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The steel industry in the EU hydrogen economy

European Energy Forum

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Ahead of the next industrial revolution....

Circular Economy (CE)

Carbon Direct Avoidance (CDA)

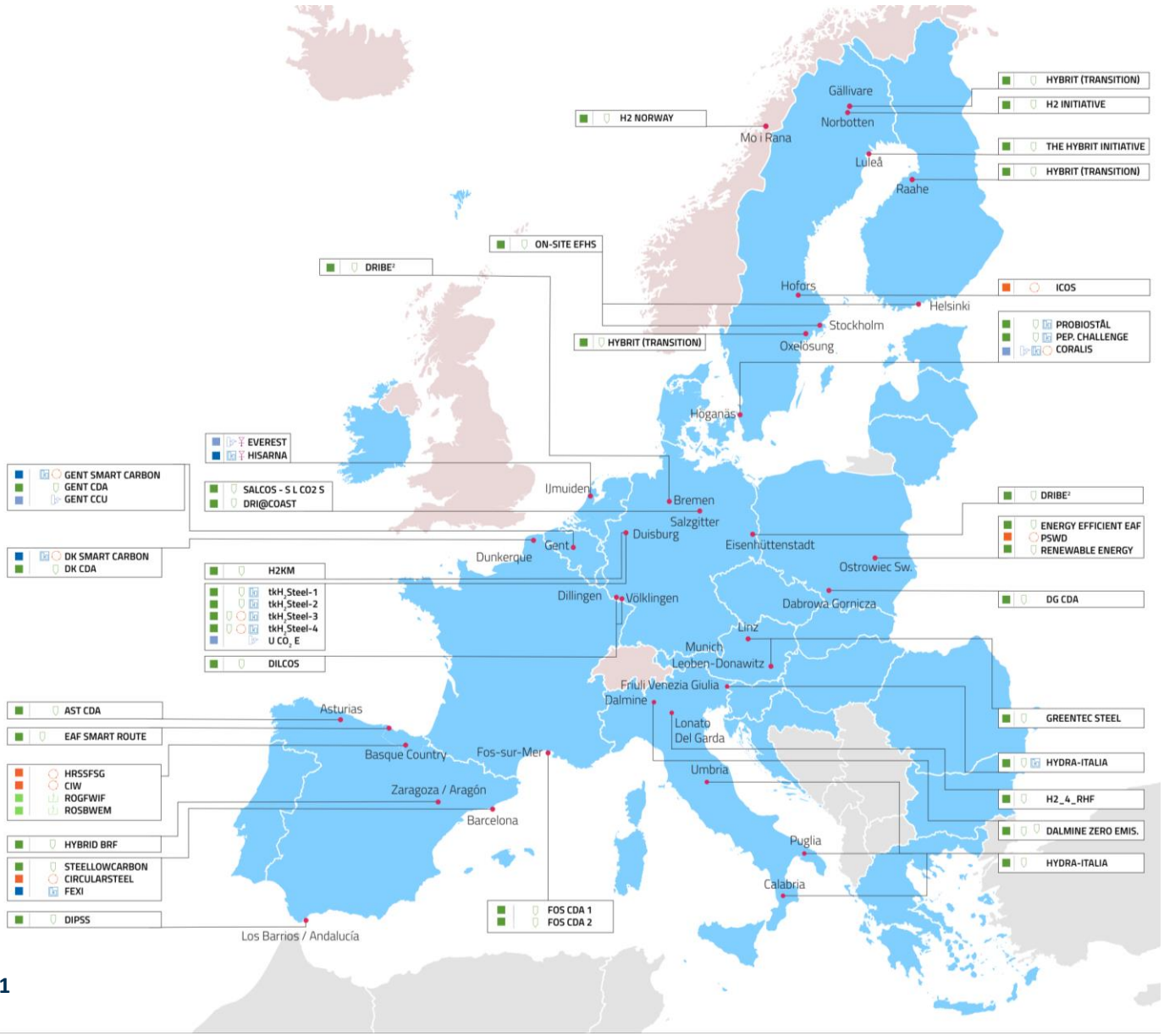
- H_2-based metallurgy
- Electricity-based metallurgy

Smart Carbon Usage (SCU)

- Proces Integration
- Carbon Valorisation/CCU

Carbon Capture and Storage CCS²
(not included in SCU, CDA or CE)

- **54 low-CO_2 projects**
- **At least at Technology Readiness Level (TRL) 7**
- **Starting year before 2030**
- **Potential annual CO_2 abatement in 2030: 76 Mio tons CO_2/year**
- **Capex needs: 25 billion EUR**
- **Opex needs: 45 billion EUR**



Source: IPCEI Low Carbon Industry, July 2021

....under the right enabling conditions

Creating lead markets

Green steel will cost up to 35%-100% more

- Contracts for difference and other risk sharing instruments
- Incentives for green steel use (e.g. automotive, construction, etc.)
- Public procurement

Level playing field

EU steel is highly exposed to international competition (30 Mt imports and 20 Mt exports)

- Benchmark based free allocation
- Compensation of indirect costs
- Complementary carbon border adjustment
- Measures fostering steel recycling in the EU

Affordable low carbon energy

Green steel needs ± 400 TWh of electricity (equivalent to Germany)

- Build the necessary infrastructure
- Rump up production of low carbon electricity and H_2
- Reward the use of low carbon energy in state aid and taxation

Funding support

Investment amounts 50 to 60 €bn

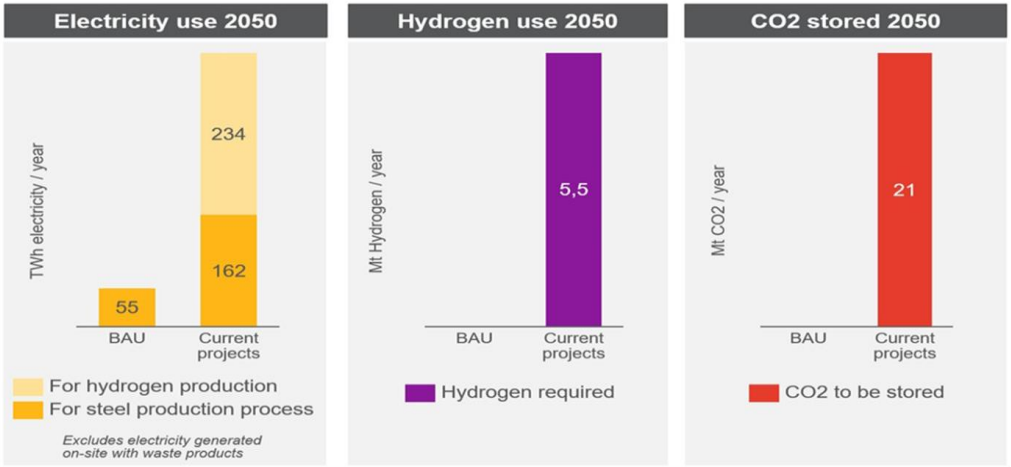
- Innovation Fund and ETS revenues
- Important Projects of Common EU Interest
- National support based on state aid rules
- Next Generation EU

Hydrogen and metallurgy

- H_2 is one of the key drivers of the steel industry decarbonisation
- Availability of large volumes
- Cost-competitiveness and affordability
- Security of supply through adequate infrastructure
- Specific quality needs

The European steel industry energy demands in 2050

Up to 400TWh of CO2-free electricity (including for the production of yearly **5.5 Mt hydrogen**), which is **7 times more** than what the sector purchases from the grid today.



Source: EUROFER low-Carbon Roadmap, Nov 2019

An enabling H_2 regulatory framework

- Ensuring legal predictability and a consistent legal framework
- Providing effective carbon leakage protection
- Rewarding H_2 consumption
- Granting security of supply
- Pursuing cost efficiency
- Applying the technology neutrality principle

Thank you for your attention

Visit www.eurofer.eu for more information

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