Fuel Cell & Hydrogen 2 Joint Undertaking

European Union represented by the European Commission

A portfolio of clean, efficient and competitive solutions based on fuel cells and hydrogen technologies in energy and transport
The Solution for decarbonisation

Enable the renewable energy system → Decarbonize end uses

Enable large-scale renewables integration and power generation

Distribute energy across sectors and regions

Act as a buffer to increase system resilience

Help decarbonize transportation

Help decarbonize industrial energy use

Help decarbonize building heat and power

Serve as renewable feedstock
Long Term Strategy 2050: Sectoral Integration
Hydrogen Roadmap for Europe

BESIDES CO₂ ABATEMENT, DEPLOYMENT OF THE HYDROGEN ROADMAP ALSO CUTS LOCAL EMISSIONS, CREATES NEW MARKETS AND SECURES SUSTAINABLE EMPLOYMENT IN EUROPE

2050 hydrogen vision

- ~24% of final energy demand
- ~560 Mt annual CO₂ abatement
- ~EUR 820bn annual revenue (hydrogen and equipment)
- ~15% reduction of local emissions (NOₓ) relative to road transport
- ~5.4m jobs (hydrogen, equipment, supplier industries)
Hydrogen Roadmap for Europe

HYDROGEN TECHNOLOGY EXISTS AND IS READY TO BE DEPLOYED

- **Ambitious scenario**
- **Business as usual scenario**
- **Start of commercialization**
- **Mass market acceptability**

**Transportation**
- Today
- 2020
- 25
- 30
- 35
- 40
- 2045
- Forklifts
- Medium and large cars
- Synfuel (freight ships and aviation)
- Small cars

**Heating and power for buildings**
- mCHPs
- Pure hydrogen heating
- Blended hydrogen heating

**Industry heat**
- Low/medium industry heat
- High-grade industry heat

**Industry feedstock**
- Existing: refining, chemicals (production of ammonia, methanol, and others), metal processing
- CCU (methanol, olefins, BTX)
- Steelmaking

**Power generation**
- Power generation, balancing, buffering
Important Projects of Common European Interest

Geographically, 3 IPCEIs can be identified
Important Projects of Common European Interest

IPCEI 1: Netherlands, Belgium & Germany:
- Off-shore wind
- L-gas pipelines
- Electrolyser capacity
- Trucks
- Light Duty Vehicles
Important Projects of Common European Interest

IPCEI 3: Spain, Portugal, France, Germany & Poland:
- Stacks
- Buses & trains
- Tanks
- Electrolyser capacity?
IPCEI 2: Italy, Slovenia & Austria:
- Port strategy
- Pipeline hub in Austria
- Liquid hydrogen
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