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THE EUROPEAN STEEL ASSOCIATION

Transforming the metal-making industry: showcases for retrofitting and circularity

Meeting the Green Deal targets

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The European Green Deal

- The European Union Green Deal presented in December 2019 is the **EU's growth strategy to make the EU economy more sustainable**.
- Its overarching objective is for the **EU to become the first climate neutral continent by 2050**, resulting in a cleaner environment, more affordable energy, smarter transport, new jobs and an overall better quality of life.
- The core of the implementation activities of the European Green Deal is the '**European Climate Law**' which turns the 2050 climate neutrality objective of the EU Green Deal into legislation. As a milestone towards this target, the **EU 2030 target for the reduction of greenhouse gas emissions was increased to at least 55 % compared to 1990**.
- **The European Climate Law** requires that all EU policies contribute to achieving the EU Green Deal objective. Therefore, the EU Commission has been **reviewing existing policies and Union legislation** to ensure their **alignment with the new 2030 target and ultimately with the EU climate neutrality objective**, under an exercise called the "**Fit for 55 package**".

The EU Green Deal: Initiatives directly relevant to manufacturing industry:

Revision of existing and proposals for new legislation

- Emissions Trading System Directive;
- Effort Sharing Regulation;
- Land use land use change and forestry Regulation;
- Energy Efficiency Directive;
- Renewable Energy Directive;
- CO₂ emissions performance standards for cars and vans,
- Energy Taxation Directive,
- Proposal for a carbon border adjustment mechanism for selected sectors,
- New EU Strategy on Adaptation to Climate Change,
- strategy for smart sector integration,
- 'Renovation wave' initiative for the building sector,
- Trans-European Network – Energy Regulation,
- Strategy on offshore wind,
- EU Industrial strategy,
- Circular Economy Action Plan,
- initiatives to stimulate lead markets for climate neutral and circular products in energy intensive industrial sectors,
- a proposal to support zero carbon steel-making processes by 2030,
- legislation on batteries,
- legislative waste reforms,
- a strategy for sustainable and smart mobility,
- a revised proposal for a Directive on Combined Transport,
- a review of the Alternative Fuels Infrastructure Directive and the Trans European Network – Transport Regulation,
- a proposal for more stringent air pollutant emissions standards for combustion-engine vehicles,
- a chemicals strategy for sustainability,
- a zero pollution action plan for water air and soil,
- a revision of measures to address pollution from large industrial installations,
- a proposal for a Just Transition Mechanism, including a Just Transition Fund, and a Sustainable Europe Investment Plan,
- a renewed sustainable finance strategy,
- a review of the Non-Financial Reporting Directive,
- a review of the relevant State aid guidelines, including the environment and energy State aid guidelines and the Proposal for an 8th Environmental Action Programme.
- Etc.

The EU metal sectors are already decarbonising

but deep carbon emissions cut are possible only through **new technological pathways**

 Pathways/Groups



CIRCULAR ECONOMY

Enhancing recycling or reuse of residual materials and energy – increasing resource efficiencies.

SMART CARBON USAGE (SCU)



Process Integration with reduced use of fossil carbon (+CCS)

Integration of process steps and internal use of process gases



Carbon Capture and Usage (CCU) (+CCS)

Using CO/CO₂ from process gases as raw material (chemical or biological conversion of CO/CO₂)

CARBON DIRECT AVOIDANCE (CDA)

Direct use of renewable electricity or use of hydrogen to replace carbon

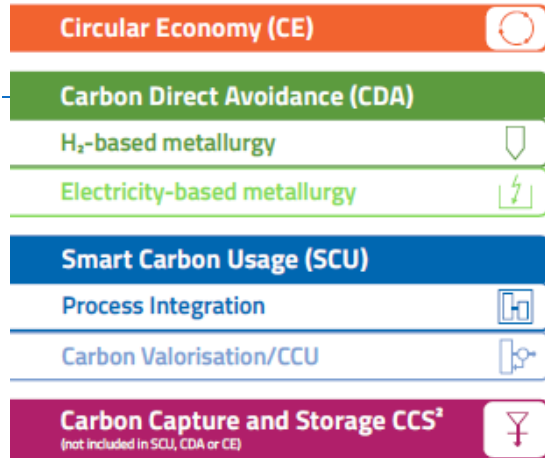


Carbon Direct Avoidance Hydrogen

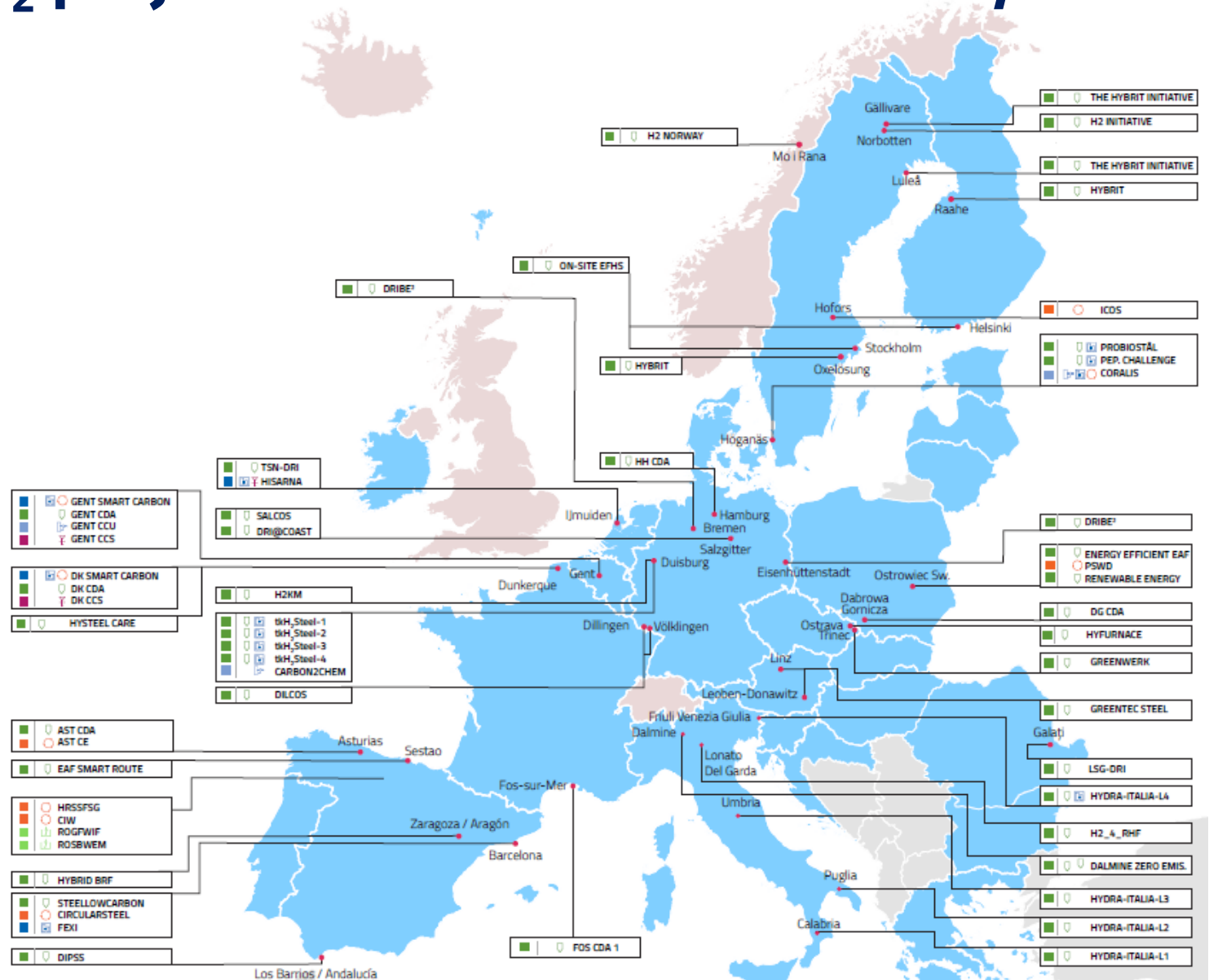


Carbon Direct Avoidance Electricity

Example: key low-CO₂ projects of the EU steel industry



- **60** projects
- Technology Readiness Level: at least **TRL 7**
- Starting year: **before 2030***
- Potential CO₂ abatement in 2030: **81.5 Mio tons/year** (over 1/3 of current direct and indirect CO₂ emissions)
- **Capex** needs: **31 bn EUR**
- **Opex** needs: **54 bn EUR**
- **Energy** needs in 2030: **165 TWh** electricity, of which **90 TWh for hydrogen** production (2.12 Mio tons) via water electrolysis



Status: 04/05/2022

* A few projects could start slightly later

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Low-CO₂ steel : Technical challenges

ENERGY NEEDS



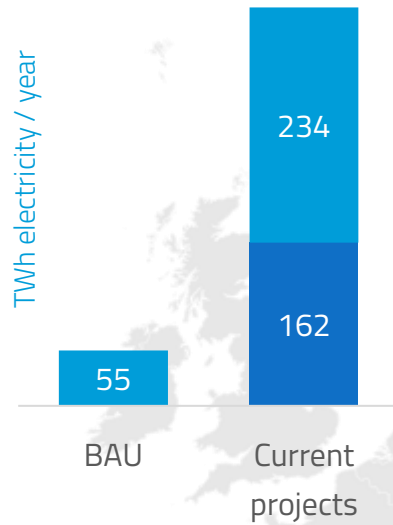
Up to **400TWh/year** of CO₂-free electricity, including **230 TWh** for the production of **5.5 Mt hydrogen**

7 TIMES MORE

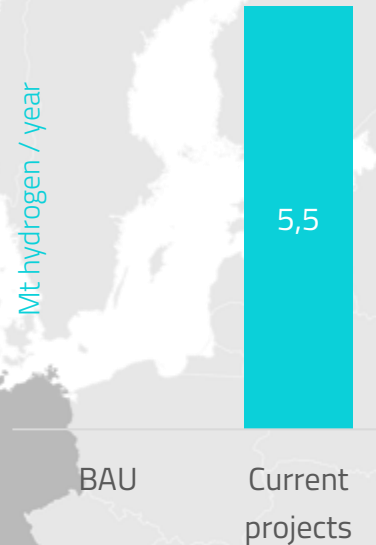
than what the sector purchases from the grid **today (= Germany)**



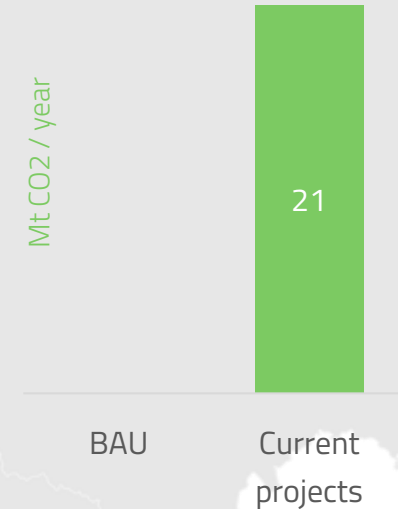
Electricity use 2050



Hydrogen use 2050



CO₂ to be stored



■ For hydrogen production

■ For steel production

■ Hydrogen required

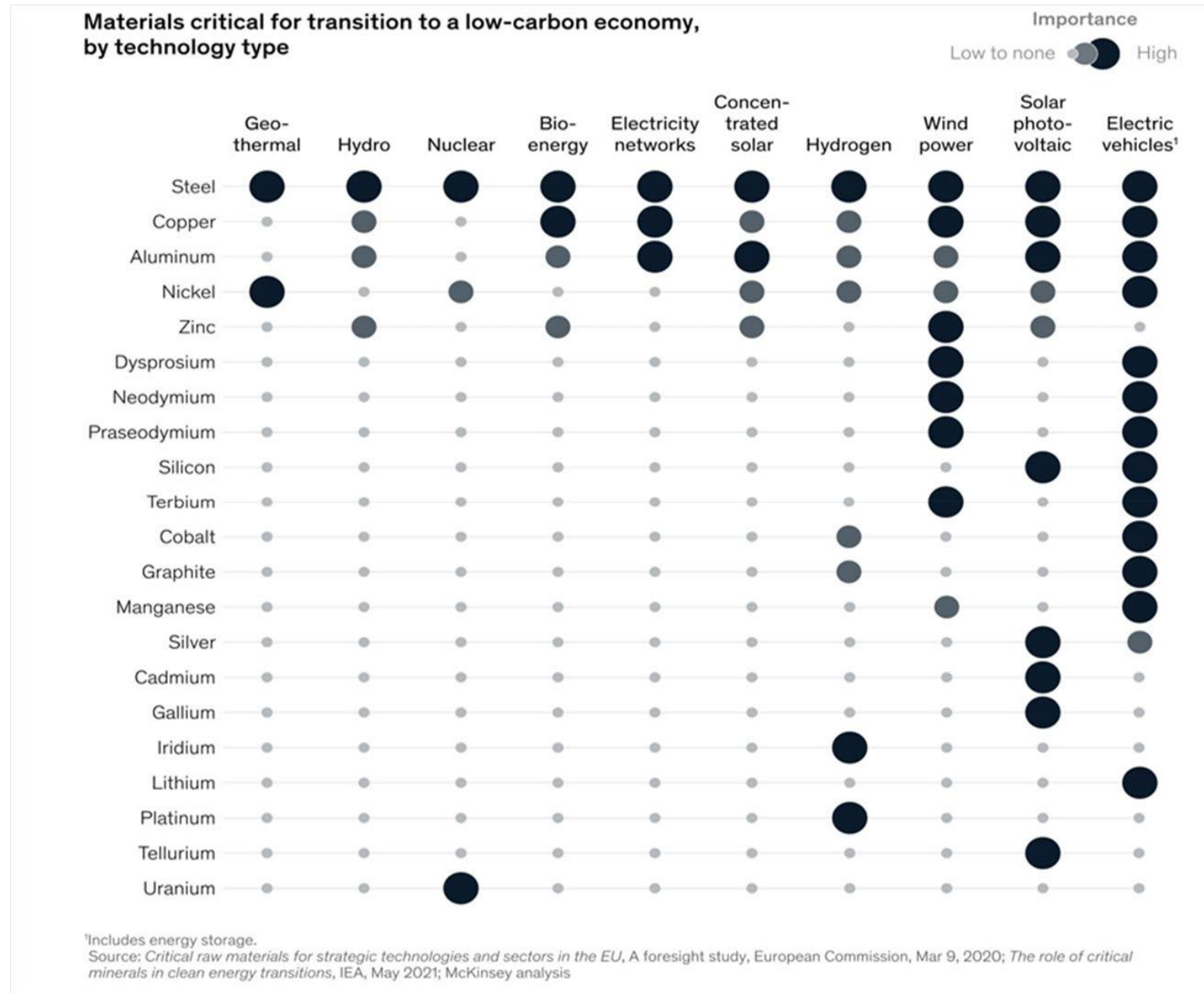
■ CO2 to be stored

Excludes electricity generated on-site with waste products

SOURCE : EUROFER low-Carbon Roadmap, Nov 2019

The transition to a net-zero economy will be metal-intensive

- Metal sectors are **key enablers** of the transition to a circular and climate neutral European economy, and essential to EU's strategic autonomy and resilience.
- **Big quantities of metal** will be required for the necessary energy transition in order to achieve the objective of the EU Green Deal.



The key drivers that will ensure competitiveness and spur the transition of metal sectors:

- Access to **sufficient and affordable CO₂-free energy** and to **primary and secondary raw materials**, such as steel scrap.
- Better tailored, certain and swifter **funding and financial incentives** across the EU, including the establishment of **lead markets for green products** (CO₂-low products).
- A level playing field with global competitors, through an **effective EU trade policy** (to insure open and fair trade), including :
 - Continuation of the EU steel safeguard as an important safety net
 - Solutions that secure exports under the Carbon Border Adjustment Mechanism (CBAM).
- **Mainstream industrial policy and competitiveness** in all planned and ongoing policy initiatives and legislative proposals.



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Thank you