THE ITALIAN CLIMATE CHANGE THINK TANK

INDUSTRIAL TRANSFORMATION POLICIES

THE STEEL SECTOR

POLICY PAPER

JUNE 2024

Simone Gasperin

Giulia Novati

Chiara Di Mambro

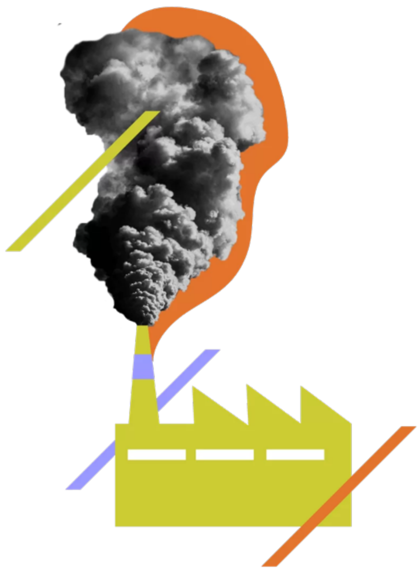


TABLE OF CONTENTS

EXECUTIVE SUMMARY

There currently exists a strategic opportunity for setting Italy's industrial development within the context of reducing greenhouse gas emissions. In this regard, the National Energy and Climate Plan (NECP) offers a great opportunity[1].

Due to its importance from an economic standpoint (15% of GDP) as well as in terms of emissions produced (22% of the national total), it's paramount that Italy's manufacturing sector embarks on a development path towards decarbonisation. The regulatory and planning framework should facilitate this change.

An industrial transformation requires policies that are specifically formulated for each sector, including those which aren't particularly energy intensive as well as SMEs, and which are designed to bring about positive change both in the short term (2030) and in the long term (2050) for the country's entire industrial ecosystem.

Italy is the second largest steel producer in Europe and the eleventh largest in the world. In 2023, Italy produced 21.1 million tonnes (Mt) of steel.

Of this, around 18 Mt (86% of the total) is produced from steel scrap. Indeed, Italy is Europe's largest producer of steel using electric arc furnaces to recycle steel scrap. As a result, in terms of emissions, Italy's steel production is among the most efficient in the world, with emission factors per tonne of crude steel significantly lower than primary steel production using a coal-fired BF-BOF (approximately 2.3 - 2.5 tCO_2/t_{steel} with the coal-fired BF-BOF compared to approximately 0.08 - 0.09 tCO_2/t_{steel} with the EAF[2]).

Regarding primary steel production, which remains of strategic importance, both for its specific uses (construction, food tin, car bodies and chassis) as well as from a security of supply perspective as global demand for recycled steel is expected to increase in the coming years the country's only currently operational site is the ex-ILVA facility in Taranto. . As a result of continuing corporate difficulties, this site's production levels, bearing in mind it has a production capacity of approximately 9.5 Mt_{steel}/year, were in the order of 3.5 Mt in 2022, and fell even further in 2023 to less than 3 Mt.

Such an industrial transformation in the steel sector would also greatly benefit companies producing technologies and materials aimed at enabling the manufacture of zero/low emission steel (hereinafter "green" steel), such as hydrogen-ready DRI facilities, or the production of carbon additive substitutes in electric arc furnaces, as well as the sector's energy efficiency, all of which are important elements in terms of national production.

The lack of any clear objectives, within the NECP, for steel manufacturing and paths towards transforming the strategic supply chains appears even more evident in light of the public financing initiatives that exist for so-called clean-tech, such as the Inflation

[1] See also NECP A Plan for Action – Chapter 4 The Plan and the Manufacturing Industry (https://eccoclimate.org/wp-content/uploads/2024/03/Technical-report_Necp_A-plan-for-action.pdf) and Industry and Electrification: Strategic Opportunities for The National Energy and Climate Plan (https://eccoclimate.org/industry-and-electrification-strategic-opportunities-for-the-necp/)

[2] From the IEA and sustainability reports published by secondary steel production companies detailing their emissions from the production of crude steel. The data refers only to emissions directly associated with the steel production process, it doesn't include emissions produced during any rolling processes.

Reduction Act or the five-year plans in China, the Clean Technology Fund in India or the Net Zero Industry Act established within the EU.

Maintaining a steel production sector and transforming it towards "net zero" are strategic objectives for both the decarbonisation and the competitiveness of the Italian manufacturing industry. Other European steel industries (Sweden, Germany and France to name just a few) have for some time been introducing measures to convert their most emission producing processes, using an integrated approach that considers the entire production and supply chain as well as all the implications for the energy, economic and social system. Technological solutions to decarbonise steel production, to a large extent, do exist (see also A Green Steel Strategy, September 2022).

The biggest obstacle for zero/low emission or green steel is the simple fact that, within the current market, it isn't cost-competitive. Even if the development of new facilities is financed through investment, the operating costs of green steel production exceed those of conventional steel production.

For this reason, it is necessary to devise a set of coordinated industrial policies that are assigned varying priorities and executed accordingly. Supply-side support policies should provide assistance with investment costs and then, subsequently, with the energy costs deriving from the use of natural gas (and electricity). Simultaneously, since it is more expensive to produce, regulatory, incentive and demand-side protection mechanisms must be introduced to facilitate the development of a market that can provide a vehicle for the commercialisation of green steel.

In light of the complex regulatory framework that has been developed around energy and climate objectives, this policy paper offers a perspective and a conceptual outline for defining a policy framework that's consistent with the country's emission reduction goals.

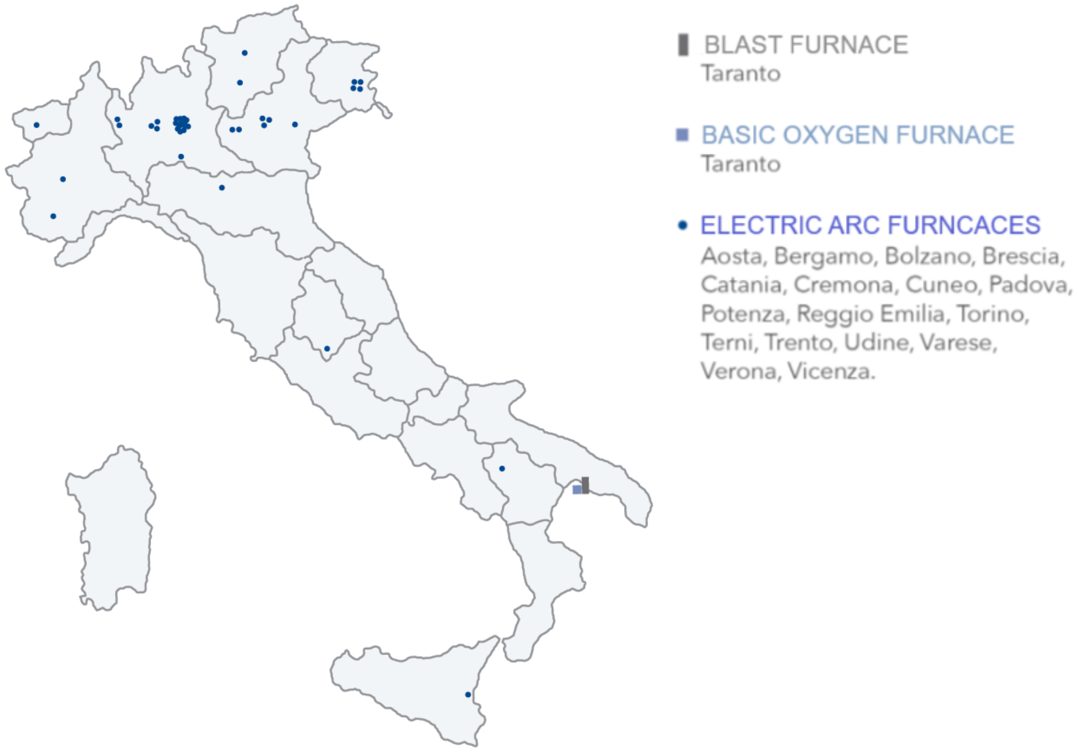
1 THE ITALIAN STEEL INDUSTRY

1.1 The Italian Steel Industry in numbers

Italy is the second largest steel producer in Europe and the eleventh largest in the world[3]. In 2023, 21.1 million tonnes (Mt) of steel were produced in Italy[4], down 2.5% from the previous year, following an 11.5% drop in 2022. This decline in national production is set within a weak context, where 2023 output remained at 2022 levels (1.9 Bn tonnes, +0.1%) globally. In 2023, the breakdown of national production saw flat-rolled products accounting for 45% of the total (9.6 Mt), while long-rolled products for the ramaining 55% (11.7 Mt)[5].

Italian steel production is mainly concentrated in the North (Figure 1), the majority of which is produced by recycling steel scrap using Electric Arc Furnaces (EAFs). With 18 Mt produced in 2023 (86% of the total), Italy is Europe's largest producer of recycled steel[6].

Figure 1 – *Geographical distribution of steel production sites in Italy by technology*[7]



The other 14% of Italian production is made up of primary steel produced from iron ore at the Acciaierie d'Italia plant in Taranto, Italy's only operational integrated-cycle coal-fired facility (Blast Furnace - Basic Oxygen Furnace, BF - BOF). In 2022, crude steel production in Taranto was 3.5 Mt[8], with a further drop below 3 Mt in 2023. Just ten years earlier, in 2012, blast furnace steel production in Italy exceeded 9 Mt and accounted for 34% of the overall total[9].

---

[3] "World Steel in Figures 2023", *Worldsteel* (2023).
[4] "World Steel in Figures 2024", *Worldsteel (2024).*
[5] "La siderurgia italiana in cifre 2023" (The Italian Steel Industry in Figures 2023), *Federacciai* (2024).
[6] "World Steel in Figures 2024", *Worldsteel* (2024).
[7] "La siderurgia italiana in cifre 2022" (The Italian Steel Industry in Figures 2022), *Federacciai* (2023).
[8] "Bilancio di Sostenibilità 2022" (Sustainability Report 2022), *Acciaierie d'Italia* (2023).
[9] "La siderurgia italiana in cifre 2013" (The Italian Steel Industry in Figures 2013), *Federacciai* (2014).

The importance of the Italian steel sector is more significant from an economic perspective than it is from a production standpoint. As Table 1 shows below, although Italy produces approximately only 60% of the total crude steel produced in Germany, in terms of revenue and value added it is worth as much as 80% and 72% respectively. This is evidence of Italy's greater focus on high value-added production, a fact further confirmed by the workforce productivity figure, the highest among Europe's six major steel producing countries. The importance of the Italian steel sector is not only evidenced by its large number of employees, but also by the significance of its share of the value added for the manufacturing sector (2.16%).

Table 1 – *Comparison between Italy and Europe's other major steel producing countries (2021)* [10]

	Germany	Italy	Spain	France	Poland	Austria
Production [millions of tonnes]	40.1	24.4	14.2	13.9	8.5	7.9
Number of companies	423	344	289	40	74	10
Employees	81,434	43,630	22,017	25,346	25,516	21,619
Net revenue [millions of Euros]	46,145	37,085	15,339	18,995	10,991	8,899
Value added [millions of Euros]	8,228	5,918	2,770	3,186	2,136	2,578
Share of value added for the manufacturing sector	1.12%	2.16%	2.07%	1.25%	2.21%	3.86%
Workforce productivity [thousands of Euros]	101	136	126	126	84	119

Thanks to its strong mechanical engineering sector, Italy is the second largest consumer of steel in Europe (after Germany, which, however, has a higher per capita consumption), with 23.5 Mt in 2023[11]. In Italy, steel is primarily used in the construction sector (36.5%), followed by mechanical engineering (20.2%), metal-based products (18.7%), the automotive industry (17.1%), and other sectors (the remaining 7.5%)[12]. However, there is a significant difference between long products, which are predominantly used in the construction sector, and flat products, whose use is more likely to be found in the mechanical engineering and automotive sectors[13].

This large volume of national consumption implies a high dependence on imports, especially of flat products, which registered a net trade deficit of 6.5 Mt in 2023 (8.1 Mt in 2022). Italy is the world's fourth largest importer of steel (in volume terms), but is only the sixth largest exporter[14]. This translates into a net negative steel trade balance of 2.6 Mt in 2023[15], a trade deficit that has existed for 9 consecutive years and that has grown[16],

[10] Sector economic data "Manufacture of basic iron and steel and of ferro-alloys" from Eurostat (*Structural Business Statistics*). Production data from "World Steel in Figures 2022", *Worldsteel* (2022).
[11] "World Steel in Figures 2024", *Worldsteel* (2024).
[12] "Come cambia il consumo di acciaio in Italia" (How Steel Consumption is Changing in Italy), *Federacciai* (21 October 2020), Presentation by Flavio Bregant at the webinar entitled "Reagire alla crisi: i settori utilizzatori di acciaio" (Reacting to the Crisis: the Steel-Using Sectors).
[13] "Come cambia il consumo di acciaio in Italia" (How Steel Consumption is Changing in Italy), *Federacciai* (21 October 2020), Presentation by Flavio Bregant at the webinar entitled "Reagire alla crisi: i settori utilizzatori di acciaio" (Reacting to the Crisis: the Steel-Using Sectors).
[14] "World Steel in Figures 2024", *Worldsteel (2024).*
[15] "L'industria siderurgia italiana 2023" (The Italian Steel Industry 2023), *Federacciai* (2024).
[16] Not including 2020, the year of the pandemic.

if we limit the analysis to non-EU countries only, from just under 2 Mt in 2014 to over 7 Mt in 2023.

All this evidence demonstrates a situation of high production specialisation accompanied by a structural decline in the primary steel industry, which in 10 years has seen direct employment fall from 36,000 to just under 31,000 (-15.5%) and hours worked from almost 58,000 to 44,000 (-25.2%)[17]. The fall in total production, from 26.3 Mt in 2012 to 21.6 Mt in 2022, is entirely explained by the collapse in the production of hot-rolled flat products, largely produced via the integrated-cycle process with a blast furnace, which decreased from 14.5 Mt in 2012 to 3.5 Mt in 2022.

1.2 The Strategic Importance of Primary Steel

Since 2022, the corporate difficulties experienced by Acciaierie d'Italia, Italy's only primary steel producer, have worsened dramatically, mainly as a result of the increased cost of raw materials and the impossibility of accessing traditional debt financing to raise working capital. The unresolved governance related tensions between the majority shareholder and the public partner[17] have recently led to the company being placed into extraordinary administration[18] with theMinistry for Enterprises and Made in Italy.

Keeping the company operational, with the renewal of the Taranto plant towards decarbonisation, is firmly in the country's strategic interest, even if we just consider its importance from an employment perspective, with around 8,000 direct employees, plus another 10,000 indirect employees of supply companies, involved in its operations. In particular, the company's upstream supply chain comprises 1,267 Italian companies (not including the 30 suppliers of gas, energy and other utilities), with the total value of orders issued in 2022 totalling €970 million (€240 million in Apulia alone)[19].

Perhaps even more important is the role that Taranto's steel production plays for the country's downstream industry. Primary steel has specific surface and deformation (ductility) properties that make it irreplaceable in many industrial processes. These include car bodies and car chassis parts, tin packaging for food preservation (for which the ArcelorMittal Italia Group is Italian primary producer with its plant in Genoa), complex furniture structures, as well as mechanical system components that require significant deformation. These applications account for approximately 30% of Italy's demand for steel[20].

Furthermore, primary steel production is also strategically important for the production of recycled steel since, after its use, it becomes part of the scrap that feeds into that industrial process. Producers of EAF steel are heavily dependent on the overall availability of steel scrap[21] (the 2022 purchase requirement was approximately 18.6 Mt), and their dependence on foreign sources has increased from 30% in 2012 to 37% of total imports in 2022 (Figure 2).

---

[17] The company that was given the responsibility for managing the Taranto steel plant is "Acciaierie d'Italia SpA", which is 100% controlled by the financial vehicle "Acciaierie d'Italia Holding SpA", which is in turn 62% owned by the steel manufacturing corporation ArcelorMittal SA and 38% owned by the government agency Invitalia.

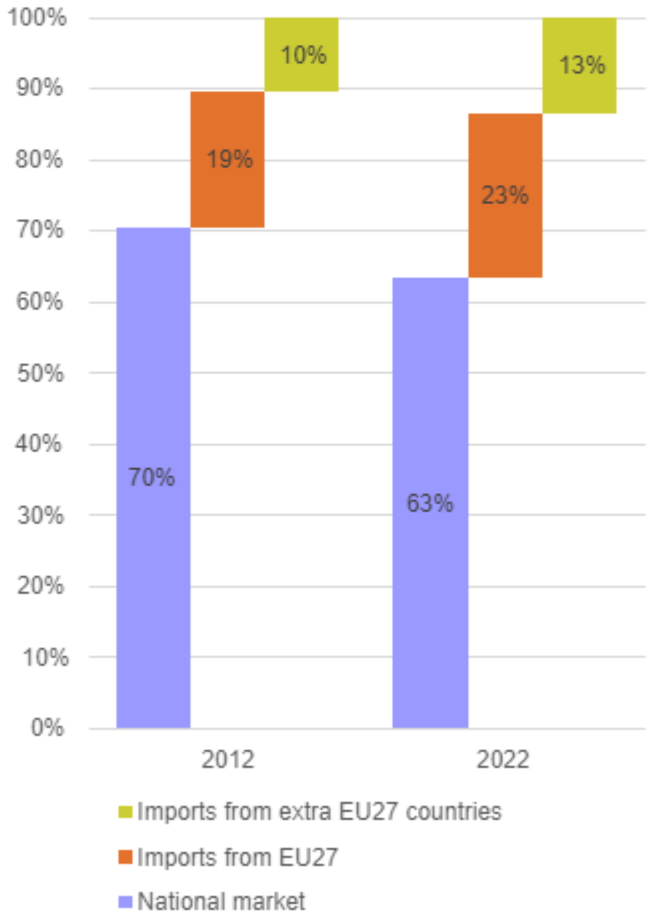
[18] "MIMIT: Acciaierie di Italia S.p.A. ammessa alla procedura di amministrazione straordinaria" (Acciaierie d'Italia SpA placed into extraordinary administration), *Ministero delle Imprese e del Made in Italy* (Ministry for Enterprises and Made in Italy - 20 February 2024).

[19] "Bilancio di Sostenibilità 2022" (Sustainability Report 2022), *Acciaierie d'Italia Holding SpA* (2023).

[20] "Steel Statistical Yearbook 2020 concise version", *World Steel Association* (2021).

[21] Including steel scrap, basic pig iron and HBI (Hot Briquetted Iron), a compact form of DRI that's produced with specific chemical and physical characteristics.

Figure 2 – *Comparison of raw material imports: steel scrap, basic pig iron and HBI*[22].



Aside from the physical availability of raw materials, a heavy dependence on foreign imports also affects the competitiveness of producing companies, which are more exposed to fluctuations in steel scrap prices (as happened when the New Campsider composite price index doubled between 2019 and the beginning of 2022).

For years, the consumption of ferrous scrap in the EU steel industry has been lower than the available supply. For example, in 2021, when steel production reached 152.6 Mt, 87.9 Mt of ferrous scrap was remelted, generating a surplus of almost 19.5 Mt between supply and demand[23]. However, this situation could change and the availability of steel scrap from abroad could fall significantly, especially in the medium to long term if China[24] – which produces 54% of the world's steel and has a net export of 83 Mt (66% of the steel cast in the entire European Union in 2023) – or other primary steel producing countries start converting an increasingly significant share of their steel production from conventional blast furnace methods (currently around 90% of the total) to electric arc furnace technology, thus removing steel scrap from international markets for their own domestic use.

Finally, during use and disposal, steel tends to be polluted by undesirable elements (e.g. tin and copper). In order to obtain high-quality steel with the electric arc furnace

[22] "L'industria siderurgica italiana 2022" (The Italian Steel Industry 2022), *Federacciai* (2023); "L'industria siderurgica italiana 2012" (The Italian Steel Industry 2012), *Federacciai* (2013).

23 Data from Assofermet.

[24] Chinese data from "World Steel in Figures 2022", *World Steel Association* (2023).

technology, it may be necessary to use specially selected scrap or to add a certain amount of pig iron or sponge iron during the production process.

In light of all these considerations, it becomes clear that, in undertaking a path towards decarbonising the steel production process, it remains strategically important to consider both the decarbonisation of primary steel production, for reasons relating to the security of supply and competitiveness of the production system, as well as the production of steel from scrap which, in itself, is already a low-emission process that's already prevalent within the Italian steel production sector.

2 THE TECHNICAL AND ECONOMIC NATURE OF GREEN STEEL

The concept of green steel isn't something that can be defined in absolute terms, it rather falls within a spectrum depending on the level of its emissions impact. A standard has yet to be established, either within Europe or internationally, to clearly and explicitly identify which products fall under this definition and which do not. This, therefore, leads to a proliferation of "green", "climate friendly", "low" or "zero carbon" product announcements that have no shared standard definition. In turn, this situation gives rise to confusion within the market and an increased risk of greenwashing practices.

Transforming steel production processes is a highly complex technical endeavour that requires significant investments and, as the following paragraphs highlight, this transformation will require support from the public sector if the aim of creating green steel markets is to become a reality. It's precisely for this reason, i.e. that such a public sector commitment is required, that it is crucial to establish what is meant, in terms of the degree of sustainability, by a green steel product. This will make it possible to calibrate the level of support that's required and to avoid any price distortions that aren't connected with the effort to decarbonise the production processes.

For information regarding the technical characteristics of current steel production processes and the possibilities for reducing emissions within the production cycle, please refer to a previous ECCO technical paper: A Green Steel Strategy[25].

2.1 Emissions and Energy Consumption of the Different Types of Steelmaking Processes

The direct and indirect CO_2 emissions caused by the Italian steel industry have decreased significantly in recent decades, however, they still account for approximately 19% of all manufacturing emissions[26]. From 1990 to 2020, the industry's emission intensity relative to production decreased by 60.4%, a result that can also be credited, in part, to a much-changed product mix and a substantial reduction in the production of primary steel[27]. The following table outlines the specific consumption of fossil fuels, electricity and the direct CO_2 emissions associated with the principal steel production processes used in producing both primary and recycled steel.

Table 3 *– Comparison of energy consumption and CO_2 emissions between the different steel production technologies[28]. Indirect CO_2 emissions were calculated using an emission factor for the national electricity mix of 300 g CO_2 /kWh.*

Production process	Consumption of coal [kg/t_{STEEL}]	Consumption of natural gas [Sm^3/t_{STEEL}]	Consumption of electricity [kWh/t_{STEEL}]	Direct CO_2 emissions [kg_{CO2}/t_{STEEL}]	Indirect and fugitive CO_2 emissions [kg_{CO2eq}/t_{STEEL}]
BF-BOF	365.2	32.2	166	1,912 – 2,035	54

[25] "A Green Steel Strategy. Options and Challenges of Decarbonisation", *ECCO* (2022).

[26] Produced by ECCO using UNFCCC data.

[27] https://indicatoriambientali.isprambiente.it/it/industria/intensita-di-emissione-di-anidride-carbonica-nellindustria-siderurgica

[28] Data from the Polytechnic University of Milan.

Production process	Consumption of coal [kg/t_{STEEL}]	Consumption of natural gas [Sm^3/t_{STEEL}]	Consumption of electricity [kWh/t_{STEEL}]	Direct CO_2 emissions [kg_{CO2}/t_{STEEL}]	Indirect and fugitive CO_2 emissions [kg_{CO2eq}/t_{STEEL}]
DRI-EAF with natural gas	0	401.9	634	816	243
DRI-EAF with green hydrogen	0	0	4,576[29]	3.7	1372.8
EAF with natural gas[30]	0	35	510	70[31]	160
EAF with green hydrogen	0	0	722	47 - 50	216.6

Using coal to produce primary steel, a process also known as the integrated cycle or primary steelmaking, results in an emission value of approximately 2 tCO_2/t_{STEEL} produced[32]. This value decreases dramatically when Direct Reduced Iron (DRI) technology is used with natural gas, i.e. to 0.8 tonnes of CO_2 emitted per tonne of steel produced[33]. When DRI technology is fuelled by green hydrogen, this further reduces CO_2 emissions almost to zero, but the consumption of electricity is around 7 times higher than with natural gas-fuelled DRI per tonne of steel produced. In the case of green hydrogen-fuelled DRI, approximately 65% of the electricity consumed is attributable to the production of hydrogen for the DRI unit[34].

Electric arc furnaces (EAFs) generate direct CO_2 emissions via their natural gas-fuelled burners, the use of charge carbons (e.g. anthracite) as reducing agents and the oxidation of the graphite electrodes. The emission level is on average 70 - 90 $kgCO_2/t_{STEEL}$. Replacing the gas burners with green hydrogen leads to a further 30% reduction in emissions.

The indirect emissions associated with DRI using green hydrogen depend on the average emission factor assumed for the electricity produced by the national grid. Using an emission factor of 300 gCO_2/kWh, this results in a total of 1,373 $kgCO_2$/kWh of indirect emissions. However, with the electricity sector due to become progressively more decarbonised, indirect emissions are set to decrease. Considering the NECP scenario presented in the June 2023 draft, the national emission factor is estimated to decrease to 146 gCO_2/kWh. Using this figure would give an indirect emission value of 666.7 $kgCO_2/t_{STEEL}$ for the DRI + EAF technology with green hydrogen.

2.2 'Green Steel' and its Economics

The main barriers to scaling up the production of 'green steel' relate to the expected availability of green hydrogen, mainly due to issues relating to the development of renewables and the technology and to its economic cost. With respect to the average

---

[29] Including the quantity of electricity required to produce hydrogen via electrolysis.

30 The natural gas is used in burners inside the electri arc furnces.

[31] From the IEA and sustainability reports published by steel recycling companies detailing their emissions in relation to iron ore steel production.

[32] Polytechnic University of Milan.

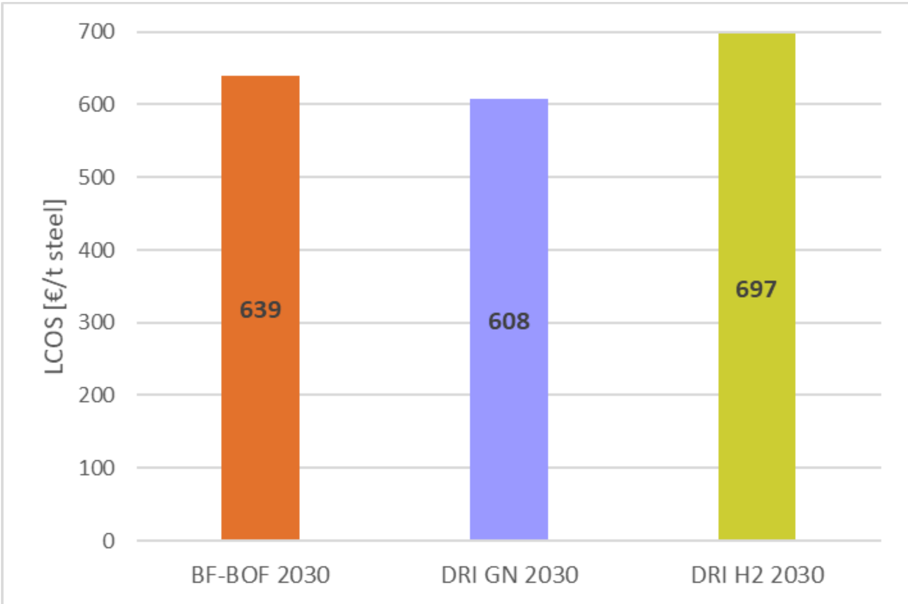
[33] Polytechnic University of Milan.

[34] Data from the Polytechnic University of Milan.

cost of producing primary steel using BF-BOF technology, all other solutions are significantly more expensive and therefore less competitive, since the final product price is nearly always the primary discriminating factor.

The CapEx alone required to install a DRI-EAF facility is substantial in itself, but then the OpEx needs to be added to this, which in the case of a natural gas DRI-EAF facility is about 22% higher than that associated with a BF-BOF facility[35]. For a DRI-EAF facility using green H_2, the OpEx is approximately two-thirds higher than for a BF-BOF facility, because in addition to the iron ore cost it's also necessary to factor in the cost of the electricity required to produce green hydrogen via electrolysis. Estimates show that in 2030, the Levelised Cost of Steelmaking (LCOS) using a green hydrogen DRI-EAF facility will be 9% higher than for a BF-BOF facility (€697 per tonne of steel, compared to €639) and 15% higher than for a natural gas-fuelled DRI facility (€608 per tonne of steel)[36].

Figure 3 – *Projections for the 2030 Levelised costs of steelmaking (LCOS) for BF-BOF, natural gas DRI and green hydrogen DRI facilities.*



These numbers clearly demonstrate that, under normal market conditions, it is impossible for a steel producer to produce primary steel using a near-zero GHG emissions production process without adequate intervention measures on price and cost. To further underline this point, in 2021, the gross operating margin within the Italian steel sector was less than 10% of the total net revenue[37].

Similar considerations can also apply to EAF-produced steel, although in this case it's impossible to generalise since the situation can vary greatly depending on the value added of the particular supply chain of the finished products.

[35] Measured in €/t, from the "Transformation Cost Calculator (TTC) - steel", *Agora* (2022).
[36] The following assumptions were made for estimating the cost of steel production in 2030: electricity price of €0.04 per kWh, natural gas price of €11.3 GJ, coal price of €3.1 per GJ and CO_2 allowance price of €80 per tonne. The natural gas, coal and CO_2 price assumptions were taken from the 2023 draft of the NECP.
[37] "Manufacture of basic iron and steel and of ferro-alloys" *Eurostat* (*Structural Business Statistics*).

Another important factor to consider is the fact that only a fraction of the green steel produced can be voluntarily purchased at a higher price and used as a distinctive selling factor in the market for finished products incorporating it. It has been estimated[38] that the higher costs of green steel can be diluted in high value products, achieving a price differential as low as less than 1% in the case of a car, for example. However, even in this case, the greatest impact would be on high-end and electric cars, since using green steel would make the greatest contribution to reducing total emissions over the life cycle of the product. Conversely, the additional cost of green steel may have a greater impact in the case of household appliances (+1.5%), sheet metal for construction (+2.1%)[39] or shipping containers (+18%)[40]. In these cases, however, transferring the increased cost of green steel to the price paid by the end consumer would not be feasible.

Therefore, producing green steel can only be economically viable if appropriate support policies are developed and implemented to, on one hand, facilitate the adoption of low-emission technological processes by producers and, on the other hand, change relative prices so that a competitive green steel market can gradually develop and become self-sustaining in the longer term.

---

[38] Various studies have reported that the green steel premium on the total cost of the car can be estimated at around 0.5-1%. These include "Stainless Green: Considerations for making green steel using carbon capture and storage (CCS) and hydrogen (H_2) solutions", Oxford Institute for Energy Studies (2023); "From Niche to Mainstream: Shaping Demand for Green Steel", *Sandbag* (2024); "Making Net-Zero Steel Possible", *Mission Possible Partnership* (2022).

[39] Calculation, with estimated prices for 2030, by "Making Net-Zero Steel Possible", *Mission Possible Partnership* (2022).

[40] Calculation, with estimated prices for 2023, by "From Niche to Mainstream: Shaping Demand for Green Steel", *Sandbag* (2024).

3 AN INDUSTRIAL STRATEGY FOR GREEN STEEL

As has been repeatedly emphasised, to enable an industrial transformation process aimed at facilitating decarbonisation, it is necessary to adopt an integrated industrial strategy[41] that's capable of reconciling climate objectives with those of economic competitiveness and promotion of employment.

The situation in the steel industry is a rather typical case. As highlighted in the previous chapters, its transformation is strategic, both in terms of reducing CO_2 emissions as well as for the competitiveness of the country's manufacturing industry as a whole. Since it's impossible for the sector to be transformed via simple market mechanisms, it is necessary to consider an overall industrial strategy consisting of a coordinated set of actions on both the supply side and the demand side, in order to transform the production processes and ensure a viable market for green steel products.

The outline of such a set of actions, as proposed by ECCO, is set out in Figure 3 and discussed in the following paragraphs. It specifies a number of action areas where individual policies will be able to have an impact. The action, demand and supply policies are distinguished according to whether they are aimed at the steel producer (direct) or at implementing certain enabling conditions (indirect). The policy coordination, prioritisation and sequencing (see sub-section 3.3), defined in relation to the sector's needs and the impacts the policies may have on it, are fundamental for setting out an overall strategy for decarbonising the steel industry.

3.1 Supply-Side Actions for Transforming the Production Processes

The aim of the supply-side policies is to decarbonise both primary and recycled steel production through the adoption of new production processes and the use of energy carriers such as electricity and green hydrogen.

For this to be possible, a number of action areas need to be considered:

- The capital expenditure that companies ("Company CapEx") will need to incur to install and/or replace existing production facilities.
- The operating costs that companies ("Company OpEx") will need to incur to produce green steel.
- The enabling infrastructure required to make green steel production processes possible ("Infrastructure").
- The development of technologies to make the production processes more efficient and thus reduce operating costs ("Technologies").

Regarding direct policies to support the capital investments of steel companies, these shall include grants or subsidised loans aimed at helping to fund the installation of DRI and EAF production solutions. Indirect actions shall include measures to support the development of national supply chains for DRI facilities and electrolyser manufacturers, in order to increase efficiencies of scale and reduce installation costs, as well as to generate economic value from the transition of the steel sector.

[41] "The National Energy and Climate Plan: A Plan for Action – Chapter 4 The Plan and the Manufacturing Industry, *ECCO* (2023). https://eccoclimate.org/wp-content/uploads/2024/03/Technical-report_Necp_A-plan-for-action.pdf

With regard to companies' operating costs, direct energy price intervention policies are crucial. Contracts for Difference (CfDs)[42], which the public authority can award to a steel producer, are an effective tool for guaranteeing a competitive energy price to a company for a specific period of time. Affordable electricity costs, which are crucial for both DRI and EAF facilities, can be guaranteed through Power Purchase Agreements[43] (PPAs). Furthermore, measures to indirectly disincentivise emissions - such as the Emissions Trading System (ETS) - effectively increase production costs and, in so doing, create a competitive advantage for less carbon-intensive producers[44].

Policies aimed at acting on infrastructural aspects are mainly indirect, but they are a necessary precondition for taking the final step towards producing steel using green electricity and green hydrogen. They are primarily aimed at facilitating the installation of renewable electricity capacity (including near the facility) and expanding the capacity of the transmission/distribution grid to be able to sustain the increased loads.

Finally, innovation support policies (direct) can help improve the energy efficiency of processes at the individual facility level, or they may be used to support the development and improvement of enabling technologies (indirect). These include the Innovation Fund, especially as set out within the latest revision of the EU ETS directive.

3.2 Demand-Side Actions for Creating Green Steel Markets

During the process of transforming the sector's production processes, it is important that demand-side policies are also directed to ensure the existence of markets that are able to meet the higher costs associated with green steel, and thus reduce the consumption of high CO_2 emission steel products. Naturally, the level of price support afforded to a particular final product must be inversely proportional to the quantity of emissions associated with that product, thus rewarding green steel production processes that are more decarbonised, and which are generally more expensive as a result.

Public procurement is a direct tool that can be used to create such markets. More specifically, green public procurement (GPP) makes it possible to favour goods with a higher green steel content.

Similarly, setting standards and introducing legal minimum quotas for green steel in materials and products indirectly influence the market for steel products, thus creating a cost advantage for green steel. Environmental "protectionism" measures, such as the Carbon Border Adjustment Mechanism (CBAM), effectively function like indirect demand policies, since they protect Europe's decarbonised steel producers from "climate unfair" competition from abroad still they cannot be sufficient (paragraph 3.4.10).

---

[42] Contracts for Difference are an instrument that allows a public authority to fix the supply price for a particular energy product at a certain value for an extended period of time. In the event that the market price for the energy product rises above the stipulated value, the public authority shall cover the price difference so as to ensure the supplier is paid accordingly and the consumer doesn't have to bear excessive costs.

[43] Power Purchase Agreements (PPAs) are long-term agreements for the purchase of renewable electricity between a supplier and a customer, whereby the customer has the benefit of being able to purchase electricity at a pre-negotiated fixed price.

[44] The revised scope of the ETS directive also moves in this direction, removing the production thresholds to enable the inclusion of all types of facilities within its scope.

3.3 Priorities for Action and their Future Coordination

The policies and actions set out in Figure 3 are all aimed at helping to achieve the objective of decarbonising the Italian steel industry whilst simultaneously maintaining its competitiveness in the global markets. However, they are not all of equal importance and, in any case, they need to be implemented in a logical order if their effectiveness is to be maximised.

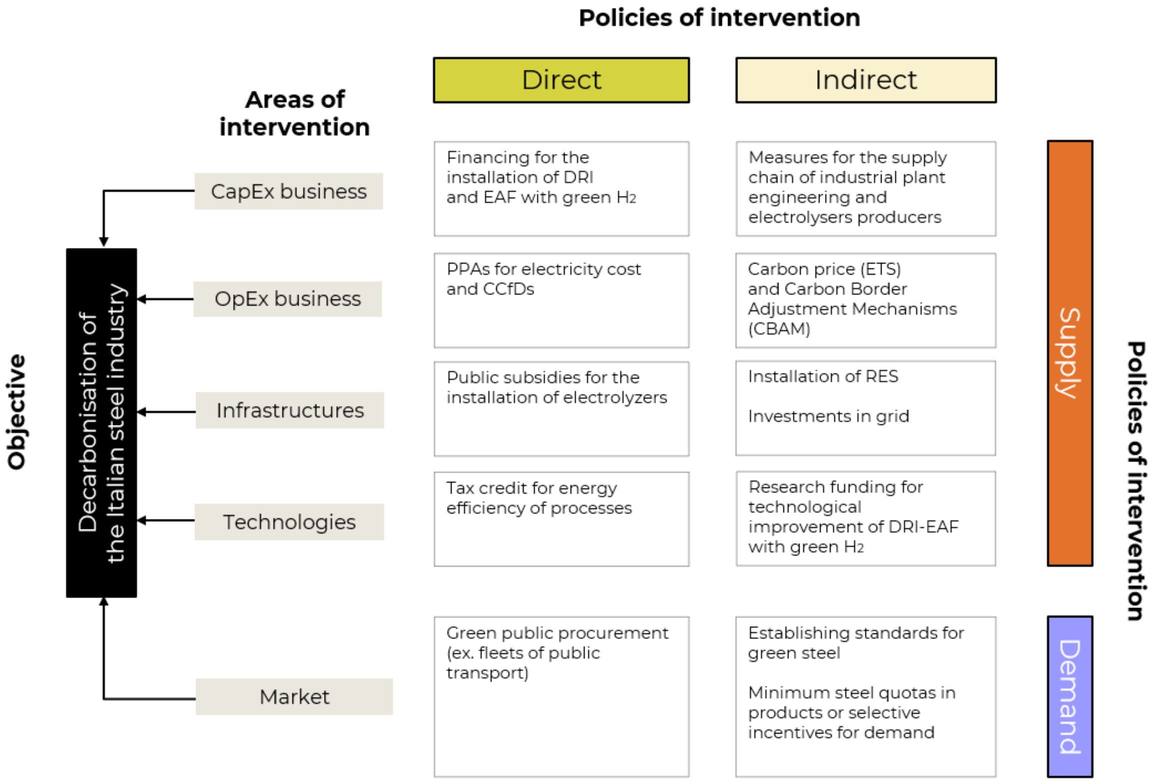
For example, the technologies required to transition to a green, or rather, zero-low emission steel industry are already sufficiently advanced, meaning not much further work is required in terms of basic research. The biggest obstacles, as outlined in Chapter 2, are those relating to costs that steel companies are faced with. Depending on their reference market, their profit margins are generally insufficient for them to be able to use their internal resources or to resort to market financing in order to cover the increased CapEx and OpEx costs necessary to transform their production processes.

Hence why it’s a priority to subsidise investments for the installation of new DRI-EAF facilities, initially fuelled by natural gas, but already capable of transitioning to green hydrogen. To prepare for such facilities becoming operational, energy supply contracts should be agreed to minimise operating cost differentials. The same mechanisms will also be required when the facilities convert to green hydrogen, and financial support will be needed for the installation of on-site electrolysers and capped electricity price agreements will also need to be in place.

Since these measures will still not be sufficient to render green steel as cost competitive as traditional steel, “protected” market areas for green steel, developed through demand-side policies, will therefore need to exist from the outset. These must, however, be designed to maximise the desired impact.

For example, construction products used in public works are predominantly long products, primarily from secondary steel production. In this case, therefore, the use of green public procurement would be less effective; conversely, it can be more significant in the procurement of (local) public transport vehicles, where the use of flat products from primary steelmaking is more predominant. In the construction sector, flat products are more widely used in residential buildings, but the lack of public procurement in this area and the wide distribution of production make GPP less effective and means that rewarding builders with incentives that encourage them to use building materials that are made of green steel is a more appropriate approach.

Figure 4 – *Example policy framework for decarbonising the Italian steel industry (Created by ECCO)*



3.4 Overview and Assessment of Existing Policies

This section provides an overview of existing national and EU policies that can help facilitate the decarbonisation of the Italian steel sector. Table 2 provides a summary of these, defining them by type (using the definitions outlined in Figure 3), potential relevance (for decarbonising the sector) and current impact (if any).

As shall become evident, the abovementioned direct supply-side measures, those which are fundamental for installing new facilities and providing support for the operating costs associated with green steel production, are yet to be implemented in Italy.

Table 2 *– Assessment of current policies within the Italian-EU context*

Policy	Italy or EU	Type	Relevance	Impact
Ex PNRR M2C2 "Utilizzo dell'idrogeno in settori *hard-to-abate*" (Italy's recovery and resilience plan Mission 2 Component 2 "Use of hydrogen in hard-to-abate sectors")[45]	Italy	Supply Direct Company CapEx	◆◆◆◆◆	◆◆◆◆◇
Criteri Ambientali Minimi (CAM - Minimum Environmental Criteria)	Italy	Demand Direct Market	◆◆◆◆◇	◆◆◆◇◇
Italian Decree Law on Energy	Italy	Supply Indirect Companies	◆◆◆◆◇	◆◆◆◆◇
Transizione 5.0	Italy	Supply Indirect Companies	◆◆◆◇◇	◆◆◇◇◇
EU Innovation Fund	EU	Supply Direct Company CapEx or OpEx	◆◆◆◇◇	◆◆◆◇◇[46]
Research Fund for Coal and Steel	EU	Supply Indirect Technologies	◆◆◆◇◇	◆◆◆◆◇
Clean Steel Partnership	EU	Supply Direct Companies	◆◆◆◇◇	◆◆◆◇◇

[45] The funds initially allocated were reallocated through Cohesion and Complementary Funds, and DECREE LAW No. 19 of 2 March 2024, converted into law with amendments on 12 April 2024, details the funds to be allocated between 2024 and 2029 and the method for doing so via the company DRI d'Italia.

[46] There are several EU DRI projects financed through the Innovation Fund, but none in Italy. Any changes to the directive would also allow part of the OpEx to be financed through Carbon Contracts for Difference and the Innovation Fund.

Policy	Italy or EU	Type	Relevance	Impact
IPCEI for hydrogen	EU	Supply Indirect Technologies	◆◆◇◇◇	◆◆◆◇◇
EU ETS	EU	Supply Indirect Company OpEx	◆◆◆◆◇	◆◆◆◆◇
CBAM	EU	Demand Indirect Company OpEx	◆◆◆◇◇	◆◆◇◇◇ (Progressively implemented from 2026)

3.4.1 *Ex PNRR M2C2 "Utilizzo dell'idrogeno nei settori hard-to-abate" (Italy's recovery and resilience plan Mission 2 Component 2 "Use of hydrogen in hard-to-abase sectors")*

As part of the National Recovery and Resilience Plan[47] (NRRP), the Italian government had allocated €1 billion for the purposes of introducing green hydrogen to decarbonise the industrial process of at least one facility operating in the steel sector. More specifically, decree law "*Aiuti TER*"[48] established that these funds were to be allocated to DRI d'Italia (a company established by Invitalia in January 2022), whose role is to oversee the development and installation of a natural gas/green hydrogen DRI facility at the Taranto steel plant by 2026.

Following the cancellation of this investment, as a result of the NRRP being revised under the approval of the European Commission on 24 November 2023, Decree Law No. 19 of 2 March 2024 provided for a new measure to allocate the funding through a 6-year investment plan (2024 to 2029), divided as follows: *€100 million for each of the years from 2024 to 2026, €210 million for the year 2027, €285 million for the year 2028 and €205 million for the year 2029*. This financing shall be allocated through DRI d'Italia[49].

As reported by ECCO as part of its analysis[50], this measure facilitates the transition of the ex-Ilva plant to green hydrogen DRI technology, provided that the technologies used for the production of DRI are compatible from the outset with the use of a mixture of natural gas and hydrogen.

Therefore, the relevance of this particular provision is clearly evident. However, regarding how impactful this measure is expected to be, the assessment is a little more conservative. This is largely due to the fact that for this part of the investment (estimated to be at least €2.5 billion to convert an 8 Mt facility to DRI by 2030), the development and installation timeframes and approaches are as yet unknown, including in relation to the management of the corporate crisis, planning and authorisation times for the project, particularly considering the context of a complex situation such as that of the ex-ILVA site in Taranto.

---

[47] "National Recovery and Resilience Plan", Italian Government (2021).
[48] Decree Law No. 144 of 23.9.2022, converted by art. 24 of Law No. 175 of 17.11.2022.
[49] Established by art. 1 quater of Decree Law No. 142 of 16 December 2019, converted with amendments by Law No. 5 of 7 February 2020 (in the Official Gazette of the Italian Republic no. 37 of 14/02/2020).
[50] "A Green Steel Strategy. Options and Challenges of Decarbonisation", *ECCO* (2022).

3.4.2 Criteri Ambientali Minimi (CAM - Minimum Environmental Criteria)

The Criteri Ambientali Minimi[51] (CAM) are requirements for the public procurement processes and their purpose is to identify the most environmentally friendly products or services available on the market.

In Italy, the CAM are defined within the National GPP Action Plan[52] and are regulated by the Contracts Code[53], which establishes the obligation for "technical specifications" and "contractual clauses" to be contained in the CAM, as well as the "contract award criteria" that favour the most sustainable and circular supply chains.

With respect to the use of steel, there are a number of detailed CAMs for construction products used in the building industry[54]. These criteria specify the minimum amount of recycled material that the steel which is used for structural or other purposes must contain. A bonus score is also awarded to companies who procure construction products that are made from steel produced entirely at facilities in EU ETS countries.

However, in the current CAMs that are applicable to building products, no account is taken of the variable "CO_2 emissions" associated with the production of materials. Furthermore, there also are no requirements in the CAMs applicable on steel used for land public transport vehicles[55], or public service and emergency vehicles (police cars, ambulances, etc.). Using the reward CAMs, i.e. taking advantage of the current updates to the building related CAM, would increase the relevance of CAMs in the Italian context and increase their potential impact in terms of creating markets for green steel.

3.4.3 Italian Decree Law on Energy (DL energia)

Decree Law No. 181 of 9 December 2023 provides for both a "preference" mechanism, where there are multiple competing cases, for renewable energy projects aimed at meeting the energy needs of high energy users, and an advance on a proportion of the electricity produced by newly developed facilities, or those in the process of being developed, ahead of them becoming operational, so as to enable companies to benefit immediately from the anticipated reduction in energy expenditure without having to wait for the facilities to become operational. This measure is aimed at accelerating investments in self-generated renewable energy in sectors with high electricity consumption and where carbon leakage is commonplace, such as the steel industry, particularly in view of the need to reduce the impact of energy price variations on energy expenditure - the spot price of electricity stood at €128/MWh in 2023, compared to €52/MWh in 2019. In the current market situation, in which significant uncertainty remains due to the Russian-Ukrainian conflict and the resulting geopolitical fallout, the increased use of renewables helps to contain rises in energy costs and reduces

---

[51] "Green Public Procurement – Criteri Ambientali Minimi", Italian Ministry of the Environment and Energy Security.

[52] "National action plan for the environmental sustainability of consumption within the public administration sector" Ministerial Decree of 3 August 2023.

[53] Legislative Decree No. 36 of 31 March 2023.

[54] "Minimum Environmental Criteria for the provision of planning and implementation services to building projects", *Official Gazette of the Italian Republic*, 6 August 2022.

[55] "Purchase, leasing, renting, hiring of vehicles for road transport and for land public transport services and special road passenger transport services", published in the Official Gazette of the Italian Republic No. 157 of 2 July 2021.

exposure to electricity price volatility, which can be a significant issue for companies in terms of their international competitiveness.

Such a measure has a two-fold benefit: it helps to maintain the competitiveness of companies, especially those with high energy consumption requirements, and simultaneously facilitates the increased use of renewable energy.

The relevance and, potentially, the impact of such a measure as a decarbonisation policy is assessed as being significant.

3.4.4 Transizione 5.0 (Transition 5.0)

Article 38 of Decree Law No. 39 of 2 March 2024 establishes the Transizione 5.0 Plan as part of Mission 7 of the EU's RePowerEU plan and sets out how it will be applied and implemented, largely by MIMIT (Ministero delle Imprese e del Made in Italy - Ministry for Enterprises and Made in Italy). The idea behind the plan is to use tax credits to finance innovation projects that lead to a reduction in energy consumption during 2024 and 2025 for companies located either within Italy (minimum 3% reduction) or abroad (minimum 5% reduction).

Furthermore, in accordance with the DNSH (Do No Significant Harm) principle, investments intended for "activities directly related to fossil fuels" or ETS facilities whose performance is worse than the sector benchmark are not eligible[56].

Once again, the article introduces the possibility of financing investments in self-generated renewable energy for self-consumption, with the exception of biomass, including facilities to store the energy produced, thus establishing an important stimulus to encourage the installation of renewable facilities to meet the energy needs of companies (in line with the Decree Law on Energy).

The incentive is conditional on the presentation of special certificates, issued by an independent assessor, attesting to the actual savings achieved.

For SMEs and non-ETS facilities in particular, this measure represents an important source of financing[57]. However, for ETS facilities, the need to comply with the benchmark reduces the number of operators that may be eligible for financing, because the emission levels associated with the relevant benchmarks should be achievable even without funding. The evaluation of this measure in terms of its relevance and impact are, therefore, affected by the limitations described.

3.4.5 EU Innovation Fund

The EU Innovation Fund[58] is an EU climate policy funding programme that's focused on the development and commercialisation of technologies aimed at decarbonising industry. The fund is financed by the monetisation of EU Emissions Trading System (EU ETS) allowances, which the European Commission estimates will amount to approximately €40 billion over the period 2020-2030, which will also include

---

[56] The benchmarks are defined according to the Free Allocation Rules, the latest revision of which is COMMISSION DELEGATED REGULATION (EU) 2024/873 of 30 January 2024, in the Official Journal since 4 April 2024 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202400873

[57] However, the regulation presents an unresolved distinction between ETS and non-ETS companies, as the implementation of the DNSH principle should provide for the extended application of the comparison against sector or "fall-back" benchmarks in case these do not exist.

[58] "EU Innovation Fund", *European Commission*.

allowances deriving from CBAM sectors, such as steel. For these sectors, the directive provides for dedicated calls to be opened by 2027 and for the allocation of a significant share of the financial equivalent of the reduced allowances once the CBAM becomes operational.

The EU Innovation Fund has financed (through grants) a number of different initiatives, two of which are Swedish projects - "H2 Green Steel" and "HYBRIT" - to develop green hydrogen DRI steel facilities. In light of Italy's limited fiscal space and, therefore, the difficulty of accessing government funding, this EU fund, despite the complexities often associated with using EU funds, could co-finance the capital expenditure of similar projects in Italy as well, including the conversion of the Taranto site.

In addition to the increase in the size of the fund and the specific mention of the CBAM sectors as the preferential recipients because of the reduction in free allocations, the latest version of the directive also brings in a number of other important changes, these relate to:

- financing modes - it opens up the possibility of financing through Contracts for Difference (CD) and Contracts for Carbon Difference (CCD), a contract type that primarily provides support with OpEx, often the major barrier for the development and implementation of technological innovations.
- project types: compared to the past, when the fund was principally aimed at transitioning prototype technologies to commercial scale, the latest revision of the directive appears to proffer a broader objective, *supporting innovation in low- and zero-carbon techniques, processes and technologies that contribute significantly to the decarbonisation of the sectors covered by this Directive and broadly contribute to zero pollution and circularity objectives.*

It is therefore necessary that any subsequent implementation legislation reflects this concept, enabling the fund to rebalance, at least partially, the competitive imbalances that exist as a result of different possibilities for accessing EU transition financing, due to the different fiscal spaces of each of the Member States.

3.4.6 Research Fund for Coal and Steel

The Research Fund for Coal and Steel[59] (RFCS) co-finances research and innovation projects in the coal and steel sectors conducted by universities, research centres and companies. The fund is financed via the revenues generated by the European Coal and Steel Community (ECSC) in liquidation assets, with an annual allocation of €111 million for the 2021-2027 period. One of the fund's objectives is to support research and innovation projects into decarbonised steel production, in cooperation with Horizon[60], the European Union's research programme. The fund could help steel companies. Between 2011 and 2017, Italy benefited significantly from RFCS funds[61], with no less than 203 organisations winning funding, second only to Germany (360) in Europe.

3.4.7 Clean Steel Partnership

The Clean Steel Partnership is a European public-private partnership established between ESTEP[62] - as the private entity - and the European Commission in the context of Cluster 4 (Digital, Industry and Space) of the Horizon Europe funding programme

[59] "Research Fund for Coal and Steel", *European Commission*.
[60] "Funding opportunities to decarbonise the EU steel industry", *Green Steel for Europe* (June 2021).
[61] "Research Fund for Coal & Steel – Monitoring and Assessment Report (2011-2017)", *European Commission*.
[62] European Steel Technology Platform https://www.estep.eu/

and the Research Fund for Coal and Steel. The general objective of the partnership is to develop technologies at a high readiness level (TRL 8) to reduce CO_2 emissions deriving from EU steel production by 80-95% compared to 1990 levels by 2050, to be achieved alongside the objectives of preserving the competitiveness of the EU steel industry and ensuring that EU production will be able to meet the growing demand for steel products. Thus far, the partnership has financed several projects at EU and national levels.

3.4.8 IPCEI for Hydrogen

IPCEIs (Important Projects of Common European Interest) are public-private investment projects across multiple EU countries to facilitate innovation in certain key sectors and technologies, including hydrogen. Three hydrogen-focussed IPCEIs - “Hy2Tech”, “Hy2Use” and “Hy2Infra” - have been launched between 2022 and 2024[63], totalling €17.5 billion of state aid approved at the EU level.

Italy has thus far contributed a substantial amount of NRRP funds to the IPCEI projects, allocating €700m to “Hy2Tech”[64] and €350m to “Hy2Use” [65]. Furthermore, one of the most important initiatives to develop a DRI pilot facility near the Taranto site - the €88m “Hydra” project - was recently relocated to the RINA centre at Castel Romano.

Therefore, these projects have a certain degree of relevance and impact in terms of decarbonising primary steel production, although the timing of the project’s implementation needs to be carefully considered in relation to the DRI project in Taranto.

3.4.9 EU ETS

The European Union Emissions Trading System (EU ETS) is the primary tool used by the European Union to achieve its CO_2 emission reduction targets in the electricity generation and hard-to-abate industrial sectors. In Italy, more than 1,200 facilities (accounting for 40% of the country’s total emissions) are subject to the ETS directive[66]. The ETS assigns a value per tonne of CO_2, so-called emission allowances. Companies must buy emission allowances which correspond to the quantity of their annual emissions. The entire steel sector, including the Taranto steelworks, is eligible to receive free emission allowances, but these will be phased out from 2026 when the CBAM Regulation becomes operational.

The reduction and eventual phase out of ETS free allocations , for a traditional steel producer, will undoubtedly result in increased operating costs, which will in turn leave them at a competitive disadvantage in relation to a zero-low emission steel producer, for whom any production costs relating to CO_2 emissions will be lower (typically electric arc furnaces and, if the steel is produced from iron ore, gas DRI and, even more so, green hydrogen DRI[67]). This should be an incentive for steel producers, particularly those with coal-fired BF-BOFs like Taranto, to accelerate the transformation of their

---

[63] “Approved IPCEIs in the Hydrogen value chain”, *European Commission.*

[64] “IPCEI Idrogeno 1 (H2 Technology)”, *Ministero delle Imprese e del Made in Italy (Ministry for Enterprises and Made in Italy).*

[65] “IPCEI Idrogeno 2 (H2 Industry)”, *Ministero delle Imprese e del Made in Italy (Ministry for Enterprises and Made in Italy).*

[66] ”Emission Trading”, Ministero dell’Ambiente e della Sicurezza Energetica (Italian Ministry of the Environment and Energy Security).

[67] This is, in particular, possible following the change in the scope of the standard that sets the product thresholds, regardless of the production process used, so that DRI produced steel would be, for the purposes of calculating the allocations, fully equivalent to BF-BOF produced steel.

production process, otherwise the impact on their profit and loss account will be very difficult to sustain.

The directive and its implementing legislation[68] also sets out conditional requirements for the allocation of free allowances to operators of facilities whose greenhouse gas emission levels are above the 80th percentile of emission levels for the relevant product benchmarks if, by 1 May 2024, they have not yet established a climate neutrality plan. Notwithstanding the implementation timeframes, such a provision appears to be in line with the need for companies to start planning the transformation of their industrial processes to meet the transition requirements and to plan their investments accordingly.

All sector companies are included within the directive's scope of application, whose relevance and impact, therefore, are assessed to be particularly significant.

3.4.10 CBAM Regulation

The EU's Carbon Border Adjustment Mechanism (CBAM) was introduced to put a fair price on the CO_2 emitted during the production of goods imported into the EU. The payment of a price for the embedded carbon emissions generated in the production of certain goods imported into the EU ensures the carbon price of imports is equivalent to the carbon price of domestic production, thus safeguarding the EU's climate objectives. The CBAM will become operational from 2026, with a gradual introduction and simultaneous phasing-out of the allocation of free allowances from 2026 to 2033. The directive will then be fully operational from 2034 onwards. The monitoring system will be implemented between 2023 and 2025.

As previously mentioned, the CBAM system will apply to imports of non-EU steel products. Therefore, the disincentives will impact those companies using the imported steel, especially those that process and re-export products, while the benefits will help green steel producers, who will be protected from any non-EU competitors that don't respect the emission parameters. There remains, however, the need to generate domestic demand for these products, through selective demand mechanisms, since there are currently no mechanisms to help these products become more competitive on the global markets. For countries and producers that are strongly export-oriented, the CBAM doesn't offer significant benefits.

Therefore, the assessment of the impact and relevance of this measure is largely influenced by the limited overall impact of the provisions, particularly in terms of its support for decarbonisation and protection from international competition.

[68] Art. 10 bis, para. 1, of Directive 2003/87/EC, Art. 22 ter of COMMISSION DELEGATED REGULATION (EU) 2024/873 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202400873 and Commission Implementing Regulation (EU) 2023/2441 of 31 October 2023

4 CONCLUSIONS

The decarbonisation of the Italian steel sector poses two principal challenges: maintaining the competitiveness of the national steel production system and the technologies for its transformation to green steel, whilst helping the country achieve its climate objectives.

Transforming the steel industry towards green steel production can generate opportunities for technological development and energy infrastructure that go beyond the sector itself.

International experience has shown that this transition cannot be achieved with the current cost profiles and market conditions. Support is therefore required from the public sector and it is precisely for this reason that the implementation of any policies designed for this purpose must be coordinated (establishing priorities for actions) so as to ensure the efficient use of the available public resources and to maximise the impact of the actions taken.

For this reason, it is necessary to devise a set of coordinated industrial policies that are assigned varying priorities and executed accordingly. Supply-side support policies should provide support with investment costs and then, subsequently, with the energy costs deriving from the use of natural gas (and electricity). Simultaneously, regulatory measures, incentives and demand-side support mechanisms must be introduced to facilitate the development of a market that can provide a vehicle for the commercialisation of green steel, due to its generally higher production prices.

This policy paper offers a perspective and a conceptual outline for defining a policy framework that's consistent with the country's emission reduction goals.

THE ITALIAN CLIMATE CHANGE THINK TANK

This document has been edited by:

Simone Gasperin

Giulia Novati, Research Associate Industry, ECCO
giulia.novati@eccoclimate.org

Chiara Di Mambro, Head of Decarbonisation Policy, ECCO
chiara.dimambro@eccoclimate.org

For interviews or more information on the use and dissemination of the content of this document, please contact

Andrea Ghianda, Head of Communication, ECCO
andrea.ghianda@eccoclimate.org

+39 3396466985

www.eccoclimate.org

Publication date:
26 June 2024