STEELING OUR FUTURE

The banks propping up coal-based steel

RECLAIM Finance

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Author : Cynthia Rocamora, Industry Campaigner, Reclaim Finance

Climate and industry analysis : Henri Her, Energy Analyst, Reclaim Finance

Financial analysis : Léa Miomandre, Financial Analyst, Reclaim Finance

Policy analysis : Julie Lassus, Policy Analyst, Reclaim Finance

Copy editor : Hele Oakley

Graphic design : Edouard Marchal

Graphs and figures : Léo Martin, Digital Project Officer, Reclaim Finance

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Contributors and peer reviewers :
- Caroline Ashley, Director, SteelWatch
- Clément Faul, Research and Analysis Manager, Reclaim Finance
- Julia Hovenier, Banks and Steel Campaigner, BankTrack
- Yann Louvel, Senior Financial Institutions' Policy Analyst, Reclaim Finance
- Lucie Pinson, Founder and Executive Director, Reclaim Finance
- Valentin Vogl, Analyst, ARIA
- Romain Su, Analyst, SteelWatch
- Caitlin Swalec, Program Director for Heavy Industry, Global Energy Monitor

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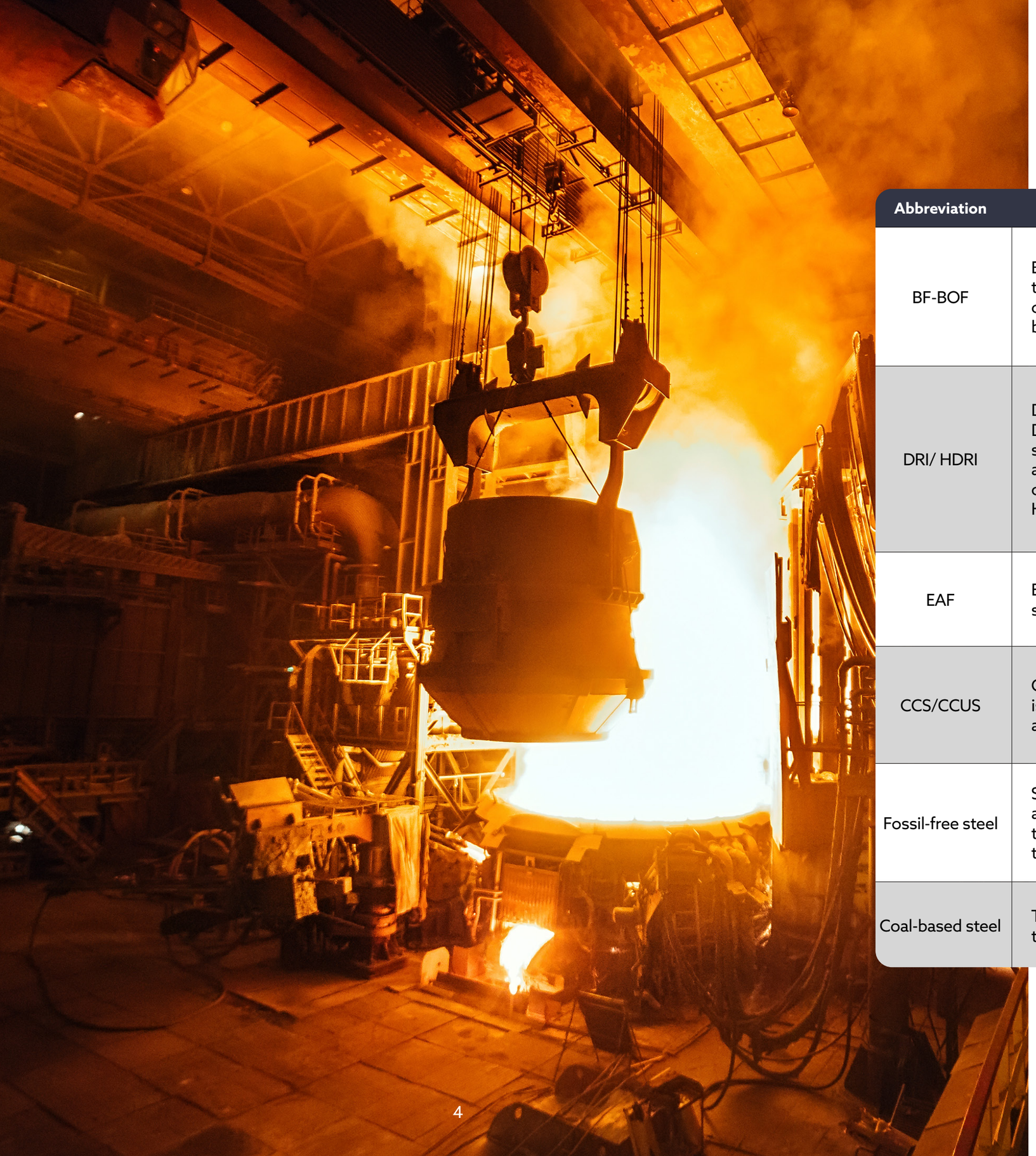


Abbreviation	Definition
BF-BOF	Blast Furnace to Basic Oxygen Furnace. This is the production route that requires the use of metallurgical coal, which includes coking coal/ coke. Blast furnaces are used to convert iron ore into liquid iron, and basic oxygen furnaces turn liquid iron into liquid steel.
DRI/ HDRI	Direct Reduction of Iron. DRI is an alternative to the blast furnace. In DRI, iron ore is converted into solid iron. Today, this involves fossil fuels such as coal, natural gas and fossil hydrogen. The DRI process can also be powered by green hydrogen made from sustainable sources of energy. DRI is paired with an Electric Arc Furnace to produce steel. HDRI stands for Hydrogen-based DRI.
EAF	Electric Arc Furnace. This facility is used to make steel by recycling steel scraps, or using iron produced from the DRI process.
CCS/CCUS	Carbon Capture and Storage/Carbon Capture, Utilization and Storage. It is the process of capturing CO2 emissions from fossil power generation and industrial processes and then storing or using it.
Fossil-free steel	Steel produced without using any fossil fuels. The terms green steel and near-zero emission steel are often used. However, it is important to note that there is no internationally accepted definition of what these terms entail.[1]
Coal-based steel	Throughout this report, coal-based steel refers to steelmaking routes that use blast furnaces (BF) to produce iron.

EXECUTIVE SUMMARY

Financial institutions increasingly voice their discontent at climate action that is limited to the supply of fossil fuels. However, they are yet to adopt policies to address demand-side sectors. The steel industry is one of these sectors. As one of the biggest industrial emitters, and with steel demand expected to increase globally, decarbonizing this sector is key to answering the climate emergency. The climate impact of the steel sector is primarily due to its reliance on coal – specifically, metallurgical coal – for steel production. Indeed, almost 90% of steel sector emissions are attributed to the coal-based route.[2] As new technologies that do not rely on metallurgical coal develop, studies show that coal can be phased out of steelmaking in the early 2040s.[3]

All stakeholders must act quickly to set up the conditions for the deep decarbonization of the steel sector. Banks have the power to make this change happen; they can use their financial power as an incentive to shift the production methods of the world's biggest steel companies to fossil-free techniques. The planet can no longer afford for the world's main steel producers to continue their reliance on coal, particularly as some of these companies, including ArcelorMittal and POSCO, are already accountable for above average carbon intensities.[4]

Our research reveals that banks have provided US$429 billion to the 100 biggest steel producers since 2016. Yet, the commitments that banks have made when it comes to the steel sector remain highly insufficient. Out of the 50 banks analyzed in this report, only one has adopted a policy on coal-based steelmaking – although it is too weak to have a true impact[5] – and only 17 banks have adopted steel decarbonization targets. However, not only are new decarbonization targets not enough to prevent the development of new blast furnaces, the existing targets are inadequate to influence the current situation. As shown in this research, the adoption of steel decarbonization targets does nothing to prevent banks from financing steel companies that have plans to expand coal-based steelmaking capacity or to extend the life of coal-based assets. Remediating this requires banks to prioritize the adoption of sectoral policies that sufficiently restrict financing to coal-based steelmaking.

Today a large pipeline of coal-based steel projects is endangering global climate targets, with at least 57% of planned new capacity using the coal-based BF-BOF route.[6] If all the new coal-based capacity is built, the steel industry could face as much as US$554 billion in stranded assets risk.[7] Furthermore, the OECD reports that the steel industry is already in excess capacity (of 26% in 2022).[8] Taken together, this represents a considerable risk for banks, with the additional likelihood of new projects becoming stranded assets due to their incompatibility with the goal of limiting global warming to 1.5°C.[9] By contrast, the development of fossil-free technologies represents a major financial opportunity for banks, as fossil-free steel becomes increasingly competitive, and could cost 5% less than fossil-based routes by 2050.[10] Banks must therefore immediately make commitments to transform the steel sector :

1. **Adopt strong commitments to restrict financing to coal-based steelmaking. This includes :**
   - Immediately ending dedicated financial services, including advisory services and dedicated financing, to new blast furnaces and to the relining of existing blast furnaces.
   - Committing to no longer provide services for companies that have plans to develop new blast furnaces or to reline existing ones. This includes no longer providing services to companies that do not have a detailed asset-by-asset transition timetable aligned with a 1.5°C scenario, and a just and sustainable transition plan for workers, local communities, and the environment.
2. **Improve existing steel decarbonization targets to make them robust.** This involves adopting targets that cover all greenhouse gas emissions, scopes 1, 2 and 3 emissions, all jurisdictions where a company operates, and all of its value chain and joint ventures. Targets should be adopted for 2025, 2030 and 2035, with a commitment to reach carbon neutrality by 2050 at the latest. Targets must be based on absolute emissions reductions, and intensity targets can be added. They must additionally be based on and aligned with a 1.5°C pathway with no or low overshoot and a limited volume of negative emissions. Targets must also be set against the most recent year where data is available, unless this year significantly differs from the normal activities and emissions of the entity. A specific target should be adopted for methane emissions, especially due to the high methane intensity of metallurgical coal mines.[11]
3. **Commit to increasing finance for fossil-free technologie**s, like green HDRI, and key enabling sectors, like sustainable energy and green hydrogen for steelmaking.

INTRODUCTION

From buildings to cars, domestic appliances and other equipment, steel is omnipresent in our modern world, and it will not go away anytime soon. The third most abundant man-made bulk material on Earth[12] is also an essential part of the energy transition, as it is used to build infrastructure and products such as wind turbines, solar panels and electric vehicles. With steel demand projected to increase globally by more than a third through to 2050,[13] driven in part by developing and emerging economies that need more steel as they industrialize, as well as by the needs of the energy transition, steel will need to be manufactured in a way that is compatible with the climate emergency.

The iron and steel sector has a heavy climate impact. It accounts for around 7% of global greenhouse gas emissions and 11% of global carbon dioxide (CO2) emissions.[14] This is primarily due to the reliance on coal in the steelmaking process. The steel sector is the highest industrial consumer of coal, which meets 75% of its energy needs.[15] The coal used in steelmaking is referred to as metallurgical or met coal, which includes coking coal/coke, and it is used in blast furnaces to turn iron ore into liquid metallic iron suitable for steelmaking. Almost 90% of steel sector emissions are attributed to this coal-based route.[16]

Decarbonizing the steel sector is key to keeping the 1.5°C limit on global average temperature increase within reach. The International Energy Agency's (IEA) Net Zero Emissions by 2050 Scenario calls for steel sector emissions to drop by 25% by 2030, representing a fall of about 3% each year,[17] and then an over 90% drop by 2050.[18] The biggest shift to achieve this is ending the use of coal to produce steel.

According to research by SteelWatch, business as usual coal-based steel production could use up 23% of the world's remaining carbon budget for 2023 to 2050.[19]

This is a pivotal moment for the steel industry; as existing plants progressively reach the end of their lifetime, they will require substantial reinvestments to be relined or replaced. In the context of the climate emergency, producing more steel without irrevocably harming the planet involves decarbonizing production methods to align steel production with a 1.5°C scenario that involves no or low overshoot and limited reliance on negative emissions technologies. In light of the large excess capacity prevalent in the industry today, most additional steel demand can be served by greater utilization of decarbonized steel assets. This means putting an end to coal-based steel.

Fortunately, technologies to produce fossil-free steel are developing fast. The project pipeline for fossil-free steel projects is increasing, but there is still a need to increase near-zero steel production by more than a hundred-fold by 2030.[20] In other words, to ensure they can meet future steel demand, these technologies need investment. In light of this, institutions financing steelmaking have an important responsibility to the sector's transition: they must play their part to stop the development or relining of coal-based blast furnaces, and provide financing for fossil-free projects. Studies show that the steel sector can be close to fully decarbonized by the early 2040s.[21]

This report dives into the role of banks in financing steelmaking and analyzes their commitments in relation to the steel sector. Recommendations for the concrete steps that banks can take to restrict financing to coal-based steel are given at the end.

UNDERSTANDING STEEL DECARBONIZATION

How steel is produced

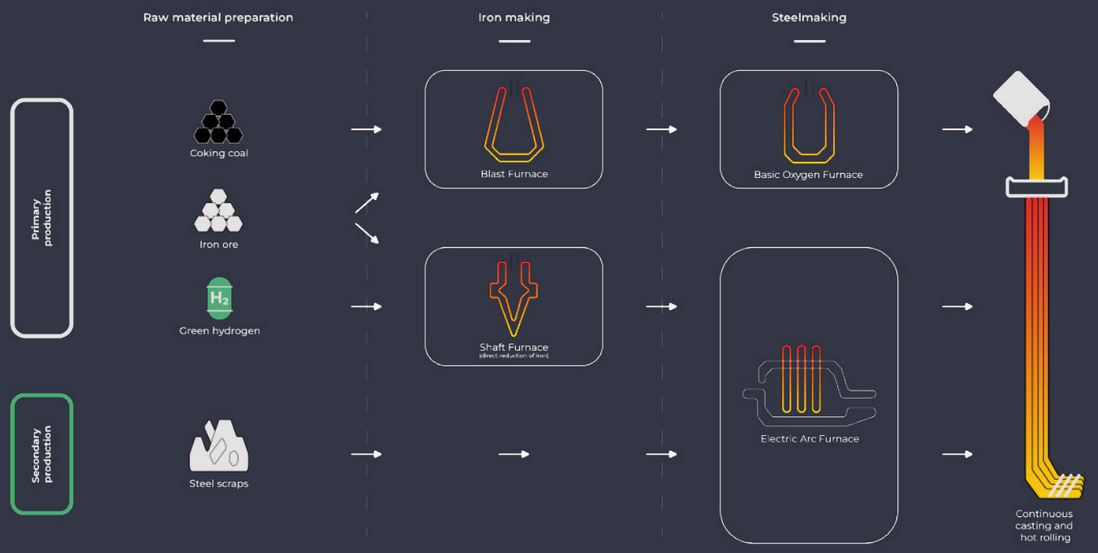


Figure 1 - Overview of the main steelmaking processes

There are two main ways to produce steel: primary production refers to the production of steel from raw materials, and secondary production refers to the recycling of steel scraps.

Today, primary steel production relies on two principal technological routes. The first uses blast furnaces (BF) in the initial ironmaking step, where liquid iron is produced from iron ore. The output of the blast furnace is then processed, in most cases, in a basic oxygen furnace (BOF) to produce steel. This predominant route is referred to as the BF-BOF route and was responsible for 72% of global steel production in 2023.[22]

However, this route is highly carbon-intensive, mainly due to the use of coal in blast furnaces for ironmaking. Indeed, this requires high volumes of coking and PCI[23] coals, the preparation and consumption of which emit significant CO2 quantities: taken together, they make up around 85% of BF-BOF emissions.[24]

More recently, primary steel has been produced using the direct reduction of iron process and electric arc furnaces route (DRI-EAF). This is significantly less carbon-intensive than the BF-BOF route. First, iron ore is turned into sponge iron using hydrogen or natural gas-derived carbon as a reducing agent in place of coking coal, which moderately lowers the carbon emissions. This is particularly climate-friendly when green hydrogen is used in hydrogen-based direct reduction of iron (HDRI). The sponge iron is then fed into an electric arc furnace to produce steel, sometimes in conjunction with steel scraps.

Secondary steel production involves the recycling of steel scraps by melting them together in an electric arc furnace. This is less carbon-intensive than primary steelmaking and can be virtually fossil-free when sustainable sources of electricity are used,[25] but it is highly dependent on scrap availability and quantity. Primary steelmaking produces on average seven times more emissions than secondary steelmaking.[26]

In 2022, secondary steelmaking accounted for 21% of global steel production and primary steelmaking for 79%: 72% from the BF-BOF route, and 7% from the DRI-EAF route, with DRI currently almost exclusively produced using natural gas or coal.[27]

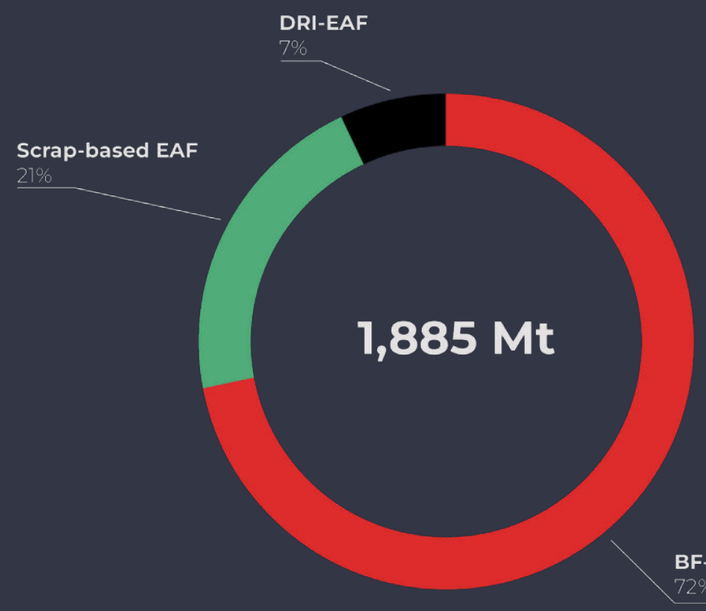


Figure 2 - Global share of steel production by technology, 2022

Coal-based steel is extremely carbon-intensive

Since coal-based steelmaking is currently the main production route, the steel sector is responsible for around 7% of global greenhouse gas emissions and 11% of global CO2 emissions.[28] The sector directly emits 2.6 gigatonnes (Gt) of CO2 per year globally (around 25% of industrial CO2 emissions[29]), but when indirect emissions are also taken into account, it is responsible for around 4 Gt of CO2 per year, according to the IPCC.[30] This amount still does not include coal mine methane. Direct emissions are mainly due to the reliance on coal to produce steel from raw materials in primary steel production. Metallurgical coal and coke supply the vast majority of the energy for the BF-BOF primary production route, both for heating and producing chemical reactions – it is used

in blast furnaces to process iron ore into liquid iron, and in basic oxygen furnaces for making steel (see Figure 2). Blast furnaces account for 90% of steel production from iron ore.[31]

According to the International Energy Agency, the CO2 intensity of the BF-BOF route is 2.2 tonnes of CO2 per tonne of steel (72% of steel production), compared to 0.34 tonnes of CO2 for the scrap-based EAF route (21% of steel production), and 1.4 tonnes of CO2 for the gas-based DRI-EAF route.[32]

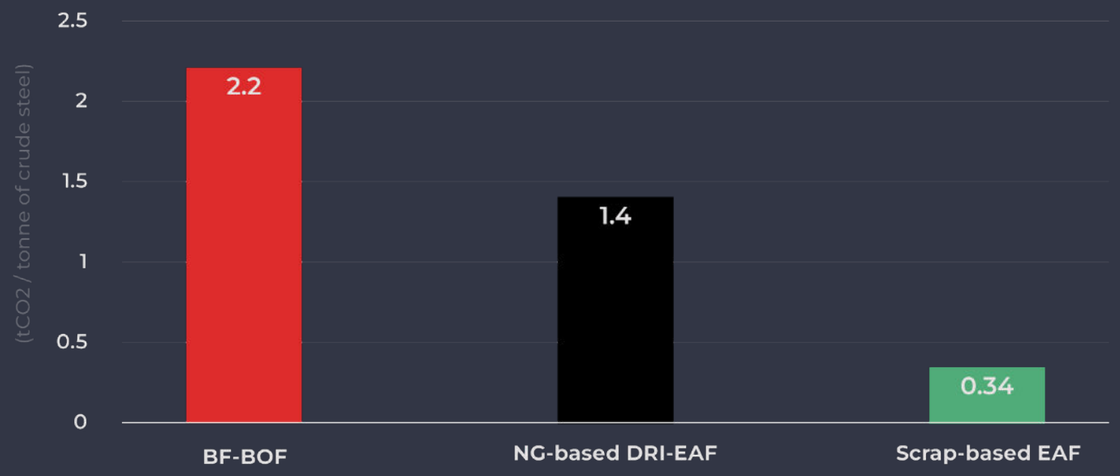


Figure 3 - Carbon intensity of main steel production routes (tonnes of CO2 per tonne of crude steel)

Source : International Energy Agency, Iron and Steel Technology Roadmap - Towards more sustainable steelmaking, 2020. The carbon intensity displayed for the DRI-EAF route is associated with ironmaking using natural gas-based DRI, and is greater than green hydrogen-based DRI.

Methane emissions from mining make the impact of coal-based steel even worse

One of the major climate impacts of coal is the routine methane emissions that occur during coal mining operations. The mining of coking coal/coke alone, which is the main kind of metallurgical coal, was responsible for 10 Mt of methane emissions in 2022, according to IEA estimates.[33] Although this is a relatively small quantity of emissions, methane is such a strong factor in climate impacts that it is equivalent to as much as 298 Mt of CO2 emissions over a 100-year timeframe.

Today, the steel industry is responsible for 2.6 GtCO2[34] of direct emissions, and another 1.1 GtCO2 of indirect emissions. Global Energy Monitor found that methane adds an additional 1 Gt of carbon dioxide equivalent (CO2e), leading to a further 27% increase in the carbon footprint of the steel industry. This risks pushing the Paris Agreement's 1.5°C global warming target out of reach.[35]

As methane has a short life, over the next 20 years its climate impact will be even stronger than CO2.[36] Methane emissions from coking coal will cause a warming effect equivalent to 825 Mt of CO2 emissions – more than the combined emissions of Germany and Canada.[37] This goes against the grain of the UNEP Global Methane Assessment, which highlights the crucial need to reduce human-induced methane emissions by 45% by 2030, short of which average global temperatures will increase by a further 0.3°C by 2050.[38] The UNEP assessment is consistent with the IEA in showing that the fossil fuel industry is the first sector where significant emissions reductions can be achieved.[39] Methane inaction and overshooting the 1.5°C Paris Agreement target, however, is not a merely passing issue; tipping points would be crossed, causing the disruption of climate systems or mechanisms that, in turn, are likely to worsen global warming.[40]

All available solutions to decarbonize steelmaking must be used

Despite being long deemed «hard-to-abate» by policymakers due to limited viable alternative technologies, recent analyses indicate that the steel sector could become coal-free in the early 2040s, thanks to technological advancements.[41]

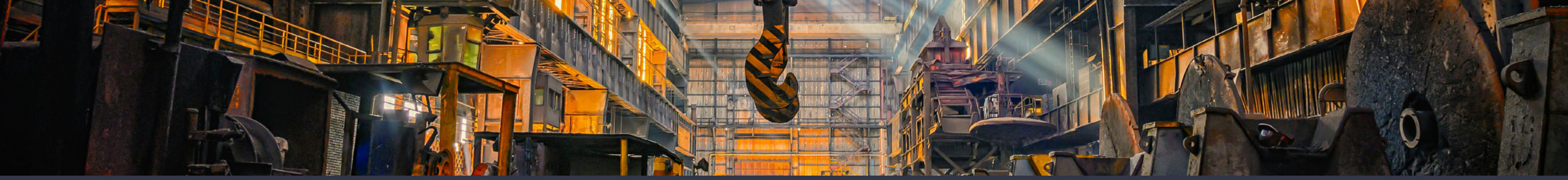
Existing solutions to decarbonize the steel sector include:[42]

- Reducing the need for virgin steel as much as possible, notably by increasing material efficiency and scaling up recycling.
- Developing cleaner iron and steel production methods and sources of energy.

While action on virgin steel demand is essential, there is an urgent need to act on the other two groups of solutions. However, though increasing scrap recycling is a key lever, it depends heavily on the availability of scrap, which is limited. It is necessary then to also act on the third group of solutions by developing and deploying new technologies for steel production that do not rely on fossil fuels.

The promising potential of HDRI for fossil-free steelmaking

As mentioned above, instead of using coking coal in a blast furnace, iron ore can be reduced with lower process emissions through the use ofDRI with hydrogen or natural gas-derived carbon as a reducing agent. While natural gas-based DRI currently reduces primary steelmaking emissions by a third compared to the coal-based BF-BOF route, using hydrogen as a reducing agent offers even greater potential: decreasing process emissions by 91%[43] depending on the production route and associated emissions of the hydrogen. The resulting liquid iron, or scrap steel, can then be melted together to produce steel in an electric arc furnace (EAF).



To make the process entirely fossil-free, sustainable electricity should be used to power the electrolysers producing and supplying green hydrogen for use in the HDRI step, and to power the EAF step. Specifically, for the HDRI to be beneficial in terms of emissions when compared to natural gas-based DRI, the associated green hydrogen should be produced from electrolysers running on an electricity supply with a carbon intensity below 120 gCO2e/kWh.

All in all, primary steelmaking using the HDRI-EAF route and running entirely on sustainable electricity provides the way to a low-carbon steel sector.

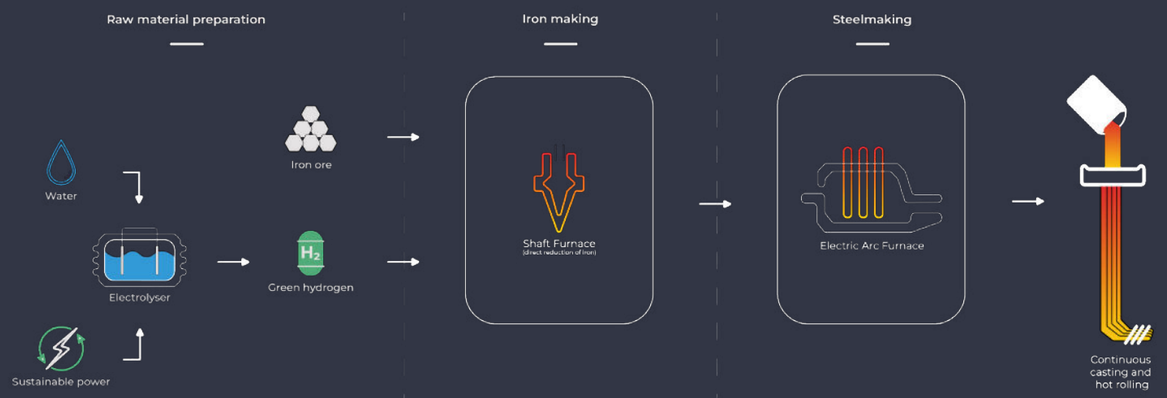


Figure 4 - Hydrogen-based Direct Reduction of Iron (HDRI)

Specifically, for the HDRI to be beneficial in terms of emissions when compared to natural gas-based DRI, the associated green hydrogen should be produced from electrolysers running on an electricity supply with a carbon intensity below 120 gCO2e/kWh.

All in all, primary steelmaking using the HDRI-EAF route and running entirely on sustainable electricity provides the way to a low-carbon steel sector.

The IEA's Net Zero by 2050 Scenario indicates that about half (48%) of all steelmaking capacity needs to use EAF technology by 2050, and 58% of primary steelmaking needs to use HDRI (44%) or iron ore electrolysis (14%) to meet that goal. Although iron ore electrolysis is a promising technology, it is not yet ready to be deployed.[44]

Fossil-free steelmaking implies using sustainable power

Electric arc furnaces stand out today as the most climate-friendly way to produce steel, melting steel scrap, liquid iron or a mix of both using electricity. However, this process will never be cleaner than the electricity it uses to melt and process steel, and so producing fossil-free steel requires EAFs to run on sustainable electricity. Estimates show that using green steel to meet the 2021 level of global steel production requires 97.6 Mt of hydrogen and 1,371 GW of renewable energy.[45] Put into perspective, this represents nearly half of today's current global renewable energy generation capacity. In other words, there is a considerable capacity gap that needs to be filled.[46]

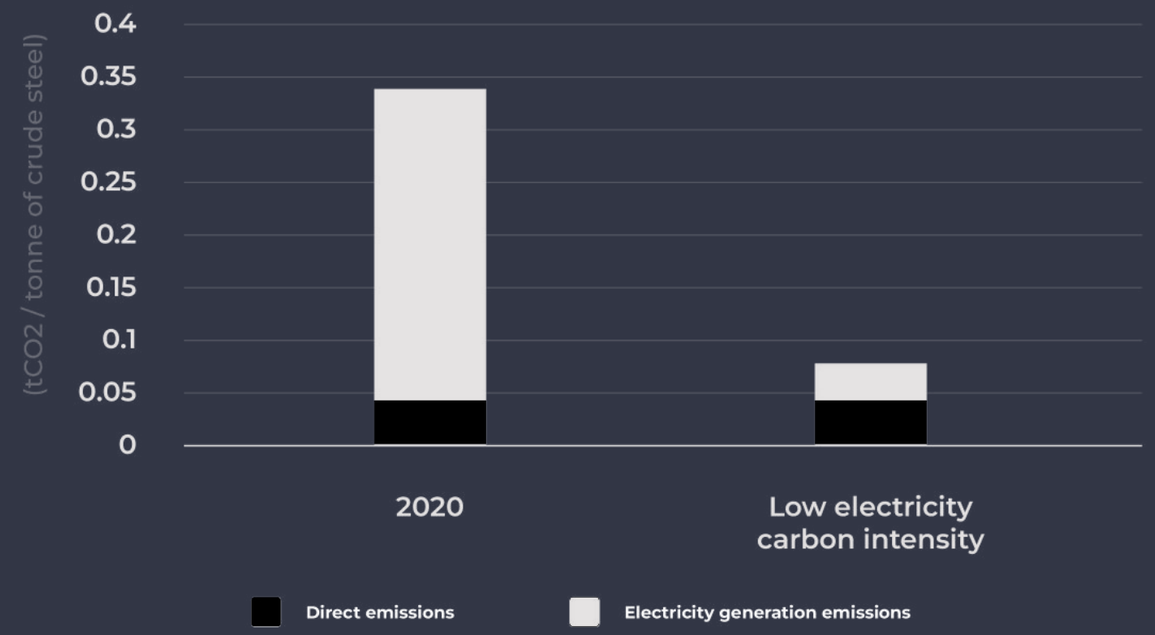


Figure 5 - Carbon intensity of EAF routes fall when sustainable electricity is used (tCO2/tonne of crude steel)

Source : International Energy Agency, Iron and Steel Technology Roadmap - Towards more sustainable steelmaking, 2020. The 2035 electricity carbon intensity in the IEA's Net Zero Roadmap - A global pathway to keep the 1.5°C goal in reach is used for this low electricity carbon intensity assessment.

1. THE STEEL ECOSYSTEM

A. WHO PRODUCES STEEL AND WHERE

Who are the biggest steel producers?

Decarbonizing the steel sector implies addressing how the biggest players in the industry manufacture steel. This report looks at the 100 biggest steel producers that together represent a steelmaking capacity of 1,480 million tonnes per annum (Mtpa), or 65.2% of total global capacity. This is heavily weighted to primary steel production, which represents 85% of these steel companies' combined capacity. The DRI-EAF route accounts for 5% of their primary production capacity, and coal-based routes – using carbon-intensive blast furnaces for ironmaking – account for 80.3%, with the BF-BOF route specifically accounting for 75.4%.

As for secondary steel production, or scrap steel recycling, the top 100 biggest steel companies are laggards: only 12.7% of their total combined capacity relies on scrap-based EAF. By comparison, this route represents 21.2% of total global steel production capacity.[47]

The top five steel companies include ArcelorMittal, China Baowu Steel Group, Nippon Steel, Ansteel Group and Jindal Group. While China Baowu Steel Group is the top producer worldwide, production capacities in the Global Energy Monitor database rank it second after ArcelorMittal, which illustrates the difficulty in assessing detailed steel plant-level information. Together, the five biggest companies account for 15.6% of total steelmaking capacity, or 354 Mtpa. Shifting the way these companies produce steel towards low-carbon routes is essential to see a sector-wide transition.

Almost two-thirds of the companies in this report (63 of 100) are building or planning additional steel production capacity. Of these new projects, 41 still rely on coal-based routes using blast furnaces for ironmaking, despite the need to decarbonize the steel sector with low-carbon production routes. The companies specifically responsible for new coal-based capacity plans are shown with a star in Figure 7. These carbon-intensive developments make up the majority of new projects: 56% of this additional capacity consists of either new blast furnace production routes or new basic oxygen furnace (BOF) additions to existing blast furnace production routes. As a comparison, the same proportion for the whole steelmaking industry is 45%.

The largest steelmakers are therefore behind in the transition to fossil-free steel, as they seem more inclined to continue carbon-intensive developments than to take up more sustainable options. It is worth noting in this context that only one-third of the world's top 50 steel producers have set targets to reach net-zero emissions by 2050, despite being responsible currently for more than 60% of the steel sector's emissions.[48] Furthermore, an analysis by the Australasian Center for Corporate Responsibility finds that some of the biggest steelmakers, like ArcelorMittal, Ansteel Group, POSCO, JFE Steel, Tata Steel and United States Steel, are responsible for above global average carbon intensities.[49]

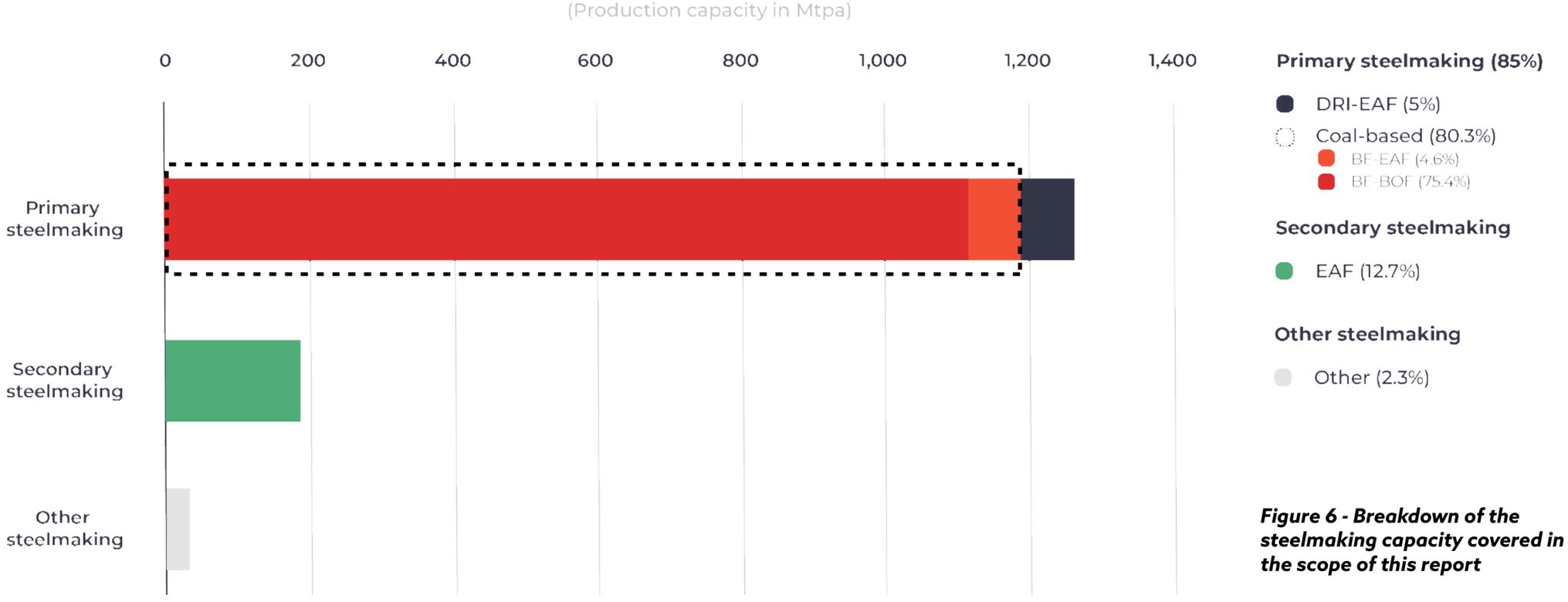
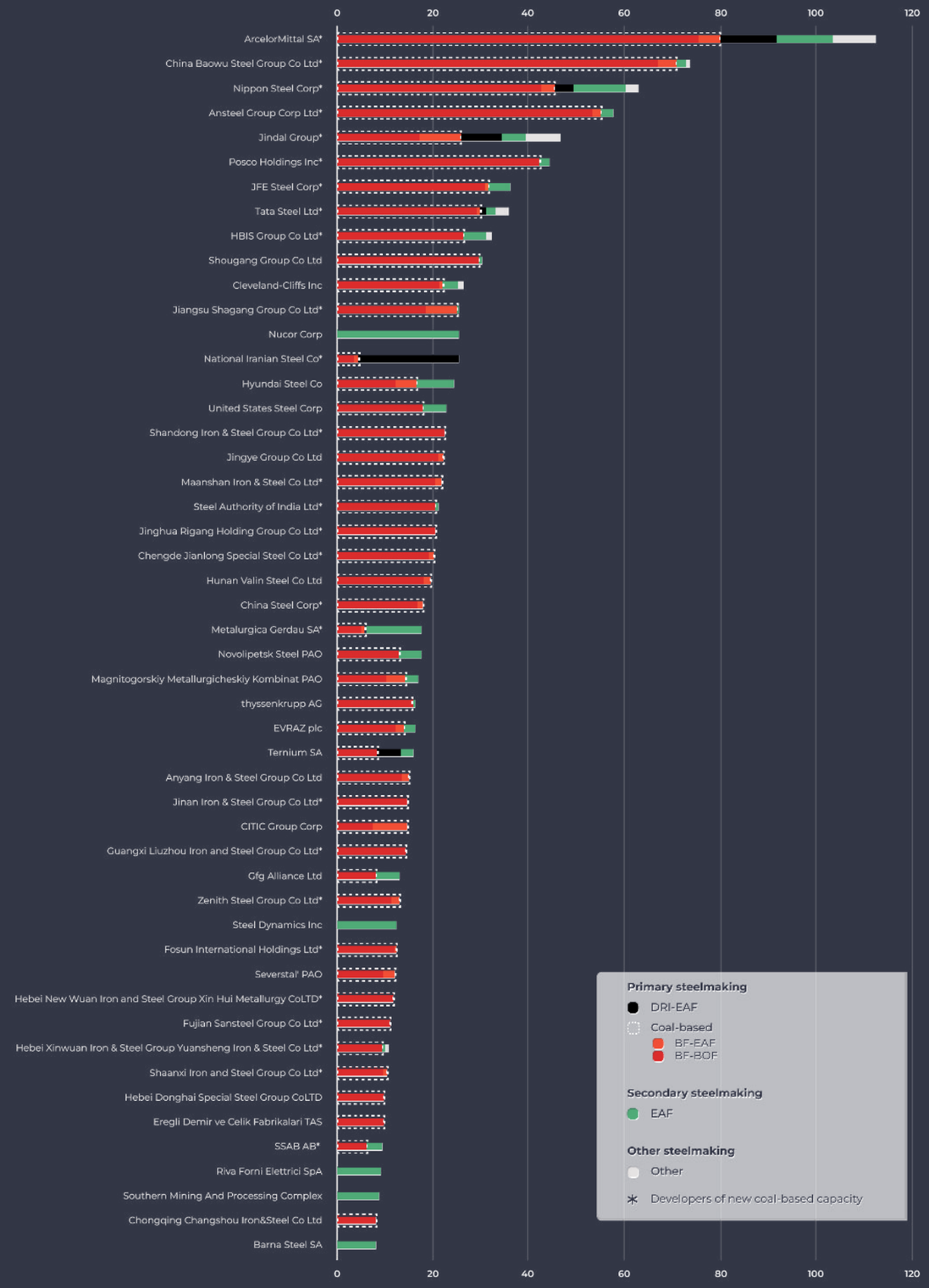
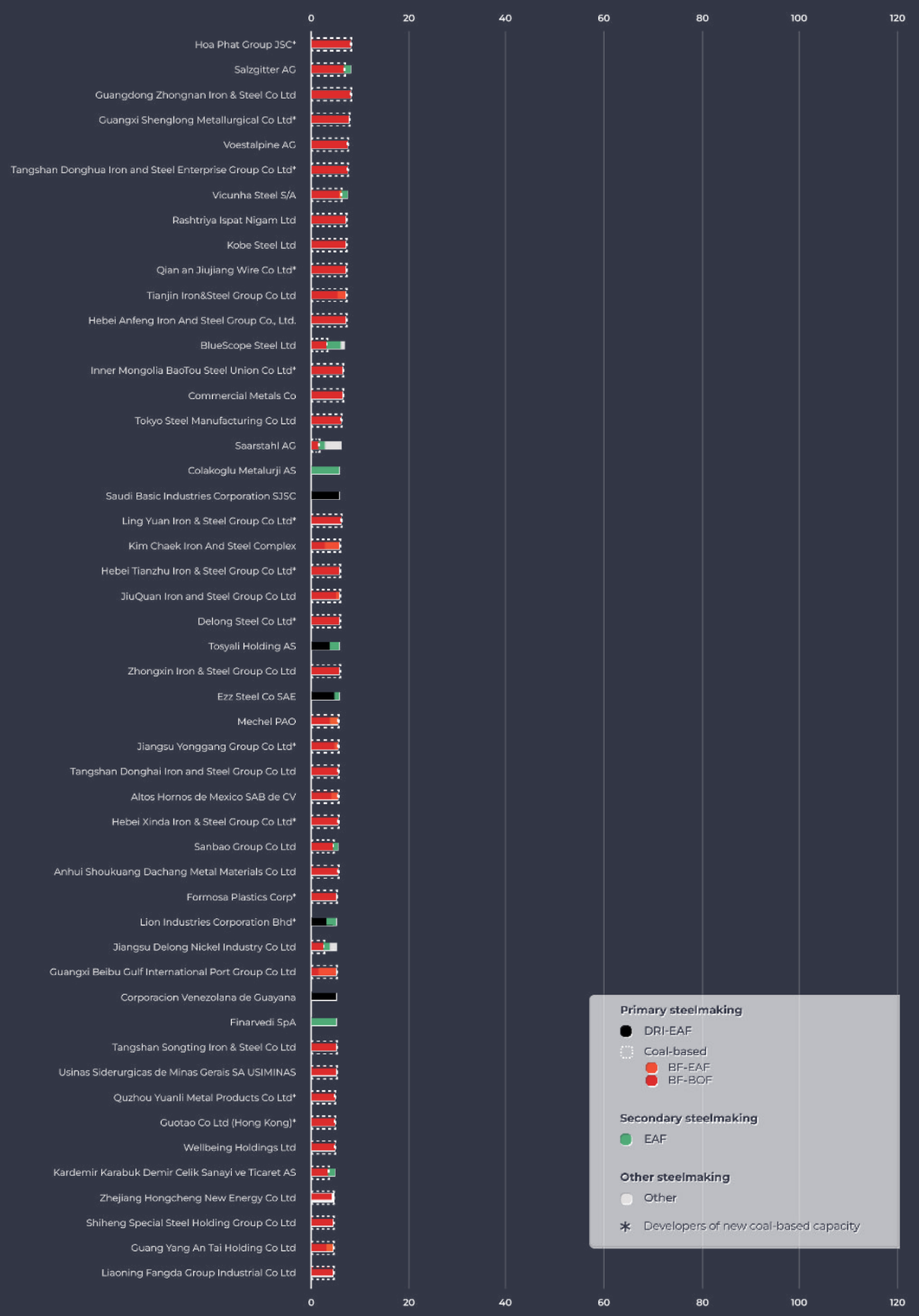


Figure 6 - Breakdown of the steelmaking capacity covered in the scope of this report

Figure 7 - Steelmaking production capacity of the top 100 companies





Where steel is produced

In 2022, 1,885 million tonnes of crude steel were produced worldwide, with China accounting for more than half of this amount. The six countries leading steel production – China, India, Japan, the US, Russia and South Korea – contributed approximately three-quarters of 2022's global production,[50] while the top 17 countries were together responsible for almost 90%.

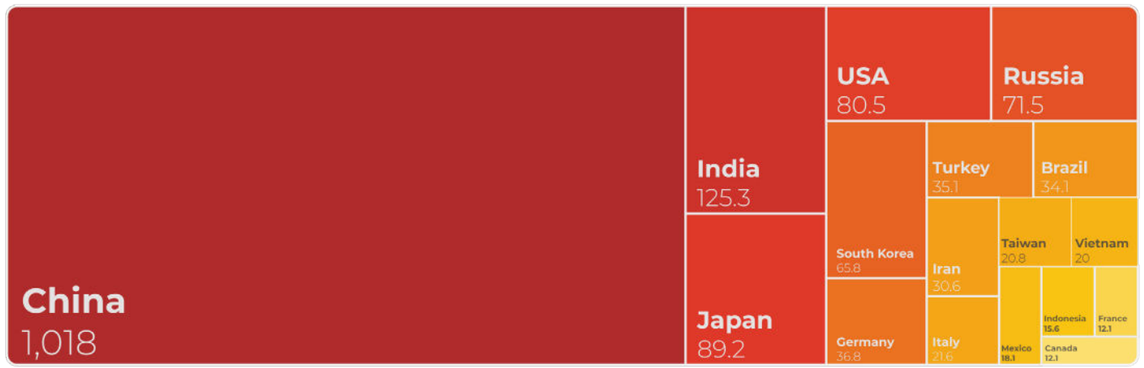


Figure 8 - Global steel production (Mt) of leading steelmaking countries, 2022

National steelmaking capacities in leading countries are mostly held by companies headquartered in those countries – in China, for example, almost 90% of the steelmaking capacity is held by Chinese companies.

Additionally in the case of China, Chinese steelmakers concentrate almost all – more than 98% – of their steelmaking capacity within China. This national production trend is confirmed throughout the scope of this report: across the 100 companies studied, 89 hold the majority of their steelmaking capacity in the same country as they are headquartered.

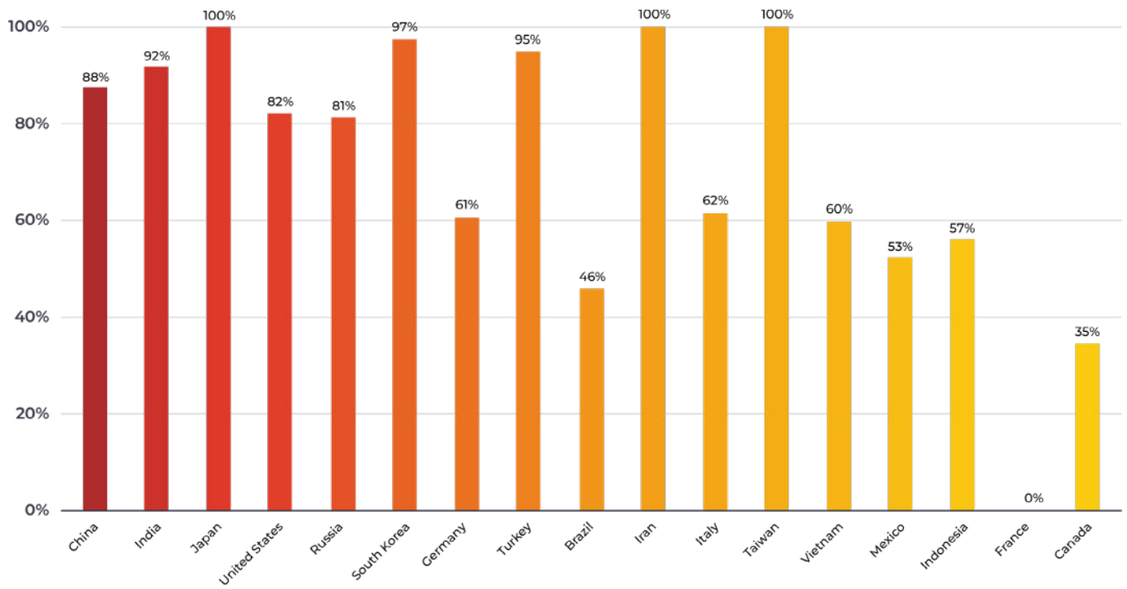


Figure 9 - Share of steelmaking capacity held by companies headquartered in the country

Of the remaining companies, the activities of which are mainly international, five stand out: ArcelorMittal – with only 1.2% of its capacity in the country of its headquarters, Luxembourg – and EVRAZ, Formosa Plastics Corporation, Ternium SA and Fosun International Holdings Ltd with no capacity in the respective country in which they are headquartered.

B. THE BANKS BEHIND THE BIGGEST STEEL PRODUCERS

Action from a wide array of stakeholders, including governments, is necessary to make the shift to fossil-free steelmaking happen. Banks play a crucial role in driving the decarbonization of the steel industry. Indeed, steel companies pursue their operations thanks to the influx of resources received from financial institutions; by providing this support, banks hold both the power and the responsibility to compel steel manufacturers worldwide to transition from their existing practices to production methods aligned with climate imperatives.

Between 2016 and June 2023, 354 banks provided US$429 billion to the 100 biggest steel producers, this includes US$326 billion from the top 50 banks. During this timeframe, 40% of bank support was in the form of loans, while 60% was provided through underwriting (issuance of new shares/bonds). This figure varies widely from one country to another – for instance, only 15% of bank support takes the form of loans in China, compared to 50% in the US and 70% in Japan. Based on the financial research for this report, only 1% of financing is classified as pure project financing in which the entirety of funds are designated for a specific project. This highlights the need for corporate-based approaches to steel financing that ensure decisions have a real-world impact – by allocating funds to companies that develop low-carbon technologies rather than coal-based technologies.

In total, out of the 354 banks included in the financial research, just 20 banks account for 47% of the financing identified. The top ten banks supporting steel producers – Bank of China, China Construction Bank, Bank of America, JPMorgan Chase, Goldman Sachs, CITIC, Citigroup, Mizuho Financial, BNP Paribas and Agricultural Bank of China – represent 31% of the total banking support to the sector between 2016 and June 2023. The research further shows that 42% of global financing came from banks in China, 18% from banks in the United States, 21% from banks in Europe (16% in the EU) and 7% from banks in Japan. The French banks involved in the steel sector (representing 6% of global financing) are BNP Paribas (38%), Crédit Agricole (29%), Société Générale (24%), Groupe BPCE (6%) and Crédit Mutuel (3%).

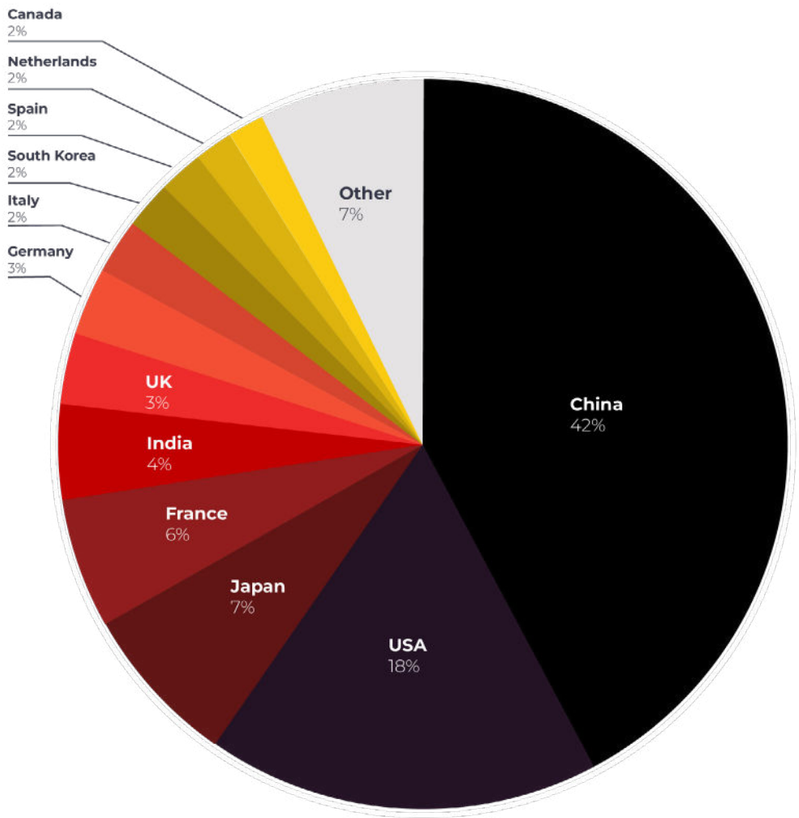


Figure 10 - Total banking services by country of financial institution headquarters, 2016 to June 2023

Figure 11 - Total banking services (US$ million) by country of financial institution headquarters, 2016 to June 2023

Table 1 - Top 50 banks supporting steel companies, 2016 to June 2023

Rank	Bank	Country of headquarters	Total financing provided (US$ million)	Steel policy (Yes/ No)	Steel decarbonization targets (Yes/No)	Top companies financed	Share of coal-based routes in the company's capacity[51]	Company developing new coal-based capacity
1	Bank of China	China	23,073	No	No	HBIS Group	83%	Yes
						China Baowu Steel Group	97%	Yes
						Ansteel Group	96%	Yes
2	China Construction Bank	China	20,436	No	No	HBIS Group	83%	Yes
						China Baowu Steel Group	97%	Yes
						Ansteel Group	96%	Yes
3	Bank of America	United States	15,024	No	No	ArcelorMittal	71%	Yes
						Cleveland-Cliffs	84%	No
						Nucor Corp	0%	No
4	JPMorgan Chase	United States	11,898	No	Yes	ArcelorMittal	71%	Yes
						Nucor Corp	0%	No
						United States Steel*	79%	No
5	Goldman Sachs	United States	11,568	No	No	ArcelorMittal	71%	Yes
						Cleveland-Cliffs	84%	No
						Nippon Steel*	73%	Yes
6	CITIC	China	11,059	No	No	HBIS Group	83%	Yes
						Shougang Group	99%	No
						CITIC Group	100%	No
7	Citigroup	United States	9,996	No	Yes	ArcelorMittal	71%	Yes
						POSCO Holdings	96%	Yes
						United States Steel*	79%	No
8	Mizuho Financial	Japan	9,803	No	No	ArcelorMittal	71%	Yes
						Kobe Steel	100%	No
						Nippon Steel*	73%	Yes
9	BNP Paribas	France	9,392	No	Yes	ArcelorMittal	71%	Yes
						POSCO Holdings	96%	Yes
						Jindal Group	56%	Yes

Rank	Bank	Country of headquarters	Total financing provided (US$ million)	Steel policy (Yes/ No)	Steel decarbonization targets (Yes/No)	Top companies financed	Share of coal-based routes in the company's capacity[51]	Company developing new coal-based capacity
10	Agricultural Bank of China	China	8,940	No	No	HBIS Group	83%	Yes
						China Baowu Steel Group	97%	Yes
						Jiangsu Shagang Group	99%	Yes
11	China Everbright Group	China	8,283	No	No	Shougang Group	99%	No
						HBIS Group	83%	Yes
						Guangxi Liuzhou Iron and Steel Group	100%	Yes
12	Industrial and Commercial Bank of China	China	8,089	No	No	China Baowu Steel Group	97%	Yes
						HBIS Group	83%	Yes
						Shandong Iron and Steel Group	100%	Yes
13	Crédit Agricole	France	7,084	No	Yes	ArcelorMittal	71%	Yes
						POSCO Holdings	96%	Yes
						Finarvedi SpA	0%	No
14	Shanghai Pudong Development Bank	China	6,850	No	No	China Baowu Steel Group	97%	Yes
						Jiangsu Shagang Group	99%	Yes
						Shandong Iron and Steel Group	100%	Yes
15	SMBC Group	Japan	6,717	No	No	ArcelorMittal	71%	Yes
						Nippon Steel*	73%	Yes
						BlueScope Steel	46%	No
16	ING Group	Netherlands	6,619	Yes	Yes	ArcelorMittal	71%	Yes
						United States Steel*	79%	No
						Novolipetsk Steel	75%	No
17	UniCredit	Italy	6,605	No	Yes	ArcelorMittal	71%	Yes
						Novolipetsk Steel	75%	No
						Voestalpine	100%	No
18	Hua Xia Bank	China	6,267	No	No	Shougang Group	99%	No
						Shandong Iron and Steel Group	100%	Yes
						HBIS Group	83%	Yes

Rank	Bank	Country of headquarters	Total financing provided (US$ million)	Steel policy (Yes/ No)	Steel decarbonization targets (Yes/No)	Top companies financed	Share of coal-based routes in the company's capacity[51]	Company developing new coal-based capacity
19	Commerzbank	Germany	6,085	No	Yes	ArcelorMittal	71%	Yes
						Thyssenkrupp	99%	No
						United States Steel	79%	No
20	Bank of Communications	China	6,031	No	No	China Baowu Steel Group	97%	Yes
						HBIS Group	83%	Yes
						Jiangsu Shagang Group	99%	Yes
21	China Merchants Bank	China	6,000	No	No	China Baowu Steel Group	97%	Yes
						Guangxi Beibu Gulf International Port Group	100%	No
						Jiangsu Shagang Group	99%	Yes
22	Société Générale	France	5,981	No	Yes	ArcelorMittal	71%	Yes
						Novolipetsk Steel	75%	No
						United States Steel*	79%	No
23	Wells Fargo	United States	5,963	No	Yes	Nucor Corp	0%	No
						Cleveland-Cliffs	84%	No
						United States Steel*	79%	No
24	Industrial Bank Company	China	5,631	No	No	HBIS Group	83%	Yes
						China Baowu Steel Group	97%	Yes
						Guangxi Beibu Gulf International Port Group	100%	No
25	Bank of Ningbo	China	5,370	No	No	Shougang Group	99%	No
						Jiangsu Shagang Group	99%	Yes
						China Baowu Steel Group	97%	Yes
26	Mitsubishi UFJ Financial	Japan	5,050	No	Yes	ArcelorMittal	71%	Yes
						Nippon Steel*	73%	Yes
						Cleveland-Cliffs	84%	No

Rank	Bank	Country of headquarters	Total financing provided (US$ million)	Steel policy (Yes/ No)	Steel decarbonization targets (Yes/No)	Top companies financed	Share of coal-based routes in the company's capacity[51]	Company developing new coal-based capacity
27	China Minsheng Bank	China	5,043	No	No	HBIS Group	83%	Yes
						Shougang Group	99%	No
						Shandong Iron and Steel Group	100%	Yes
28	Haitong Securities	China	4,858	No	No	Ansteel Group	96%	Yes
						HBIS Group	83%	Yes
						Shougang Group	99%	No
29	JBIC	Japan	4,653	No	No	ArcelorMittal	71%	Yes
						Jindal Group	56%	Yes
						Nippon Steel*	73%	Yes
30	Standard Chartered	United Kingdom	4,647	No	Yes	Thyssenkrupp	99%	No
						Jindal Group	56%	Yes
						Tata Steel	84%	Yes
31	Credit Suisse**	Switzerland	4,517	No	Yes	Cleveland-Cliffs	84%	No
						United States Steel	79%	No
						BlueScope Steel	46%	No
32	Santander	Spain	4,462	No	Yes	ArcelorMittal	71%	Yes
						Metalurgica Gerdau	34%	Yes
						CELSA Group	0%	No
33	CSC Financial	China	4,384	No	No	HBIS Group	83%	Yes
						Shougang Group	99%	No
						China Baowu Steel Group	97%	Yes
34	Ping An Insurance Group	China	4,272	No	No	Inner Mongolia BaoTou Steel Union	100%	Yes
						Ansteel Group	96%	Yes
						Guangxi Beibu Gulf International Port Group	100%	No
35	Guotai Junan Securities	China	4,185	No	No	Ansteel Group	96%	Yes
						Shandong Iron and Steel Group	100%	Yes
						HBIS Group	83%	Yes
36	Deutsche Bank	Germany	4,172	No	Yes	Cleveland-Cliffs	84%	No
						Nucor Corp	0%	No
						Jindal Group	56%	Yes

Rank	Bank	Country of headquarters	Total financing provided (US$ million)	Steel policy (Yes/ No)	Steel decarbonization targets (Yes/No)	Top companies financed	Share of coal-based routes in the company's capacity[51]	Company developing new coal-based capacity
37	HSBC	United Kingdom	4,049	No	Yes	ArcelorMittal	71%	Yes
						POSCO Holdings	96%	Yes
						BlueScope Steel	46%	No
38	China Development Bank	China	3,989	No	No	HBIS Group	83%	Yes
						Guangxi Beibu Gulf International Port Group	100%	No
						Ansteel Group	96%	Yes
39	State Bank of India	India	3,920	No	No	Jindal Group	83%	Yes
						Tata Steel	100%	Yes
						Steel Authority of India	96%	Yes
40	Morgan Stanley	United States	3,897	No	No	United States Steel	79%	No
						Steel Dynamics	0%	No
						ArcelorMittal	71%	Yes
41	PNC Financial Services	United States	3,804	No	No	Cleveland-Cliffs	84%	No
						Steel Dynamics	0%	No
						Commercial Metals	0%	No
42	Royal Bank of Canada	Canada	3,519	No	No	ArcelorMittal	71%	Yes
						Nucor Corp	0%	No
						Cleveland-Cliffs	84%	No
43	Huatai Securities	China	3,359	No	No	Guangxi Beibu Gulf International Port Group	100%	No
						HBIS Group	83%	Yes
						Hunan Valin Steel	100%	No
44	Bank of Beijing	China	3,341	No	No	Shougang Group	99%	No
						Shandong Iron and Steel Group	100%	Yes
						Zenith Steel Group	100%	Yes
45	Barclays	United Kingdom	3,206	No	Yes	United States Steel	79%	No
						ArcelorMittal	71%	Yes
						Cleveland-Cliffs	84%	No
46	Postal Savings Bank of China	China	2,980	No	No	Shougang Group	99%	No
						HBIS Group	83%	Yes
						Ansteel Group	96%	Yes

Rank	Bank	Country of headquarters	Total financing provided (US$ million)	Steel policy (Yes/ No)	Steel decarbonization targets (Yes/No)	Top companies financed	Share of coal-based routes in the company's capacity[51]	Company developing new coal-based capacity
47	Axis Bank	India	2,849	No	No	Tata Steel	84%	Yes
						Jindal Group	56%	Yes
48	Intesa Sanpaolo	Italy	2,772	No	No	ArcelorMittal	71%	Yes
						Finarvedi SpA	0%	No
						Thyssenkrupp	99%	No
49	KB Financial Group	South Korea	2,765	No	Yes	Hyundai Steel	67%	No
						Posco Holdings	96%	Yes
50	BMO Financial Group	Canada	2,666	No	No	ArcelorMittal	71%	Yes
						United States Steel	79%	No
						Cleveland-Cliffs	84%	No

* Nippon Steel is in the process of acquiring United States Steel,[52] meaning that United States Steel will also be categorized as developing new coal-based capacity when the acquisition is final.[53]

** Credit Suisse was bought by UBS in 2023. Integration should be completed in 2024.

2.

IMMEDIATE ACTION FROM BANKS IS NEEDED TO DECARBONIZE THE STEEL SECTOR

A. EXISTING COMMITMENTS ARE TOO WEAK

In order to play an active role in steel decarbonization and become part of the solution, banks should not provide any more financial support to coal-based steelmaking. So far, almost all existing commitments made by banks are decarbonization targets.

The Net-Zero Banking Alliance (NZBA) requires its members to adopt sectoral targets that cover "a substantial majority of carbon-intensive sectors", including steel.[54] However, the alliance does not specify sectors that must be covered, meaning banks are free to decide whether to include steel. Based on the research for this report, of the top 50 banks that support the 100 biggest steel producers, only 17 (all NZBA members) have adopted steel decarbonization targets. Those that have not yet done so should follow suit and immediately adopt decarbonization targets – this includes Goldman Sachs, Intesa Sanpaolo and Morgan Stanley.

That said, the very few steel sector commitments that are currently in existence are highly insufficient. Indeed, none of the analyzed banks adopted all the elements that are key to robust steel decarbonization targets.[55] None use both absolute and intensity metrics; only two – Barclays and JPMorgan Chase – have adopted targets covering both lending and underwriting-related capital market activities; none are currently targeting scope 3 steel emissions, even though these may account for more than a quarter of the total emissions of the steel sector; and none specifically target methane emissions.[56]

The continued financial support from banks to blast furnace producers even when decarbonization targets have been adopted illustrates the weakness of their commitments. While they constitute a step forward, decarbonization targets are insufficient to truly prevent the expansion of coal-based steelmaking. To be properly aligned with their own targets, banks must stop financing coal-based steelmaking entirely. As such, they must not only strengthen their existing commitments but also stop financial support for the expansion or relining of coal-based blast furnaces. In other words, banks must complete their steel decarbonization targets with sufficient sectoral policies that restrict financing to coal-based steelmaking.

Unfortunately, at the time of publication, only one bank – ING – has adopted a steel policy.[57] The Dutch bank can no longer provide dedicated finance to new unabated blast furnaces or to the life extension of existing unabated blast furnaces for steelmaking.[58] No other bank has adopted a similar policy or commitments and can, therefore, still support the expansion and relining of coal-based steelmaking facilities.

ING

A pioneer in steel decarbonization ?

While considered a climate laggard in many ways,[59] ING has made several public statements in favour of steel decarbonization. It led the development of the Sustainable STEEL Principles,[60] a voluntary banking sector methodology for measuring and disclosing financed emissions in banks' steel portfolios.[61] And, in December 2023, ING announced it would no longer provide dedicated finance to new unabated blast furnaces or the life extension of existing unabated blast furnaces for steelmaking. It was the first major bank to officially target the expansion of blast furnace projects, making it a significant step towards steel decarbonization.

However, these current ING commitments do not mean the bank will stop financing the expansion of coal-based steelmaking. Indeed, project financing represents a minimal amount of ING's financial support to the steel industry since, in fact, no project finance was found in the research for this report. Besides, the bank's committed exclusions only target unabated blast furnaces; these must be extended to all blast furnaces.

ING and the other signatories to the Sustainable Steel Principles – Société Générale, Standard Chartered, UniCredit, Citigroup and Crédit Agricole – must urgently end all support to companies that develop new blast furnaces. By doing so – and by excluding companies with any coal-based (including metallurgical coal) expansion plans – these banks will properly become steel decarbonization pioneers.

Table 2 - Steel-related commitments of the top 50 banks in this report

Banks listed in the global top 50 supporters of steel companies	Country of headquarters	Is the bank part of the NZBA?	Does the bank have a metallurgical coal policy?	Does the bank have a steel policy?	Has the bank adopted steel decarbonization targets?	Financial support given to steel producers (US$ million)
Bank of China	China	NO	NO	NO	NO	23,073
China Construction Bank	China	NO	NO	NO	NO	20,436
Bank of America	US	YES	NO	NO	NO	15,024
JPMorgan Chase	US	YES	NO	NO	YES	11,898
Goldman Sachs	US	YES	NO	NO	NO	11,568
CITIC	China	NO	NO	NO	NO	11,059
Citigroup	US	YES	NO	NO	YES	9,996
Mizuho Financial	Japan	YES	NO	NO	NO	9,803
BNP Paribas	France	YES	YES	NO	YES	9,392
Agricultural Bank of China	China	NO	NO	NO	NO	8,940
China Everbright Group	China	NO	NO	NO	NO	8,283
Industrial and Commercial Bank of China	China	NO	NO	NO	NO	8,089
Crédit Agricole	France	YES	NO	NO	YES	7,084
Shanghai Pudong Development Bank	China	NO	NO	NO	NO	6,850
SMBC Group	Japan	YES	NO	NO	NO	6,717
ING Group	Netherlands	YES	YES	YES	YES	6,619
UniCredit	Italy	YES	NO	NO	YES	6,605
Hua Xia Bank	China	NO	NO	NO	NO	6,267
Commerzbank	Germany	YES	NO	NO	YES	6,085
Bank of Communications	China	NO	NO	NO	NO	6,031
China Merchants Bank	China	NO	NO	NO	NO	6,000
Société Générale	France	YES	YES	NO	YES	5,981
Wells Fargo	US	YES	NO	NO	YES	5,963
Industrial Bank Company	China	NO	NO	NO	NO	5,631
Bank of Ningbo	China	NO	NO	NO	NO	5,370

Banks listed in the global top 50 supporters of steel companies	Country of headquarters	Is the bank part of the NZBA?	Does the bank have a metallurgical coal policy?	Does the bank have a steel policy?	Has the bank adopted steel decarbonization targets?	Financial support given to steel producers (US$ million)
Mitsubishi UFJ Financial	Japan	YES	NO	NO	YES	5,050
China Minsheng Banking	China	NO	NO	NO	NO	5,043
Haitong Securities	China	NO	NO	NO	NO	4,858
JBIC	Japan	NO	NO	NO	NO	4,653
Standard Chartered	US	YES	NO	NO	YES	4,647
Credit Suisse*	Switzerland	YES	NO	NO	YES	4,517
Santander	Spain	YES	NO	NO	YES	4,462
CSC Financial	China	NO	NO	NO	NO	4,384
Ping An Insurance Group	China	NO	NO	NO	NO	4,272
Guotai Junan Securities	China	NO	NO	NO	NO	4,185
Deutsche Bank	Germany	YES	NO	NO	YES	4,172
HSBC	UK	YES	YES	NO	YES	4,049
China Development Bank	China	NO	NO	NO	NO	3,989
State Bank of India	India	NO	NO	NO	NO	3,920
Morgan Stanley	US	YES	NO	NO	NO	3,897
PNC Financial Services	US	NO	NO	NO	NO	3,804
Royal Bank of Canada	Canada	YES	NO	NO	NO	3,519
Huatai Securities	China	NO	NO	NO	NO	3,359
Bank of Beijing	China	NO	NO	NO	NO	3,341
Barclays	UK	YES	NO	NO	YES	3,206
Postal Savings Bank of China	China	NO	NO	NO	NO	2,980
Axis Bank	India	NO	NO	NO	NO	2,849
Intesa Sanpaolo	Italy	YES	NO	NO	NO	2,772
KB Financial Group	South Korea	YES	NO	NO	YES	2,765
BMO Financial Group	Canada	YES	NO	NO	NO	2,666

* Credit Suisse was bought by UBS in 2023. Integration should be completed in 2024.

B. NEW PROJECTS MUST BE FOSSIL-FREE

Cleaner steel projects are already under way and need investments

Since demand for green steel is rising much faster than current capacity can meet it,[62] financial institutions have the opportunity to invest in new technologies now that will become increasingly competitive with time. According to the Green Steel Tracker developed by the Leadership Group for Energy Transition,[63] there are at least 89 low-carbon iron and steel projects planned in the world, almost 60% of which are located in Europe. This includes, for instance, the world's first large-scale green steel plant being developed by the Swedish company H2 Green Steel. The company recently raised EUR€4.75 billion (US$5.17 billion) for its planned flagship plant in the northern Swedish town of Boden.[64] Banks like BNP Paribas, ING, KfW IPEX-Bank, Société Générale and UniCredit have already seized the opportunity to finance this project by participating in the loan.[65] While this is a step in the right direction by these banks, they continue to simultaneously finance companies that are building new coal-based steel production capacity, like ArcelorMittal (see box on page 52). BNP Paribas, ING, Société Générale and UniCredit together granted ArcelorMittal a US$2.2 billion revolving credit facility, with a book ratio of US$156 million each, in September 2022.

Meeting increasing steel demand with existing technologies and infrastructure would require US$47 billion annually over the next three decades.[66] Shifting the current worldwide steel industry towards net-zero compliant technologies would require even more financial resource – according to a study conducted by the Mission Possible Partnership,[67] an extra annual investment ranging from US$8 billion to US$11 billion, or a cumulative additional investment of US$235 billion to US$335 billion by 2050 would be needed. As steel companies will be reliant on the support of financial institutions to secure the required funds, this presents an opportunity for banks to invest in companies developing fossil-free technologies. Indeed, the market size for green steel should increase by over 122% from 2023 to 2030, according to a study by Fairfield Market research.[68] Additionally, while today fossil-free, green steel is around 40% more expensive than fossil-based steel, Bloomberg New Energy Finance has revealed it could cost 5% less by 2050. [69]

Yet, too many coal-based projects are in the pipeline

Despite the imperative for the steel sector to shift away from coal-based processes to address the climate emergency, steelmakers in many parts of the world are heading in the wrong direction by continuing to develop new blast furnaces.

The IEA's Net Zero by 2050 Scenario indicates that 53% of steelmaking capacity needs to use EAF technology by 2050, and 42% of primary steel production must use hydrogen-based DRI and EAFs, or iron ore electrolysis, to meet that goal. However,53% of planned capacity consists of BF-BOF, and 43% consists of EAFs (gas- or electricity-based), according to Global Energy Monitor. [75]

In fact, of current total capacity plans by 2050, only 32% will consist of EAFs, falling considerably short of the required transition.
Continuing to finance coal-based steelmaking is a risky bet for banks. While decarbonizing blast furnaces by retrofitting them is not possible today, alternatives are developing quickly, which places new BF-BOF steel plants at risk of becoming stranded assets. Indeed, they will likely be unable to compete with less carbon-intensive facilities as these become more cost competitive and the demand for fossil-free steel continues to rise. Global Energy Monitor estimates that the steel industry could face as much as US$554 billion in stranded asset risk over time, an amount which could otherwise be invested in fossil-free technologies.

> ***While the growing proportion of EAF in planned capacity is promising, existing BF-BOF capacity must be closed and planned BF-BOF capacity canceled.***
>
> *Global Energy Monitor, Pedal to the Metal 2023*

Investing in carbon capture, utilization and storage for coal-based steelmaking is a dead end

Carbon capture, utilization and storage (CCUS) technologies have been explored as a means to reduce carbon emissions across various industries, including the steel sector. However, there are several challenges and considerations that make CCUS less than an ideal option for decarbonizing the steel industry, including that it is both insufficient and uncertain. CCUS primarily focuses on capturing carbon dioxide emissions, but when applied in steelmaking involving blast furnaces, it does nothing to eliminate the use of carbon-intensive raw materials like coal. Achieving deep decarbonization requires an end to the dependence on fossil fuels across the entire production chain.

Furthermore, CCUS technologies have a long track record of failure, and have even been called into question by the Intergovernmental Panel on Climate Change (IPCC).[70] Research by Agora Industry reveals that CCS on the BF-BOF steel production route is unlikely to reduce direct CO2 emissions beyond 73%,[71] and actual performance is highly uncertain given that there are currently no full-scale CCUS facilities for blast furnaces in operation, or even planned.[72] Furthermore, the use of CCUS in steel production would not affect coal mine methane emissions.

Several studies highlight both the limited potential of CCUS and the risk of investments in CCS for the steel sector. Research suggests it will be a dead end,[73] resulting in new coal-based steel plants with high carbon lock-in and stranded asset risk. Indeed, DRI-based steelmaking is a much more promising avenue that is already leaving CCUS behind in the decarbonization race, according to the Institute for Energy Economics and Financial Analysis (IEEFA).[74] IEEFA further highlights that steel companies relying on CCS for long-term decarbonization can expect to see their plans increasingly questioned by investors.

Maximizing the use of recycled scrap steel and fast-tracking the innovation process needed to commercialize green hydrogen-based DRI is, therefore, essential.

Table 3 - Top 20 developers of coal-based steelmaking capacity in this report and their financial support

Company name	Country of headquarters	Number of coal-based steelmaking expansion plans	Coal-based steelmaking capacity planned or under development (ttpa) [76]	Top banks	Financial support received from top banks (US$ million)
Jindal Group	India	5	35,545	BNP Paribas State Bank of India Standard Chartered	3,749
Steel Authority of India Limited	India	6	29,750	ICICI Bank State Bank of India IDFC FIRST Bank	898
Qian'an Jiujiang Wire	China	3	15,038	-*	-*
China Baowu Steel Group	China	4	9,967	Bank of China Industrial and Commercial Bank of China Shanghai Pudong Development Bank	12,751
Formosa Plastics Corp	Taiwan	1	9,800	First Financial Holding Chang Hwa Commercial Bank Taiwan Financial Holding	871
Shaanxi Iron and Steel Group	China	2	9,800	-*	-*
Tata Steel	India	3	8,937	Axis Bank HDFC Bank State Bank of India	6,053
Jinghua Rigang Holding Group	China	1	8,892	-*	-*
Hoa Phat Group	Vietnam	1	8,400	Bank of China BNP Paribas Industrial and Commercial Bank of China	254
Shanghai Delong Steel Group	China	1	7,425	China Minsheng Banking Industrial and Commercial Bank of China Bank Mandiri	410
Shandong Iron and Steel Group	China	2	7,176	China Everbright Group CITIC Ping An Insurance Group	2,242

Company name	Country of headquarters	Number of coal-based steelmaking expansion plans	Coal-based steelmaking capacity planned or under development (ttpa) [76]	Top banks	Financial support received by top banks (US$ million)
ArcelorMittal	Luxembourg	4	6,650	Commerzbank UniCredit JBIC	13,132
Guangxi Shenglong Metallurgical	China	1	6,383	-*	-*
Hebei Xinwuan Steel Group, Hebei Yuansheng Iron & Steel	China	1	5,000	-*	-*
Fujian Sansteel Group	China	2	4,950	China Everbright Group CITIC Guosen Securities	554
Tangshan Donghua Iron and Steel Enterprise Group	China	1	4,600	-*	-*
Guotao (Hong Kong)	China	2	4,230	-*	-*
Jinan Iron & Steel Group	China	2	4,100	-*	-*
Zenith Steel Group	China	1	3,900	Agricultural Bank of China Bank of Beijing Bank of China Bank of Communications Industrial and Commercial Bank of China Bank of Jiangsu Bank of Nanjing China Eximbank	2,662
Hebei Xinwu'an Iron and Steel Group Xinhui Metallurgy	China	2	3,859	-*	-*

** No transactions were found in the research.*

All-talk ArcelorMittal and climate laggard Nippon Steel want India to get hooked on coal

With a combined capacity of 176 Mtpa, ArcelorMittal and Nippon Steel are two of the world's biggest steelmakers. Together they have entered a joint venture in the Indian steel sector, AM/NS India, to take advantage of rapidly growing demand. While ArcelorMittal and Nippon Steel present themselves as decarbonization leaders, they continue to build and expand new coal-fired blast furnaces, at odds with their respective commitments to reach net zero by 2050.[77] ArcelorMittal is in fact pursuing a two-speed decarbonization strategy, by investing in innovative and cleaner technologies in Europe and Canada,[78] while building new coal-fired blast furnaces in India.[79] The expansion plans in India include two additional blast furnaces that will become operational in 2025 and 2026, and an upgrade of an existing blast furnace from 2 Mtpa to 3 Mtpa.[80] These plans are considerably at odds with climate imperatives.

Additionally, ArcelorMittal and Nippon Steel are planning two new production sites located in Odisha – one of 24 Mtpa,[81] the other 7 Mpta[82] – and the companies have entered a memorandum of understanding to further expand the Hazira steel plant by 2030 to bring total production capacity there to 24 Mtpa[83]. While technologies have not been disclosed yet, the company's last expansion plans were coal-based, which raises concerns about their next technology choices.

In the meantime, ArcelorMittal is part of several leading initiatives on steel decarbonization, including the Science Based Targets initiative (SBTi), the Mission Possible Partnership, and the Responsible Steel Initiative. Instead of using its leading position to bring about meaningful change, it continues to head in the wrong direction by extending its coal dependency. Furthermore, although the company's public declarations claim it is committed to Paris-aligned objectives, its lobbying practices are a cause for concern. ArcelorMittal and Nippon Steel were among the 25 most influential companies blocking climate policy action globally,[84] according to the independent think tank InfluenceMap in its 2022 'Corporate Climate Policy Footprint' report.[85] ArcelorMittal is also a member of two of the top ten most negative and influential industry associations: BusinessEurope (fourth) and the Federation of German Industries (tenth). The company has a D+ grade on InfluenceMap's platform LobbyMap – the rating goes from A+ to F and measures a company's climate policy engagement, with grades D to F indicating increasingly obstructive climate policy engagement. For example, ArcelorMittal has actively lobbied against EU climate regulations, such as the Carbon Border Adjustment Mechanism and the EU Emissions Trading System reform.

On human rights and pollution violations ArcelorMittal's track record is disastrous. The company has been found guilty and fined in several instances, including in Ukraine, France, India, the US, Liberia and Canada.[86] More recently, the deadliest accident in Kazakhstan's post-Soviet history[87] occurred at ArcelorMittal's metallurgical coal mine, where a methane explosion killed 46 people.[88] This is the latest in a list of over 180 fatalities and numerous severe injuries at the company's mining operations in Kazakhstan since their establishment in 1995.[89]

In light of all these elements, financiers of ArcelorMittal and Nippon Steel should question their expansion plans and technology choices. The two companies must be required to adopt comprehensive climate strategies across all geographies. [90]

Banks already provide substantial financial support to ArcelorMittal and Nippon Steel, making it likely they will support this joint venture in India as well. In March 2023, ArcelorMittal benefitted from a US$5 billion loan involving Mizuho Financial, Sumitomo Mitsui Trust and SMBC. While these Japanese banks have not adopted decarbonization targets, they are members of the NZBA. As such, they should urgently follow NZBA recommendations and adopt the most robust targets possible while simultaneously restricting financing for new blast furnaces – effectively killing two birds with one stone. JBIC was also involved in the loan; while it has no existing commitment regarding the steel sector, as a key financial institution in Japan it should also urgently adopt measures to help the sector transition.[91] Mizuho Financial, along with other banks, also took part in the structuring of a US$220 million bond issuance in March 2023 for the benefit of Nippon Steel.

C. EXISTING COAL-BASED FACILITIES MUST NOT BE RELINED

In addition to increasing demand, the global steel industry is facing another significant challenge: more than 70% of existing blast furnaces are approaching the end of their operational lifetimes and will require reinvestment by 2030.[92] With these aging facilities, the need for blast furnace relining becomes increasingly likely in the coming years. Relining involves refurbishing the interior of a blast furnace to prolong its technical life.

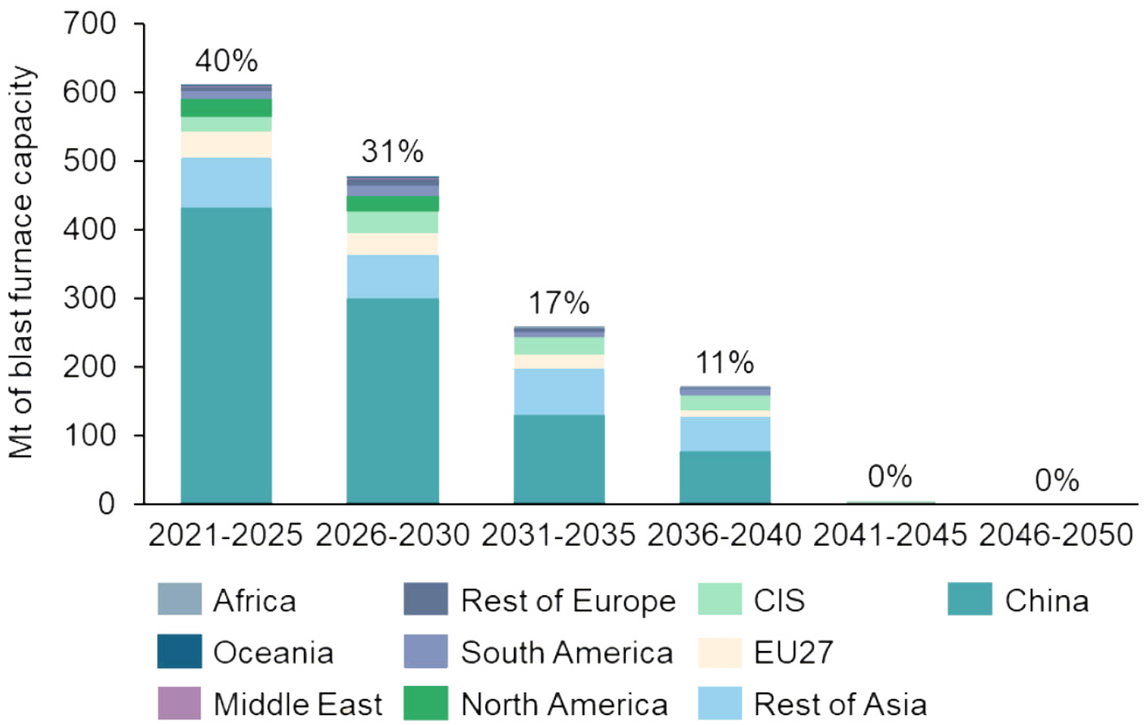


Figure 12 - Share of global blast furnace fleet requiring reinvestment

Source : Agora Industry, Global Steel at a Crossroads

Blast furnace lifetimes are subject to regional differences, tending to be longer in North America and Europe but shorter in Asia, especially in China. Based on analyses of different studies and hypotheses, blast furnace lifetimes are estimated to range between 15 and 20 years, with a median of 17 years.[93] This means that imminent relining would lock-in carbon emissions in the medium term. If all expected relining work goes through by 2030, most of the current coal-based steel production route will continue to operate, emitting 2.2 GtCO2 per year until 2040 and sinking the steel sector's opportunity to meet the global climate targets.

The steel sector's aging infrastructure underscores the potential of the industry's transition towards more sustainable and efficient technologies, as modernizing or replacing existing blast furnaces presents an opportunity to adopt clean, fossil-free methods of production. As steel manufacturers navigate this critical phase, strategic decisions regarding investments in innovative technologies and sustainable practices will play a pivotal role in shaping the sector's future landscape. The 2020s is the crucial decade in which key reinvestment decisions will have to be made. Research reveals that 90% of blast furnaces can be phased out by 2040 without premature shutdown.[94] Banks must avoid providing financial services that would extend the lifetime of blast furnaces, lock-in decades of emissions and risk the creation of stranded assets. The first step for banks is to require steelmakers in their portfolios to be more transparent about potential relining plans. The second step is to adopt a policy to stop financial support for relining plans at the project level. The ultimate step is to adopt a policy to stop financial support for companies with plans to reline existing blast furnaces, as this contradicts the commitment to a credible 1.5°C-aligned climate plan. [95]

The company with the most ongoing and planned relining projects in the database used in this report is ArcelorMittal. In addition to its ongoing relining projects in Poland and Ukraine, the company is planning to reline blast furnaces in India, Italy, a plant which is in the process of being taken over by the Italian government to save it from financial ruin, and the Vanderbijlpark Steel Works in South Africa, a country where ArcelorMittal is the third worst greenhouse gas emitter and has been denounced by activists for air pollution, land and water impacts, as well as human rights abuses. Yet, the company still receives substantial support from banks worldwide. Indeed, even as the banks adopted decarbonization targets, ArcelorMittal was the top steel company supported by JPMorgan Chase, Citigroup, BNP Paribas, UniCredit, ING, Crédit Agricole, Société Générale, Commerzbank, Santander, HSBC and Mitsubishi UFJ Financial. As a reminder, the company still produces more than 70% of its steel using coal-based blast furnaces for ironmaking.[98]

As Table 1 of this report shows, US banks are at the forefront of financing coal-based steel, with the top US steelmaker, Cleveland-Cliffs, heavily undertaking relining projects. Cleveland-Cliffs plans to reline two of its blast furnaces in the US,[99] a country in which over two-thirds of steel production comes from electric arc furnaces.[100] The Burns Harbor facility in Indiana is set to be relined from 2025 to 2026, and the Middletown blast furnace in Ohio is likely to be relined in 2027. Extending the life of blast furnaces for several years after these dates is highly incompatible with targets to tackle the climate emergency.

Alarm bells should be ringing for the banks behind companies like ArcelorMittal and Cleveland-Cliffs. This includes Wells Fargo, which has adopted steel decarbonization targets but also granted US$1.3 billion between 2016 and 2023 to Cleveland-Cliffs despite the company relying on coal-based technologies for 82% of steel production. It also includes JPMorgan Chase, which also supports Cleveland-Cliffs via an April 2023 US$750 million bond issuance regardless of its own steel decarbonization targets.

POSCO's blast furnace relining: a threat to climate commitments in a steel-polluted country

Korean steelmaker POSCO is planning to reline two blast furnaces at its Gwangyang and Pohang steel plants, which are the world's two largest integrated steel mills. Research by Solutions For Our Climate reveals that the coal-based steelmaking of these two plants contributes heavily to air pollution, causing health-related issues estimated to have cost US$2.95 billion in 2021.[101] Furthermore, the steel sector is responsible for 16.7% of South Korea's total greenhouse gas emissions. Civil society organizations have pointed out that the relining plans go against POSCO's climate targets of reducing emissions by 10% by 2030, and by 50% by 2050.[102] Solutions for Our Climate and SteelWatch calculate that relining the two blast furnaces for operation over another typical 17-year lifespan will cause the emission of almost 200 Mt of CO2.[103]

So far, it is estimated that POSCO has spent US$393 million on relining these two blast furnaces.[104] Financiers of the company, including HSBC, BNP Paribas, Citigroup, Bank of America and Crédit Agricole, should be extremely wary of the company's ability to meet its climate ambitions.[105]

POSCO produces more than 95% of its steel using the BF-BOF route. In spite of both this and its blast furnace relining plans, Citigroup, BNP Paribas and HSBC – each of which have adopted decarbonization targets – provided more than US$1 billion to POSCO Holdings, making it the banks' second most supported company. Further still, several banks – including HSBC, BNP Paribas, Standard Chartered, Citigroup and Crédit Agricole – helped POSCO issue a new US$2 billion bond in January 2023 regardless of their steel decarbonization targets.[106]

Table 4 - Top 10 companies with relining plans (ongoing and planned) and associated financial support

Company	Steel plant names	Location	Capacity with ongoing relining (Mtpa)	Capacity planned for relining (Mtpa)	Planned relining start date	Top banks providing financial support
ArcelorMittal	ArcelorMittal Nippon Steel India (joint venture)	India		2,040	2025	Commerzbank JBIC UniCredit
	ArcelorMittal Acciaierie d'Italia, Taranto (joint venture)*	Italy		3,500	2023	
	ArcelorMittal Dąbrowa Górnicza	Poland	2,3		March 2023	
	ArcelorMittal Kryvyi Rih	Ukraine	4		April 2023	
	ArcelorMittal Vanderbijlpark Steel Works	South Africa		1,900	2027	
POSCO Holdings	POSCO Gwangyang	South Korea		4,500	Unknown	BNP Paribas Citigroup HSBC
	POSCO Pohang	South Korea	5,3		February 2023	
Hong Kong Evergain	Zhangjiagang Hongchang Group	China		4,500	2023	-**
Jiangsu Shagang Group	Zhangjiagang Hongchang Group	China		4,500	2023	China Construction Bank China Merchants Bank CITIC
Severstal PAO	Severstal Cherepovets	Russia		4, 000	2022	Citigroup JPMorgan Chase Société Générale
Hyundai Steel	Hyundai Steel Dangjin	South Korea		4,280	Unknown	KB Financial Group Korea Investment Holdings NongHyup Financial
Tata Steel	Tata Steel IJmuiden	Netherlands		3,540	2022	Axis Bank HDFC Bank State Bank of India
BlueScope Steel	BlueScope Port Kembla	Australia	3		November 2023	ANZ Credit Suisse HSBC
Algoma Steel	Algoma	Canada		2,690	Unknown	CIB
Ternium	Ternium Brasil Santa Cruz	Brazil		2,650	2024	BNP Paribas Crédit Agricole JPMorgan Chase

* The Taranto steel plant is in the process of being taken over by the Italian government. More information here.
** No transactions were found.

RECOMMENDATIONS

Banks have a key part to play in decarbonizing the steel sector. Decarbonization involves relegating the use of coal to the past, and shifting to entirely fossil-free ways of steelmaking. As the industry transitions towards fossil-free and more sustainable practices, substantial investments are required for the development and implementation of cleaner technologies. Here the role of banks is pivotal; providing the necessary capital, incentivizing low-carbon initiatives, and supporting research and development efforts.

Immediate action by financial institutions is needed to decarbonize the steel sector. They must:

1 - Adopt strong commitments to restrict financing to coal-based steelmaking. This includes :

- Immediately ending dedicated financial services, including advisory services and dedicated financing to new blast furnaces and to the relining of existing blast furnaces.
- Committing to no longer provide services for companies that have plans to develop new blast furnaces or to reline existing ones. This includes no longer providing services to companies that do not have a detailed asset-by-asset transition timetable aligned with a 1.5°C scenario, and a just and sustainable transition plan for workers, local communities, and the environment.

2 - Improve existing steel decarbonization targets to make them robust. This involves adopting targets that cover all greenhouse gases, scopes 1, 2 and 3 emissions, all jurisdictions where a company operates and all of its value chain and joint ventures. Targets should be adopted for 2025, 2030 and 2035, with a commitment to reach carbon neutrality by 2050 at the latest. Targets must be based on absolute emissions reductions, and intensity targets can be added. They must additionally be based on and aligned with a 1.5°C pathway with no or low overshoot and a limited volume of negative emissions. Targets must also be set against the most recent year where data is available unless this year significantly differs from the normal activities and emissions of the entity. A specific target should be adopted for methane emissions, especially due to the high methane intensity of metallurgical coal mines.[107]

3 - Commit to increasing finance for fossil-free technologies, like green HDRI, and key enabling sectors, like sustainable energy and green hydrogen for steelmaking.

METHODOLOGY

Company analysis

This report analyzes the financial support provided to the 100 companies with the largest operating steel production capacity. Together these companies make up two-thirds of global steel production capacity, based on data from the March 2023 version of the Global Steel Plant Tracker developed by the Global Energy Monitor (GEM).

"The Global Steel Plant Tracker (GSPT) provides information on global crude iron and steel production plants, and includes every plant currently operating with a capacity of five hundred thousand tonnes per year (ttpa) or more of crude iron or steel."

Parent company unpivoting and processing

For each asset, regardless of its status, the Global Steel Plant Tracker details many data points, including the holding parent companies and the nominal crude steel production capacity (hereafter referred to as crude steel production capacity). The database also goes into further detail where applicable and when information is available, including the steel production per technology of an asset (including basic oxygen furnace and electric arc furnace) and iron production per technology (including blast furnace and direct reduction of iron). Finally, the database details each steel plant's specific equipment based on the best publicly available data.

The independent research organization Profundo B.V. was mandated to process the Global Energy Monitor data in order to:

1. Split the steel production capacity of each asset in the database between the different parent companies, assuming each parent company receives a share of the production capacity equal to its ownership in the asset.
2. Research each Asset - Parent Company - Ultimate Parent Company ownership chain to identify the highest parent company of corporate type.

In addition to this process, affiliation to its parent company of each of the ten largest steel producers' subsidiaries present in the database (identified using Bloomberg data) has been checked.

This process aims to ensure that companies included in this report do not overlap with one another or belong to the same entity, and that the capacities indicated are the best reflection of reality based on available data. However, it is acknowledged that some ownership relationships or plant information may be missing due to the lack of transparency of companies, which may cause a splintering of production capacity among a higher number of companies and lead to an underestimation of parent companies' capacity.

Identification of steel companies with the largest operating capacities

The Global Steel Plant Tracker offers the possibility of differentiating steel plants based on their equipment, their steel production per technology, and their related ironmaking technology. The association of an ironmaking technology and of a steelmaking technology defines a production route. On the basis of Global Energy Monitor data, production capacity associated with the four main following routes was identified: BF-BOF, scrap-based EAF, DRI-EAF, and BF-EAF.

The two first routes (BF-BOF and scrap-based EAF) are included because they are responsible for the large majority of current production. The third (DRI-EAF) is included as it is growing in importance and holds the largest potential to decarbonize primary steel production, providing that DRI production directly uses hydrogen made in electrolysers powered by sustainable electricity. The last route(BF-EAF) is less significant than the first two production routes but is included since it involves the use of highly polluting blast furnaces.

As mapped in the following table, production capacity for each route has been determined as sets of combinations of:

1. A value of the "Main production process" datapoint, which provides information on the ironmaking technology used in the steel plant, and
2. A steelmaking technology-specific steel capacity datapoint.

Route	Main production process	Capacity considered
BF-BOF	Integrated (BF)	Nominal BOF steel capacity
	Integrated (BF and DRI)	Nominal BOF steel capacity, prorated with the share of Nominal BF capacity in the Nominal iron capacity
	Integrated (unknown) Oxygen	Nominal BOF steel capacity, if the asset is part of a facility in which iron capacity is fully reliant on BF
Scrap-based EAF	Electric Electric, oxygen	Nominal EAF steel capacity
DRI-EAF	Integrated (DRI)	Nominal EAF steel capacity
	Integrated (BF and DRI)	Nominal EAF steel capacity, prorated with the share of Nominal DRI capacity in the Nominal iron capacity
BF-EAF	Integrated (BF)	Nominal EAF steel capacity
	Integrated (BF and DRI)	Nominal EAF steel capacity, prorated with the share of Nominal BF capacity in the Nominal iron capacity

Production capacities in these four main routes cover more than 95% of the operating global steel production capacity, as follows:

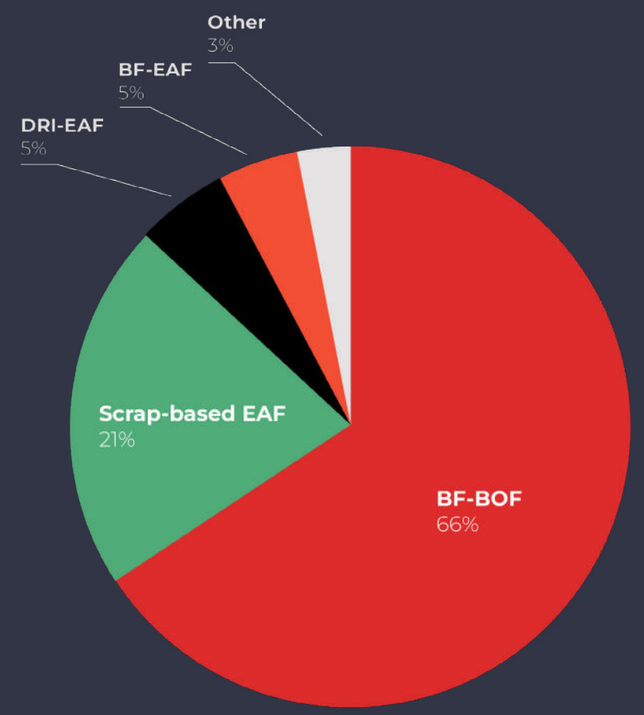


Figure 13 - Breakdown of capacity by steel production route

Financial analysis

Financial research for this report was also conducted by the independent research organization Profundo B.V. using financial databases, including Bloomberg, Refinitiv and IJGlobal. Corporate loans, credit and underwriting facilities provided to the world's 100 biggest steel producers were researched for the period of 2016 to June 2023. Investments in bonds and shares of the selected companies were identified through Bloomberg, Refinitiv and Thomson EMAXX as of June 2023. Pure green instruments were removed from the dataset and not taken into account in the analysis.

Transactions were weighted based on the proportion of the borrower or issuer's operations devoted to steel production using adjusters; they were calculated using revenues, operations or capital expenditures, on the basis of available data.
For more detailed explanations on the financial research used in this report, please consult Profundo's methodology document.
The financial institutions explicitly mentioned in this report have been contacted by email by Reclaim Finance and were given the possibility of accessing and reviewing the financial data concerning them before publication. Data were amended when justified, according to this review phase. The consultation period took place over January and February 2024.

To identify the practices of leading companies in the steel sector, the 100 companies included in the scope of this report were selected on the basis of crude steel production capacity, regardless of the production route used.

The breakdown of the crude steel production capacity per production route was then used to assess the climate impact and the transition stage of the practices of each of these biggest steel producers.

Analysis of bank policies and decarbonization targets

This report evaluates the steel commitments of the top 50 banks most exposed to the 100 biggest steel producers, based on Reclaim Finance's financial analysis.
The focus has been on both steel sectoral policies and steel decarbonization targets, based on research carried out by Reclaim Finance in January 2024 and by BankTrack[108] continuously. Engagement policies and enhanced due diligence policies were not taken into account.
Metallurgical coal policies adopted by these financial institutions have also been considered, based on the analysis in the Coal Policy Tracker (the last general update was made in November 2023, to which we added two other updates following the adoption of new measures by financial institutions).

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STEELING OUR FUTURE
The banks propping up coal-based steel

Reclaim Finance is an NGO affiliated with Friends of the Earth France. It was founded in 2020 and is 100% dedicated to issues linking finance with social and climate justice. In the context of the climate emergency and biodiversity losses, one of Reclaim Finance's priorities is to accelerate the decarbonization of financial flows. Reclaim Finance exposes the climate impacts of some financial actors, denounces the most harmful practices and puts its expertise at the service of public authorities and financial stakeholders who desire to to bend existing practices to ecological imperatives.

contact@reclaimfinance.org