods**
- »»»»»»» **Life-cycle aspects and recyclability**



# INTEGRATED INNOVATION ARCHITECTURE NEEDED



# THE PROGRAMME SETUP IN A NUTSHELL







CLEAN AVIATION

**ENGAGE**  
with US!

[www.clean-aviation.eu](http://www.clean-aviation.eu)

Visit our online stand at  
<https://cleansky.virtualfair.be/>



Co-funded by  
the European Union