

Energy storage innovation - webinar EASE & ESTEP -

Klaus Peters, Secretary General ESTEP

08 December 2023, online



Energy storage innovation - webinar EASE & ESTEP · 2023-12-06

Webinar

The "Energy Storage Innovation" webinar is presented by the European Steel Technology Platform (ESTEP) and the European Association for Storage of Energy (EASE).

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Opening

10:00 – 10:10 – Introduction and welcome by ESTEP – Klaus Peters, Secretary General

10:10 – 10:20 – General Introduction by EASE and Energy Storage – Margareta Roncevic

Innovation examples

10:20 – 10:40 – Carbon Clean – Robert Pfab, COO

10:40 – 11:00 – UNDA Engineering, Emin Selahattin Umdu

11:00 – 11:20 – Innovation powered by EU funding – Martin Bracken,
EU Funding Development Manager, CLERENS

Closing

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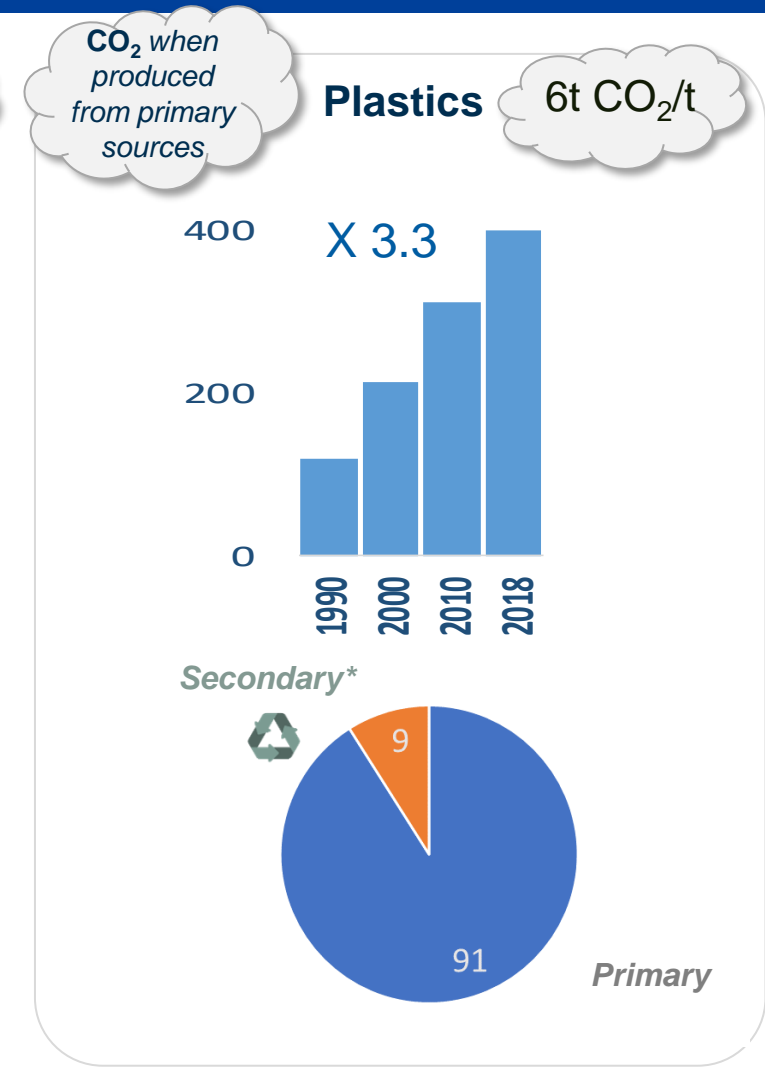
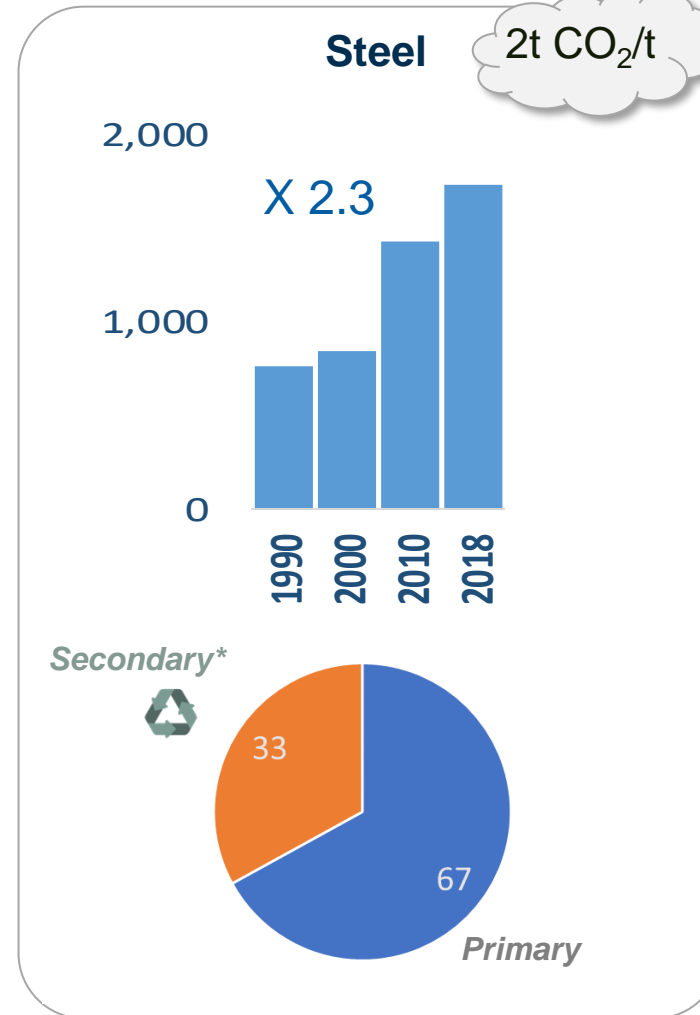
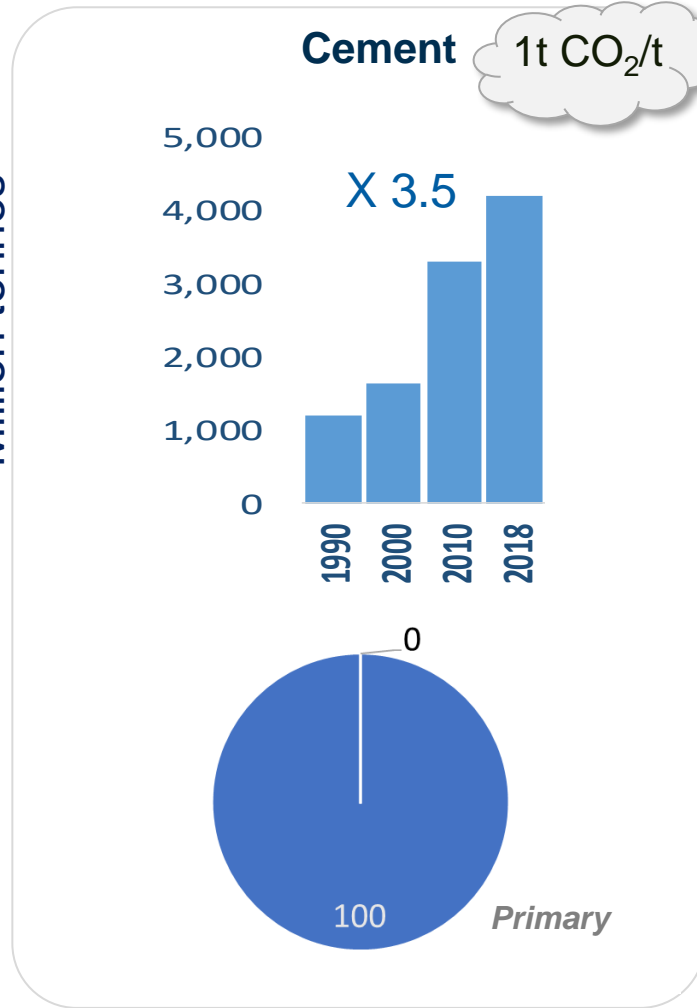
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Global production

Million tonnes

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: WSA, Plastics Europe, ArcelorMittal Corporate Strategy analysis

• 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 2023: 68 members (Dec 2023)
- Open for organisations 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 standardisation

• EU Clean Steel Partnership (CSP)



- 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
 - Strategic Research and Innovation agenda is being updated: Have your voice heard



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

3 Technology Pathways for decarbonization

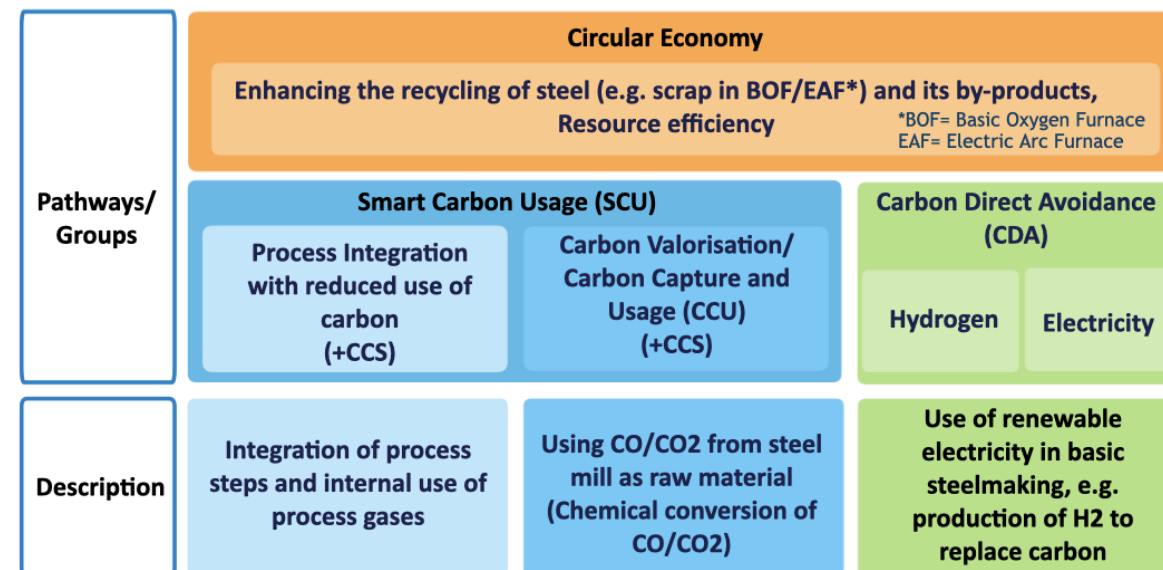
- Carbon direct avoidance (CDA)
- Smart carbon Usage (SCU)
 - Process Integration (PI)
 - Carbon, Capture, Storage, Utilization (CCUS)
- Circular Economy (CE)

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



Energy storage technologies are part of **Building Block 8 (BB8)**

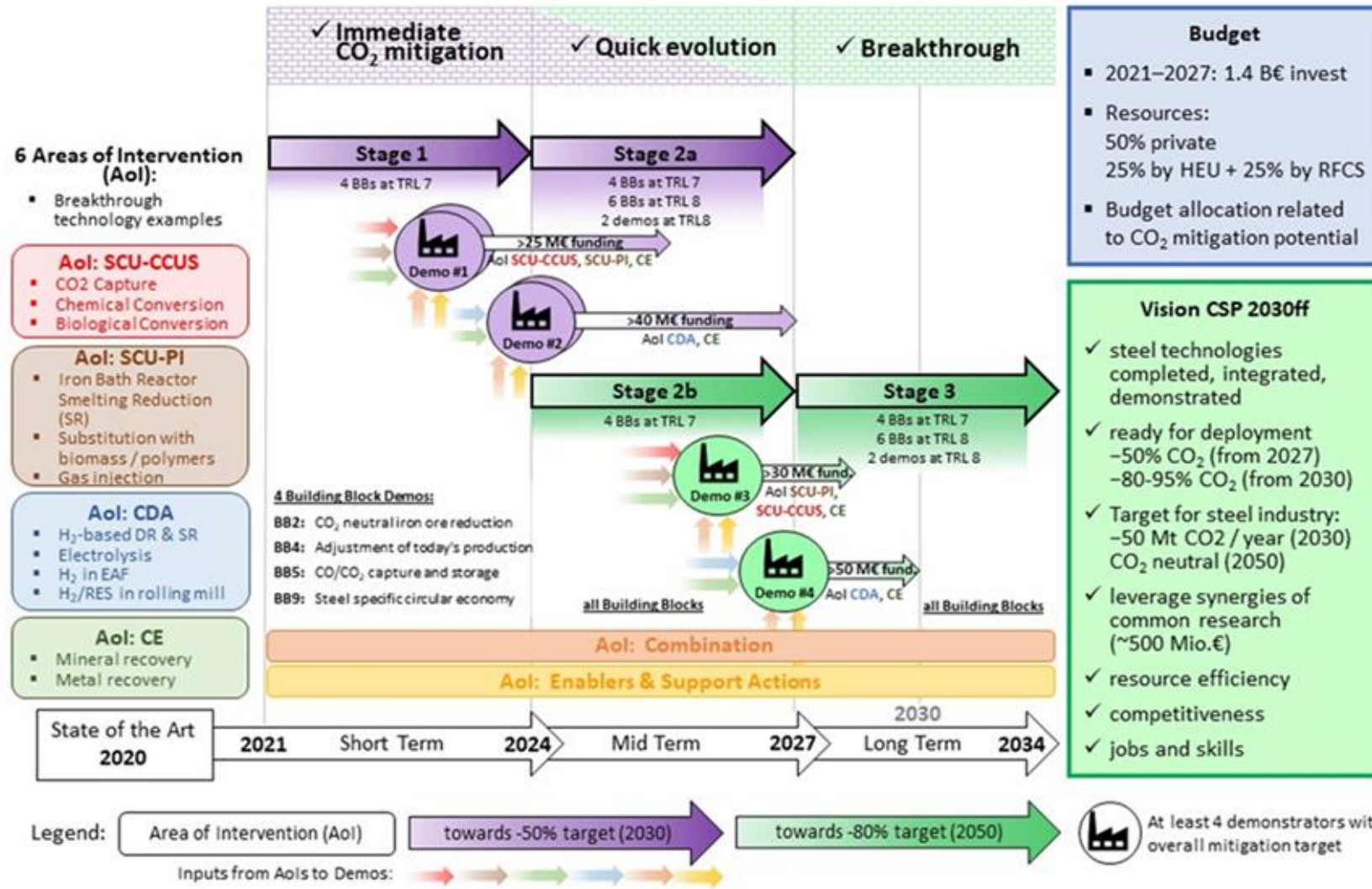
8: Energy

Energy management / Energy vector storage (H₂, electricity, intermediate materials, ...) for clean steel production

- Fluctuating energy supply and supporting energy system transformation, through **storage** solutions and accumulation systems in the steelmaking plants
- Enhancing the **storage** of heat in the energy vector. Introduction of heat transfer media (e.g. diathermic oil, molten salt, liquid metals) not yet considered state-of-the-art in the steelmaking process, but that could improve the thermal exchange process and ultimately reduce CO₂ emission
- Demonstrating smart energy use through the integrated energy management also considering **storage** strategy and relevant devices
- **Buffer solutions** in steel production processes aimed also at electric power balancing through harmonisation of demand and supply response

We wish you an interesting and encouraging webinar

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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