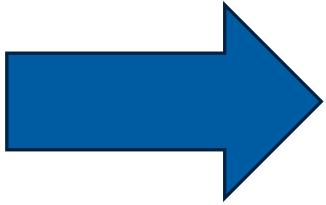


ESTEP @ a glance

October 2024





- ESTEP – European Steel Technology Platform
 - www.estep.eu
- CSP - Clean Steel Partnership
 - <https://www.estep.eu/clean-steel-partnership>

• European Technology Platform (EU 2020)

- Created in **2004** (ULCOS) and reconfirmed by EC in 2013
- Legal entity (AiSBL): incorporation by 13 founders in March 2018
- Members more than 5-fold by 2024: 70 members (Apr 2024)
- Open for organizations from EU + associated countries (steel producer, technology provider, university, RTO, SME, ...)

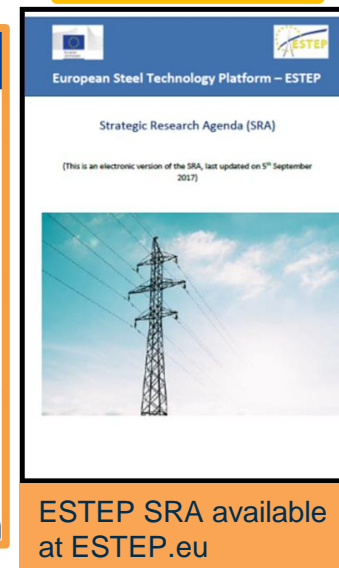
• ESTEP mission

Collaborative EU actions (projects) on innovative technology to tackle EU challenges (renewable energy, climate change (CO₂), Circular Economy) in order to create a sustainable EU steel industry

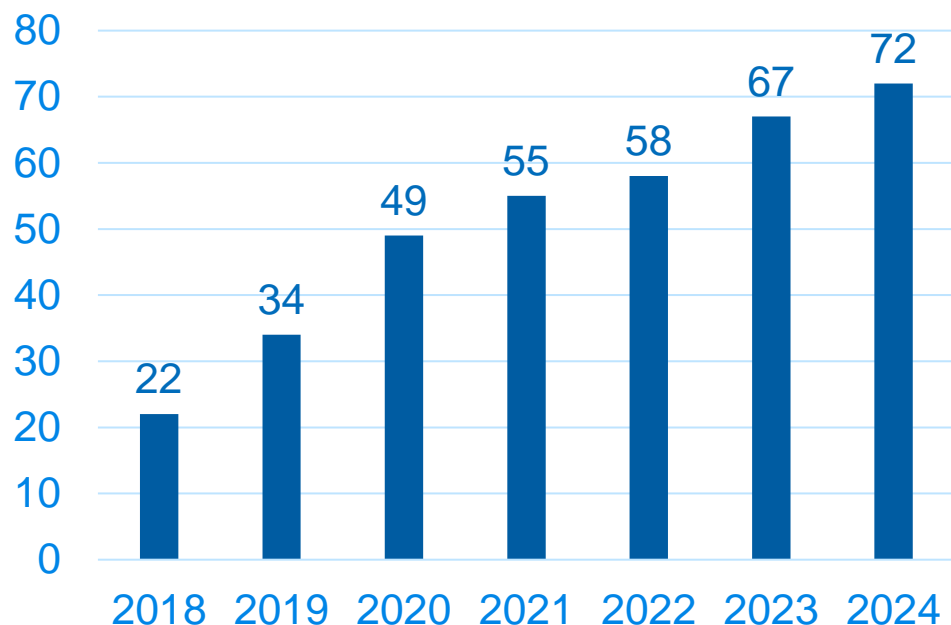
• Collaborative work in 6 Focus Groups

- Thematic mini-conferences
- Initiate proposal writing
- Road mapping and publication
- Work towards standardization

• EU Clean Steel Partnership (CSP)



Number of ESTEP members



Type

Type	Number
Academia	8
EUROFER	1
Industry	40
RTO	20
SME	2
Industry Association	1
Grand Total	72

Size

Size	Number
large	26
medium	34
small	11
SME	1
Grand Total	72

Country

Country	Number
Austria	6
Belgium	10
Finland	2
France	4
Germany	13
Italy	20
Luxembourg	1
Norway	1
Poland	1
Portugal	1
Spain	4
Sweden	5
The Netherlands	2
United Kingdom	2
Grand Total	72

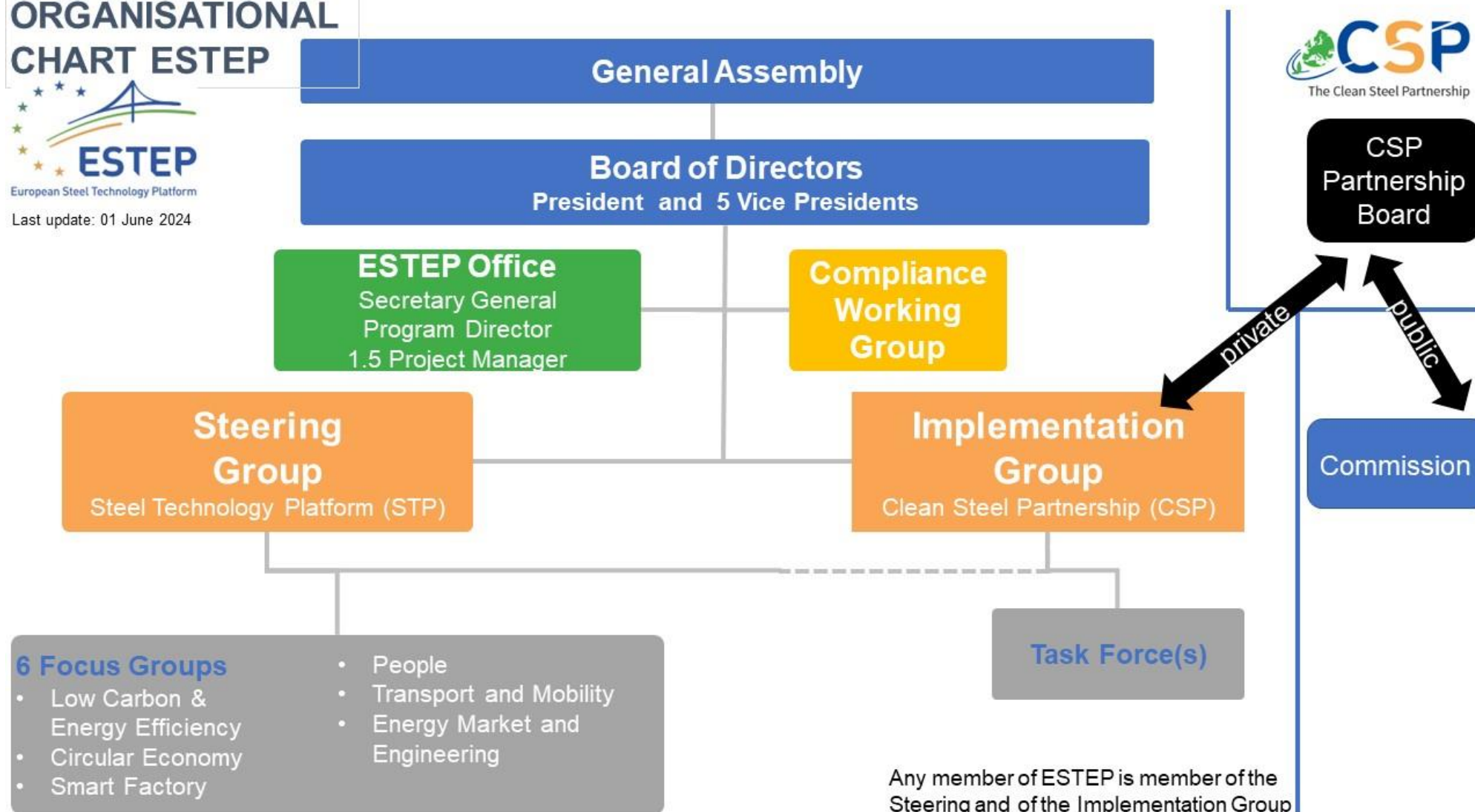
- Information about supporting instruments of research and innovation at EU level
- Contribution to co-creation of roadmaps and European call texts
- Participation and contribution to ESTEP events
 - ESTEP Focus Groups (e.g. proposal writing, position papers)
 - Thematic Mini-conferences
 - Thematic workshops
- Project dissemination
 - Dedicated event spring each year
- Access to extensive steel stakeholder platform
- Work towards norms and standardisation
- Participation in ESTEP tasks & projects
 - Public funding (EU, national, ...)
 - Industry funding



ORGANISATIONAL CHART ESTEP



Last update: 01 June 2024



6 Focus Groups

- Low Carbon & Energy Efficiency
- Circular Economy
- Smart Factory

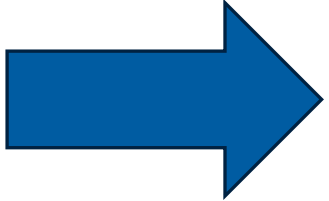
- People
- Transport and Mobility
- Energy Market and Engineering

Any member of ESTEP is member of the Steering and of the Implementation Group

Open, transparent and inclusive:

- All members attend Steering Group and Implementation Group
- Minutes of SG + IG + Board are shared with all members

- ESTEP – European Steel Technology Platform
 - www.estep.eu
- CSP - Clean Steel Partnership
 - <https://www.estep.eu/clean-steel-partnership>



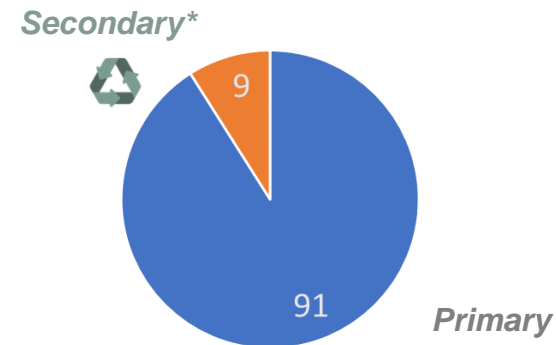
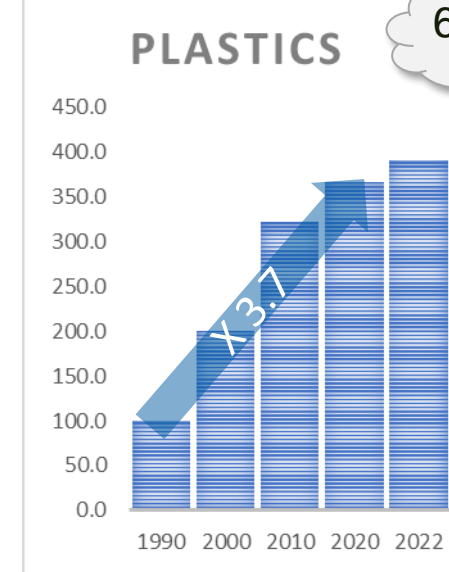
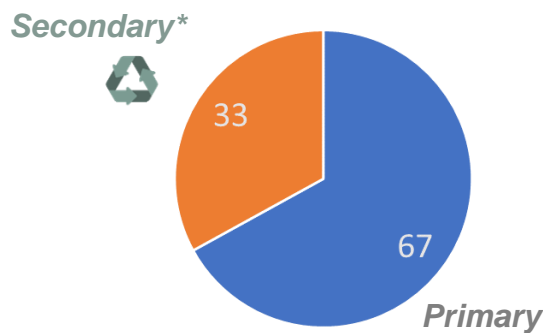
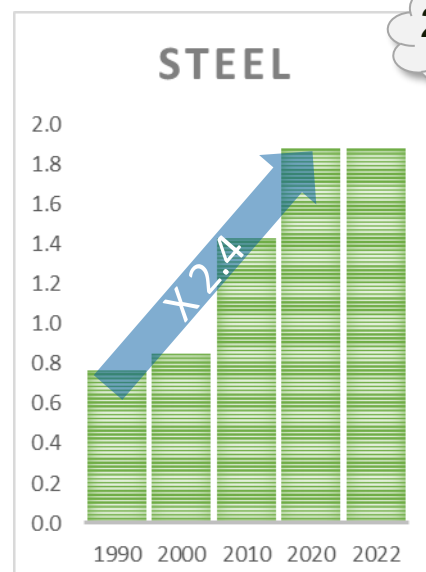
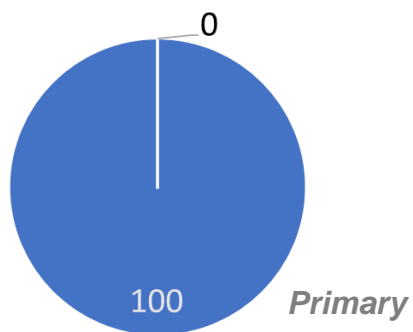
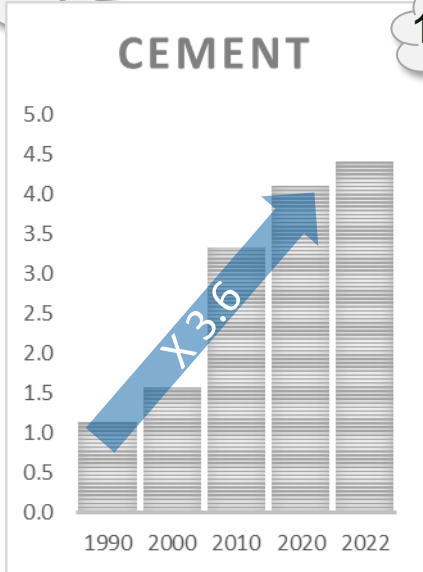
Challenge for all industries to become climate neutral

How to meet the growing global demand in a sustainable + climate neutral way

Global production

Billion tonnes

CO₂ when produced from primary sources



Materials are responsible for 25% of GHG and demand has tripled over the last 30 years.

* Defined as end of life material recycled to make same material again

Sources: Global Cement Report (International Cement Review) and the Global Cement and Concrete Association, World Steel Association, Plastics Europe reports and International Energy Agency, ESTEP analyses

MoU


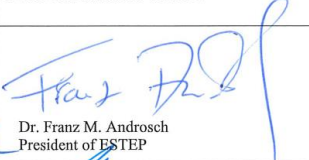
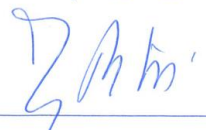

EN
Annex 3

Memorandum of Understanding for the Co-programmed European Partnership for Clean Steel - Low Carbon Steelmaking

The ESTEP aisbl, representing the partners other than the Union (its constituent entities¹), the registered offices of which are in Avenue Cortenbergh 172, 1000 Brussels, Belgium, hereafter referred to as the “Partners other than the Union”, and the European Union, represented by the European Commission, (jointly hereinafter referred to as “the Partners”),

Considering that:

- Parts of Horizon Europe – the Framework Programme for Research and Innovation (‘Horizon Europe’)² – may be implemented through Co-Programmed European

FOR THE EUROPEAN COMMISSION	FOR THE ESTEP AISBL
	
Mariya Gabriel	Dr. Franz M. Androsch President of ESTEP
	
Z. Mihail	VICE-PRESIDENT of ESTEP

SRIA



Clean Steel Partnership – CSP

- Horizon Europe (2021-2027)
- Co-programmed Partnership**
- Two financial funding pillars
 - Horizon Europe
 - Assets of Research Fund for Coal and Steel (RFCS)
- Established by **Memorandum of Understanding (MoU)**
 - ESTEP
 - DG RTD & DG Grow
- SRIA explains in detail the **intended activities of CSP**
- SRIA adopted** by the Partnership Board of the Clean Steel Partnership on 13 December 2021
- SRIA Update** end 2023/beginning 2024

- Public calls open to every organization

- According to Horizon Europe (HEU) regulation
- According to Research Fund for Coal and Steel (RFCS) regulation
- No membership etc. required



- ESTEP facilitates the private side of the Clean Steel Partnership

- Membership in ESTEP (European Steel Technology Platform) available for steel stakeholder
- Clean Steel Partnership board private side composed of ESTEP members
- ESTEP organises CSP related events for its members (in addition to open events)
 - Contribute to definition of the call texts of CSP (HEU+RFCS)
 - Information sharing
 - Brokerage event, consortium matchmaking



- Partnership in the frame of Horizon Europe (HEU) in 2021 to 2027/2030
 - Unique setting due to synergies of public financial pillars (HEU + Research Fund Coal+Steel)
 - Memorandum of Understanding signed by ESTEP + European Commission (RTD+Grow)
- CSP-Budget: € 1.7 billion
 - €350 million from Horizon Europe
 - €350 million from assets of the ECSC* in Liquidation (source of RFCS funding)
 - At least matched by steel sector (expected €1.000 million)
- Projects
 - size: € 10-100 million
 - Developments starting at TRL 6 to end up with TRL 8 (Technology Readiness Level)
exceptional start at 5 to end up with at least TRL 7
 - 2 + 2 demonstrators showing CO₂ emission reduction potential of at least 50% (80%)
- Strategic Approach by 12 Building Blocks
 - Building Blocks define collaborative research areas
 - Impact by linking the Building Blocks with company pathways
 - Carbon Direct Avoidance
 - Smart Carbon Usage (Process Integration and CCUS)
 - Circular Economy
 - Enablers: People + Digitization (2% of the total budget)



* ECSC=European Coal and Steel Community (grandfather of the EU)

- The objectives and impacts of the Partnership are in line with **the pathways of Horizon Europe**
- Contribute to **the Sustainable Development Goals 3, 8, 9, 12 and 13** under the United Nation’s 2030 Agenda
- Impacts in various areas, such as:
 - **CO₂ reduction:** new technologies will be deployed that could reduce emissions from EU steel production by 50% by 2030, compared to 1990 levels;
 - **Industry and EU competitiveness:** The support for the deployment of the decarbonisation technologies will allow the **EU to remain a global leader** in the steel industry and to reinforce its knowledge-based competitive advantage;
 - **Resource efficiency:** coordination of technological progress in the use of steel scrap and by-products, leading to an enhanced, larger use of those resources;
 - **Jobs and skills:** the Partnership will support the preservation of high-quality jobs in the steel making value chain.



TOTAL SOCIETAL IMPACT



ENVIRONMENTAL SUSTAINABILITY



SOCIETAL ENABLEMENT



ACCESS / INCLUSION



ECONOMIC VALUE



LIFETIME WELL-BEING



ETHICAL CAPACITY



3 Technology Pathways for decarbonization

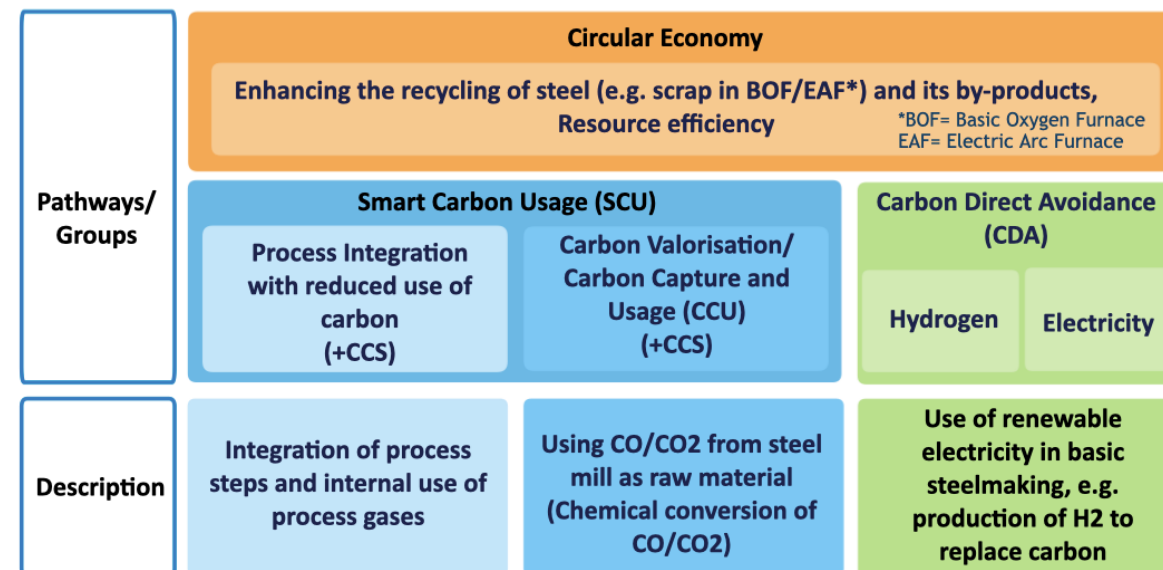
- Carbon direct avoidance (CDA)
- Smart carbon Usage (SCU)
 - Process Integration (PI)
 - Carbon, Capture, Storage, Utilization (CCUS)
- Circular Economy (CE)

6 Areas of Intervention

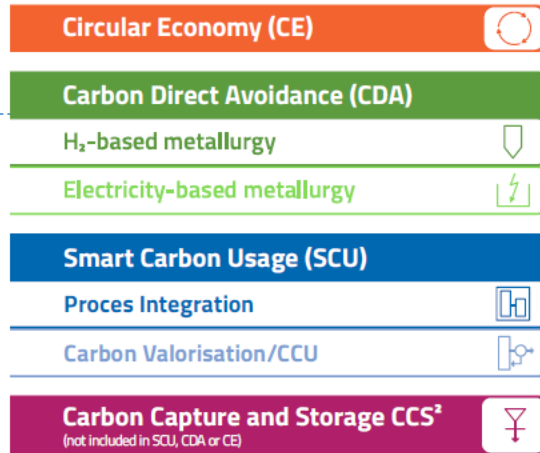
- Integrating Building Blocks into the 3 Pathways
- CDA, SCU-PI, SCU-CCUS, CE, combination
- Include enablers (Digitalisation + Social Innovation)

12 Building Blocks (BB)

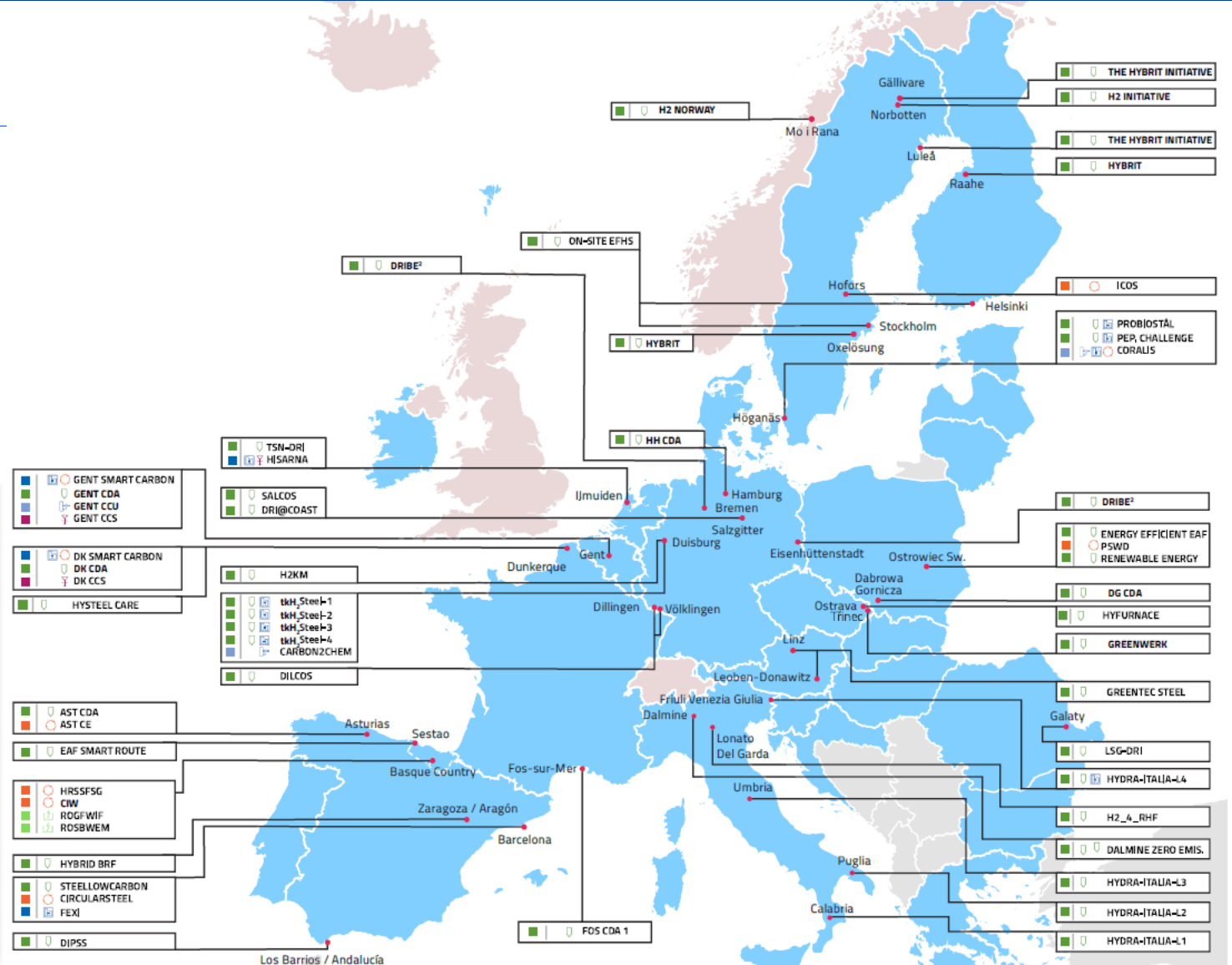
- Bring to TRL8 at large scale



Key low-CO₂ projects of the EU steel industry



- **60** projects
- Technology Readiness Level : at least **TRL 7**
- Starting year: almost all **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**



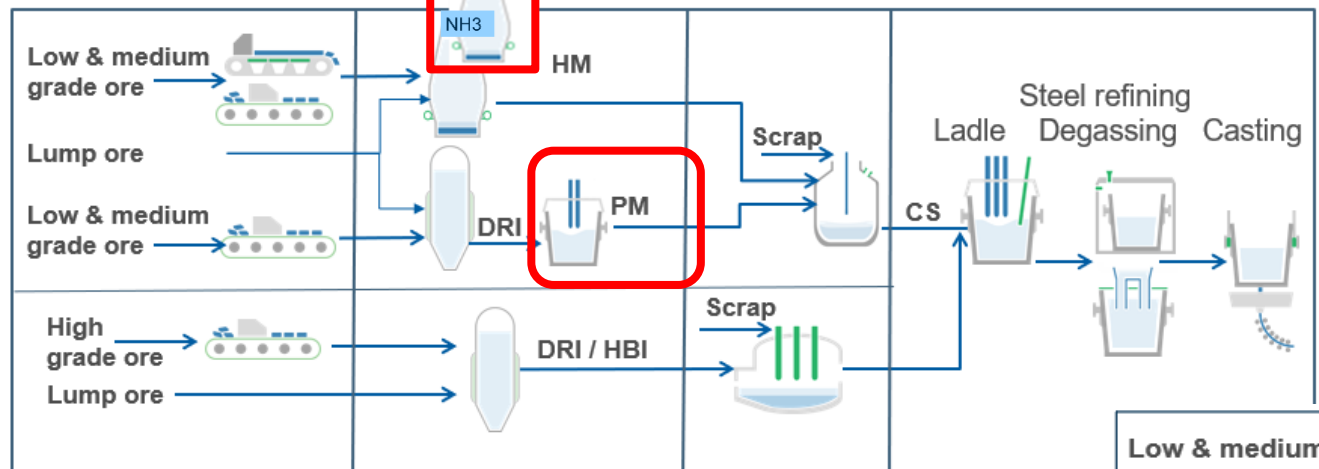
Status: 04/05/2022

www.eurofer.eu [link](#)

Transformation of EU steel industry

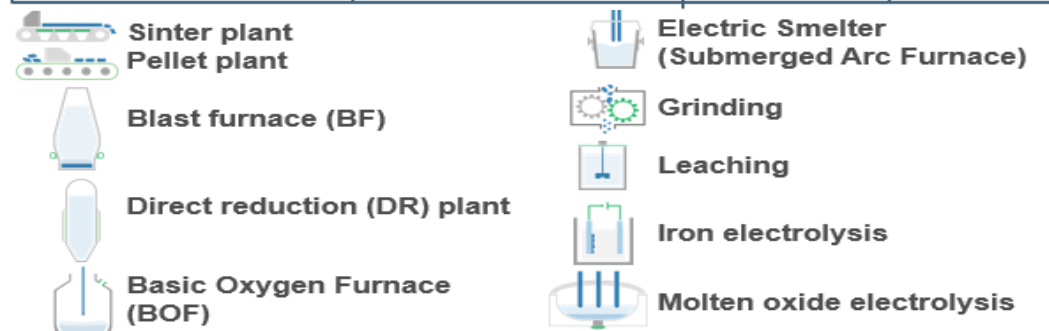
Co-existence of breakthrough and traditional steelmaking processes

Near term (2030) Mid term (2040) Long term (2050)

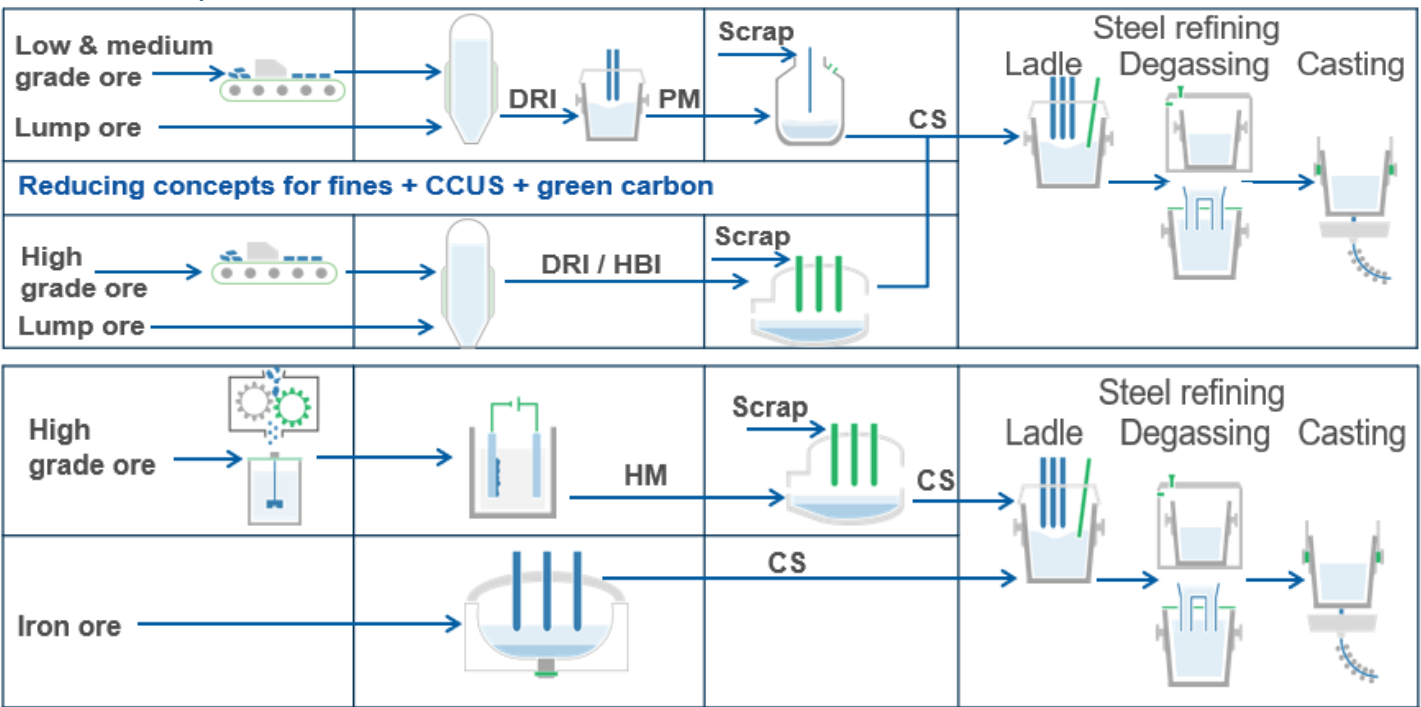


New ideas generated since 2021

- Primary melter
- Hydrogen BF

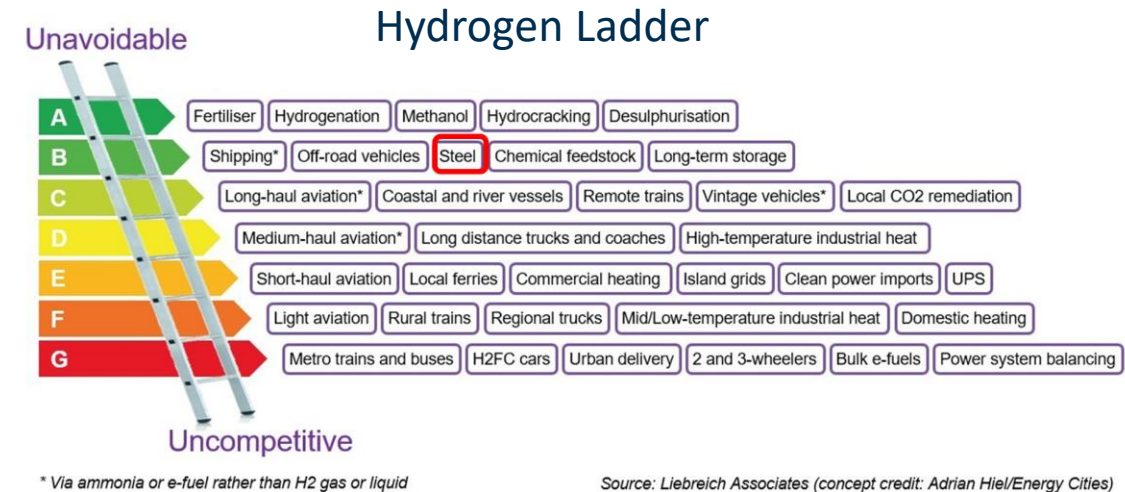


HM Hot Metal
DRI Direct Reduced Iron
PM Pre Melt
CS Crude Steel
HBI Hot Briquetted Iron
CCUS Carbon, Capture, Utilization and Storage



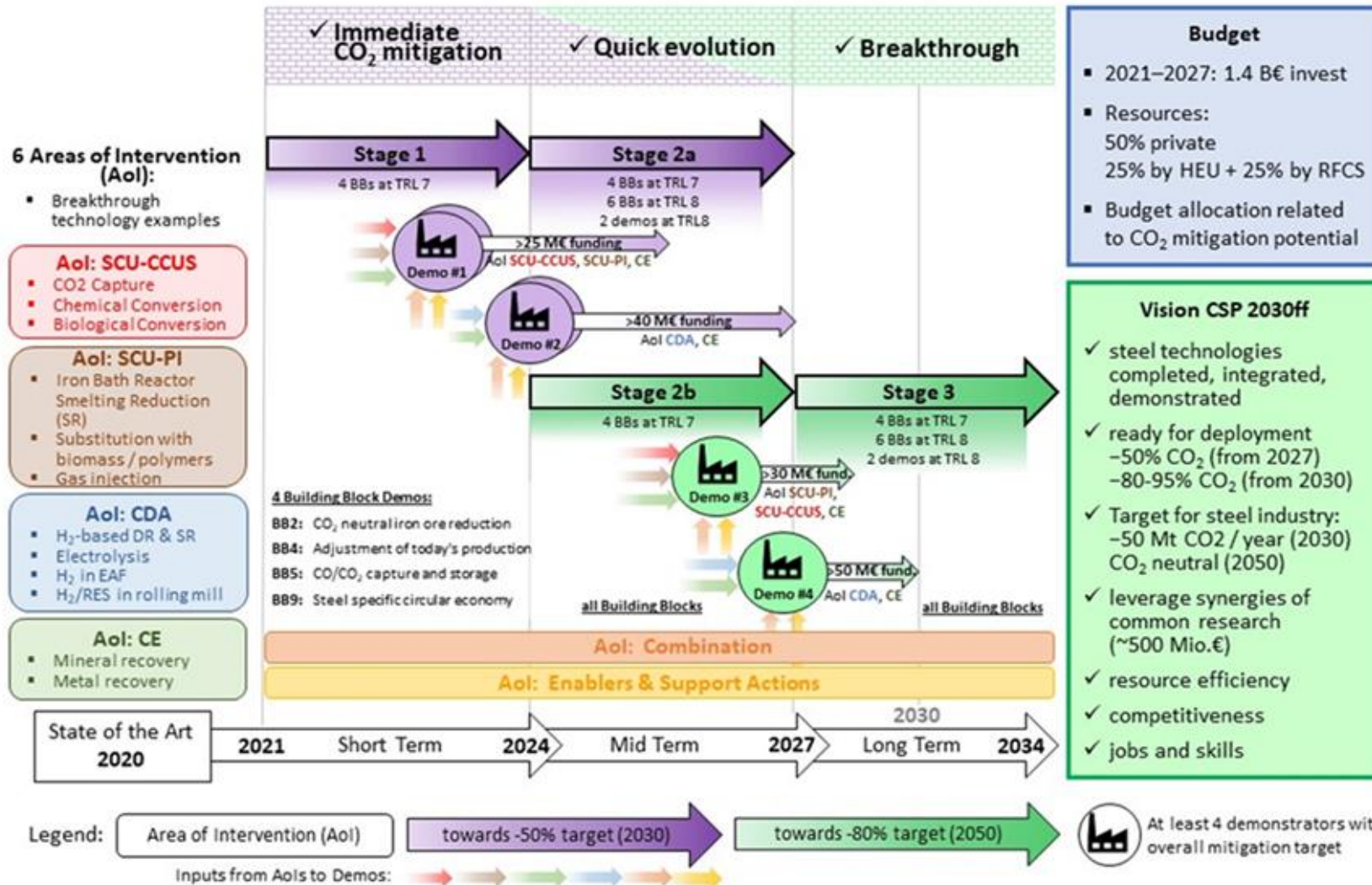
Challenges for the Decarbonisation Transformation

- Reliable, predictable policy framework supporting the transformation
- Global level playing field
- Renewable Energy (electricity)
 - Supply
 - Affordability
- Green Hydrogen
 - Supply & Infrastructure (pipelines)
 - Affordability
- Risk sharing
 - Robust business case for low carbon steel production (CAPEX+OPEX)
 - Mile stone approach from technology development to market roll-out
- Work force empowerment and talent recruiting
- Development and implementation of digital solutions



Thank you very much for your attention

Clean Steel Partnership CSP: Vision, Ambition and Resources



Budget

- 2021–2027: 1.4 B€ invest
- Resources:
 - 50% private
 - 25% by HEU + 25% by RFCS
- Budget allocation related to CO₂ mitigation potential

Vision CSP 2030ff

- ✓ steel technologies completed, integrated, demonstrated
- ✓ ready for deployment
 - 50% CO₂ (from 2027)
 - 80-95% CO₂ (from 2030)
- ✓ Target for steel industry:
 - 50 Mt CO₂ / year (2030)
 - CO₂ neutral (2050)
- ✓ leverage synergies of common research (~500 Mio.€)
- ✓ resource efficiency
- ✓ competitiveness
- ✓ jobs and skills

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klaus.peters@estep.eu