EUROFER

The European Steel Association

Coal to Steel – Responsible Mining & Sustainable Steel

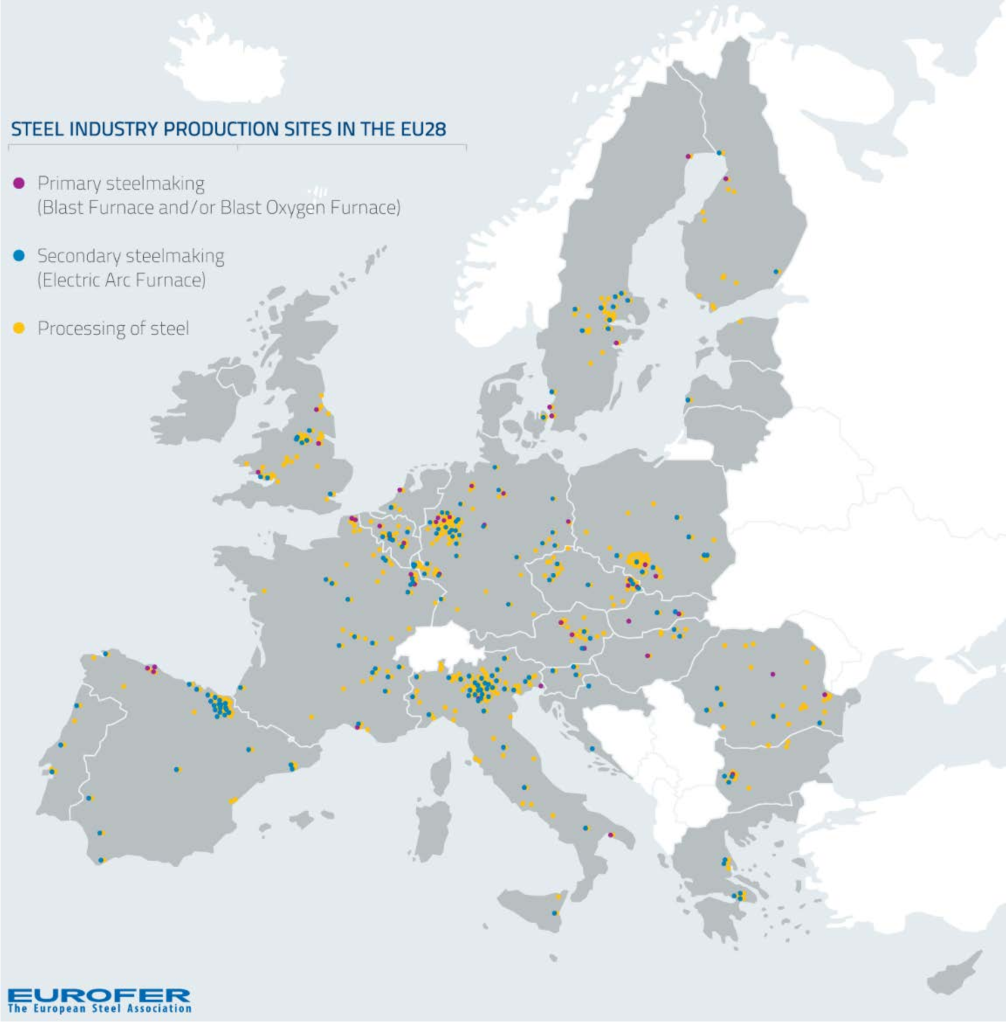
Brussels, 27 June 2018

EU STEEL INDUSTRY

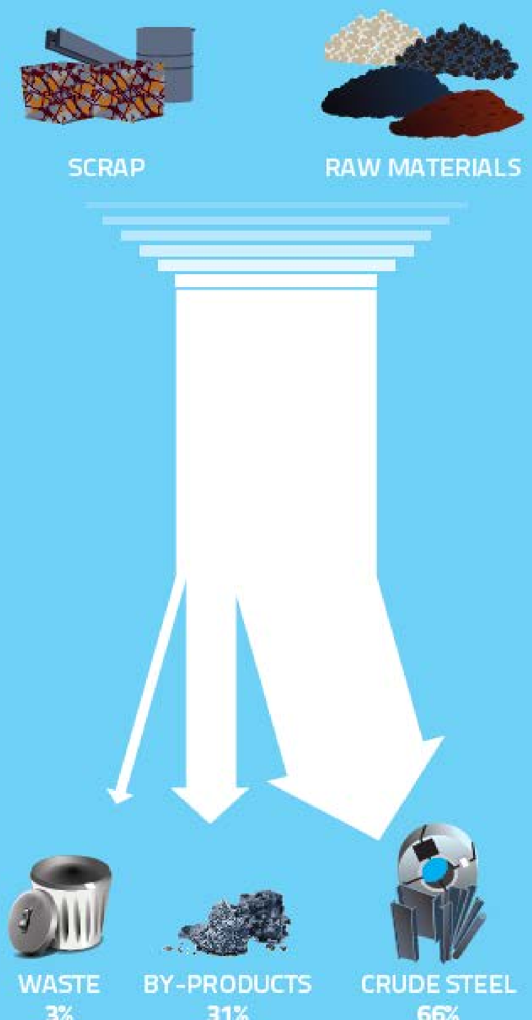
Axel Eggert, EUROFER

ABOUT THE EUROPEAN STEEL INDUSTRY

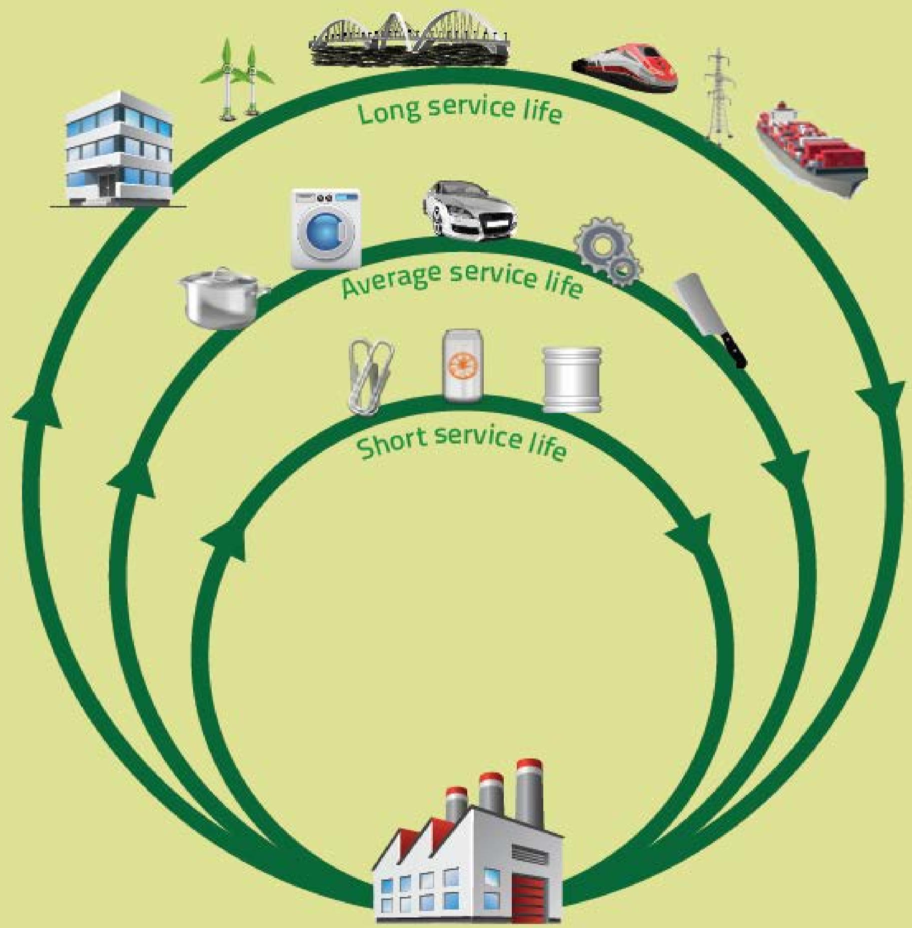
- 500 production sites
- 160 million tonnes of steel produced per year
- €166 billion turnover
- 320,000 direct jobs
- Multiplier effect of 7.7: Millions of indirect jobs in value chain and related service sectors
- 20% drop in employment since 2007
- 28% drop in EU steel demand (2007-2014); gradual recovery mostly benefitted importers
- EU steel faces relatively high energy prices
- Unfair trade practices from non-EU countries undermine margins
- 100% infinitely recyclable - Steel is a permanent material
- 50% reduction in CO_2 emissions and energy use since 1960s
- 500 Mt of CO_2 can be saved in other sectors per year by 2030 with innovative steel applications



STEEL IS TRULY CIRCULAR

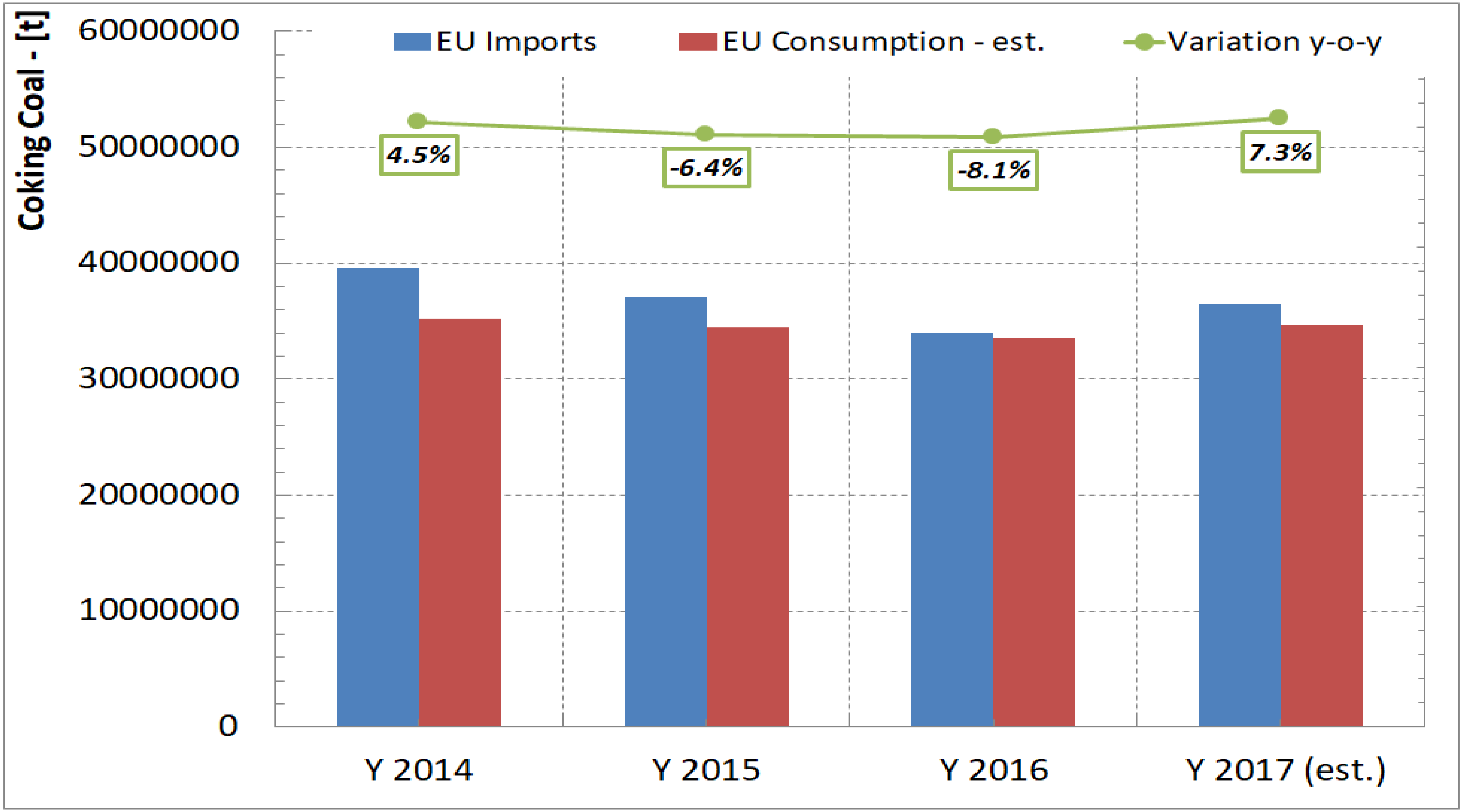


EUROFER based on worldsteel calculations



EUROFER based on WV Stahl

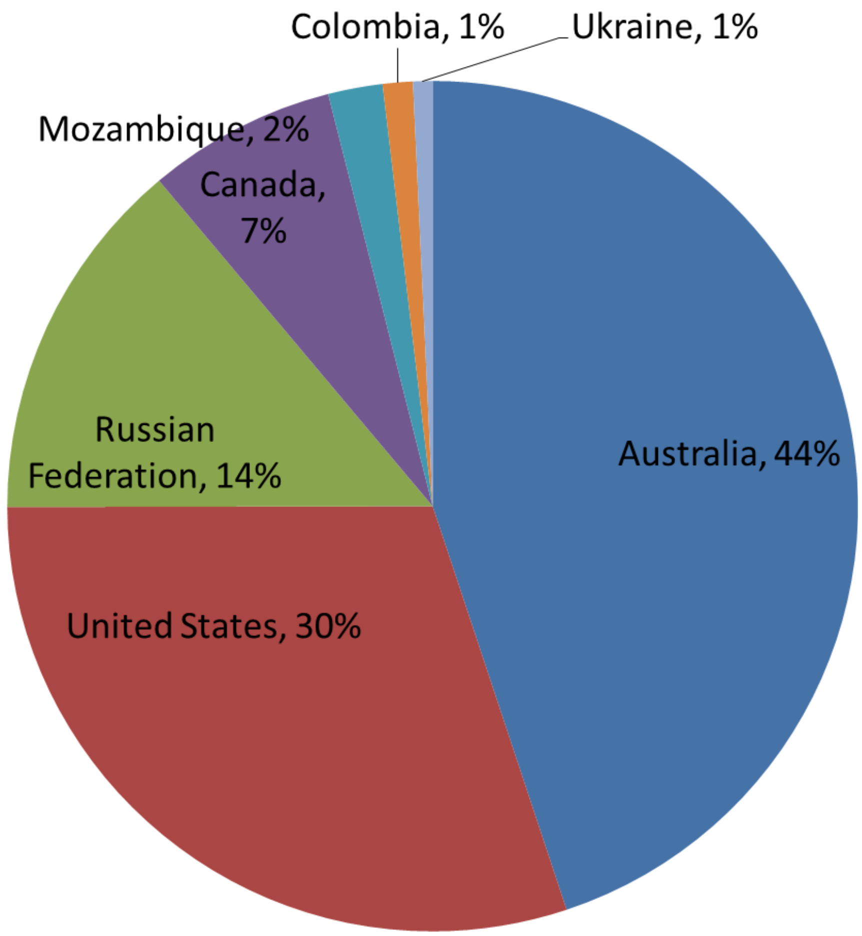
EU 28 IMPORTS OF COKING COAL, 2014 - 2017



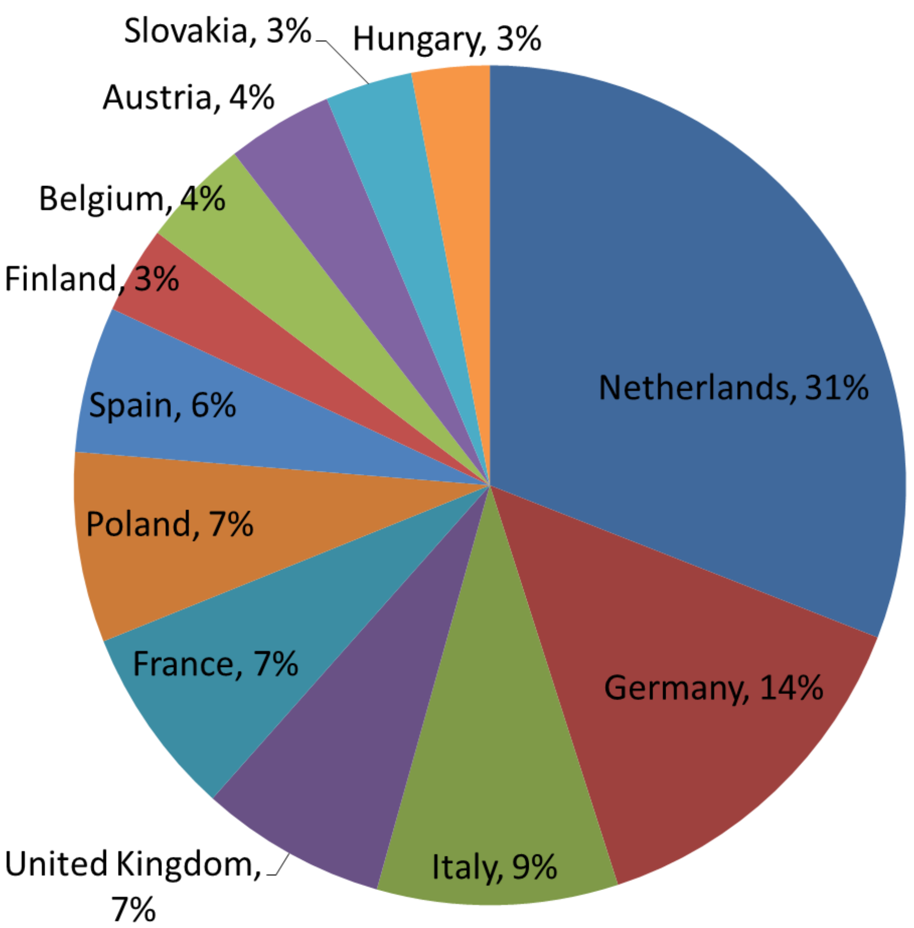
The EU imports 35 to 40 million t of coking coal p.a.

EU 28 IMPORTS OF COKING COAL 2017 IN %

from



to



MAPPING KEY INNOVATIVE CARBON NEUTRAL PROJECTS OF THE EU STEEL INDUSTRY

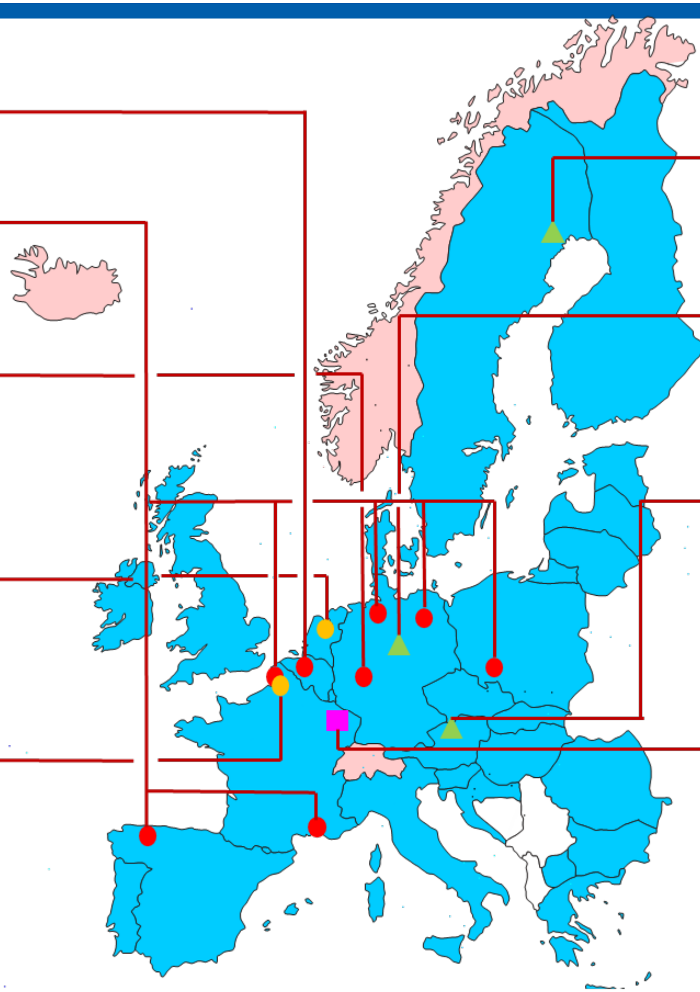
Steelanol - *Ghent*
2015-2017: R&D+Engineering+Pilot test
2018-2020: Full demonstration plant

2021-2030s: Scale-up and Roll-out in AM plants

Carbon2Chem - *Duisburg*
2015-2020: Proof of concept
2020: Start scale-up on industrial scale
2030s: Start large scale implementation

HIsarna - *IJmuiden*
2018-2020: Pilot plant
2021-2025: Industrial Demo. plant (1.2 Mt/y) first hot metal 2024
2025: Production & further roll-out

IGAR - *Dunkerque*
2018-2020: Pilot plant
2023-2027: Demonstration plant
2030s: Roll-out



Hybrit - *Lulea*
2018-2024: Pilot plant
2025-2035: Demonstration plant
2036: Roll-out

SALCOS - *Salzgitter*
2018-2020: Pilot phase
2021-2050s: Full implementation phase

H2Steel – *Linz & Leoben*
2017-2030: Demo H_2 PEM electrolyser
2019-2030: Pilot HPSR*
2030-2035: Demonstration Plant
2036: Start Roll-out
*Hydrogen Plasma Smelting Reduction

SIDERWIN- *Maizières*
2018-2022: Pilot cell
2022-2030: Large scale pilot
2035s: Roll-out

Process Integration
CO_2 Valorization /CCU
H_2 based steel making
Iron ore electrolysis

Start of **market roll-outs** if CAPEX & OPEX are competitive at demonstration phase, & regulatory framework conditions and infrastructures beyond site borders are in place

Source: Publicly available literature, presentations

INDUSTRIAL DEMONSTRATION OF 7 PROJECTS & ROLL-OUT

Period	Smart Carbon Use (SCU) Carbon Direct Avoidance (CDA)		CO_2 reduction potential* (up to…)
2018-2021	SCU	CCU (ethanol)	80% with CCS and H_2
2021-2025	SCU	CCU (methanol)	80% with CCS and H_2
2022-2027	SCU	Process Integration	80% with CCUS
2025-2030	CDA	Hydrogen based steelmaking	95%
2025-2030	CDA	Hydrogen based steelmaking	95%
2025-2035	CDA	Hydrogen based steelmaking	95%
2025-2035	CDA	Iron ore electrolysis	95%
2022, 2026, 2031, 2036	Start of **market roll-outs** if CAPEX & OPEX are competitive at demonstration phase, & regulatory framework conditions and infrastructures beyond site borders are in place		
2050	**Carbon-neutral steel industry in Europe (80-95% CO_2 reduction)**		

*Potential CO_2 reduction compared to Blast Furnace route in case of full scale implementation. CO_2 reduction of the entire steel industry depends on the combination of production technologies.

CREATING NEW MARKETS FOR …

- Carbon-neutral steel
- Hydrogen from carbon-lean electricity
- Carbon feed-stocks for the chemical industry
- Secondary fuels
- By-products
- Carbon Capture and Storage
- Energy storage
- Increased demand-supply flexibility
- Enhanced and new skills

CONCLUSION

KEY MESSAGES FOR POLICYMAKERS

- **Foresee a powerful budget for Framework Programme 9 (“Horizon Europe”) with a strong element for industry as the driver of innovation and added value in Europe**
- **Foresee a mission and a Joint Technology Initiative for a carbon-neutral steel value chain**
- **Work out an EU Masterplan for a low-carbon, competitive European Steel Value Chain, addressing infrastructure and supply requirements, and the legal framework**
- **Promote circular materials which give a real benefit to society**
- **Continue to address vigorously steel trade distortions by non-EU countries and reduce EU regulatory burdens to keep our industry globally competitive and able to invest**

EUROFER
The European Steel Association

THANK YOU FOR YOUR ATTENTION!

www.eurofer.eu
@EUROFER_eu