



# Mission Integrated Biorefineries

For Sustainable Fuels, Chemicals and materials





Launch on 4<sup>th</sup> April 2022: New Delhi

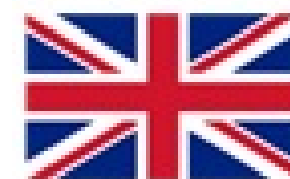
## Mission Integrated Biorefineries

### Develop & Demonstrate innovative solutions

- To accelerate the commercialization
- Target of **replacing an additional 10% of the fossil carbon equivalent by 2030**
- by **sustainable bio-carbon in fuels, chemicals and materials**
- from residues and wastes .



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International Energy Agency



Task 42



biofuture platform  
Kickstarting a global, advanced bioeconomy



IRENA  
International Renewable Energy Agency



# Overview: Total Projects by Country



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## **The Netherlands**

Total Projects: 71



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## **India**

Total Projects: 13



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## **Brazil**

Total Projects: 4



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## **Canada**

Total Projects: 37



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## **The United Kingdom**

Total Projects: 24



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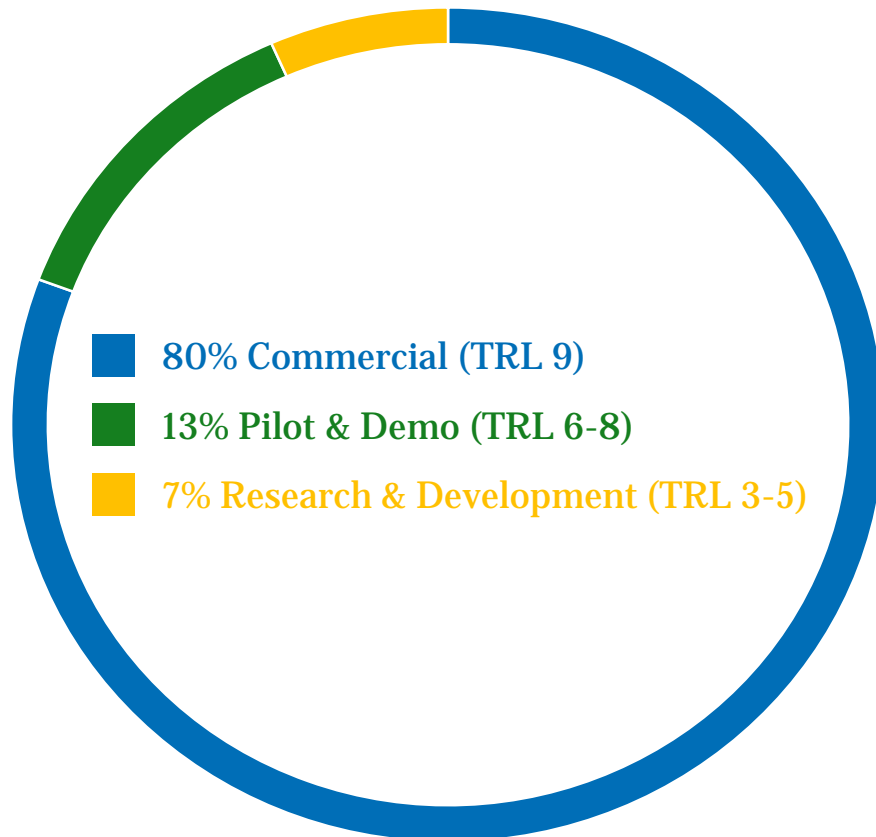
## **The European Union**

Total Projects: 1,336

# International status Bio refinery



Total Number of Projects: 1,492



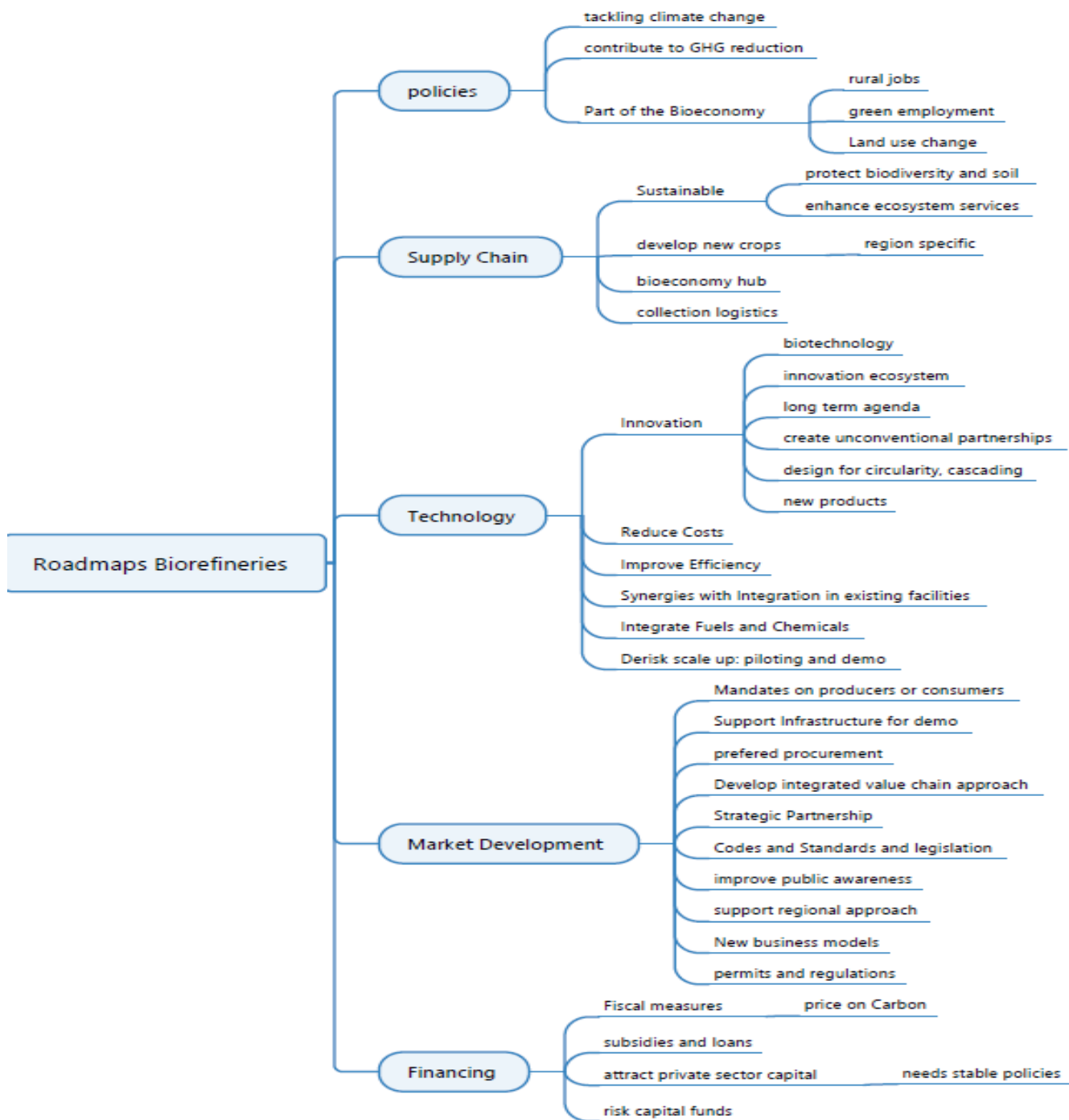
## Projects by the Numbers

1,200 Commer cial	189 Pilot & Demo	103 R&D
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## Executive Summary

- Commercial projects primarily EU based.
- Pilot and demo projects primarily in India, Canada, Brazil.
- UK projects primarily research & development.
- Similar number of research and development projects across all member countries.

# Result in Mind map





# Actions (the second sprint)

1. Collaborative workshops with industry & researchers
2. Call for collaborative projects on cost reduction and efficiency improvement in biorefineries
3. Research call on new chemical products from biomass
4. Optimize permitting procedures
5. Develop business plan/framework to enable pilots/demo
6. Develop standards for biorefining processes
7. Internationally recognized sustainability criteria
8. Harmonization of LCA of biorefinery products (fuels, chemicals,)



# BACKGROUND – Streamlining the Innovation to Deployment Pipeline



## MI serves as:

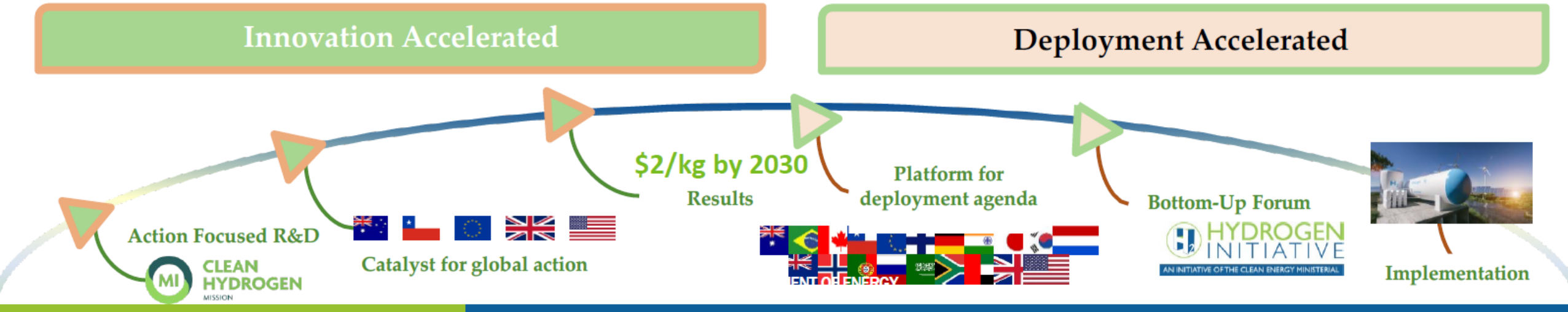
- An **action-oriented forum** that innovates clean energy solutions through international collaboration.
- A **catalyst for global action** through public-private Missions that set ambitious goals to reach tipping points toward rapid adoption.
- A **results-driven collaboration** vehicle through may develop “Innovation Pathways” and active partnerships with the private and financial sectors.

## The CEM serves as:

- A **platform** for members to shape the agenda for, and deployment of, clean energy technologies and solutions.
- A **bottom-up, government-led community** for exchanging insights, building networks and partnerships, and facilitating coordinated actions on clean energy.
- An **implementation vehicle** that helps its members to achieve specific domestic clean energy objectives.

Innovation Accelerated

Deployment Accelerated





# THANK YOU

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# 4. Innovation Roadmap Mission Biorefineries

## 4.1 Research and Development

### a) Long term:

- Biomass cultivation & logistics (aquatic, sustainable..)
- Conversion
  - Advanced fermentation, synthetic biology
  - Novel catalysts, biotechnology
  - Thermal conversion (syngas)



# Innovation roadmap (2)

- Research and Development

- b. Short term

- to improve existing pilots/demos (biofuels/chemicals)

- synergies with existing facilities

- utilization of lignin

- advanced biofuels for aviation and marine

- LCA to prove low carbon pathway



## 4.2. Pilots and dem o

- Based on 2030 goals dem and for SAF, green gas, biofuels (road/ marine)
  - Pilots:
    - Utilize aquatic biomass
    - To extract valuable chemicals
  - Demonstration:
    - Syngas - > biofuels/ biochemicals
    - Ease of permitting
    - International exchange of demo's



## 4.3 Markets for biobased products: fuels, chemicals, materials

- Challenges:
  - Chemicals not yet included in climate policies
  - Lacking consumer demand
  - No incentive for risk taking
  - No standard for LCA



# Innovation roadmap (3)

- Markets for biobased products: fuels, chemicals, materials
  - *Strategies to support the market*
    - Mandates
    - Procurement
    - Financial (tax) tools to support investment
    - Standardize LCA

