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COMMISSION STAFF WORKING DOCUMENT

Towards competitive and clean European steel

Accompanying the

**Communication from the Commission to the European Parliament, the Council, the
European Economic and Social Committee and the Committee of the Regions**

**Updating the 2020 New Industrial Strategy: Building a stronger Single Market for
Europe's recovery**

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Contents

1. Introduction.....	2
2. The steel industry in Europe and globally	3
3. The green and digital transition challenge	7
4. The EU toolbox - towards green, digital and resilient EU steel industry	12
4.1 Funding and budget programmes	12
4.1.1 The Recovery and Resilience Facility.....	12
4.1.2 Research and Innovation	12
4.1.3 Innovation Fund	13
4.1.4 InvestEU.....	14
4.1.5 Sustainable financing taxonomy	14
4.1.6 Competition policy	15
4.2 Supportive regulatory environment.....	16
4.2.1 EU Emissions Trading System.....	17
4.2.2 Affordable, accessible and abundant decarbonised energy.....	17
4.2.3 Carbon Border Adjustment Mechanism.....	19
4.2.4 Standardisation	19
4.2.5 Industrial Emissions Directive	20
4.2.6 Construction Products Regulation.....	20
4.2.7 Sustainable Products Initiative	21
4.2.8 Public Procurement	21
4.3 Global supply chains	21
4.3.1 Need for a global level playing field	22
4.3.2 International partnerships	23
5. The social dimension and skills	24
6. Conclusion	26

1. Introduction

Steel is a vital material for a modern, industrialised economy. Modern buildings, cars, ships, tools, industrial machinery and household appliances would not be imaginable without its unique and diverse properties. Steel is a vital component in most of the EU's industrial ecosystems. It is estimated that, for every person in the EU, there are currently about 12 tonnes of steel in use.¹

The European steel industry has a long history and is a leader in innovation, quality and environmental performance. However, the sector has been struggling in recent years – with stagnating demand, international trade distortions and a pandemic that has disrupted supply chains and impacted downstream sectors. At the same time, the European steel industry is expected to invest in research and development, rethink its production processes and deliver substantial emission reductions in order to stay competitive and contribute to climate neutrality by 2050. This combination makes for an exceptionally challenging business environment and illustrates many of the challenges that EU industry at large faces.

The Commission's New Industrial Strategy for Europe, adopted a year ago, sees industry at the heart of the twin green and digital transition driving change in the European economy.² For this to happen, Europe needs a deeper and more digital single market, greater resilience and open strategic autonomy in line with the recently adopted Commission Trade Policy Review.³ The Industrial Strategy recognised that energy-intensive industries are indispensable to Europe's economy and that other sectors rely on them. It announced that the Commission would support clean steel breakthrough technologies leading to a zero-carbon steel making process and recalled the importance of creating new markets for climate-neutral and circular products such as steel, cement and basic chemicals.

The steel sector and other energy-intensive industries play a vital role in providing products and services to a wide-range of Europe's industrial ecosystems, which are assessed in the accompanying staff working document on the single market economy report, and its annex presenting the 14 industrial ecosystem fiches⁴. The steel sector and other energy-intensive industries also face common challenges to achieve their twin transition and resilience objectives.

Steel is capable of being one of the first hard-to-abate sectors to produce green products, and to do so first in Europe, provided that the right framing conditions are in place. However, this is a race against time. 2050 is just one investment cycle away for a sector like steel, which has long-lasting capital assets. The next five years will be crucial for seeing which part of the world is fastest to develop clean breakthrough technologies and processes to make steel.

The steel sector is an important voice in the High-Level Group on Energy-Intensive Industries, which in 2019 developed its masterplan on how steel and other energy-intensive industries could reach climate-neutrality and circularity by 2050.⁵

This staff working document shows which policies and tools the EU has at its disposal or in the pipeline to help the steel industry in its transformation – from research funding, through regulatory measures to trade instruments.

¹ Material Economics (2019): Industrial Transformation 2050.

² COM/2020/102 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0102>

³ COM(2021) 66 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52021DC0066&from=ES>

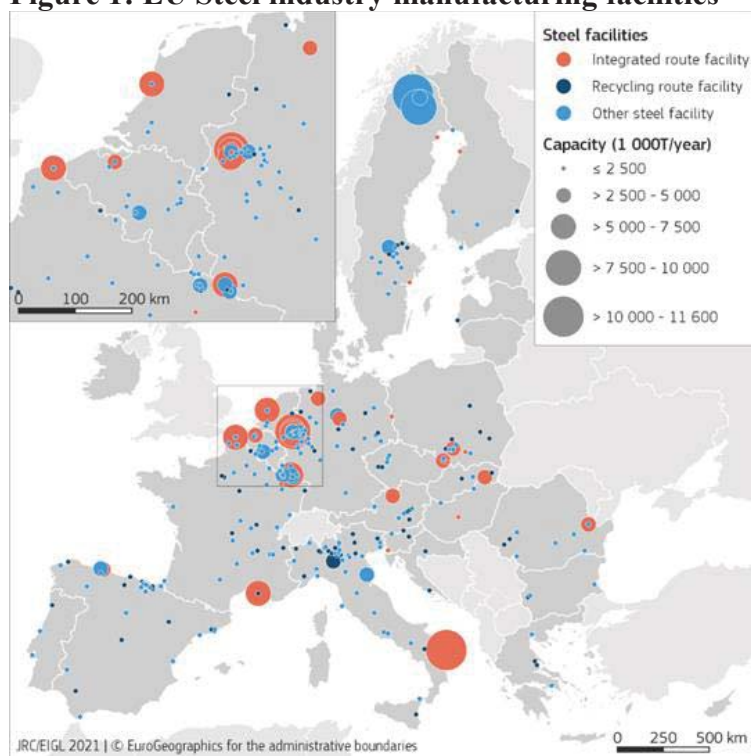
⁴ SWD(2021)351, Annual Single Market Report 2021, Annex III

⁵ <https://op.europa.eu/en/publication-detail/-/publication/be308ba7-14da-11ea-8c1f-01aa75ed71a1>

2. The steel industry in Europe and globally

The European steel industry has more than 500 production sites operating across 23 EU Member States. The industry directly employs 330,000 people, and when including indirect and induced jobs in other sectors, creates 2.6 million jobs throughout the EU.⁶

Figure 1: EU Steel industry manufacturing facilities



Source: JRC (data from Plantfacts)

In 2019, total global steel production was 1.9 billion tonnes. The EU was the second biggest steel producer in the world, accounting for around 150 million tonnes of production, after China, whose production currently represents around 53% of global production (1 billion tonnes).⁷

The EU currently imports around 41 million tonnes of steel annually, mainly from non-EU European countries, CIS and Asian countries, or 26% of its consumption. It exports 30 million tonnes, or 18% of its production, mainly to non-EU European countries and North America.⁸ In value terms, the trade balance of the iron and steel sector is positive, at EUR 1.1 billion in 2019.⁹

Steel is a crucial input to several downstream ecosystems, such as construction, mobility and automotive, or for mechanical engineering companies. Data on steel consumption per sector shows that construction account for 35% steel use in the EU, automotive for 19%, mechanical engineering and metal ware by 15% each and tubes for 10%¹⁰. Companies active in these sectors, many of which are small and medium-sized enterprises (SMEs), employ millions of workers in Europe and depend on EU steel production. These European businesses rely on

⁶ EUROFER, European Steel in Figures 2020.

⁷ World Steel Association, Steel Statistical Yearbook 2020.

⁸ World Steel Association, Steel Statistical Yearbook 2020.

⁹ https://ec.europa.eu/eurostat/statistics-explained/index.php?title=International_trade_in_goods_by_type_of_good

¹⁰ EUROFER, European Steel in Figures 2020.

having access to steel products at competitive prices in order to be able to compete, even globally.

Two main steelmaking processes are currently used in the EU:

- 60% of steel is made via the integrated route, which produces virgin steel from iron ore. Iron, in the form of sinter or pellets, is reduced in the presence of coke in a blast furnace (BF), and then converted into crude steel in a basic oxygen furnace (BOF).
- 40% of steel is made through the recycling route, where scrap steel is reprocessed in an electric arc furnace (EAF).¹¹

Steel is not a homogenous product and different types of steel can be distinguished based on chemical composition (carbon, stainless, electrical and specialty steel), physical form (flat and long steel), transformation stage (hot rolled, cold rolled, galvanised steel), as well as quality differentiation (high-end/advanced quality steel products vs basic grades steel).

European steel demand is differentiated, with different demand patterns and prices across European regions. Such differences come on top of what can be observed at the global level, where prices, trade flows and demand patterns vary greatly. Some steel producers act as opportunistic players, shifting their supplies across the world for price arbitrage. The level of imports is not homogeneous across Europe, as imported steel is mainly steel of lower quality and basic grades, which does not meet the criteria of certain users that need more specialised steel, such as the automotive industry.

Whilst the EU steel industry operates in a global context, the markets for different steel products are regional (EEA-wide) or possibly sub-regional in scope. Market structures largely differ across different geographic regions and sourcing occurs to a very large extent at a regional level. Importantly, the pricing of steel products can be significantly differentiated across different geographic areas around the world as prices are not only affected by global development in raw material and global demand/supply balances but are also significantly affected by domestic factors that drive local price differentiation.¹² For example, the relevant price benchmarks and indices for steel products vary geographically, often even on a sub-regional level.

Nonetheless, different levels of environmental commitments and targets around the world already affect the EU steel industry's ecosystem and competitiveness in certain steel grades. This will increase as the sector develops low emission products that cost more but apart from environmental footprint perform identically compared to conventional products. Such imbalances may give rise to carbon-intensive imports, in particular of commodity steel grades, replacing more expensive EU production as a result of higher cost due to environmental commitments, or to direct relocation of industry to less-regulated jurisdictions.

Main actors in the European steel sector

Following a number of consolidation waves (e.g. Mittal/Arcelor (2006), Outokumpu/Inoxum (2012), SSAB/Rautaruukki (2014), ArcelorMittal/Ilva (2018) and the emergence of the Liberty Steel Group (2018-present), the steel industry in Europe has become heavily concentrated. High levels of concentrations often lead to increased prices across many value chains.

¹¹ EUROFER, European Steel in Figures 2020.

¹² M.8444 – ArcelorMittal/Ilva, recitals 321 et seqq.

In the recent consolidation wave, merger control enforcement contributed to keeping vibrant competition in the European steel markets to the benefit of the many downstream industries that use steel, rely on affordable materials to compete globally and employ millions of Europeans. By prohibiting anti-competitive mergers (e.g. Tata Steel/ThyssenKrupp) or approving mergers subject to conditions, such as structural divestitures (e.g. ArcelorMittal/Ilva), merger enforcement ensured that European steel customers are not left with less choice, higher prices, or less innovation.

Top 10 EU Steel Producers, 2019

<i>Company</i>	<i>ktonnes</i>
ArcelorMittal	38 839
Tata Steel	10 000
Thyssenkrupp	8 678
Voestalpine	7 224
Riva	6 306
Celsa	6 276
Salzgitter AG	5 426
SSAB Europe	5 071
Liberty Steel Group	3 988
US Steel Kosice	3 541

Source: EUROFER¹³

Continued vigorous merger control enforcement will play a crucial role during the transition towards a green, digital and resilient EU steel industry. Preserving vibrant competition among European steel players will ensure that the steel industry, which is an energy intensive industry and a major user of raw materials, has the incentives to continue investing in R&D projects and deployment, innovating and improving their production processes to become more sustainable. Such desired beneficial competition should extend to maintain future innovation competition where different companies could develop a range of green technologies, methods and solutions.

The current situation

The COVID-19 pandemic dramatically reduced steel demand in the EU as well as abroad. In its most recent Outlook from October 2020, Worldsteel expected global steel demand to contract by -2.4% and in the developed economies by -14.9%. Major steel consuming economies like India, Japan, the European Union and the United States experienced dramatic demand declines of 18.0%, 19.1%, 15.8% and 22.9%, respectively. The only exception is China where Worldsteel anticipated steel demand to increase by 8% in 2020, aided by government infrastructure stimulus and a strong property market.¹⁴

While the COVID-19 pandemic has had an impact on the steel demand and consumption, under normal circumstances, and without prejudice to the cyclical nature of the industry, steel

¹³ Notes: Total Crude Steel production, all qualities; data refer to EU production

¹⁴ OECD - STEEL MARKET DEVELOPMENTS – Q4 2020: <https://www.oecd.org/industry/ind/steel-market-developments-Q4-2020.pdf>

supply and demand in the EU are in broadly in balance. The structural overcapacities in EU steel production that peaked in the 1970s have been addressed through decades of comprehensive policies on capacity rationalisation and strict State aid control.¹⁵

The global shortfall in demand in 2020 adds to a long-standing problem of overcapacity, which severely undermines the functioning of the global steel markets. According to the latest OECD data, global overcapacity (in nominal crude terms) is now 624.1 million tonnes, i.e. more than three times the full EU capacity (203.1 million tonnes), and one fourth of worldwide steel production capacity (around 2.4 billion tonnes). For the past 15 years, China alone has increased its steelmaking capacity by 599 million tonnes; this increase corresponds closely to the current global excess capacity in crude steel production. Other countries such as India, Indonesia and Turkey have recently also increased their steelmaking capacity. The EU is at the forefront of the international efforts to tackle the problem playing a key role in the creation of the Global Forum on Steel Excess Capacity in 2016. Since 2019, China, Saudi Arabia and India have disengaged from the Forum's work. Nevertheless, joint efforts are needed to address the overcapacity issue and its root causes.

In any case, the relationship between the production capacity for downstream steel products, including high-end steel grades, and global crude steel overcapacity is not linear. Crude steel overcapacities do not necessarily have a direct effect on the capacity, availability and price of various downstream steel products demanded by sophisticated European steel customers, such as car manufacturers and mechanical engineering businesses.

¹⁵ As shown by the Commission's recent merger investigations in cases M.8444 ArcelorMittal/Ilva and M.8713 Tata Steel/ThyssenKrupp/JV, the capacity utilisation in the EU is very high.

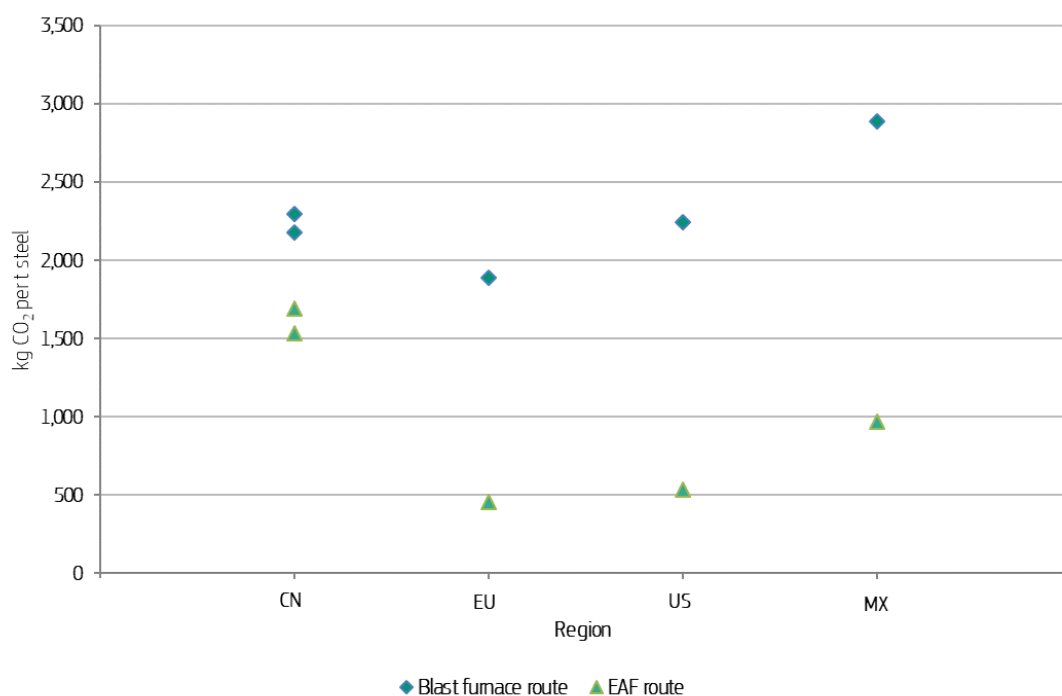
3. The green and digital transition challenge

Going Green

Reducing the CO₂ intensity of the energy intensive industries in general and the global steel sector in particular is crucial for meeting the objectives of the Paris agreement and the EU's own climate targets. The EU steel industry currently accounts for 221 Mt GHG emissions annually (including both direct and indirect emissions). This is 5.7% of total EU emissions. Energy-intensive industries altogether accounted for 665 Mt GHG emission (only direct emissions), 15% of the EU total.¹⁶ To meet the ambitions of the European Green Deal, the steel industry has to transform itself in order to stay competitive.

On average, steel production in the EU belongs to the most CO₂ efficient worldwide, and contrary to production in some third countries (such as Brazil) does not depend on the use of charcoal, which causes deforestation. The EU has the most efficient blast furnaces/blast oxygen furnaces in the world. Their average emissions per tonne of steel produced is close to 2.0 tCO₂, considering direct emissions (scope 1), indirect emissions such as CO₂ imbedded in electricity use (scope 2) and raw material sourcing (scope 3). The emissions factor of the grid electricity is a determinant factor for the CO₂ emissions of the secondary (EAF) route, a significant part of EU electricity already being decarbonised.

Figure 2: CO₂ emissions per tonne of steel in China, the EU, the US and Mexico by process route



Source: Fraunhofer, IMWS (2020)¹⁷, figure adapted

The EU steel industry has already reduced emissions by 26% since 1990, driven by energy efficiency improvements and higher recycling rates.¹⁸ Achieving climate-neutrality by 2050, however, requires radical changes to the way steel is produced. Major steel producers and steel-producing countries (US, China, Japan, South Korea) have recently adopted climate neutrality goals by mid-century. The goal now is to translate this ambition into action.

¹⁶ VUB (2018): Industrial Value Chain: A Bridge towards a Carbon Neutral Europe.

¹⁷ https://www.bdsv.org/fileadmin/user_upload/Final_Scrap_Bonus_PDF_49.pdf. Note: The two data points given for CN refer to two different studies, cf. the original Fraunhofer, IMWS paper.

¹⁸ VUB (2018): Industrial Value Chain: A Bridge towards a Carbon Neutral Europe.

Increased circularity through the EAF route and a shift to fully decarbonised electricity will be imperative, however due to the continued need for virgin steel, fully new processes, such as hydrogen direct reduction and CCUS steelmaking processes, will also be needed.

Figure 3: Main pathways and ongoing projects for low-carbon steelmaking

Pathways/ Groups	Circular Economy Enhancing the recycling of steel (e.g. scrap in BOF/EAF*) and its by-products, Resource efficiency <small>*BOF= Basic Oxygen Furnace EAF= Electric Arc Furnace</small>		
	Smart Carbon Usage (SCU)		Carbon Direct Avoidance (CDA)
	Process Integration with reduced use of carbon (+CCS)	Carbon Valorisation/ Carbon Capture and Usage (CCU) (+CCS)	Hydrogen Electricity
Description	Integration of process steps and internal use of process gases	Using CO/CO ₂ from steel mill as raw material (Chemical conversion of CO/CO ₂)	Use of renewable electricity in basic steelmaking, e.g. production of H ₂ to replace carbon
Projects/ Initiatives	HISARNA , TGR-BF-Plasma (IGAR), PEM, STEPWISE, Torero	Steelanol, Carbon2Chem, FReSMe, Everest, Carbon2Value	HYBRIT, H2Steel (H2Future, SuSteel, Hybrid Steel Making), tkH ₂ Steel, GrInHy, SALCOS, Hydrogen Hamburg, SIDERWIN

Source: Eurofer

Most low-carbon steel production pathways are not yet at technological maturity and it is not yet clear which process will dominate steel production in the future. Nevertheless, they show a high potential for future, innovative technologies, benefitting not only climate but also air quality through a reduction of non-GHG emissions. Therefore, further research, close-to-market innovation and demonstration of multiple pathways will be necessary.

While the commercial roll-out of low-carbon solutions is only expected around 2030, ambitious investments into pilot and demonstration plants are necessary today to enable rapid deployment and European market leadership once the technologies are available.

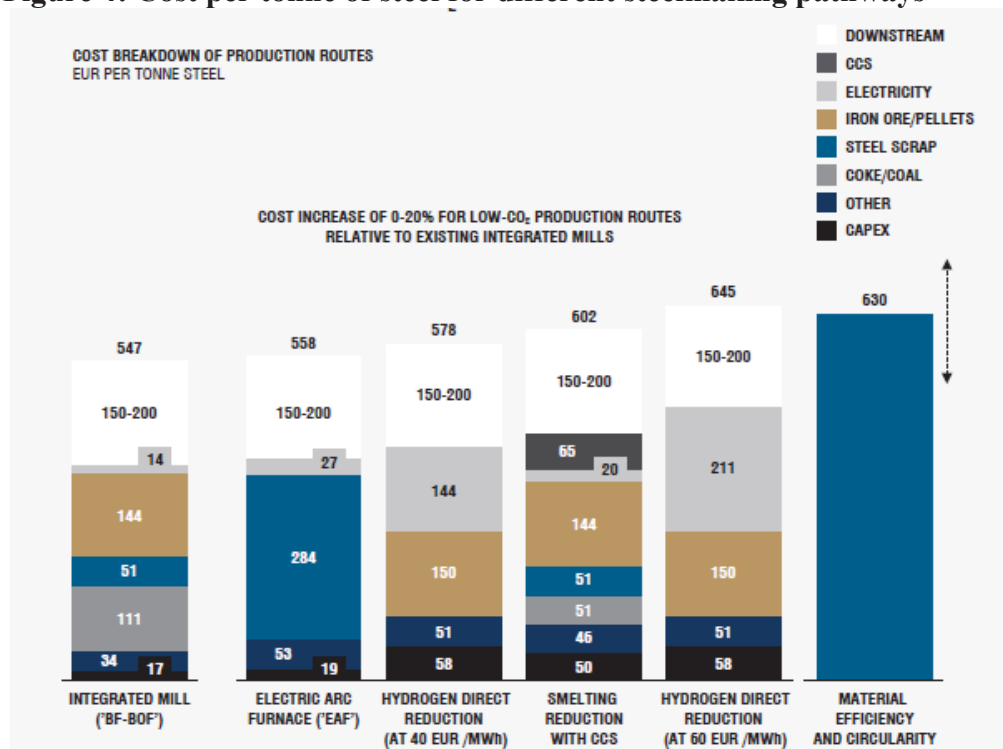
Table 1: Technology Readiness Levels (TRL) of key low-carbon steelmaking technologies

Pathway	Technology	TRL	EU R&D projects (not exhaustive)
Electrification	Increased recycling route (EAFs)	mature	
	Iron ore electrolysis (+EAF)	4	Siderwin
Hydrogen	H-DRI: Hydrogen direct reduction (+EAF) ²	5	Hybrit, Salcos, tkH ₂ steel
	Smelting reduction using hydrogen plasma	4	SuSteel
CCUS	Integrated smelting process combined with CCS	6-7	Hisarna
	Capture and recycle waste gases from the BF-BOF route into synthetic fuels	8	Steelanol, Igar
	Capture and recycle waste gases from the BF-BOF route into chemicals	7	Carbon2Chem, Carbalyst

Source: JRC

Producing steel without CO2 emissions will come at a cost, however. Even when necessary research and innovation (R&I) investments are excluded, low-CO2 production routes have a higher cost due to their increased demand for hydrogen, electricity and steel scrap. The figure below shows cost estimates for different production routes, showing an increase of up to 20% for hydrogen direct reduction compared to traditional integrated mills.

Figure 4: Cost per tonne of steel for different steelmaking pathways



Source: Material Economics (2019): Industrial Transformation 2050

The European Steel Association ('Eurofer') estimates that in comparison with conventional steel, it would cost EUR110 to EUR320 more per tonne to produce green steel through the primary (iron ore) route. This difference mainly results from higher operational costs, in particular for the low CO2 energy and feedstock supply (electricity and hydrogen).

If the full additional cost of green steel falls on the steel producer, it will be unable to compete on price with conventional steel. If the cost is passed through to the end-consumer product, the extra cost with green steel could be under EUR300 more for the price of a car and under EUR20 more for the price of a washing machine. Supportive policy efforts can help to bring about these new markets for 'green' products, generating demand from end-consumers for (slightly) more expensive but more environmentally friendly products. If the extra cost of producing green products is not passed to the end consumer because of competitive pressures from traditional steel makers or because of low demand from consumers for green steel, then it may be necessary to provide temporary compensation for the extra costs and simultaneously take measures to support the business case for clean products.

Closing the loop – the role of circularity

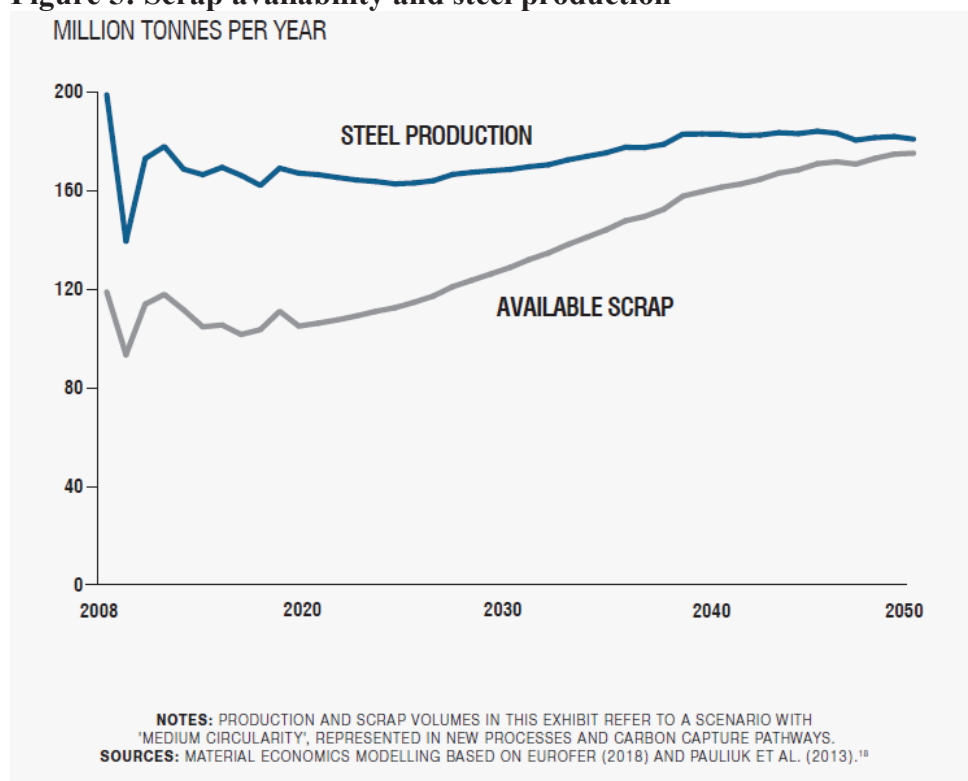
Steel is already a highly circular material. On average, the EU already recovers 85% of end-of-life steel for recycling. Recycling works because of the intrinsic economic value of steel scrap: the 131 Mt of scrap generated in the EU every year is worth some EUR 30 billion. The

EU uses 94 Mt of this scrap, making up half of the iron input to EU steelmaking. It exports 17 Mt, with Turkey the largest destination.¹⁹

Using steel scrap in the production process reduces CO₂ emissions by 58%, air pollution by 86%, water use by 40% and water pollution by 76%.²⁰ However, there are challenges to increasing the share of secondary steel: many steel applications, such as in car manufacturing or structural elements in buildings have low tolerances for copper content. Therefore, mixing different types of steel scraps and other, jointly recycled components containing copper (such as electrical wiring in cars), currently makes it impossible to use secondary steel in certain applications. Circular-by-design approaches and better scrap sorting processes will improve the outlook and help accommodate increased circularity.

By the 2050s, some estimates show that the amount of scrap available in the EU could be as large as total EU annual steel needs, raising the interesting prospect that recycling could satisfy a large part of the EU's steel needs, if the quality is good enough. Steel could become a nearly fully circular material.

Figure 5: Scrap availability and steel production



Source: Material Economics (2019): Industrial Transformation 2050

The Commission is currently reviewing the Waste Shipment Regulation,²¹ with the aim of stopping exports of waste that have harmful environmental and health impacts in third countries and improving the management of waste exported outside the EU. Other actions outlined in the new Circular Economy Action Plan²², relating to product design, quality and safety of secondary materials and enhancing their markets, will contribute to making “recycled in the EU” a benchmark for qualitative secondary materials.

¹⁹ Material Economics (2019): Industrial Transformation 2050

²⁰ EuRIC (2020): Metal Recycling factsheet

²¹ Regulation (EC) No 1013/2006, <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32006R1013>

²² COM/2020/98 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN>

By-products of the steel sector, such as iron and steel slag and slag-based products are used in the cement and construction sectors as secondary raw materials. However, ferrous slag and slag-based products increasingly face difficulties in being accepted in public tenders. Secondary construction materials are – unlike virgin materials – reportedly forbidden in public tenders due to the burden of undertaking the environmental assessments that tenderers would otherwise have to carry out. This is a real obstacle to Circular Economy and the accomplishment of the Green Deal goals, which could be addressed through prioritisation of secondary building materials in public tenders.

The business case for green steel

The technology pathways are largely known. The remaining challenge is to attract the necessary investment to develop green steel first in Europe. There is an appetite for this, as the plans of most major EU steel producers show. However, several factors need to come together in order to create the business case for investment:

- A policy framework enabling financial incentives to emit less
- market confidence in the long-term stability of the EU regulatory and policy framework
- the availability of EU, national and private funding along the path towards market deployment;
- certainty about the availability of effective carbon leakage measures, and
- robust protection against unfair trade practices.

Chapter 3 describes how the EU policy toolbox already contributes to creating the business case for investment. Remaining challenges are also identified.

Digitalisation – an important enabler for green and circular steel

The steel sector has long been a front-runner in digitalising its processes in order to improve resource efficiency and reduce emissions. Further digitalisation of the sector and better use of industrial data can optimise steel supply chains and enable new business models.

Digital technologies will also act as crosscutting enablers for industrial transformation in the energy-intensive industries (EIIs). Increased automation, process control and demand-side response will result in greater resource efficiency. Digital technologies can speed up the deployment of breakthrough processes and product innovation. Machine learning and artificial intelligence are strategic technologies for the development of new or advanced materials and catalysts. Blockchain technologies can facilitate tracking of supply chains and products' carbon footprint. Digital product passports should be a major contribution to sustainable product policy and enable greater circularity, including for the EIIs.

A report by Branca et al. (2020) in the journal *Metals*²³ reviews the challenges and opportunities that lie in the digitalisation of the steel sector. It outlines the potential for increasing production efficiency and sustainability with the use of digital technologies, such as Internet of Things, predictive maintenance and robotics. It also emphasises the importance of continuous updating of workers' skills and discusses the role European research programmes and skills blueprints play in driving their adoption.

Data sharing among industrial players will be important. The Commission's proposal for a Data Governance Act²⁴ addresses the need for clear rules on secure data sharing. The EU's Digital Europe Programme will invest in data spaces to optimise supply chains and predictive maintenance.

²³ <https://www.mdpi.com/2075-4701/10/2/288/htm>

²⁴ COM/2020/767 final , <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020PC0767>

To handle the new process conditions and the corresponding new issues, e.g. related to safety and the stronger fluctuations of energy supply and process conditions, Machine learning and artificial intelligence techniques will play an ever-increasing role. Cybersecurity aspects must be deployed with specific strategies devoted to the steel sector.

4. The EU toolbox - towards green, digital and resilient EU steel industry

4.1 Funding and budget programmes

4.1.1 The Recovery and Resilience Facility

The COVID-19 pandemic has created enormous challenges for industry, but also opportunities to accelerate the transition and to ‘build back better’.²⁵ The EU and its Member States have secured a stimulus package of EUR 1.8 trillion made up of the new long-term budget for 2021-2027 and the Next Generation EU (NGEU) recovery package. The Recovery and Resilience Facility (RRF) is the cornerstone of that package, with EUR 672.5 billion available in loans and grants to support reforms and investments undertaken by Member States. Member States will prepare recovery and resilience plans that set out a coherent package of reforms and public investment projects. To benefit from the support of the Facility, these reforms and investments should be committed by 2023 and implemented by 2026.

Each recovery and resilience plan should allocate at least 37% and 20% of the Recovery and Resilience Facility for investments and reforms that foster respectively the green and digital transitions. The Commission will assess the plans against these targets.

NGEU and in particular the RRF provide an unprecedented opportunity for industry and Member States to accelerate the decarbonisation of heavy industries like steel, developing resilient value chains and building open strategic autonomy. Such investments offer the opportunity to bring the industry onto a transition path towards climate neutrality, recognising that initial projects may not be fully carbon-free themselves but nevertheless contribute to the necessary advancement of low-carbon technologies. Projects relating to breakthrough technologies, such as hydrogen-based steelmaking, carbon capture, utilisation and storage, investments in infrastructure and skills will be important and could be financed under RRF, provided that they comply with the “do-no-significant-harm” principle, ensuring that they do not significantly harm the environment.²⁶

4.1.2 Research and Innovation

The EU needs to step up its R&I in breakthrough technologies to support the development of green steel. Building on the work already carried out under past Framework Programmes and with the help of the Research Fund for Coal and Steel (RFCS), the Commission is launching a Horizon Europe European partnership on clean steel.²⁷ It will focus on accelerating and deploying the most promising solutions for climate-neutral steel production. The partnership will support research and innovation activities from the pilot to the demonstration phases of breakthrough technologies for carbon neutral steel production, while leveraging private investments.

The specific aims of the clean steel partnership are:

- Developing, testing and scaling breakthrough technologies for clean steel production consistent with the climate neutrality objective by 2050.
- Achieving TRL 8 by 2030 in at least 12 technologies funded by the Partnership;

²⁵ OECD (2020): Building back better: A sustainable, resilient recovery after COVID-19, <https://www.oecd.org/coronavirus/policy-responses/building-back-better-a-sustainable-resilient-recovery-after-covid-19-52b869f5/>

²⁶ Commission Notice C(2021) 1054 final clarifies that, in relation to measures supporting activities covered by the EU Emission Trading System (ETS) in particular, in order not to distort the market signals put in place by the ETS, activities with projected CO₂ equivalent emissions that are not substantially lower than the relevant benchmarks established for free allocation should generally not be supported under the RRF.

²⁷ SWD(2021)351, Annual Single Market Report 2021, Annex II

- Ensuring the construction by 2030 of at least two demonstrations of a technological pathway (Carbon Direct Avoidance, Process Integration, Carbon Capture and Usage, Circular Industry) leading to 80% CO₂ emission reduction compared to 1990 levels for the plants where the demonstration projects are implemented.
- Fostering European steel competitiveness tackling digitalisation, upskilling and new markets creation.
- Providing the European Steel sector with a first mover advantage to introduce clean steel technologies.

Based on the estimated industrial efforts from the steel sector in R&I projects falling within the scope of the Clean Steel Partnership, the total resource requirement is estimated at around EUR 2.5 billion, as estimated by ESTEP, the European Steel Technology platform, representing the private side of the Clean Steel partnership. Once a technology has successfully been demonstrated, an additional investment of around EUR 9 billion is needed for its first roll-out.

The alignment and coordination of private and public funding ensures financing up to the deployment phase. The European Parliament Pilot Project “Green Steel” will provide a set of scenarios on this.

The clean steel partnership relies on synergies of funds up to EUR 700 million coming in equal parts from Horizon Europe and assets of the European Coal and Steel Community in liquidation. The Commission is exploring the possible use of part of the funding under the European Coal and Steel Community ‘in liquidation’ (ECSC). A revision of the RFCS legal bases (announced in the Commission’s EU Green Deal Investment Plan in January 2020²⁸) is moving forward with the aim to be adopted in 2021 .

Steel will also be part of a broader Horizon Europe partnership on energy-intensive industries. Under Horizon 2020, the steel sector was part of the public-private partnership SPIRE - Sustainable Process Industry through Resource and Energy Efficiency. It addressed process optimisation, waste material recovery, alternative feedstock, waste energy valorisation and industrial symbiosis. Under Horizon Europe, this will become the European partnership Processes4Planet. This partnership aims at circularity and an extensive decarbonisation of European process industries, with a strong focus on competitiveness with a cross sectorial approach.

4.1.3 Innovation Fund

The Innovation Fund established under the EU Emissions Trading System²⁹ is one of the world’s largest funding programmes for the demonstration of innovative low-carbon technologies in multiple sectors, including energy-intensive industries such as steel. It will provide about EUR 18 billion³⁰ of support over 2021-2030 for the commercial demonstration of innovative low-carbon technologies (in energy intensive industries, including CCS and CCUS; renewable energy; energy storage), aiming to bring to the market industrial solutions to decarbonise Europe and support its transition to climate neutrality.

The first call for large-scale proposals with capital expenditure above EUR 7.5 million closed in October 2020 and received 311 proposals for innovative clean tech projects located in all Member States and covering all sectors, including steel. Following the evaluation of the first

²⁸ COM/2020/21 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0021>

²⁹ Commission Delegated Regulation (EU) 2019/856 of 26 February 2019 supplementing Directive 2003/87/EC of the European Parliament and of the Council with regard to the operation of the Innovation Fund, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32019R0856>

³⁰ Assuming a carbon price of EUR 40/tCO₂-eq.

stage of the application process, 70 projects continue to the second stage and submit full applications for the first Innovation Fund call for large-scale projects, while all applicants have been informed about the results. Grants will be awarded at the end of 2021. .

The Commission is also running the first call for small-scale projects under the Innovation Fund with capital expenditure between EUR 2.5 and EUR 7.5 million. The Commission received 232 applications for innovative clean tech projects in renewable energy, energy-intensive industries, energy storage, and carbon capture, use and storage (CCUS).³¹ Applications come from projects to be implemented in all Member States, Iceland and Norway and the proposed projects have requested a total of more than EUR 1 billion. Proposals that fulfil the admissibility and eligibility conditions will be evaluated by external evaluators against the award criteria and applicants will be informed about the results of the evaluation in August 2021. The grants will be awarded in the end of 2021.

Further calls for proposals, one for large-scale and one for small-scale projects, are planned to be launched later in 2021.

For energy intensive industries, such as steel, the main technological pathways outlined in the proposals focus on hydrogen, carbon capture use and/or storage (CCUS), as well as recycling (e.g. scrap metal, plastics), pyrolysis, and electrification. The upcoming proposal for a revision of the EU ETS in light of increased climate ambition and its accompanying impact assessment will also address the future of the Innovation Fund.

4.1.4 InvestEU

The InvestEU Fund, as part of the InvestEU Programme, will finance a wide range of investments, including in energy-intensive industries. An EU Guarantee of EUR 26.2 billion underpinned by budgetary means of the Next Generation EU recovery instrument and the Multiannual Financial Framework 2021-2027, will allow additional public and private investments of around EUR 370 billion.

Financial support under the InvestEU Fund is demand-driven and can take various forms of equity or loan finance provided by the European Investment Bank Group or other implementing partners.

The InvestEU Fund, with its four priority areas (“policy windows”), has a strong focus on financing investments that have a positive climate and environmental impact. The InvestEU’s Sustainable Infrastructure Window supports investments in sustainable industrial applications which help reduce greenhouse gas emission. The InvestEU’s Research, Innovation and Digitisation Window supports new environmentally sustainable technologies that lead to the reduction of greenhouse gas emissions of energy-intensive industries. Both windows are relevant for steel.

4.1.5 Sustainable financing taxonomy

On 8 March 2018, the EU Commission published its Action Plan: “Financing Sustainable Growth”, stating the need for a deep rethink of the European financial framework. The Action Plan describes the EU strategy for sustainable finance and is part of the implementation plan of Article 2(1)(c) of the Paris Agreement, relating to the alignment of financial flows with global climate goals and the UN 2030 Agenda for Sustainable Development.

The Sustainable Financing Taxonomy forms part of the implementation of the Action Plan on Sustainable Finance. It aims to further incentivise and channel private sector investment into

³¹ https://ec.europa.eu/clima/news/first-innovation-fund-call-small-scale-projects-232-applications-eur-100-million-eu-funding_en

sustainable development, by making investors more aware of what they invest in and by giving investors important tools to invest sustainably.

The first Delegated Acts setting sustainable financing taxonomy criteria for climate change mitigation and adaptation and aligned on the European Green Deal has been approved in principle on 21 April 2021 and will be formally adopted at the end of May.

Steel production is included among the activities listed in the EU taxonomy for sustainable investments to incentivise environmental improvements in the manufacturing of steel over time. While steel production is not low carbon today, the technical screening criteria for steel production in the taxonomy recognise the most climate-friendly forms of production, while ensuring no significant harm to other environmental objectives. The technical screening criteria also recognise the important role of research, development and innovation activities in low-carbon steel manufacturing technologies, especially for those technologies which are at an already advanced stage of development but not yet commercial. The criteria will tighten over time to ensure the need for constant efficiency gains and improvements in the environmental footprint of steel manufacturing. Capital expenditure for investments to reach these criteria will be eligible for green bonds under the forthcoming EU Green Bond Standard.

The taxonomy criteria for manufacturing of steel are setting a long-term ‘gold standard’, encourage investment in new breakthrough technologies with which markets are as yet unfamiliar and leave room for transitional investments that help the steel industry move towards the European Green Deal goals.

4.1.6 Competition policy

As for any other sector, investment and structural adjustments of steel output in the EU are genuinely market driven. Investment in development and deployment of breakthrough low-carbon technologies will require private financing, supported however by relevant EU programmes and national measures, where necessary and compatible with EU State aid rules. As such, the steel sector can benefit from certain types of State aid to replace existing production processes with less or even zero emitting ones.

State aid is possible for Research, Development and Innovation (RDI) activities into innovative breakthrough clean technologies, as well as for RDI activities into digital tools relevant for the industry’s transformation.

Under the Guidelines on State aid for environmental protection and energy (EEAG), aid may be granted for the introduction of climate or other environmental friendly technologies. The Commission is currently preparing the revision of the EEAG. The support is limited to the shift to green technologies and may not generate undue distortions of competition and trade in the internal market. It must also meet the compatibility requirements under State aid rules.

For example, steel producers may receive investment aid through national aid schemes for significantly improving the environmental footprint of their production facility, if the positive impact on environmental protection substantially exceeds, on the one hand, the level required by law or envisaged by Union objectives and, on the other hand, what the market itself would bring about. The aid must be limited to the extra environmental costs, comply with applicable maximum aid intensities and be subject to tendering. Similarly, under certain conditions, in particular, when competitive bidding takes place, operating aid would be possible to partially compensate steel producers for the additional costs caused by the generation of renewable energy or energy sources, such as renewable/green hydrogen. However, the support is limited to the difference between the costs for producing/purchasing grey energy and the costs for producing/purchasing green energy.

The Commission has recently adopted a State aid decision that approves aid via Carbon Contracts for Difference (CCfD) for renewable energy production, low carbon hydrogen production, low carbon electric boilers, CCS and waste heat recovery.³² Cross-sectoral competitive bidding processes were required to select beneficiaries of the support. Aid is linked to CO₂ emission reductions, taking into account also the indirect emissions of electricity.

IPCEI

Important projects of common European interest (IPCEIs) are typically ambitious cross-border research and innovation projects or infrastructure projects with a European dimension entailing significant risks and generating significant spillover effects across the EU that would not be carried out without significant pooling of public and private resources and investments and cooperation between Member States.

Steel producers, like other project owners, could receive aid for ambitious research and development and aid for first industrial deployment provided their project generates important spillovers. Both investment aid and operating aid are allowed, but only for the duration of the research or development phase and during the first industrial deployment; long-term operating aid is not possible. Therefore, the IPCEI rules exclude both investment and operating aid for the commercial mass production phase of such projects.

A project that is part of an integrated IPCEI needs to demonstrate that it is necessary to reach the objective of the IPCEI and complementarity to the other projects. Research and first industrial deployment projects must in addition demonstrate that they deliver innovations going beyond the state of the art, while infrastructure projects need to be of major importance, either for the environment, for energy or for the Union's transport strategy. Environmental, energy or transport facilities and infrastructure that are not accessible to third parties on non-discriminatory terms do not count as generating the necessary significant spillovers across the EU.

Where an undertaking receives aid as part of an important project of common European interest, it is required, inter alia, to demonstrate positive spillover effects beyond the beneficiary undertaking or the economic sector or the Member State concerned. Similarly, distortions of competition caused by the aid must be limited as far as possible and in this case additional spillovers must outweigh possible distortions. Demonstrating these two criteria could be more challenging for application projects than for open infrastructure projects. In addition, the IPCEI must respect the principle of phasing out environmentally harmful subsidies.

Relevant Industrial Alliances could also be an opportunity to identify relevant gaps and types of projects that can address them, possibly in view of forming IPCEIs). Steel stakeholders are actively engaged in the European Raw Materials Alliance and in the Clean Hydrogen Alliance. They are also involved in the work by 22 Member States to prepare an IPCEI on hydrogen³³ and interested in a possible IPCEI for low-carbon industry, building on the work of the Strategic Forum for Important Projects of Common European Interest.³⁴

The EEAG, IPCEI and RDI State aid rules are currently undergoing a revision process.

³² Commission Decision C(2020) 8773 final regarding State Aid case SA.53525 (2020/N) – The Netherlands SDE++ scheme for greenhouse gas reduction projects including renewable energy. https://ec.europa.eu/commission/presscorner/detail/en/ip_20_2410

³³ https://www.bmw.de/Redaktion/DE/Downloads/M-O/manifesto-for-development-of-european-hydrogen-technologies-systems-value-chain.pdf?__blob=publicationFile&v=8

³⁴ Strengthening Strategic Value Chains for a future-ready EU Industry - report of the Strategic Forum for Important Projects of Common European Interest, <https://ec.europa.eu/docsroom/documents/37824>

4.2 Supportive regulatory environment

4.2.1 EU Emissions Trading System

The EU ETS has proven to be an effective tool in reducing greenhouse gas emissions and it will play a key role in achieving the increased 2030 climate ambition. In line with the European Green Deal, the Commission will present its proposal for a review of the EU ETS in June 2021.

The increased 2030 climate ambition will require a strengthening of the emissions cap of the ETS. This could be achieved either through a change in the linear reduction factor which determines the rate of annual reductions in the cap, through a one-off reduction of the cap (rebasement), or through a combination of both. The Commission is assessing which option for strengthening the cap would be most opportune, also in the context of the review of the functioning of the Market Stability Reserve.

The ETS has an effective carbon leakage protection framework³⁵ and the Commission aims to ensure this will remain the case in the future. The possible impact of a strengthened cap on the availability of free allocation for industry and risks of carbon leakage is also being assessed.

4.2.2 Affordable, accessible and abundant decarbonised energy

Steel is an energy intensive sector with relevant energy costs shares in its production costs: 7.7% on average for the aggregate sector between 2010-2017,³⁶ but this share can reach up to 20%³⁷ for certain steelmaking processes, such as the electric-arc furnace secondary steel.

Coal currently plays an important role in the sector, not only covering energy needs but also providing a key chemical function in the process, but it is next in line to be phased out and must be replaced by decarbonised energy sources, or be combined with carbon capture technologies. All low-carbon production pathways for steel rely on the intensive use of electricity – either directly, as in EAF steel recycling and electricity-consuming CCUS equipment, or indirectly through the use of green hydrogen. The steel industry estimates that it will require about 165 TWh of electricity and 5.5 million tonnes of hydrogen annually by 2050 to make the total current volume of primary steel using hydrogen, resulting in a total electricity demand of 400 TWh – four times what the sector currently consumes.³⁸

Given the vastly increasing demand for electricity in all sectors of the economy (electric vehicles, heat pumps, electrolysers, etc.),³⁹ the expansion of renewables and their integration into the energy system⁴⁰ – through expansion and upgrading of grids and through installation of massive energy storage capacity to accommodate supply variability – will have to keep pace. For hydrogen, new infrastructures will have to be built, complementing the existing gas grid, and the cost of electrolysers will have to come down through technological development. This will require more ambitious commitments and investments from Member States and an infrastructure planning framework that takes into account the changing needs of energy-intensive industries.

³⁵ Ex-post studies have not found substantial levels of carbon leakage from existing mechanisms like the EU ETS, although other studies argue that carbon leakage has not happened precisely because of the free allocation of allowances. https://www.eca.europa.eu/Lists/ECADocuments/SR20_18/SR_EU-ETS_EN.pdf

³⁶ Report on energy prices and costs in Europe, SWD(2020)951 final, Table 13. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=SWD:2020:951:FIN>

³⁷ Production costs from the iron and steel industry in the EU and third countries, JRC121276 available at <https://publications.jrc.ec.europa.eu/repository/handle/JRC121276>

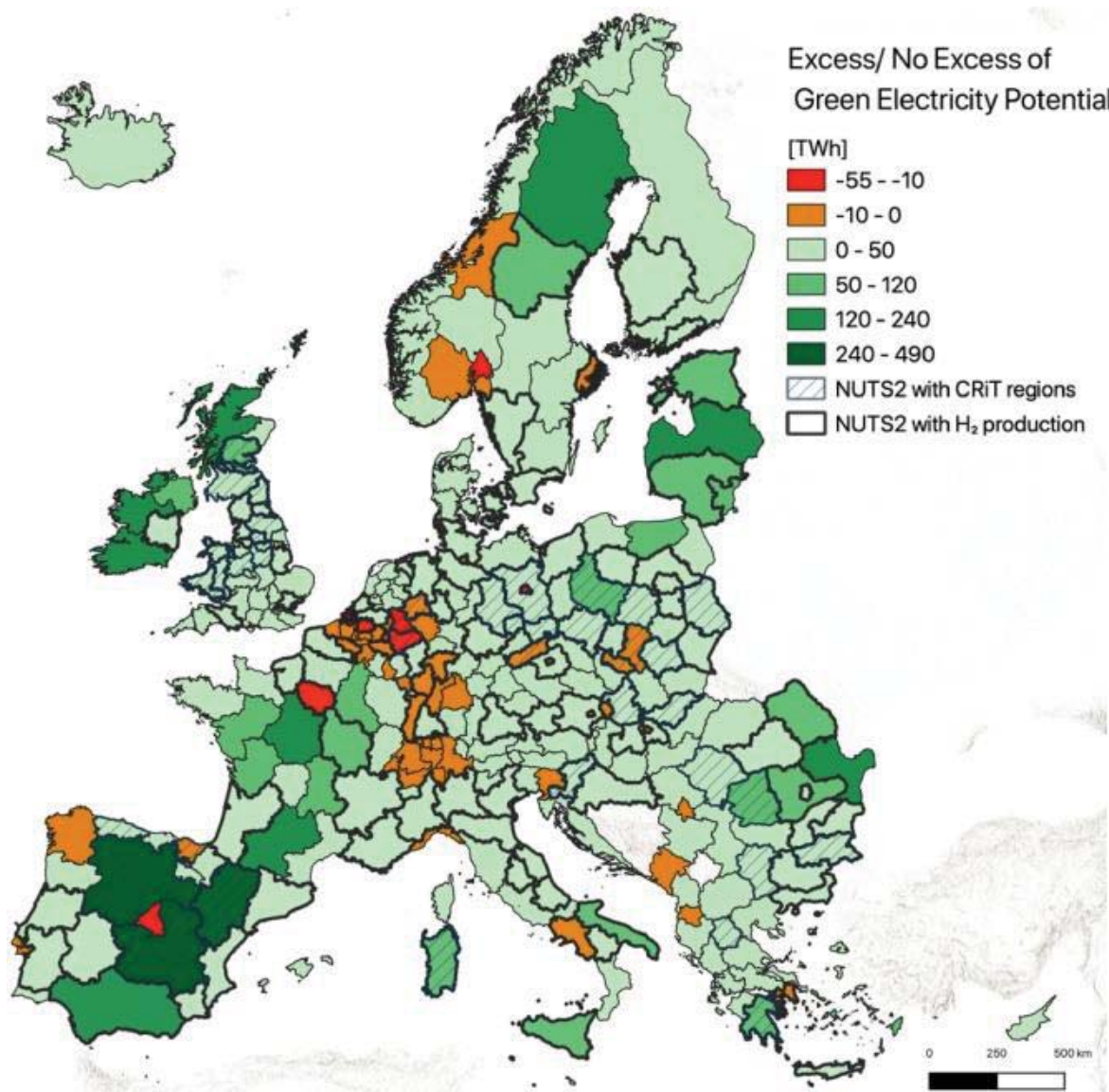
³⁸ 2019 EU27 electricity consumption of the steel sector in Eurostat is 110 TWh.

³⁹ Total electricity demand in the EU projected to more than double by 2050, cf. Impact Assessment accompanying the 2030 Climate Target Plan, SWD(2020) 176 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020SC0176>

⁴⁰ Cf. EU Strategy for Energy System Integration, COM(2020) 299, <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM:2020:299:FIN>

Especially challenging is that, absent challenging relocations of entire industrial clusters, industrial electricity demand will increase in places where these clusters are currently located and not necessarily where renewable energy sources are abundant. This could create increasing geographical imbalances, which would have to be addressed through long-range electricity transmission or hydrogen transport, including possible import from other renewables-rich regions (such as North Africa). The Commission’s proposal for a revised TEN-E Regulation, adopted on 15 December 2020,⁴¹ would adapt the EU framework for cross-border projects to better integrate renewables, CCS and hydrogen infrastructure; it also proposes to simplify and accelerate permitting and authorisation procedures.

Figure 6: Regional assessment of renewable energy potential and future electricity consumption⁴²



Source: Kakoulaki et al. (2021): Green hydrogen in Europe – A regional assessment: Substituting existing production with electrolysis powered by renewables

⁴¹ COM(2020) 824 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020PC0824>

⁴² Renewable energy potential based on JRC ENSPRESO data; future electricity consumption based on current electricity consumption plus electricity requirements to move from fossil fuel-based to green hydrogen

As the electricity price becomes an increasingly dominant factor in the cost of steel and other basic materials produced by the energy-intensive industries, reducing the cost of producing, storing and transmitting (renewable) power is of prime importance. The regulatory framework in relation to electricity markets, network charges and taxation will remain key to ensure competitively priced electricity and support the electrification and decarbonisation of the industry and to maintain its international competitiveness.

Electricity prices may display a higher short-run volatility as a result of the increasing shares of intermittent renewables and a slow uptake of flexible demand and energy storage. This could be challenging for some industrial consumers, but offer opportunities for others. Electro-intensive industries that can adjust their production flexibly (such as aluminium smelters) already today offer “interruptible load” to grid operators, meaning that part of their electricity load can be cut off at short notice to stabilise the grid, for which they receive substantial compensation. In the future, as regular patterns of electricity prices emerge (e.g. a daily trough around midday, when solar generation is strongest), more industries, such as the steel industry, could adapt their production cycles to both provide grid balancing services and benefit from lower electricity prices.

4.2.3 Carbon Border Adjustment Mechanism

The Commission is currently carrying out an impact assessment on a Carbon Border Adjustment Mechanism (CBAM), which is set to be proposed by summer 2021. It will assess different design options against the objectives of the mechanism, which is to avoid carbon leakage, and its economic, environmental and social impacts. Additional criteria include the administrative and compliance costs, the feasibility and legal aspects of the mechanism. CBAM will be compliant with World Trade Organization rules and other international obligations of the EU.

CBAM is essentially an environmental measure to enable the EU’s increased climate ambition by reducing carbon leakage risks. CBAM will ensure that the price of import reflect their carbon emissions.

Steel is one of the sectors included in the possible initial shortlist of CBAM sectors. The choice of sectors will take account of multiple criteria, balancing coverage in terms of greenhouse gas emissions while limiting complexity and administrative effort. Criteria under discussion include whether the sector is a significant emitter of greenhouse gas emissions and the sector’s exposure to a significant risk of carbon leakage, based on trade intensity as well as carbon intensity, as defined pursuant to the EU ETS Directive.⁴³

The impact assessment will take account of the results of the public consultation open to all stakeholders. The responses received indicate that the steel sector should be included in the sectoral coverage of the CBAM.⁴⁴

4.2.4 Standardisation

Standardisation will be important to create markets for clean technologies. While normal-performing companies focus on making quality products, more advanced companies also seek to maximise the setting of patents for innovation. The best companies go one step further and

⁴³ Directive (EU) 2018/410 of the European Parliament and of the Council of 14 March 2018 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814, OJ L 76, 19.3.2018, p. 3–37.

⁴⁴ Summary Report: Public consultation on the Carbon Border Adjustment Mechanism, p.4. Ref. Ares(2021)70541 - 05/01/2021 <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12228-EU-Green-Deal-carbon-border-adjustment-mechanism-/public-consultation>

seek to set the standards that the whole world will follow. The EU has traditionally been at the forefront of standard-setting and is now freshly aware how strategically important standard-setting has become for the green and digital transition.

At the request of the Commission⁴⁵, the European standardisation bodies developed a generic standard to encourage performance improvements in industrial installations. It includes EN 19694-2 for steel, which sets out the CO₂ accounting rules and metrics to assess the emission performance of steel production facilities.

The EN 19694-2 standard enables application of a life cycle approach, with the potential to provide accurate signals to producers and investors alike on the sustainability performance along the entire steel value chain, including all inter-connected steelmaking processes.

4.2.5 Industrial Emissions Directive

Steel production brings a number of environmental impacts including air emissions (CO, SO_x, NO_x, dust), emissions to water, hazardous wastes, and solid wastes. In 2017, 222 iron and steel installations were operating under the Industrial Emission Directive (IED) permit.⁴⁶

The Commission regulates emissions falling under the IED through Commission Implementing Decisions establishing Best Available Techniques (BAT) conclusion for Iron and Steel Production and Ferrous Metal Processing. The Technical Working Group established under the so-called Sevilla Process (involving Member States, environmental NGOs and industry), is presently reviewing the BAT Conclusions for Ferrous Metal Processing. EUROFER represents the steel industry there. The Commission expects to adopt the revised BAT Conclusions in late 2021 or early 2022.

Although regulating GHG emissions is not a primary objective of the Industrial Emissions Directive⁴⁷ (IED), standards set by the Directive impose emissions prevention or reduction techniques to steel producers, which may affect also CO₂ levels. The recent evaluation⁴⁸ concluded that the IED was effective in curbing pollution from industrial installations, especially to air, but that it was less effective on issues concerning decarbonisation, efficient use of energy and raw materials or waste management. The Commission is currently revising EU rules on industrial emissions⁴⁹, recognising that the same new technologies will often allow reducing emissions of both pollutants and greenhouse gases. The revision will aim to accelerate the uptake of circular economy and the zero-pollution innovation, and the Industrial Emissions Innovation Observatory will play a key role, monitoring innovations and accelerating the identification of new techniques that may qualify as BAT.

A first online stakeholder workshop took place on 15 December 2020. The Online Public Consultation and the Targeted Stakeholder Consultation ended in March 2021 and the results will feed into the impact assessment.

Decarbonisation roadmaps for the sector show a high potential for future, innovative technologies, possibly leading to a step change in terms of GHG emissions by 2050. Generally, their deployment would have a positive direct impact on air emissions, particularly of NO_x and SO_x.

4.2.6 Construction Products Regulation

⁴⁵ 6 Mandate M/478 - Standardisation mandate to CEN, CENELEC and ETSI for the development of EU technical standards in the field of greenhouse gas emissions

⁴⁶ Assessment and summary of Member States' reports under Commission Implementing Decision 2018/1135/EU EU27 horizontal analysis; Final report.

⁴⁷ Directive 2010/75/EU

⁴⁸ Wood (2021): Wider environmental impacts of industry decarbonisation, [final study report](#)

⁴⁹ Directive 2010/75/EU and Regulation (EC) No 166/2006

Construction, buildings and engineering works are a major customer of the steel industry as they use around 50% of all steel consumed in Europe. Structural steel products used in construction works must comply with the CPR provisions and are subject to harmonized European standards.

The Commission is reviewing the CPR. This review is looking at developing environmental performance requirements for construction products with a view to finding a unified method to establish the environmental footprint of all construction products in line with horizontal principles set in the Sustainable Product Initiative. The Commission is developing this in consultation with industry and Member States. Structural steel products will be one of the first families of products analysed for these new harmonized technical specifications. The adoption of the revised CPR proposal is expected in late 2021 or early 2022.

4.2.7 Sustainable Products Initiative

The Circular Economy Action Plan announced that the Commission would come forward with a legislative proposal (the Sustainable Products Initiative, ‘SPI’) to increase product sustainability in the EU.

The central focus of SPI will be to extend the scope of the Eco-design Directive, and eventually propose additional legislative and non-legislative measures to address objectives that could not be achieved through the revision of the Ecodesign legislation.

The Circular Economy Action Plan identifies steel as one of the priority product/material groups with untapped potential for circularity, along with electronics, ICT, textiles, furniture, as well as other intermediate products such as cement and chemicals. Steel has great potential to contribute to a climate neutral EU since it is a naturally long-lasting and durable product, well adapted for recycling, reuse and remanufacture.

The Commission is looking into how the SPI and sectoral legislation can support efforts to become more circular. In particular, having steel in scope of the SPI will steer the definition of agreed sectoral rules for the calculation and communication (via a digital product passport) of life cycle environmental footprint, other environmental characteristics like recyclability and recycled content, and social information/indicators for steel and steel-based products. This may lead to the definition of classes of environmental performance, and to measures to promote the uptake of low-carbon and sustainable steel in the EU market(s), including through minimum sustainability requirements in public procurement.

4.2.8 Public Procurement

Public procurement accounts for a large proportion of European consumption (nearly 15% of EU GDP), especially in sectors like construction, energy and telecommunications.

Green public procurement can help to create demand for clean products, like green steel, and green value chains. It is shifting towards a life-cycle costing approach, including trade-offs between production and use-phase emissions. There are substantial differences in the openness of public procurement markets worldwide, which is relevant for the steel sector. To combat the spread of discriminatory buy national practices, it is necessary to promote openness and reciprocity in global procurement. In 2016, the Commission revised its legislative proposal for an International Procurement Instrument (IPI). It aims to open third countries’ markets by creating leverage in negotiations on procurement. It involves the investigation of measures impairing the access of EU companies to third country procurement markets and consultation to remove such barriers. If consultations are unsuccessful, IPI could lead to the adoption of restrictive measures on relevant third country operators, goods and services in EU procurement procedures. In the 2019 EU-China Communication, the Commission called (under Action 6) for adoption of IPI. The European Council also called in

October 2020 for accelerating the work on IPI. A swift agreement on the proposed International Procurement Instrument will be essential to address lack of reciprocity and to give the EU further leverage in negotiations.

4.3 Global supply chains

4.3.1 Need for a global level playing field

EU steel producers face challenges related to the absence of a level playing field with regard to subsidies, unwarranted trade tariffs and global overcapacity. Exports of the EU steel industry have declined by more than a quarter between 2017 and 2020, mainly due to protectionist measures adopted by its trading partners as well as to trade diversions resulting from those measures. The Covid-19 crisis has exacerbated this negative trend.

On the import side, the EU's trade defence instruments play an important role in restoring a level playing field on the EU market. Notably the steel industry has in the last years, in line with China's rapidly growing steel capacity, seen an increase in imports of dumped and subsidised steel.

The EU has countered this with resolute use of trade defence instruments to level the playing field. The EU steel industry benefits from a large number of anti-dumping and anti-subsidy measures. About one third of all TDI measures concern distorted and injurious imports of steel products, notably from China. Of the 55 trade defence measures in place on steel over half (28) concern imports of steel from China. Overall, the trade defence measures in place on steel protect 197.000 direct jobs, out of a total number of almost 445.000 direct industrial jobs shielded by TDIs across all sectors.

TDI measures have proven to be highly effective: imposition results usually in substantial decrease or complete disappearance of unfair imports⁵⁰. At the end of 2018, for cases opened as from 2015, the average decrease in injurious imports for steel products under measures was close to 90 %. At the same time, statistics show that in the chain of supply, unfair imports are usually replaced by EU production and/or imports that are not dumped or subsidised. Thus, AD and AS duties restore the level playing field (both for the EU producing industry and other third country suppliers), allowing EU users to continue enjoying diversified sources of supply.

The EU has also increased its use of the anti-subsidy instrument to address new forms of harmful subsidisation. For instance, by countering different and new types of State support in China used to build up capacities abroad (so-called transnational subsidies, 'Belt & Road' initiative). After changes to the trade defence legislation in 2017 and 2018, the EU can impose measures faster and suspend the lesser duty rule in certain circumstances, possibly leading to higher measures. The revamped instruments also allow the EU to address certain environmental concerns, such as the level of environmental protection when selecting a representative country and adding the EU industry's prospective cost of environmental regulation when assessing injury.

The situation of the steel sector has been further disrupted by the US Section 232 measures, which saw the imposition in March 2018 of 25 % duties on imports of foreign steel. The US action made the EU market vulnerable to a potential trade diversion of steel products otherwise destined for the US market.

⁵⁰ E.g. in the case of seamless pipes from China by 98%, of steel rebars from Belarus by 86%, of stainless steel tube fittings from China and Taiwan by 81%, of corrosion resistant steels from China by 100%, of heavy steel plate from China by 99%. At the end of 2018, for cases opened as from 2015, the average decrease in injurious imports for steel products under measures was close to 90%.

To prevent economic damage to the EU steel producers from the trade diversion, the Commission introduced provisional safeguard measures in July 2018 on imports of certain steel products and then definitive measures in February 2019 for a period of three years, i.e. until 30 June 2021. The safeguard measure has been effective. Imports went down from a peak of 33.4 million tonnes in 2018, to 28,8 million tonnes (-13,3%) in 2019, which was the first full year covered by the measure. In June 2020, the Commission further adjusted the functioning of the measure to ensure that it remained effective in a changing economic context, largely impacted by the COVID-19 pandemic.

A safeguard measure is an extraordinary short-term measure to provide interim relief to a sector (in this case steel) in the form of protection against imports for a limited period, while other medium and longer term measures are designed and implemented to ensure its viability. The current safeguard measure takes the form of tariff-rate quotas on 26 categories of steel. The Commission is currently investigating, following a substantiated request from 12 Member States, whether the measure should be prolonged beyond its current expiry date, 30 June 2021

4.3.2 International partnerships

The Global Forum on Steel Excess Capacity (GFSEC), launched by the G20 in 2016, works to address the problem of global excess capacity by tackling distortive government policies and measures that contribute to it. The GFSEC has agreed a set of principles to address global overcapacity, including the issue of trade distorting state interventions. The next step is to ensure that all producing economies apply these agreed principles.

The EU continues to be active in the GFSEC, to promote and further develop its principles, and to retain its relevance by reengaging China, which decided to leave the GFSEC in 2019. The OECD Steel Committee provides another valuable forum for addressing the global problems of the sector.

The EU will also actively contribute to the G7's work on resilience within the newly founded Economic Resilience Panel and promote industrial decarbonisation as a key area for closer cooperation among G7 countries. With the economic weight of this group, representing about half of the world's GDP, there is a real chance to motivate a critical mass of companies to invest into low-carbon technologies in hard-to-abate sectors, through instruments such as carbon pricing, product standards and public procurement.

The EU is also a member of Mission Innovation, a global initiative of 25 countries dedicated to achieving the objectives of the Paris climate agreement through clean energy innovation and doubling public investment in this area within 5 years.

5. The social dimension and skills

With 330,000 jobs in the steel industry itself and many more indirectly induced, steel is as much a social and employment factor as an economic one. Experiences of deindustrialisation due to automation and foreign competition still weigh on many communities and regions centred around classical manufacturing industries. To avoid a repetition of such experiences in light of the new mega-trends of decarbonisation and digitalisation, European companies have to be ahead of the curve and workers have to be equipped with the right skills while enjoying adequate working conditions. Given the challenging business environment in the steel sector, the Commission will keep a close eye on developments, use the instruments at its disposal, and support Member States in anticipating and easing transitions⁵¹ with a view to minimising adverse social impacts.

Social dialogue

The steel sector has a long history of social dialogue at the European level. The Consultative Committee of the European Coal and Steel Community (ECSC), which existed between 1952 and 2002, convened producers, workers, consumers and dealers in the coal and steel sectors. After its expiry, a Sectoral Social Dialogue Committee for Steel was founded. In this framework, the European trade union federation IndustriAll Europe and the European Steel Association Eurofer, work together to represent the workers and employers in the steel sector. The SSDC's mission is to monitor the social, economic and employment consequences of EU policies on the steel sector and to represent the interests of social partners in the political process. For example, the SSDC has in recent years participated in the Commission's consultations on steel safeguards and anti-dumping and anti-subsidy cases, contributed to the "Masterplan for a competitive transformation of EU energy-intensive industries"⁵² and started analytical work on the potential impact of "Industry 4.0" on employment and skills in the steel sector.⁵³ As regards restructuring strategies, the importance of coupling them with strong re- and upskilling policies can be recalled. Considerable amounts of EU funding are available to address the adverse effect of the social impact of restructuring, with the main Union instrument being the European Social Fund (ESF).

Social dialogue would be key in transitioning towards clean and competitive European steel, to map-out the new skills needed by companies in the sector and support workers in acquiring them.

Skills

The Commission has put a "Pact for Skills" high on its European Skills Agenda.⁵⁴ The Agenda and its Pact for Skills respond to the first principle of the European Pillar of Social Rights and are anchored in the New Industrial Strategy. The Pact aims to mobilise public and private organisations to join forces so that they can take effective upskilling and reskilling actions for people of working age.

Steel companies, workers, national, regional and local authorities, social partners, industry organisations, vocational education and training providers, chambers of commerce and employment services should all play a key role in the Pact for Skills. Only by joining forces, making concrete commitments to invest in training for the workforce and building on the

⁵¹ with targeted policies and effective measures such as those set out in the Commission Recommendation on an effective active support to employment following the COVID-19 crisis (EASE)

⁵² <https://op.europa.eu/en/publication-detail/-/publication/be308ba7-14da-11ea-8c1f-01aa75ed71a1>

⁵³ https://news.industrial-europe.eu/content/documents/upload/2020/9/637350989319666309_Steel%20social%20partner%20work%20programme%202020_21.pdf

⁵⁴ COM/2020/274 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0274>

results of the ongoing Blueprint Skills Alliances,⁵⁵ can substantial progress be made towards meeting the industry's skills needs. To make sure that the Pact takes shape with the relevant partners, the Commission has begun a series of high-level discussions with representatives of industrial ecosystems, regional and national authorities, social partners and education and training providers.

Under the Digital Europe Programme, the Commission is supporting the reskilling and upskilling of workers through short-term courses in advanced digital skills. Furthermore, the SME strategy supports the 'digital volunteers' programme to promote the transfer of expertise in digitalisation from high-tech businesses to more traditional SMEs. The Covid-19 crisis has accelerated structural labour market trends, including digitalisation. Policies supporting workers in the steel industry in acquiring these relevant skills would help to ensure a job-rich recovery.

Regions in transition

The transition to a climate-neutral economy will have a significant economic and employment impact on regions with important carbon-intensive industries. However, the distributional impact on vulnerable groups and regions stemming from transitional policies could be alleviated by solidarity mechanisms, revenue recycling and financial measures.

The Just Transition Mechanism (JTM) seeks to leave no region behind in the context of the European Green Deal. It will mobilise up to EUR 100 billion in the next decade. As part of the JTM, the Just Transition Fund (JTF) will invest EUR 17.5 billion in the territories most negatively affected by the transition.

In the 2020 European Semester Country Reports, the Commission proposed the steel sector as one of the priorities of JTF support in six Member States.⁵⁶ The JTF can invest in economic diversification and reconversion, deployment of new technologies, upskilling and reskilling of workers, to overall support the decarbonisation of the industry.

The JTF complements investments from the European Regional Development Fund and the European Social Fund Plus to support a smart economic transformation and a more inclusive economy.

⁵⁵ Work on a skills Blueprint for the steel sector is ongoing: <https://www.estep.eu/essa/essa-project/>, https://skillspanorama.cedefop.europa.eu/en/useful_resources/blueprint-sectoral-cooperation-skills-steel

⁵⁶ Belgium (Hainaut), France (Bouches-du-Rhône, Nord), Italy (Taranto), Luxemburg (Esch-sur-Alzette), Slovakia (Košice) and Sweden (Upper Norrland)

6. Conclusion

The steel sector shows that this important part of the EU industrial landscape must transform itself in order to stay competitive, create quality jobs and a first mover advantage in terms of technological transformation. Many EU policies already support the transformation of the steel sector, other energy-intensive industries and manufacturing industry more generally. Other policies and EU funding are on their way, but may take time to become fully operational.

The EU steel sector faces a challenging period as it recovers from the economic impact of COVID-19, while confronting internal and external challenges. It will be important to ensure that this critical sector for so many parts of the EU economy remains strong and able to invest in transforming itself to become climate-neutral and circular, in line with the ambitions of the EU Industrial Strategy.