



# Research Theme: Industrial Decarbonisation

ERA Conference: A Race Against Time – Energy Innovation for Net-Zero

25<sup>th</sup> January 2024

**GOAL:**

Focus discussion on ERA's Themes and to develop one or two BIG IDEAS for industry and Universities to work together on.

**PROPOSED ACTIVITIES:**

10min – Introduce Chair(s) & Topic (Industrial Decarbonisation)

10min - Describe outcomes from ERA Online Workshop

5min –Introductions from attendees (depending on numbers)

20min - Bring in input from participants

10min - Identify TWO BIG IDEAS

5min - Identify challenges or barriers to overcome to move forward and work together

### Introduction from Chairs:

Professor Phil Longhurst, Professor Vasilije Manovic (Cranfield University)  
*(Apologies from: Dr Paula Blanco Sanchez)*

### Industrial decarbonisation:

The UK industrial decarbonisation strategy shows how the UK can have a thriving industrial sector aligned with the net zero target, without pushing emissions and business abroad, and how government will act to support this.

Part 1: Foundations to deliver net zero for industry

Part 2: Transforming industrial processes

Chapter 4: Adopting low-regret technologies and building infrastructure

Chapter 5: Improving efficiency

Chapter 6: Accelerating innovation of low carbon technologies

Part 3: Maximising the UK's potential...

These are examples of what is already considered to reach industrial decarbonisation and some of the identified sectors as major contributors. But we want to hear from you and your perspective on this!

**Previous Online Workshop:**

Session Chaired by [Dr Paula Blanco Sanchez](#) (Aston University), [Professor Colin Snape](#) (University of Nottingham), [Professor Brian Sun](#) (University of Birmingham)

The workshop brought together representatives from different ERA partners interested in Industrial decarbonisation.

Below are some **key words** on areas of expertise from the attendees (all linked to the workshop's topic).

- Thermal support & electrification
- Energy storage & Pump industry
- Decarbonisation of key sectors (glass & concrete)
- Compressed gases
- Carbon accounting
- Upstream & downstream emissions
- Metallurgy
- CO<sub>2</sub> capture in minerals and concrete

- Industrial and Direct Air CCS
- Decarbonisation & resource management
- Geothermal & raw materials
- Storage & battery storage management
- Power systems analysis
- Multilateral decision analysis
- Digital twins
- LCA
- Evidence-based sustainability

During the group discussion, three topics were covered:

**1) Hydrogen & CCUS; 2) CO<sub>2</sub> transportation; 3) Demonstrators relevant to Midlands industry** As a result, the following challenges were identified.

- Decarbonisation (of heat) in industrial sectors: cement, concrete, steel, glass
- Assessment of infrastructure
- Carbon accounting
- Involving digital technologies for decarbonisation
- Energy storage
- Production and piping of hydrogen & link with the West midlands region (geographically)

- Storage of hydrogen in porous media
- Greenhouse gas removal (GGR) to meet Net Zero
- Need for practical GGR as a catalyst to offer integrated solutions
- Storage & transport onshore
- Breakdown of GHG emissions (i.e. CO<sub>2eq.</sub> for different industries)

# Proposed Vision: Industrial Decarbonisation

## INDUSTRIAL SECTORS

*Steel, Glass, concrete, brick, cement*

### Hydrogen

*(demand, production, utilisation & storage)*

### CO<sub>2</sub>

*(production, storage & utilisation)*



*Infrastructure*

*GGR*

*Decarbonisation & Net Zero*

*Carbon accounting*

*Circular economy*

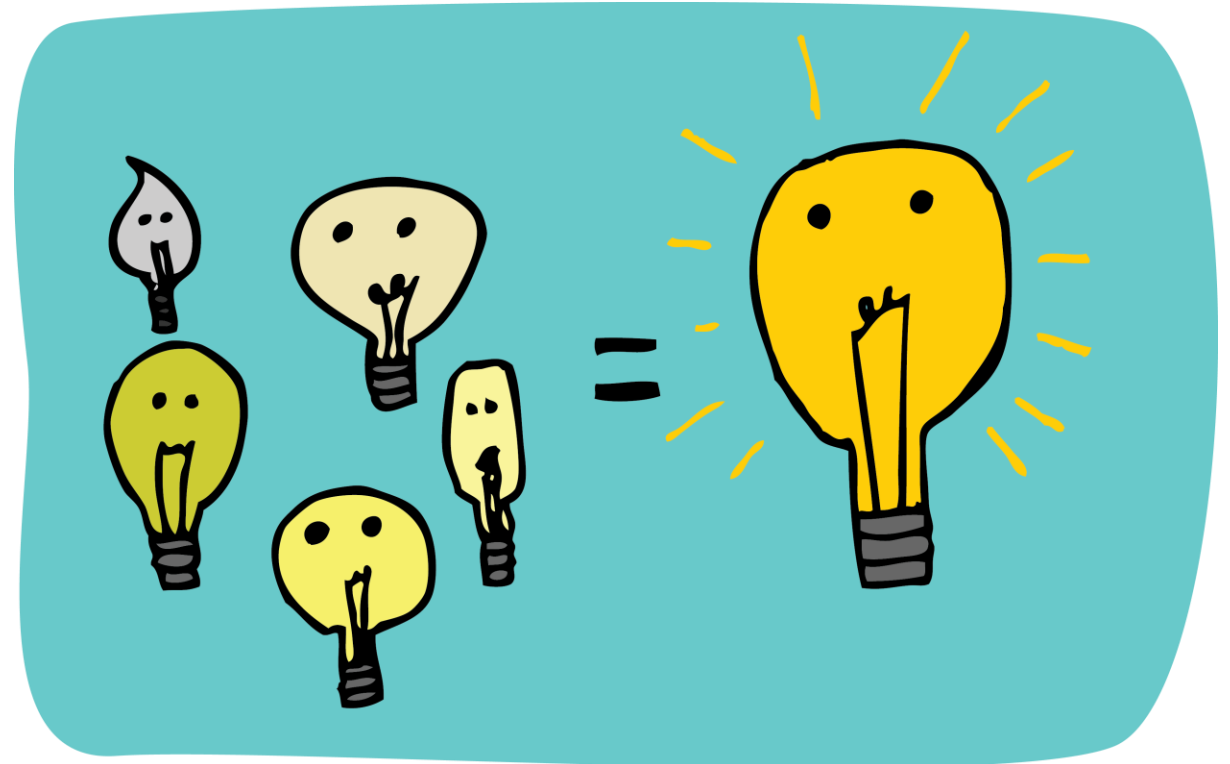
## INTEGRATED SOLUTIONS

### Introduction from attendees:

- Identify participants main work area: industry or academia/research
- Introduce yourself & briefly mention how your expertise links to the Topic: Industrial decarbonisation
- Mention any ongoing or future projects that can be linked to the Workshop's topic
- Mention any specific things you would like to cover today (if applicable)

## Input from attendees

- Discussion on previously identified challenges
- Identify main topics around industrial decarbonisation
- Propose and identify **TWO BIG IDEAS**





## Closure and Final Remarks

- Describe TWO BIG Ideas identified and the next steps