“Now or never”- Why global Cooperation for Net-Zero Industries?

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MI Net-Zero Industries Partnership

Co-Leads (2)
Austria – Australia

Core Mission Members (7)
Canada – China – European Commission – Finland – Germany – South Korea – United Kingdom

Supporting Member (1)
The United States

Key Mission Sponsors and Partners (15)
- Australian Renewable Energy Agency (ARENA)
- Austrian Institute of Technology (AIT)
- Clean Energy Ministerial Industrial Deep Decarbonisation Initiative (IDDI)
- COP28 Presidency
- Global Cement and Concrete Association (GCCA)
- Heavy Industry Low-carbon Transition Cooperative Research Centre (HILT CRC)
- International Energy Agency (IEA)
- International Renewable Energy Agency (IRENA)
- Klima- und Energiefonds (KLIEN)
- Leadership Group for Energy Transition (Lead IT)
- Mission Possible Partnership (MPP)
- United Nations Industrial Development Organisation (UNIDO)
- World Economic Forum (WEF)
- World Steel Association (Worldsteel)
- Worley
Net Zero Industries Mission purpose:

**Accelerating Industrial Uptake of Decarbonisation Technologies**

by

Sharing experience over 50 industrial scale demonstrations to build industry trust and investment confidence

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**The Challenge:**

How to leverage existing global initiatives and investment to expedite first demonstrations and transfer that knowledge to build investment confidence for subsequent industry installations

The mission has ambitious goals.

- Seven Decarbonisation Technology Pathways
- Four major Industry Sectors covering 25% of global emissions
- Minimum of 2 industry scale demonstrations in each – over 50 in total
- Supporting RD&D and Enabling Conditions to accelerate and expedite technology adoption

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**Industrial Sectors**

<table>
<thead>
<tr>
<th>Fuel switch</th>
<th>Alternative fuels and feedstocks</th>
<th>Low carbon hydrogen</th>
<th>Electrification of production and processes</th>
<th>Digitalisation &amp; flexibilisation</th>
<th>Carbon capture &amp; storage / utilisation</th>
<th>Alternative materials and more efficient processes</th>
<th>Materials efficiency and industrial symbiosis</th>
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<tbody>
<tr>
<td>Use of alternative fuels (bioenergy &amp; waste)</td>
<td>Use of alternative fuels (incl biomass)</td>
<td>Integrated H₂ production for CCU</td>
<td>Electrification of cracking and chemical processes</td>
<td>Process control and automation, digital twins and simulation, temperature upgrade of excess heat, smart management of variable energy resources such as PV and wind power, hybridisation of different sources, excess heat to power or cold, flexibility in power generation / utilisation including bottleneck management and redispatch</td>
<td>Direct capture and separation, and adsorption / absorption of CO₂ process and combustion emissions and its storage</td>
<td>Improved thermal efficiency, waste heat recovery, regenerative burners, process efficiency, alternative binding materials in cements and alternatives to carbon based feedstocks such as coking coal</td>
<td>Harnessing by-products from one industry as alternative inputs to another industry and technical upgrading of by-products, industrial symbiosis, carbonation of mineral residues,</td>
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The moon landing and industrial deep decarbonization are both mega-projects with a thousand questions and many possible solutions.

The path to the moon was successful because tasks were coordinated together, and the public could be enthused.
Unanswered questions on industrial decarbonisation…

• Which technologies will succeed and when? Risk of lock in effects!
• How will the energy infrastructure (electricity, renewable gases, CO₂...) develop?
• How will the prices (energy, CO₂, plant engineering...) develop? Supply, demand, regulatory framework...
• How is demand for the products of the energy-intensive industry developing? In the developed world and in emerging economies? What is the willingness to pay for green steel, green cement ...?
The deep decarbonization of industry requires both the development of breakthrough technologies and a better understanding of net-zero industries in the future energy system.

Cooperation can speed this up because it is most efficient to …

- share some of the high development risks along the value chain
- reduce "time to market" & accelerate technology transfer
- join forces to create knowledge about the future energy system and raise awareness for this transformation in industry, politics and civil society
Thank you!

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