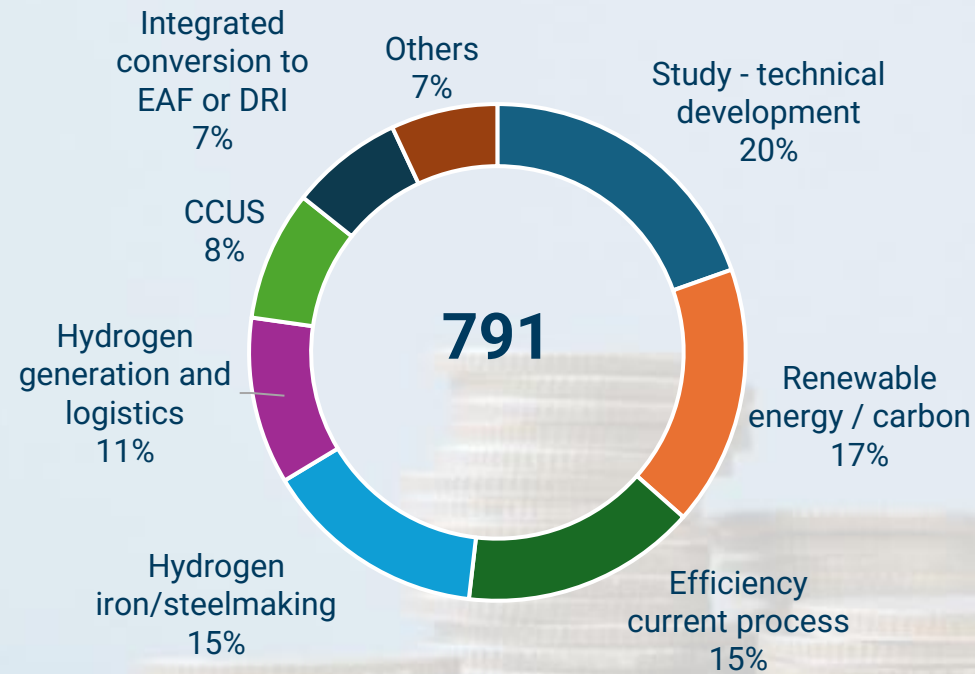


The challenges of the green steel transition in the EU and Italy

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Global decarbonization progress is slowing

Announced green iron & steel projects globally by type



- **791** green iron & steel projects were announced globally over the last 10 years (GMK Center data).
- **275** steelmaking sites are engaged in green transformation.
- In 2025, only 18 projects (**2.3%**) reported some progress. 61% of them involved hydrogen-based steelmaking.
- In 2023, new green steel projects averaged 11 media mentions per month, in 2025 – just 7.

+128

new projects in
2023

+109


new projects in
2024

+81

new projects in
2025


Companies have 4 years to meet 2030 decarbonization goals


2030 decarbonization goals

 - **25% (Group)** compared to 2018
- **35% (Europe)** compared to 2018



thyssenkrupp - **30%** compared to 2018

 - **30%** compared to 2019

 SALZGITTERAG
Stahl und Technologie - **50%** compared to 2018

 United States Steel - **20%** compared to 2018

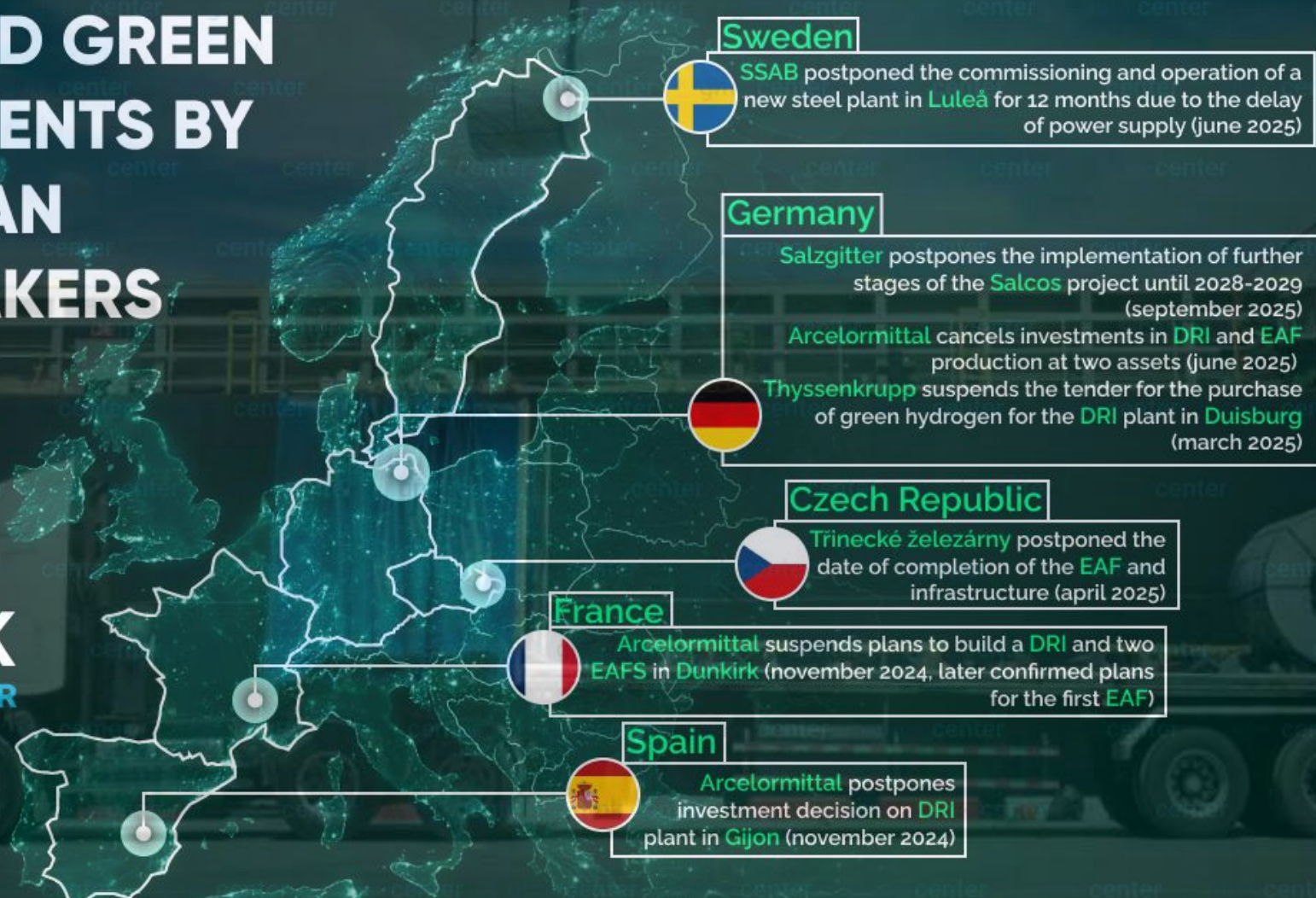
 NIPPON STEEL - **30%** compared to 2013

 CLIFFS - **25%** compared to 2017

- Steel companies set decarbonization goals to different base years.
- Winners are those who set targets to years when their emissions actually peaked.
- US Steel, ArcelorMittal (Group), Cleveland Cliffs have already met their 2030 targets. Nippon Steel is 6.6% away.
- European steel companies with ambitious targets will struggle to meet them.
- For example, voestalpine needs to cut emissions by 22.3% (compared to 2023), thyssenkrupp – by 24.9% (compared to 2023), Salzgitter – by 55.3% (compared to 2024).

Many European decarbonization projects have stalled

DEFERRED GREEN INVESTMENTS BY EUROPEAN STEELMAKERS



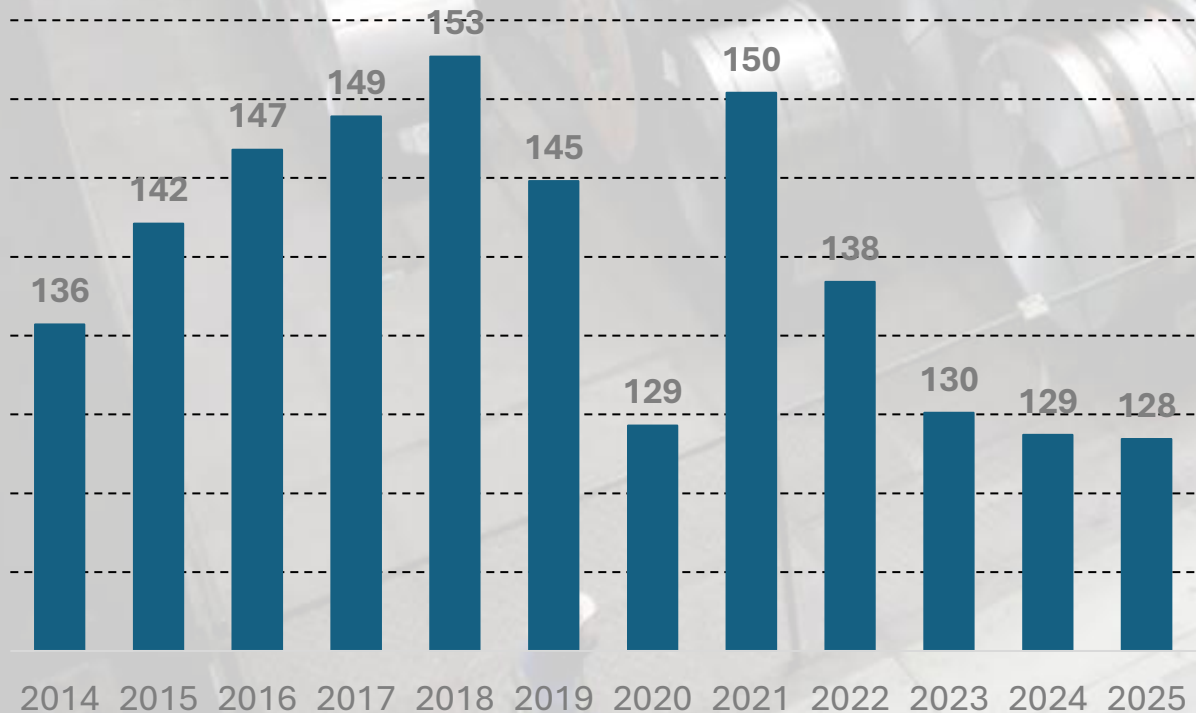
Green steel brands and certification alone can not drive decarbonization

Company	"Green" steel brand
thyssenkrupp Steel	bluemint
ArcelorMittal Europe	XCarb
voestalpine	greentec
Salzgitter	SALCOS
Kobe Steel	Kobenable
POSCO	Greenate
US Steel	verdeX
Nippon Steel	NS Carbolex Neutral
JFE Steel	JGreeX
Hyundai Steel	HyECOsteel
Tata Steel Ijmuiden	Zeremis Carbon Lite
Tata Steel UK	Optemis Carbon Lite
Arvedi	Arvzero
Acciaierie d'Italia	Penisola steel
Saarstahl	Pure Steel+
SSAB	SSAB Zero
Nucor	Econiq

- A lot of steel companies have already registered special brands for supplies of "green" steel. But there is no real green steel supplies in the market.
- Multiple competing certification schemes like Low Emission Steel Standard (LESS), Responsible Steel, Global Steel Climate Council don't support decarbonization progress.
- Branding and certifications schemes don't address fundamental market barriers for decarbonization of steel industry.

Steel consumption doesn't grow in the EU

Apparent steel consumption in the EU, mln tonnes



Data source: Eurofer.

- In 2021-2025, apparent steel consumption decreased by 14.6% in the EU.
- According to GMK Center estimations, European green steel demand in 2030 may reach 20 mln t – just 15.6% of current consumption.
- Such market conditions don't create stimulus for steel producers to modernize or expand steel capacities.
- To drive decarbonization it is necessary to stimulate economic sectors consuming steel (construction, machinery, automotive).

Steel buyers don't want to pay large "green" premiums

"Green" steel premiums* in the EU per ton of HRC

€200-300/t	asked premiums by European EAF-based producers
€120-180/t	average values of premiums in 2025
€100-170/t	average values of premiums in March 2026

* - These values reflect emissions limits of ≤ 0.8 tCO₂ per tonne of steel (including Scope 1, 2 and 3).



- Current demand doesn't support the green premiums which EU producers ask.
- In current market conditions, decarbonization projects are not cost-effective.
- Steelmakers can't secure enough funding for decarbonization projects. Subsidies alone won't finance decarbonization.

Green H2-based steelmaking isn't viable in short term

Installed capacities

2024 target **6 GWel***

June 2025 **571 MWel**

2030 target **53 GWel**

* GWel – GW of electrolysis capacities

Data source: Clean Hydrogen Monitor 2025.

- By June 2025, the EU met less than 10% of its 2024 hydrogen capacity target.
- To reach 2030 target Europe would need to more than double capacity every year until 2030. It is unrealistic in current conditions.
- In 2024, water electrolysis accounted for only 0.6% of total European hydrogen production capacity.
- The average renewable hydrogen cost was 7.1 €/kg in 2025. Industrial break-even levels are 1-3 €/kg.

High electricity prices restrain decarbonization progress

Average nominal electricity end-used prices for industrial sector in the EU, €/MWh



Data source: ACER.

- Electricity prices above €100/MWh make green steel transition unsustainable.
- Lack of affordable low-carbon electricity blocks achievement of climate targets.
- Increasing share of renewables causes extreme price volatility: since 2020, the average daily gap between the lowest and highest day-ahead electricity prices has increased fivefold.
- The EU electricity market is fragmented. Limited cross-border interconnections raise local prices and limit availability of cheap power transmission.
- New generation capacities mainly replace old ones. We don't see such growth of generating capacities which could support increasing electricity demand.

Affordable scrap supply is essential for steel decarbonization

Additional scrap need in 2027

+8 mln tonnes

of scrap supply vs 2025

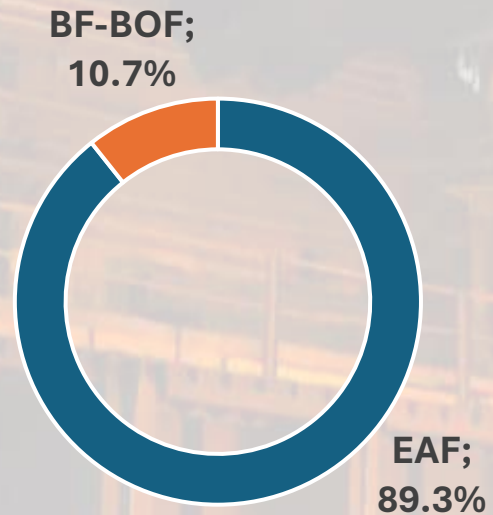


to increase **crude steel production in the EU by 12-13%** in 2027 vs 2025

- Decarbonization leads to increasing scrap consumption.
- New EAF capacities, especially for flat/high-quality grades, will have to compete for low-residual, well-sorted scrap.
- In 2025, the EU exported **16.3 mln tonnes (Mt)** of scrap to third countries and imported **4.8 mln tonnes**. So, net export was **11.5 mln tonnes (+5.8%)**.
- The EU is losing a double-digit Mt scrap stream to third countries each year.
- The future of European EAF-based “green” steel industry depends on possibility to ensure domestic scrap supplies at affordable prices.

Dual nature of Italy's steel industry: a sophisticated EAF-based system vs the obsolete Taranto

Crude steel production in Italy by process (2024)



Data source: World Steel Association.

- Italy has a better starting point than many EU countries. 89.3% of steel is produced in EAFs.
- Scrap supply and high electricity prices are the main decarbonization challenges for Italy.
- ADI (Taranto site) is the only BF-BOF producer in Italy today. Its decarbonization is another challenge considering chronic ownership instability and massive investment needs for decarbonization.

Italy lacks domestic scrap supply

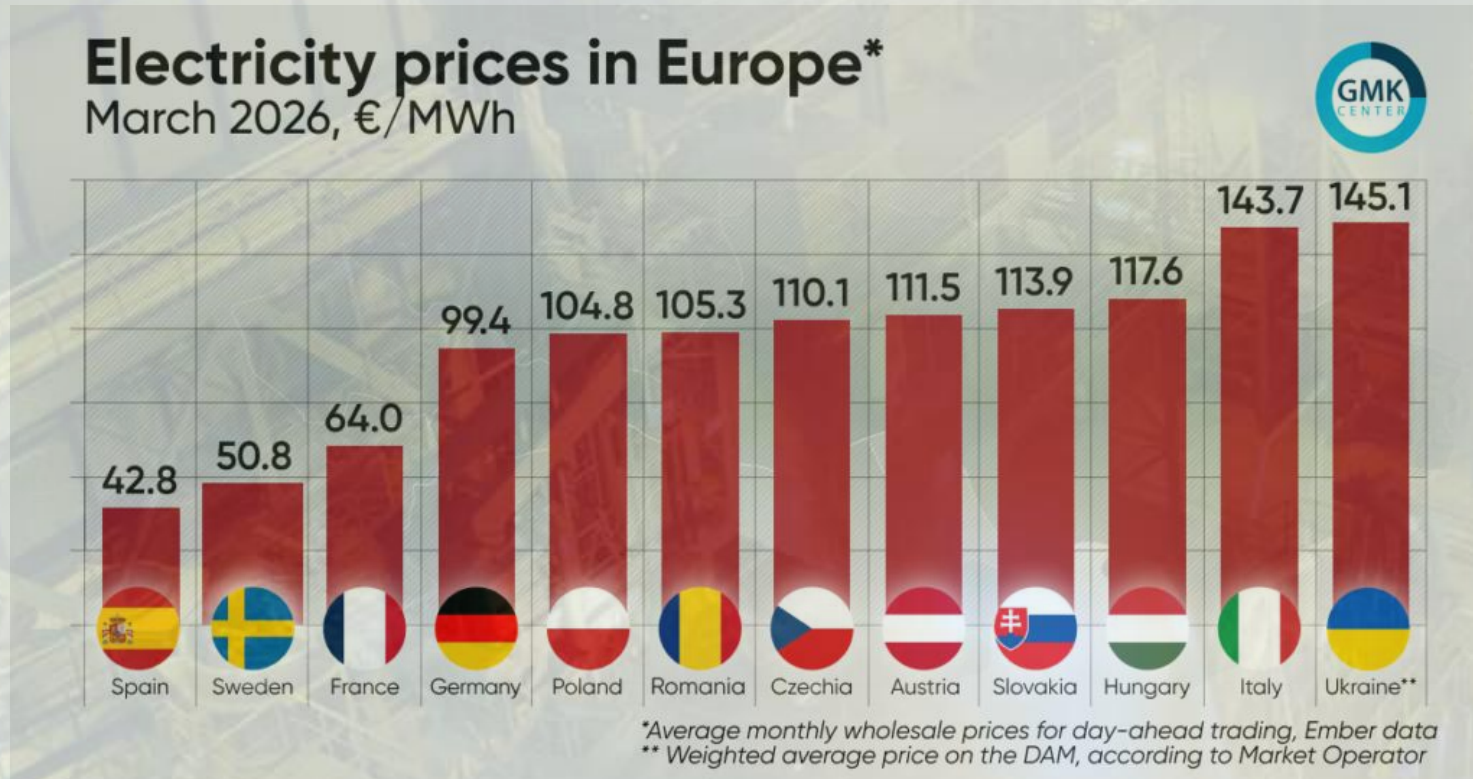
1/3

of scrap needs in
Italy are met by
imports

Data source: Federacciai.

- Italy got 3rd place in global ranking of countries by scrap imports (6.5Mt in 2025).
- According to Federacciai, about 1/3 of Italy's scrap needs are covered by imports and 13% of imports come from outside the EU.
- Scrap collection of high-quality grades (e.g. automotive scrap) is limited. Inside the EU Italy relies on scrap imports from Germany, France, Austria, Czech Republic.

Italy has the highest wholesale electricity prices in the EU



- €35/t of steel – disadvantage in energy costs for EAF production in Italy vs France, €45/t – vs Spain.
- €75 bln – CAPEX needs for power system development in Italy in 2025-2035
- 41.7% - share of gas-fired generation in Italy in 2025, 32% - is projected for 2035.
- €30/MWh – EU ETS-related costs in Italian electricity prices.

In March 2026, average electricity prices in the EU reached €94/MWh.

ADI (Taranto) remains the biggest problem in Italian steel industry

€2.5 bln

Investments needed for transition from BF-BOF to gas-based DRI-EAF route (ECCO)

Jindal`s formula:

2EAFs × 3Mt + HBI import

Flacks`s formula:

2EAFs × 2Mt + BF × 2Mt

- The plant has been the main pollution source in the country for decades. The steel plant continues to operate in violation of EU rules, particularly the Industrial Emissions Directive. In 2025, the European Commission issued a new warning to Italy regarding Taranto.
- Changes of ownership, state intervention and lawsuits create high uncertainty for long-term investments. Transition from BF-BOF to gas-based DRI-EAF route could cost €2.5 bln. Transition to hydrogen-based DRI-EAF route will require €8.2-8.9 bln additionally.

Metinvest Adria is the biggest investment project in Italian steel sector

Investment projects in steel industry of Italy

Company, site	Investment	Implementation period	Description
Metinvest Adria, Piombiono	€3.2 bln	2026-2028	Construction of EAF plant
Arvedi Acciai Speciali Terni, Terni	€0.6 bln	2025-2028	Increasing energy efficiency, installation of new production lines
Acciaierie Bertoli Safau, Pozzuolo	€0.4 bln	2026-2028	Construction of EAF plant
Marcegaglia, Italy	€0.4 bln	n/a	Downstream steel-processing upgrade

Data source: mass media.

Metinvest Adria is becoming a turning point in Italy's steel industry

Main parameters



Greenfield plant in Piombiono

Capacity – 2.7 mln tonnes of steel

CAPEX – €3.2 billion

Production start – 2028

Production route – DRI-EAF

Jobs – 1,100

- Metinvest Adria is a joint venture between Metinvest and Danieli.
- It introduces primary low-carbon steelmaking (DRI-EAF) in Italy, enabling green flat steel production at scale.
- The plant will reduce Italy's dependence on imports of slabs.
- The project creates a new low-carbon value chain: Ukraine (DR-grade iron ore / DRI) → Italy (EAF steel).
- The project directly responds to EU climate policy – EU ETS cost pressure & CBAM implementation.
- The project also creates a platform for future hydrogen-based steelmaking.

MEDIA

Free data source about iron&steel:

- ◆ up-to-date market analytics
- ◆ corporate news
- ◆ full picture of global iron&steel industry
- ◆ interviews and opinions of market leaders
- ◆ steel and raw material prices

THINK TANK

Think tank:

- ◆ fundamental studies on key challenges for iron&steel industry
- ◆ new ideas for decision making, public and expert discussion
- ◆ support of the dialogue between steel market stakeholders

RESEARCH AGENCY

Market studies:

- ◆ global steel markets coverage
- ◆ scrap market
- ◆ DRI/HBI and DR-grade feed
- ◆ CBAM/ETS/carbon prices impact
- ◆ macroeconomic modelling
- ◆ prices forecast



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