

Pedal to the Metal

Evaluating Progress Toward 2030 Iron and Steel Decarbonization Goals

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GLOBAL ENERGY MONITOR

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ABOUT THE COVER

Steelmaker at ingot casting, electric arc furnace shop. Photo by [D.Alimkin](#) via Shutterstock (2020).

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For additional data on proposed and existing steel plants see the [GIST Summary Data](#). For links to more reports based on this data, see [Reports & Briefings](#).

See the [GIST Download Data](#) and [GIOMT Download Data](#) pages to obtain primary data from the Global Iron and Steel Tracker and the Global Iron Ore Mines Tracker, respectively.

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Executive summary

As the world reaches the midway point between 2020 and 2030, it is a pivotal opportunity to evaluate the steel industry's progress toward 2030 decarbonization goals. Global Energy Monitor's 2025 Global Iron and Steel Tracker data reinforce that there is a need to urgently move away from coal-based blast furnace-basic oxygen furnace (BF-BOF) production and forge ahead with accelerated decarbonization transition plans for 2030. While electric arc furnace (EAF) capacity is progressively growing and represents a larger share of global developments than ever before, continued investments in BF technology and setbacks in green steel development plans pose a significant threat to the industry. The steel sector must increase ambition in the second half of this decade if it stands a chance to meet 2030 — and 2050 — net-zero goals.

- **Operating capacity remains dominated by China**, which holds 48% of steelmaking and 55% of ironmaking overall. This dominance is driven by BF-BOF capacity, which is concentrated in Asia. EAF processes are distributed more evenly across the world, though China still holds nearly a quarter of EAF capacity, followed by the United States (11%). Operating direct reduced iron (DRI), by contrast, is dominated by Iran (28%) and India (23%).

- **Top steelmaking country dynamics have shifted in the last five years, with India surpassing China in developments.** China's steel production has plateaued and is projected to decline gradually after 2025. Meanwhile, India intends to double its capacity by 2030. India is now responsible for over 40% of global steel capacity in development compared to China's 16%. India has an even greater lead in coal-based capacity development, accounting for 57% of new coal-based capacity. India's steel industry remains the most carbon-intensive, emitting about 20–25% more CO₂ per tonne than China.
- **While India is rapidly announcing development plans, these have yet to become a reality.** India has seen a 37% increase in developing capacity in the past year. However, only 8% of India's 352 mtpa of developments have started construction, even lower than last year's 14%, indicating that their ambitious growth plans are more talk than action thus far.
- **DRI and EAF developments continue to pick up pace globally.** EAF capacity has grown significantly in the first half of this decade, increasing nearly 11%, with a further 24% increase in capacity projected by 2030. Fifty percent of global steelmaking developments plan to use EAF technology, with half of those plans set to be integrated DRI-EAF production. Meanwhile, 42% of ironmaking developments plan to use DRI technology, a marked increase in developing DRI in the first half of this decade. Even so, DRI development has fallen behind global decarbonization goals.
- **Blast furnace phaseout remains slow.** Primary steelmaking is still fueled by coal-based blast furnace production, with 303 mtpa of BF capacity still under development despite the need to halt all new blast furnace construction and relinings in order to meet decarbonization goals. Further, 259 blast furnace relinings completed in the last five years have extended 372 mtpa of BF capacity. This represents over a quarter of operating blast furnace capacity

where steelmakers have recently doubled down on coal-based processes. Another 57 relinings have been announced on a capacity of 112 mtpa, with 22 relinings (46 mtpa) scheduled for completion before 2030, indicating significant continued carbon-intensive investment.

- **GEM's Global Iron Ore Mines Tracker (GIOMT) provides new industry supply chain insights shaping primary steelmaking.** Launched in November 2024, the GIOMT maps nearly 900 iron ore mines. The data highlight how major producers like Australia and Brazil hold strategic opportunities to lead in green primary steelmaking by leveraging large iron ore reserves and renewable energy potential. As the green steel transition necessitates a shift away from blast furnace ironmaking, DRI developments will reshape the demand for iron ore and be influenced by iron ore production.
- **There are distinct, enduring challenges to the green steel transition.** Companies' announced green transformation plans — when given at all — have proven shaky and noncommittal, and critical infrastructure like hydrogen hubs face development uncertainties. Recent setbacks emphasize the importance of an actionable roadmap and continued pressure through to full implementation.

Acronyms

BF	blast furnace	GIST	Global Iron and Steel Tracker
BOF	basic oxygen furnace	IF	induction furnace
DRI	direct reduced iron	Mt	million metric tonnes
EAF	electric arc furnace	mtpa	million tonnes per annum
GEM	Global Energy Monitor	OHF	open hearth furnace
GIOMT	Global Iron Ore Mines Tracker	ttpa	thousand tonnes per annum

Introduction

With 2030 less than five years away, it is critical to look at net-zero progress with an eye to this decade's goals and highlight the industry's shortfalls. Steel is not going anywhere — it is a fundamental material that will bolster the broader energy transition and support essential development in countries around the world. Steel demand is projected to surpass [two billion tonnes](#) per year by 2030. However, with the steel industry generating [11%](#) of global CO₂ emissions, it is impossible to tackle the climate crisis without making deep cuts in fossil fuel use across iron and steel production.

Since 2021, Global Energy Monitor (GEM) has published annual datasets and reports on the global iron and steel sector with the aim of offering a comprehensive overview of the existing operating fleet as well as capacity in the development pipeline. This year's report features data from the rebranded 2025 Global Iron and Steel Tracker (GIST), formerly known as the Global Steel Plant Tracker (GSPT) and the Global Blast Furnace Tracker (GBFT). Data from the GIST now include plant-level detail as well as information on all iron and steelmaking units at each plant. Further, with the release of the 2024 Global Iron Ore Mines Tracker (GIOMT), GEM now provides deeper insights into the upstream supply chain. Using this additional granularity, the 2025 Pedal to the Metal report looks at iron and steelmaking in more detail and dives into the latest updates on the net-zero transition.

At this moment in time, the green steel transition is facing many potential setbacks. Economic pressures and shifting policies have led major steelmakers to delay or reconsider decarbonization initiatives, threatening progress on a broader scale. Governments, companies, and the steel industry as a whole must commit now to technology and infrastructure developments to bring 2030 goals within reach.

Background

Iron and steel production pathways

Steel production is often divided into two categories, primary production (steelmaking from raw materials) and secondary production (steelmaking from recycled materials). Primary steelmaking contains two steps — the reduction of iron ore, followed by the processing of that iron into crude steel. In secondary steelmaking, scrap steel gets remelted to produce crude steel, usually in an EAF, skipping the ironmaking step. Because of the reliance on recycled materials, secondary production produces fewer emissions but is limited by the availability of material to recycle.

Primary steelmaking is usually further divided into two main production routes, BF-BOF and DRI-EAF. The BF-BOF process is the most common method, using coal in the blast furnace to reduce iron ore into molten iron, which is then refined into steel in the BOF. This route is highly emissions-intensive due to its reliance on metallurgical coal, which serves both as an energy source and a reducing agent. BF-BOF steelmaking produces around [90%](#) of the industry's direct emissions, primarily driven by ironmaking in the blast furnace. Iron inputs used in the BF-BOF route are dominated by ore-based iron, but do often include a small share of scrap. The DRI-EAF process uses gas — generally methane, syngas, gasified coal, or hydrogen — to reduce the iron ore, then usually refines the resulting sponge iron in an electric arc furnace along with a variable amount of scrap.

While BF-BOF, DRI-EAF, and scrap-fed EAF are the most common configurations for steel production, other combinations, such as DRI-smelting furnace-BOF and BF-EAF, can be used for primary production. Though BOF production on its own is not inherently coal based, nearly all BOF capacity tracked in the GIST is part of integrated BF-BOF production, meaning that BOF steelmaking is often used as

an indicator of coal-based production. Other ironmaking technologies (Corex, HIsarna, Tecnores, electrowinning, and others) and steelmaking technologies (open hearth furnace (OHF), induction furnace (IF), and others) exist in various levels of commercial use and readiness. Please see [Appendix A](#) for an overview of the main production processes and visit GEM's [2021 Pedal to the Metal](#) report for an in-depth description.

As of 2025, the GIST tracks all main iron and steel production units at plants with a capacity of 500 thousand tonnes per year (ttpa) or more, covering more than 90% of global steel capacity. This includes ironmaking units (blast furnaces and direct reduction furnaces) and steelmaking units (electric arc furnaces, basic oxygen furnaces, and open hearth furnaces). This report largely looks at ironmaking and steelmaking individually, given the distinct challenges associated with decarbonizing each and the possibility of various unit combinations within a plant.

It is important to understand the emissions produced by the iron and steel industry. Not only are [direct emissions](#) from production significant, but [additional emissions](#) generated by electricity generation, both upstream and downstream sources, produce enormous amounts of greenhouse gases. See Appendices [B](#) and [C](#) for a detailed description of the sector emissions and average intensities by production route.

Mid-2020s progress update

Based on GIST 2025, global crude steel capacity has only marginally increased (less than 2%) from 2,162 mtpa in 2020 to 2,199 mtpa in 2025 but could reach 2,595 mtpa by 2030, a potential massive increase of 18%, depending on the realizations of planned additions and retirements. Global iron capacity has also increased only slightly, by 1%, from 1,631 mtpa in 2020 to 1,645 mtpa in 2025, but could increase by 10% to reach 1,810 mtpa by 2030.

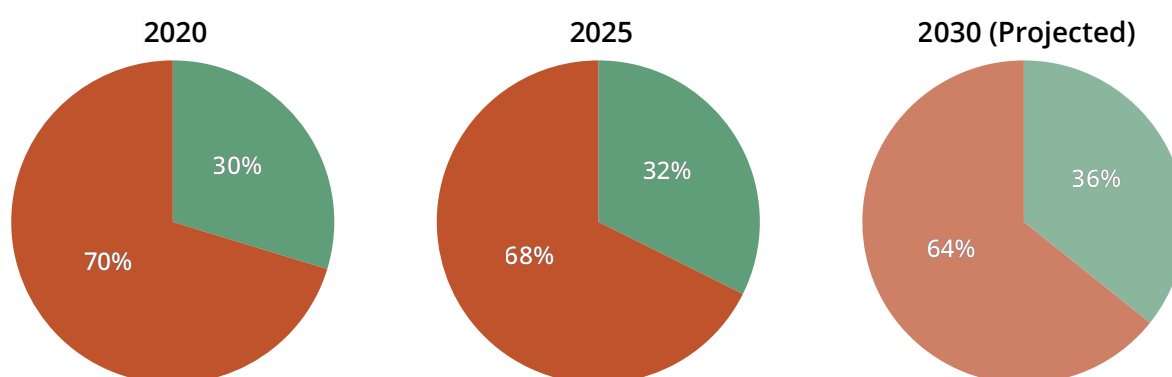
Global steel demand has rebounded strongly post-pandemic, with forecasts projecting [2.2](#) to [2.3](#) billion tonnes by 2030 and [nearly 2.5 billion tonnes](#) by 2050. Global capacity utilization rates currently hover around 84% when comparing [recent production](#) to global capacity and should remain in the [healthy range](#) of 80–90% through 2030 based on projected demand and capacity changes.

However, the climate impact of the steel capacity in development, which primarily relies on emissions-intensive coal-based BF-BOF technology, poses significant challenges to steel decarbonization. In the last five years, global BOF capacity dropped 2%, while EAF capacity increased by 11%. Projections suggest EAF capacity could increase another 24% by 2030, even as BOF capacity rises by 7% — driven largely by India and China. This points to a growing share of EAF-based steelmaking, with an increase from 30% in 2020 to 32% at present and a projected 36% by 2030.

The share of electric arc furnace-based steelmaking has been steadily increasing and is projected to increase further by 2030

Global steel capacity changes by technology between 2020 and 2030

- Higher-emissions basic oxygen furnace (BOF) technology
- Lower-emissions electric arc furnace (EAF) technology



Source: Global Iron and Steel Tracker, Global Energy Monitor

Note: The 2030 data does not include 46 mtpa of BOF capacity and 51 mtpa of EAF capacity currently in construction with start dates unknown. It also excludes 129 mtpa BOF capacity, 24 mtpa EAF capacity whose retirement has been announced without confirmed dates.



Figure 1

Global state of operating iron and steel

The Global Iron and Steel Tracker (GIST) tracks 1,204 iron and steel plants in 89 countries, representing over 90% of operating capacity globally. It covers 2,199 mtpa of operating and 873 mtpa of developing¹ steelmaking capacity as well as 1,645 mtpa of operating and 543 mtpa of developing ironmaking capacity.

The GIST now also provides coverage of operating and in-development individual units at each tracked plant, including 1,172 basic oxygen furnaces, 1,151 electric arc furnaces, seven open hearth furnaces, 1,182 blast furnaces, and 557 direct reduction furnaces.

Global steelmaking capacity

The world added more than twice as much coal-based steel capacity as lower-emissions technology last year. In 2024, nearly 55 mtpa of steelmaking capacity was added to the global operating fleet. China accounted for nearly 54% (29 mtpa) of this capacity, over 70% (21 mtpa) of which was BOF. India and Vietnam added another 10 mtpa and 4 mtpa of BOF capacity, respectively. Meanwhile, EAF additions fell to 18 mtpa, down from [23 mtpa](#) the previous year.

Of the operating steelmaking capacity with a known production route,² 1,461 mtpa (68%) now uses BOF, and 699 mtpa (32%) uses EAF. Most EAF capacity is scrap based, but 131 mtpa (19% of overall EAF) is integrated DRI-EAF production. The largest share of operating steel capacity is located in China with 1,056 mtpa,³

1. “Developing” capacity refers to capacity in the GIST that has an operating status of either “announced” or “in construction.”

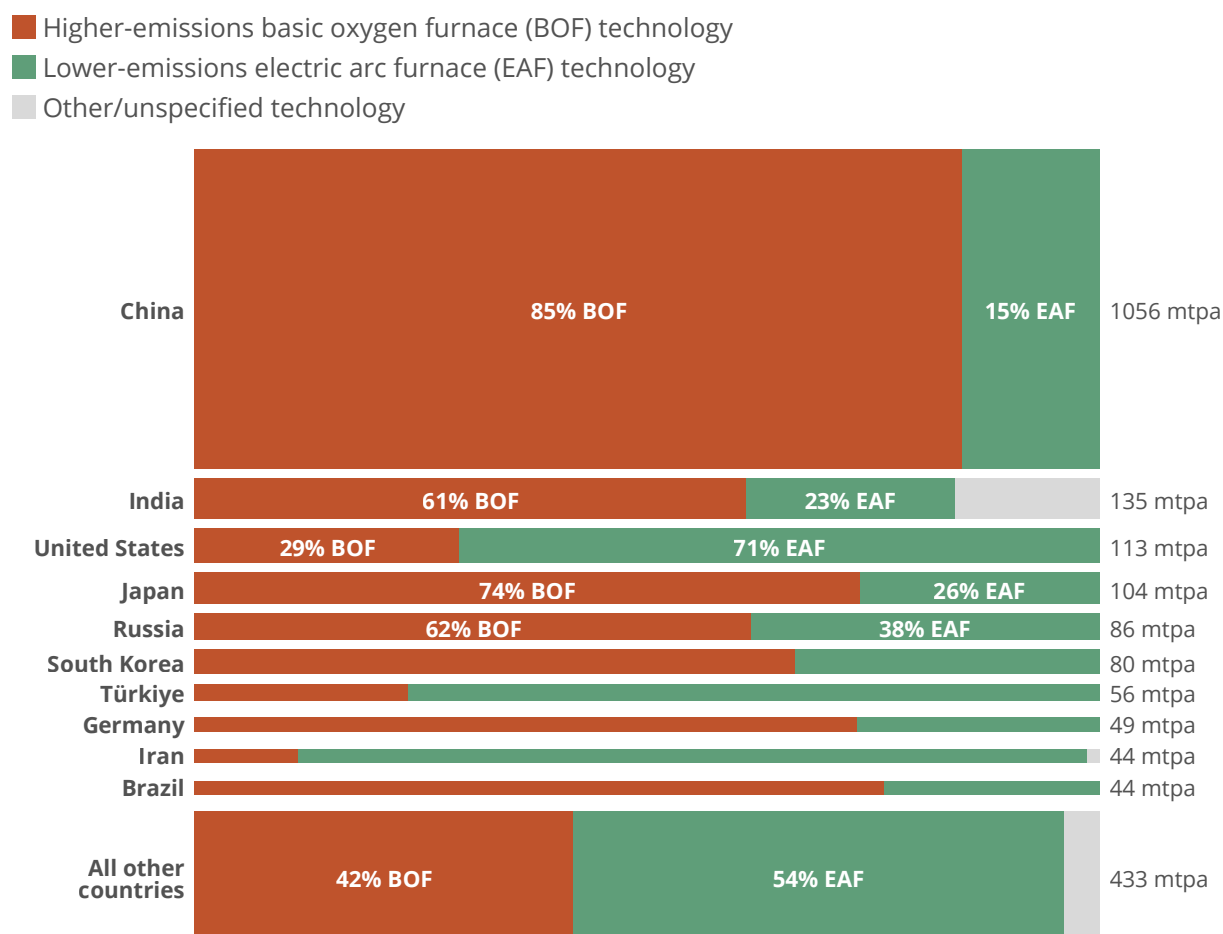
2. 39 mtpa or less than 2% of total operating steelmaking in the GIST uses production technology other than BOF or EAF (induction furnaces fall under this “other” category) or has unknown production technology. The percentages used in this report refer to that 2,160 mtpa for which the production route is specified.

3. This represents 48% of global capacity. The World Steel Association's [2024 data](#) have China producing around 53% of all steel. GEM has checked its data for China against all official sources and feel confident that it aligns with the public reports from China. Future exploration of this discrepancy should focus on comparing against satellite data to find unreported and underreported capacity.

followed by India (135 mtpa). This year, Japan's steel industry shrank slightly to 104 mtpa, falling behind the United States industry's modestly growing 113 mtpa. The Asia Pacific region overall operates over 68% of all steelmaking in the world and 80% of global BOF capacity, with China accounting for 61% (895 mtpa). Top BOF operators after China include India (82 mtpa), Japan (77 mtpa), South Korea (53 mtpa), and Russia (53 mtpa).

China dominates global steelmaking capacity, with heavy reliance on emissions-intensive, coal-based technologies

Proportion of operating steel capacity by technology type. Bar heights correspond to overall operating steel capacity for specific country in million tonnes per year (mtpa).



Source: Global Iron and Steel Tracker, Global Energy Monitor

"Other/unspecified technology" includes induction furnace (IF) production. There is significant IF capacity in India.



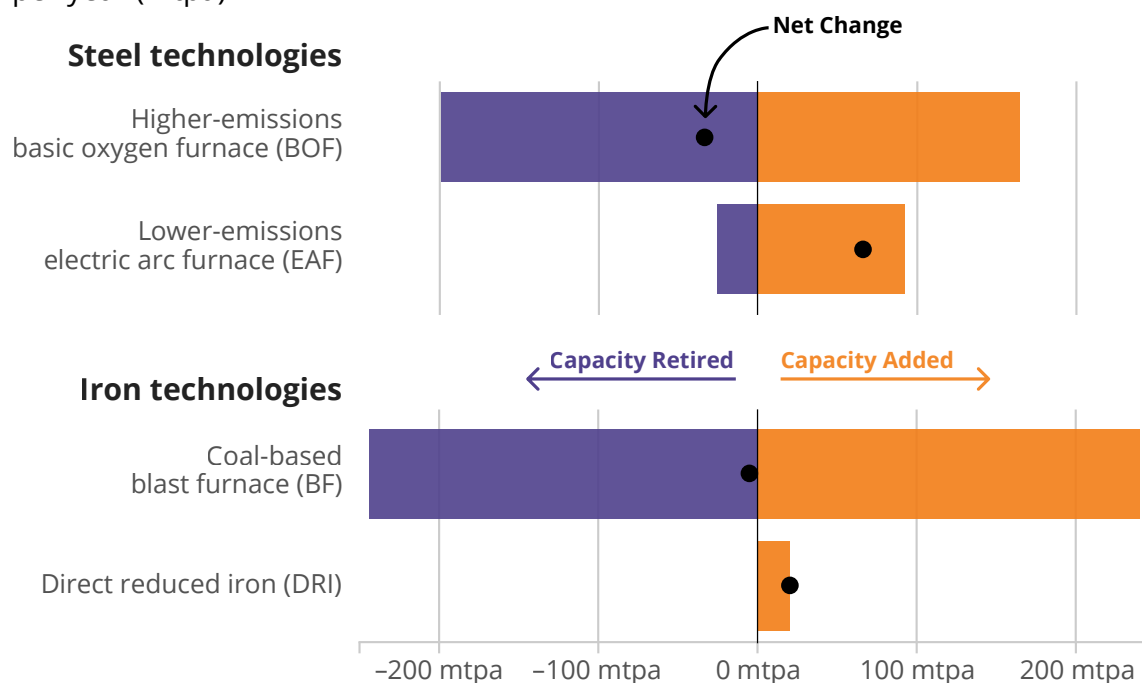
Figure 2

EAF capacity, on the other hand, is made up of smaller plants distributed more evenly around the world. China still leads comfortably in operating EAF with 23% (161 mtpa) of global capacity, followed by the United States (80 mtpa), Türkiye (42 mtpa), and Iran (39 mtpa). While China's EAF capacity is roughly twice that of its nearest competitor, it has over ten times the operating BOF capacity as the next largest country, highlighting that China's global dominance is driven largely by coal-based technology.

Since 2020, 165 mtpa of BOF capacity has been added to the global operating steel fleet, and 199 mtpa has been retired. China contributed the most to both figures, with 124 mtpa of BOF capacity and 182 mtpa retired in this timeframe. BOF capacity additions also came from India (18 mtpa), Vietnam (10 mtpa),

While iron and steelmaking capacity progressed with lower-emissions technologies, new coal-based capacity poses decarbonization concern

Changes in operating capacity between 2020–25 by technology type, in million tonnes per year (mtpa)



Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 3

and Indonesia (7 mtpa), while BOF retirements were made by Japan (9 mtpa), the UK (5 mtpa), and Pakistan (3 mtpa). Over the same time period, 93 mtpa of EAF capacity was added globally, led by China (45 mtpa), the United States (11 mtpa), and Iran (9 mtpa). Meanwhile, nearly 26 mtpa of EAF capacity was retired.

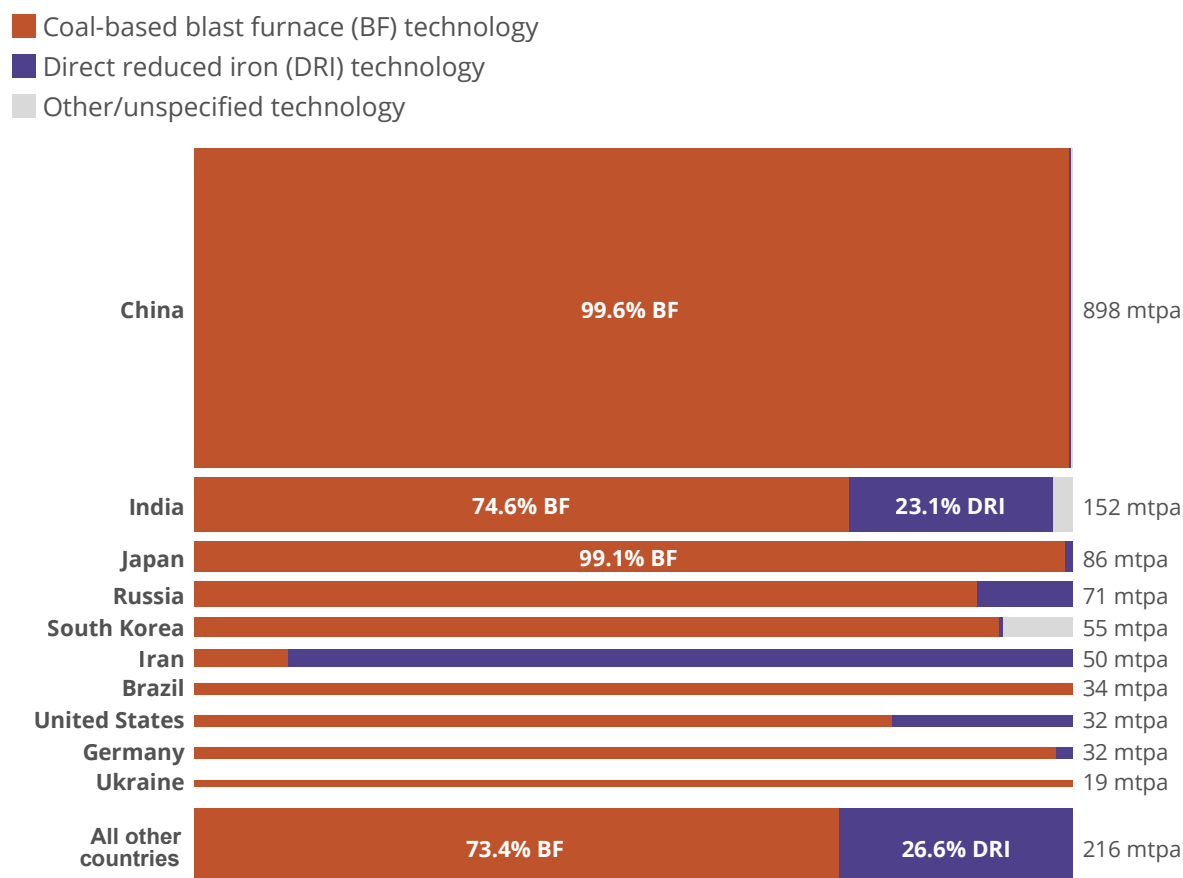
Global ironmaking capacity

In 2024, around 46 mtpa of ironmaking capacity started operations — 39 mtpa (84%) of which uses a blast furnace and 7 mtpa (16%) of which uses direct reduction. Overall, ironmaking remains predominantly coal based, with 1,480 mtpa (90% of capacity with a known technology) using blast furnaces and 155 mtpa (10%) using direct reduction.

Iron production capacity follows a similar pattern in terms of global distribution. China holds 898 mtpa of operating ironmaking capacity, or 55% of the global total, followed by India (152 mtpa), Japan (86 mtpa), and Russia (71 mtpa). These four countries are also the top blast furnace producers, with China holding an even larger share (60%) of global operating blast furnace capacity. Of the top ten iron producers, all except Iran use blast furnaces as their main ironmaking technology. Since 2020, around 240 mtpa of blast furnace capacity has gone into operation, and 244 mtpa has been retired around the world, leaving global capacity essentially unchanged. India has added 21 mtpa of this capacity without any retirements, while China has added nearly as much capacity (197 mtpa) as they have retired (208 mtpa).

China has the highest global ironmaking capacity, with almost all from emissions-intensive, coal-based technologies

Proportion of operating iron capacity by technology type. Bar heights correspond to overall operating iron capacity for specific country in million tonnes per year (mtpa).



Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 4

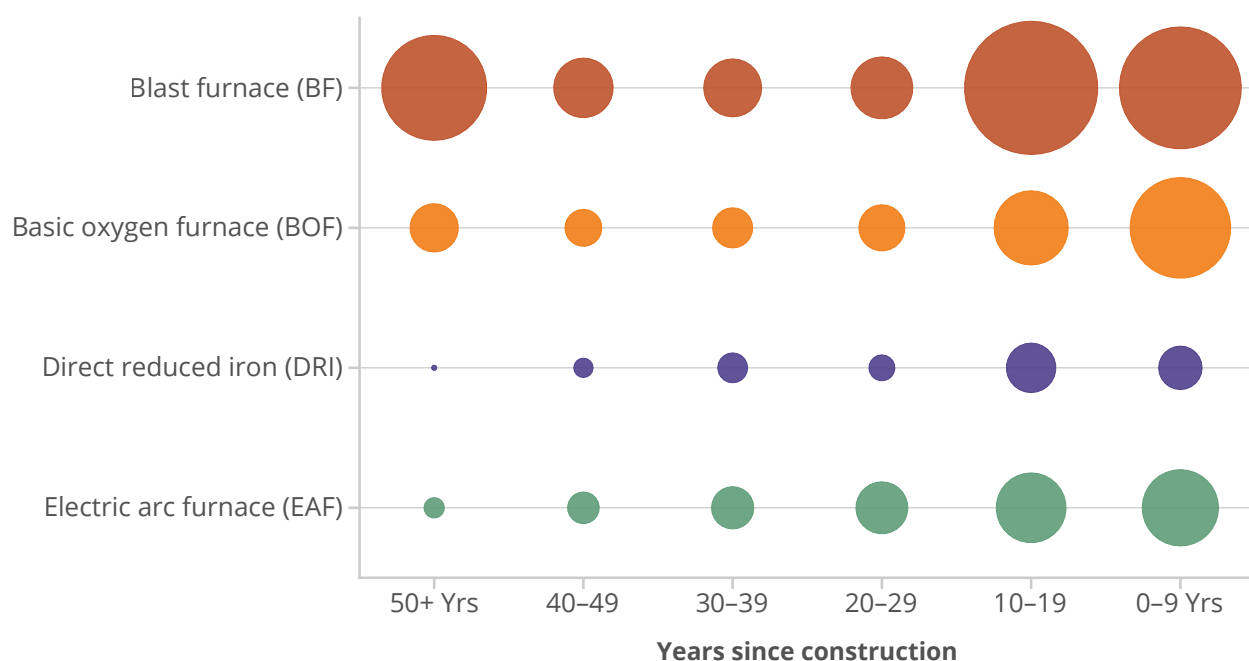
DRI production is led by Iran with 44 mtpa, followed by India (35 mtpa), Egypt (8 mtpa), and Algeria (8 mtpa). Over the first half of the 2020s, DRI has ticked up to represent a slightly larger share of ironmaking on a global scale — in 2020, less than [8%](#) of ironmaking used DRI technology, whereas today that is nearly 10%.⁴ The IEA's Net Zero Scenario requires DRI to reach [17%](#) by 2030.

4. This calculated growth is represented in both historic Global Iron and Steel Tracker data and World Steel Association [production data](#).

The shifting composition of iron and steel production technology can be seen in the average unit ages of each unit type. Units that started operating more than 50 years ago were almost entirely blast furnaces and basic oxygen furnaces, with a very small percentage of EAF units starting up. The significant number of aging blast furnace units in the 50 years and older category have generally undergone multiple relinings and represent an opportunity to phase out coal-based capacity as we develop more capacity with decarbonization potential. With rapid capacity additions in the last two decades across production routes, DRI and EAF units have made up an increasingly significant proportion of capacity coming online. These developments have been driven in large part by Iran and India.

Older capacity is largely BF-BOF and DRI-EAF capacity has grown significantly over the past two decades

Capacity of units by age, million tonnes per year (mtpa)



Source: Global Iron and Steel Tracker, Global Energy Monitor

Note: Unit relinings and refurbishments are not factored into this age analysis.



Figure 5

As mentioned in [Appendix B](#), the reducing agent used in these furnaces is also essential in understanding emissions intensity. DRI production is not lower emission across the board. While a small fraction of operating DRI capacity uses hydrogen, most is fed with methane (particularly in Iran and other Middle Eastern countries) or coal (particularly in rotary kiln DRIs located in India) according to GIST reductant data.

India: The importance of feedstocks, reductants, and iron ore

The 2025 GIST provides data on EAF inputs and DRI reductants where available, shedding more light on why certain countries' production is more emissions intensive than others' and what resources those industries will use. For instance, feedstock for EAFs in India is made up of approximately 50% DRI, whereas sponge iron overall makes up closer to 20% of EAF feedstock across all countries. Since scrap is not the primary input in Indian EAF production, this indicates a much higher demand for iron ore than other EAF producers. Further, according to reductant data in the GIST, 60% of the operating DRI capacity in India uses coal as a reductant, 35% uses methane, and 5% uses coke oven gas.⁵ This compares to a global average of 61% methane, 28% coal, 4% coke oven gas, 4% syngas, and 3% hydrogen used as reductants in operating DRI units.⁶ There are also many [small, coal-based DRI furnaces](#) in India that fall below the threshold for inclusion in the GIST but add even more coal-based DRI capacity in India than is reflected in our data.

As a result of all these factors, India's production is far more emissions intensive than other countries because of the heavy reliance on coal-based DRI in its EAFs. Overall, India's steel industry is the world's [most emissions intensive](#) and generates about an average of [2.55](#) tonnes of CO₂ per tonne of finished steel, which is 20–25% higher than China's.

5. Feedstock data can be found in the "Electric arc furnaces" tab of the steel unit data download file of the [2025 Global Iron and Steel Tracker](#); DRI reductant data can be found in the "DRI furnaces" tab of the iron unit data download file of the tracker. These averages are calculated excluding feedstocks and reductants that are unknown.

6. See [Appendix C](#) for a breakdown of emissions intensity by various production routes.

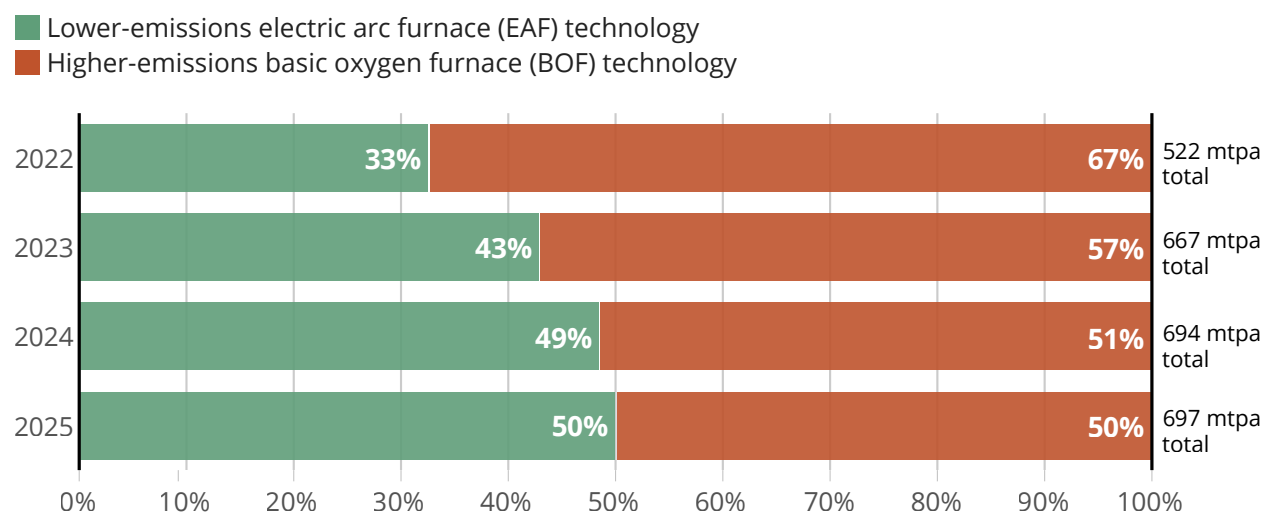
What's in the development pipeline?

Steelmaking under development

Lower-emissions EAF capacity makes up an increasingly large portion of steel-making developments globally, with half of all developing capacity (349 mtpa) today set to use EAF technology. Fifty percent (174 mtpa) of this developing EAF capacity will be part of integrated DRI-EAF production. The first half of the 2020s brought this shift toward EAF development: only 25% of steel capacity with an announcement date before 2020 was EAF-based.

Half the total steelmaking capacity currently in development uses EAF technology, up from one-third in 2022

Proportion of steelmaking capacity in development globally, by year and technology type



Source: Global Iron and Steel Tracker, Global Energy Monitor

Note: Each year's proportion is calculated from the corresponding final iron and steel dataset from GEM.



Figure 6

However, a concerning increase in Indian BOF developments threatens this trend. Only about one-third of developing steelmaking capacity set to start in 2030 or later plans to use EAF. This is driven by 81 mtpa of BOF plant announcements, and these are located mostly in India, which has 73 mtpa of BOF-based capacity set to start in or beyond 2030.⁷

This decade, India has surpassed China as the industry's largest developer. India is responsible for 352 mtpa (40%) of all developing steelmaking capacity as of 2025, far ahead of China (140 mtpa), Iran (50 mtpa), Vietnam (43 mtpa), Malaysia (23 mtpa), and the Philippines (22 mtpa). India represents an even larger share of just coal-based BOF capacity, responsible for 57% (200 mtpa) of BOF development plans — more than double China's 84 mtpa of BOF developments.

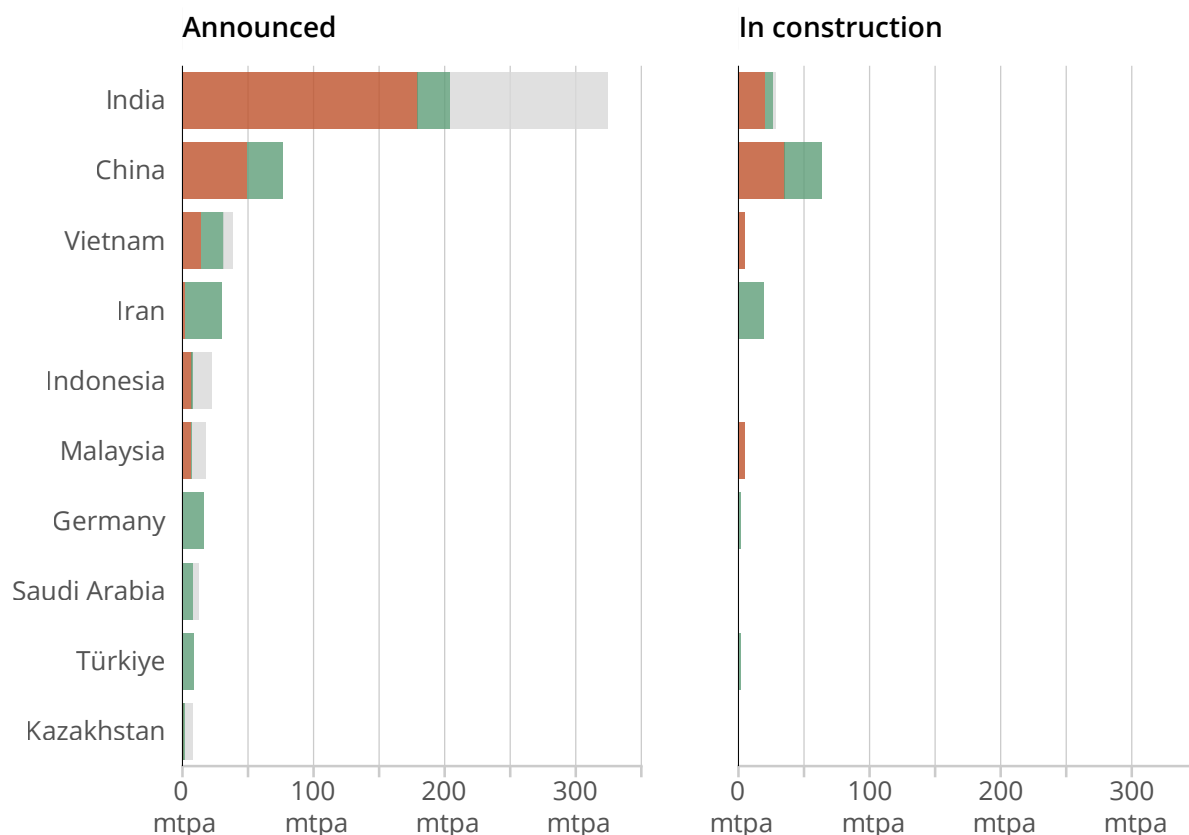
However, a large gap exists between India's ambition and execution so far. After the announcement of India's 2017 National Steel Policy, despite the capacity addition announcements of 265 mtpa (with known announced dates), only 32 mtpa (12%) have begun operations. During the same period, China implemented 201 mtpa (79%) while it made announcements of 253 mtpa. This pattern holds true for current developments as well: Only 8% (28 mtpa) of India's capacity under development has progressed to the construction stage, which indicates a lack of concrete progress. This compares to 64 mtpa or 46% of China's capacity under development that has begun construction. India has seen a 37% increase in developing capacity since just last year, suggesting that this flurry of announcements shows no signs of slowing.

7. It is worth noting that smaller EAF plants are often not announced this far in advance, so it is likely that BF-BOF developments are overrepresented in existing plans for 2030 and beyond.

While India has the largest announced steel capacity, China has more in construction

Steel capacity in development by technology type and status, million tonnes per year (mtpa)

- Higher-emissions basic oxygen furnace (BOF) technology
- Lower-emissions electric arc furnace (EAF) technology
- Other/unspecified technology



Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 7

Therefore, India has yet to prove that its massive capacity expansion goals will be realized for its steel sector. This presents a decarbonization opportunity, given the heavy reliance on coal-based BOF represented in India's plans. With so many of these developments up-in-the-air, the country can still shift course and prioritize primary and secondary EAF capacity.

Globally, 109 mtpa (58%) of developments that have started construction with known production routes are EAF-based and 42% are BOF-based (79 mtpa). Last year, EAF constituted 55% (115 mtpa) of the developments that moved into construction, while the remaining 96 mtpa was BOF-based. Further, 31% of all EAF developments have progressed to construction compared to 23% of BOF developments. This is an encouraging sign that EAF capacity is successfully graduating from the planning stages to tangible developments and that the shift toward EAF steelmaking is moving forward.

Ironmaking under development

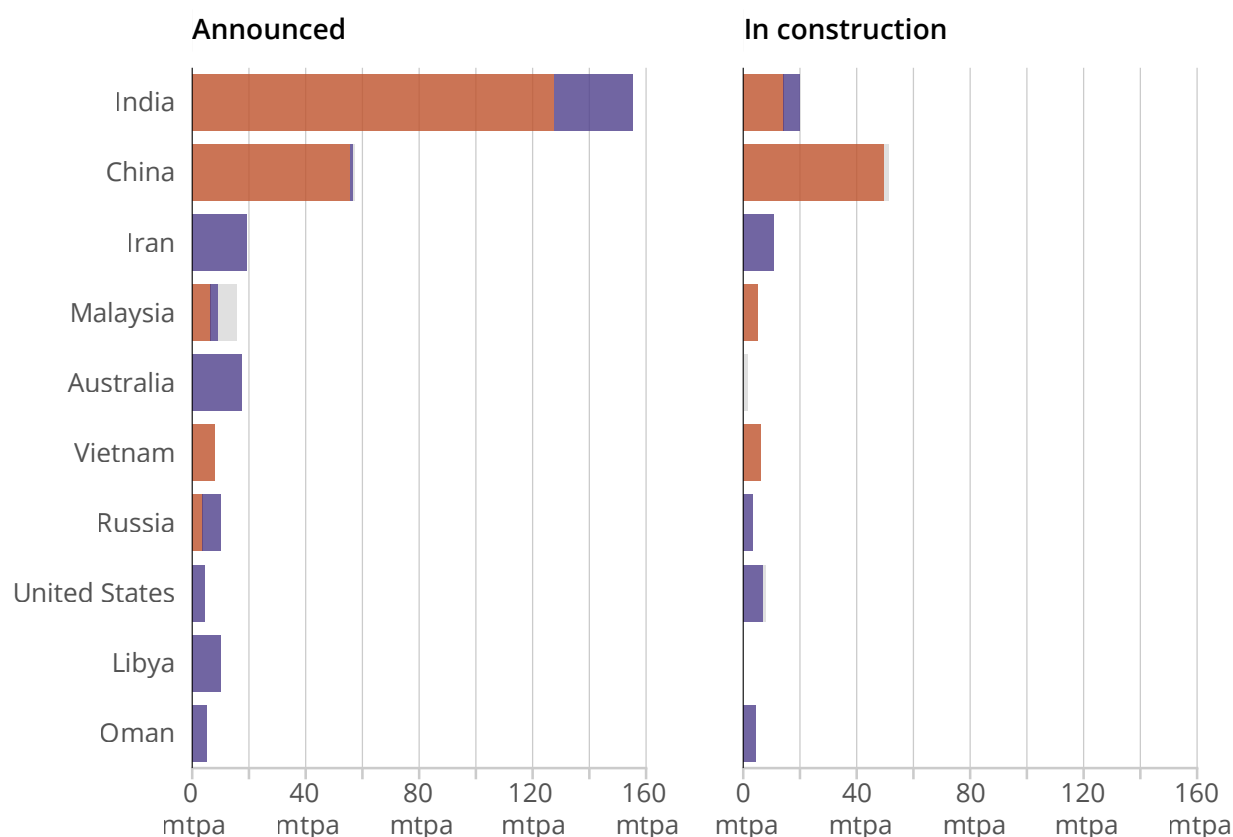
Of developing ironmaking with a known production method, 58% (303 mtpa) is set to use coal-based blast furnace technology, and 42% (215 mtpa) will use DRI. This would be a notable shift from the current operating ironmaking breakdown, 90% of which uses BF.

Blast furnace capacity expansions persist, despite the threat they pose to decarbonization. Out of the total BF capacity under development, 80 mtpa (27%) has already moved into the construction phase. India and China together are responsible for 82% of these developments — India for 47% and China for 35%. The Asia Pacific region is a hotspot for this coal-based construction, holding nearly all blast furnace capacity under development.

India has the most upcoming ironmaking capacity announced, but few developments have started construction

Iron capacity in development by technology type and status, million tonnes per year (mtpa)

■ Coal-based blast furnace (BF) technology
■ Direct reduced iron (DRI) technology
■ Other/unspecified technology



Source: Global Iron and Steel Tracker, Global Energy Monitor



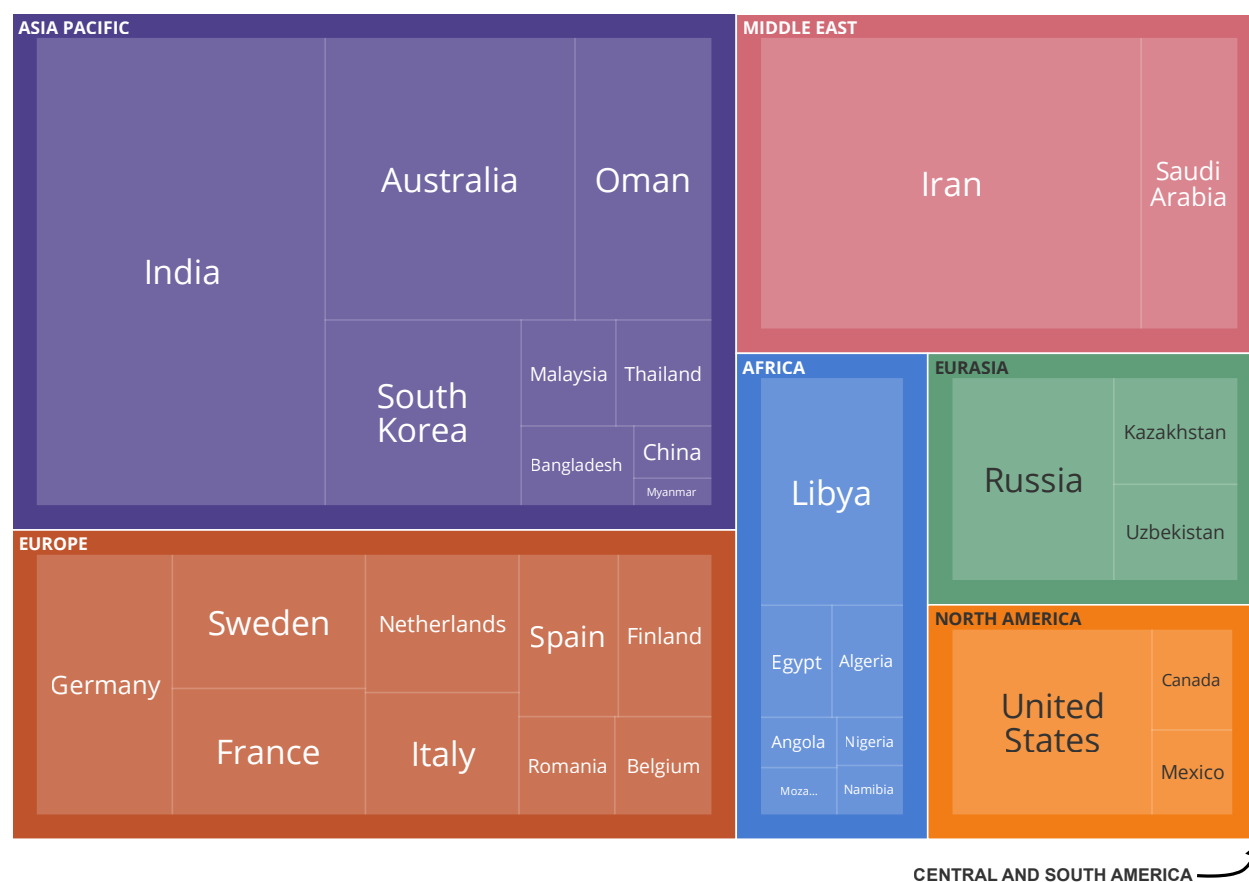
Figure 8

Developing DRI capacity, on the other hand, is distributed more evenly around the world. India leads in developing DRI with 33 mtpa, followed by Iran (30 mtpa), Australia (18 mtpa), and the United States (12 mtpa).

Top players in DRI development differ from typical key countries for iron/steelmaking

Ironmaking capacity in development using direct reduced iron technology; each segment represents share of capacity in development by country

■ Asia Pacific ■ Europe ■ Middle East ■ Africa ■ Eurasia ■ North America ■ Central & South America



Source: Global Iron and Steel Tracker, Global Energy Monitor

Figure 9



The IEA's Net Zero Scenario requires DRI to reach **17%** of iron production by 2030, 30% of which should use hydrogen as a reductant. If all retirements and developments that have been announced take place, the split will shift to 85% BF and 15% DRI in 2030. Of the DRI capacity that is operating or developing, 20% either currently use hydrogen or have announced plans to switch to hydrogen

reduction.⁸ This means that, even if all hydrogen development and transition plans go into effect, the industry is not on track to meet either of these ironmaking decarbonization goals.

Persistent blast furnace investment

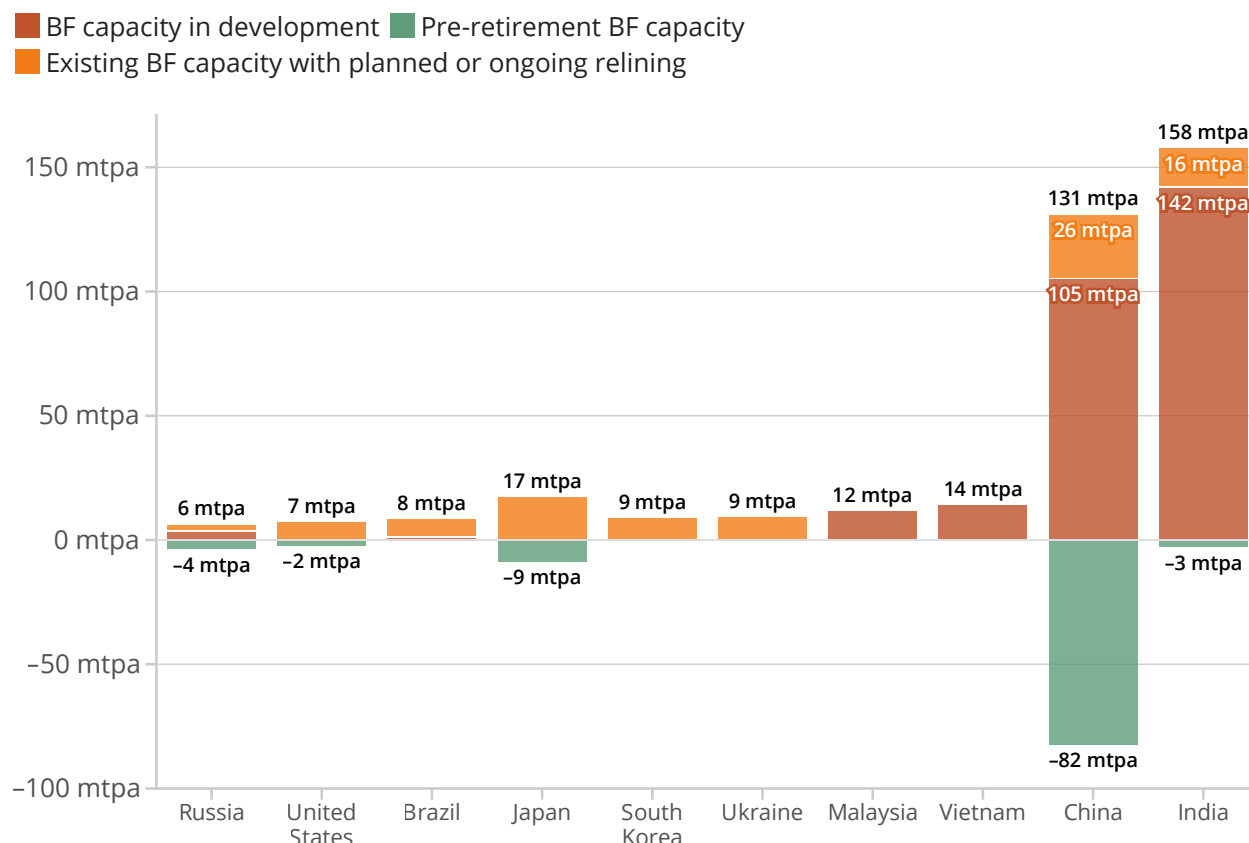
Steelmakers continue extending the lifespan of blast furnaces through relinings rather than diverging from coal-based production. Relining BFs involves major capital investments, nearly half of the cost of constructing new ones, diverting capital from green technologies. In the last five years, 259 blast furnace relinings were completed on a total capacity of 372 mtpa, representing over a quarter of operating BF capacity, locking in carbon emissions for another 15–20 years and increasing stranded asset risks. Relinings of 57 BFs on a capacity of 112 mtpa are already announced, with 22 relinings (46 mtpa) scheduled to be completed before 2030. India and China continue developing and extending blast furnace capacity through new developments and relining of existing blast furnaces, deepening dependence on coal.

While the average age of BFs globally is around 25 years, close to a quarter of operating blast furnaces are over 40 years old, with the U.S housing the oldest fleet globally. The youngest BF fleet is located in China and India. While the older furnaces require more frequent maintenance and are generally emissions intensive, the newer ones are expected to continue carbon lock-ins for longer periods to justify investments made in them.

8. Sourced from GEM's in-progress iron unit data.

India and China continue investing highly in blast furnace capacity

Planned blast furnace investments through new capacity development and relinings, compared against planned retirements, in million tonnes per year (mtpa)



Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 10

Global Iron Ore Mines Tracker

Why iron ore mining matters

Iron ore is a fundamental raw material for primary steel production and will continue to play a role as the industry evolves. GEM's Global Iron Ore Mines Tracker (GIOMT), released in November 2024, provides an analysis of existing, developing, and potential capacity around the world alongside iron and steel production data.

Iron ore mining is a resource- and emissions-intensive industry, contributing to land degradation, water pollution, biodiversity loss, and CO₂ emissions from fuel use, extraction, and processing. [Open-pit mining](#) is the dominant method of extraction, which involves drilling and blasting through rock and is often [ecologically devastating](#). These mines can also contribute to [environmental injustices](#) as they are often located near marginalized communities. Those affected face risks to their [health and cultural landmarks](#), as well as access to their [land and water](#). The global push for new iron supply has made consideration of these impacts even more important as steel production continues to develop.

As steelmakers pivot toward DRI-based ironmaking, there are additional concerns over iron ore quality. High-quality iron ore with [an iron content of over 67%](#) is required to produce DRI, which constitutes only [about 4% of the global iron ore supply](#). This will necessitate beneficiation or alternate production routes to DRI-EAF, which involves melting DRI to remove impurities. Steelmakers have been investigating [new technology combinations](#) to utilise low-grade iron ore for DRI production, including [Molten Oxide Electrolysis](#) (MOE), DRI followed by submerged arc furnace (SAF) — or DRI-smelt-BOF steelmaking — explored by [Thyssenkrupp](#), [ArcelorMittal](#), and [Bluescope](#), in addition to hydrogen-based fluidised bed reactor technology like [POSCO's HyREX](#) and [Primetals' HYFOR](#) methods.

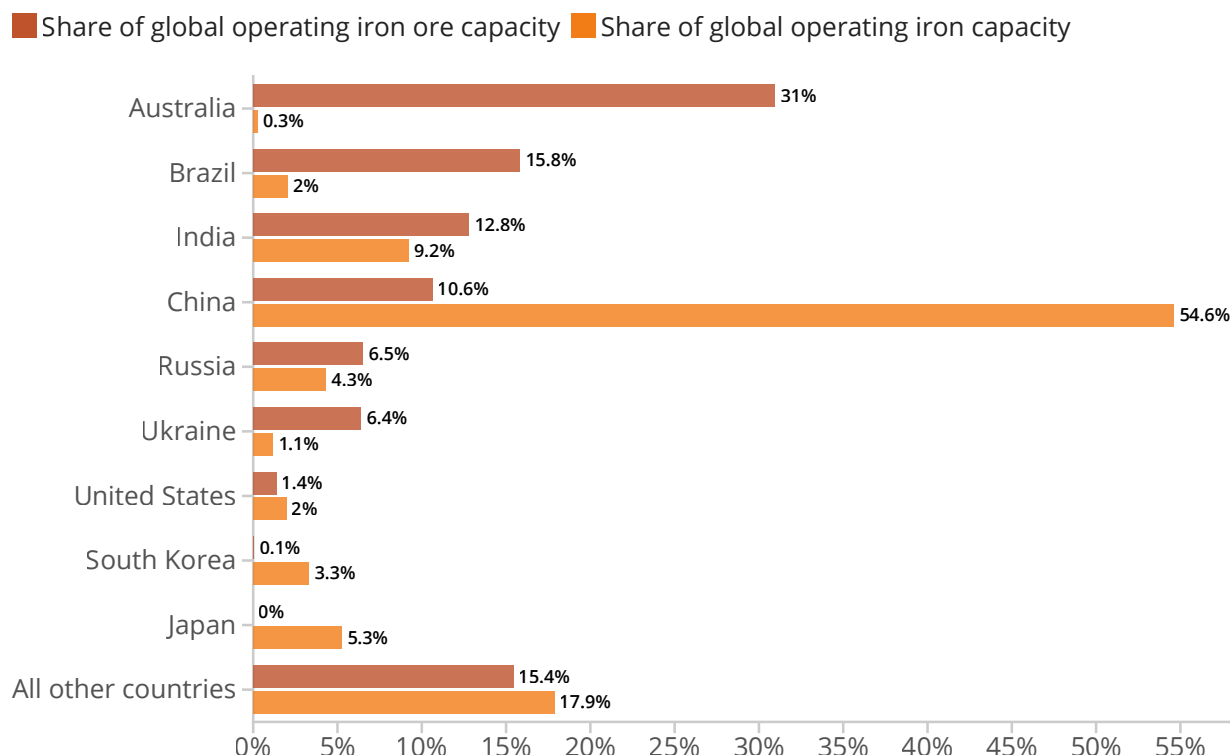
With all this in mind, iron ore mining can also shape the steel industry from the very beginning of the supply chain. Around [98%](#) of all iron ore mined goes into steel production, and iron ore can be directed toward green ironmaking projects in order to strategically propel the net-zero transition.

Global Energy Monitor's GIOMT tracks 668 operating iron ore mines, 134 in development, and 69 mothballed/retired mines in 67 countries. An estimated 116 billion tonnes of iron ore reserves and 406 billion tonnes of iron ore resources are spread globally. Australia leads in resources with 17% of the global share, followed by Russia (13%), Brazil (13%), and China (11%), while Russia leads in reserves with 22%, followed by Brazil (17%), Sierra Leone (12%), and China (10%). Australia holds 31% of the global operating iron ore mine capacity, followed by Brazil (16%), India (13%), and China (11%). Australia also leads in iron ore mine capacity in development, with 32% of the total, followed by Guinea (21%), China (18%), and Russia (8%). The GIOMT tracked a global iron ore production of 2,059 million tonnes in 2023, with Australia and Brazil accounting 43% and 21% worldwide production, respectively.

While China and India hold the largest operational and in-development ironmaking capacity, they only account for 6% and 11% of the global iron ore production, respectively. China is the world's largest consumer of iron ore and imported [1.24 billion tonnes in 2024](#), with [62% sourced from Australia and 22% from Brazil](#). Australia represents less than 1% of operating ironmaking but dominates iron ore mining, presenting an [opportunity](#) to grow the country's green primary steelmaking capacity by developing the infrastructure for green DRI-EAF. As the green steel transition necessitates a shift away from blast furnace ironmaking, DRI developments will reshape the demand for iron ore and be influenced by iron ore production. This is an opportunity for countries like Australia with higher iron ore capacity to influence green steel development. With [falling iron ore demand from China and declining prices](#), iron ore exporters would do well to start investing in coal-free DRI technologies, not just to stay competitive, but to future-proof their industry in a rapidly decarbonizing global market.

Geographic mismatches between iron and iron ore production indicates supply chain challenges

Share of global operating capacity by country (%)



Source: Global Iron and Steel Tracker, Global Iron Ore Mines Tracker, Global Energy Monitor



Figure 11

The presence of iron ore facilitates the development of new hubs of DRI development, which provides flexibility in fuel usage and unlocks the potential for hot briquetted iron production and trade to existing EAF facilities, especially in the face of scrap shortage. Brazil, the second-largest producer of iron ore and the world's [largest producer of DR-grade iron ore](#), does not produce any DRI-based iron. With its significant renewable energy and hydropower capacity, Brazil has a significant advantage over major ironmaking countries in transitioning towards DRI-based steelmaking. GIOMT plays a significant role in providing key industry supply chain insights shaping steel decarbonization.

Threats to the green transition

The transition to green steel faces significant challenges that threaten its progress, including economic, technological, and geopolitical factors. Many countries and companies have either delayed or scaled back their green steel transition plans due to economic pressures and competing priorities. Major steelmakers like ArcelorMittal and Thyssenkrupp have [postponed final investment decisions](#) and cast doubt on key green steel projects, citing unfavourable market conditions and insufficient policy support. ArcelorMittal also [delayed](#) its green investments and will likely [not meet](#) 2030 carbon reduction targets due to uncertainties surrounding the [European Commission's Steel and Metals Action Plan](#).

The development of DRI-based production technology will need to overcome the challenge of limited availability of DR-grade iron ore through technological innovations. The viability and success of hydrogen-based steelmaking projects depend heavily on the availability of affordable green hydrogen and renewable energy, which remain scarce and expensive, creating uncertainty about the feasibility of large-scale adoption. Recently, the United States saw the [cancellation of several renewable hydrogen projects](#) and the [reversal of federal policy](#) on funding of regional hydrogen hubs. Focus on less ambitious decarbonization methods like blue hydrogen and carbon capture also deters the momentum required to achieve climate goals.

Though scrap steel is a strategic resource in the global steel sector's transition, its [global supply lags demand growth](#), and [availability and quality are uneven across steelmaking economies](#) due to different stages of industrial development and recycling infrastructure. Currently, only around a quarter of global steel demand is met through scrap, which is projected to grow to [44% by 2050](#). [China's decision](#) to restrict steel scrap exports and [the EU's consideration of a similar policy for their member states](#), while ensuring domestic availability of

scrap, disrupts global trade dynamics. The transition to green steel necessitates a fundamental restructuring of global supply chains and production centres to align with the availability of scrap, renewable energy, hydrogen infrastructure, and resource distribution.

Policy changes like the imposition of tariffs by the United States on steel imports and the retaliatory measures by several countries would disrupt established global supply chains critical for green steel production. These drive up costs for companies, discouraging investments in green technologies. Such policy shifts and the looming global trade wars slow down decarbonization efforts by deterring the steel industry's cross-border investment in green steel technologies, hindering collaboration essential for decarbonizing steel. Meanwhile, constructive policies like the EU's Carbon Border Adjustment Mechanism (CBAM) incentivize green steel trade.

Country profiles

China

Operating iron and steel: China's operating steel capacity has a total of 1,056 mtpa, with the majority, 895 mtpa (85%), coming from BOF capacity, and 161 mtpa (15%) from EAF capacity. China's total operating iron capacity is 898 mtpa, nearly completely constituted by 894 mtpa (99.5%) of BF capacity. Additionally, there is a small portion of 2.4 mtpa (0.3%) from DRI capacity and 1.6 mtpa (0.2%) from other/unspecified iron sources. China holds 11% (404 mtpa) of the global operating iron ore mine capacity and 18% (100 mtpa) of the iron ore mine capacity in development, compared to its 55% share of operating integrated steel capacity. While China possesses substantial iron ore reserves

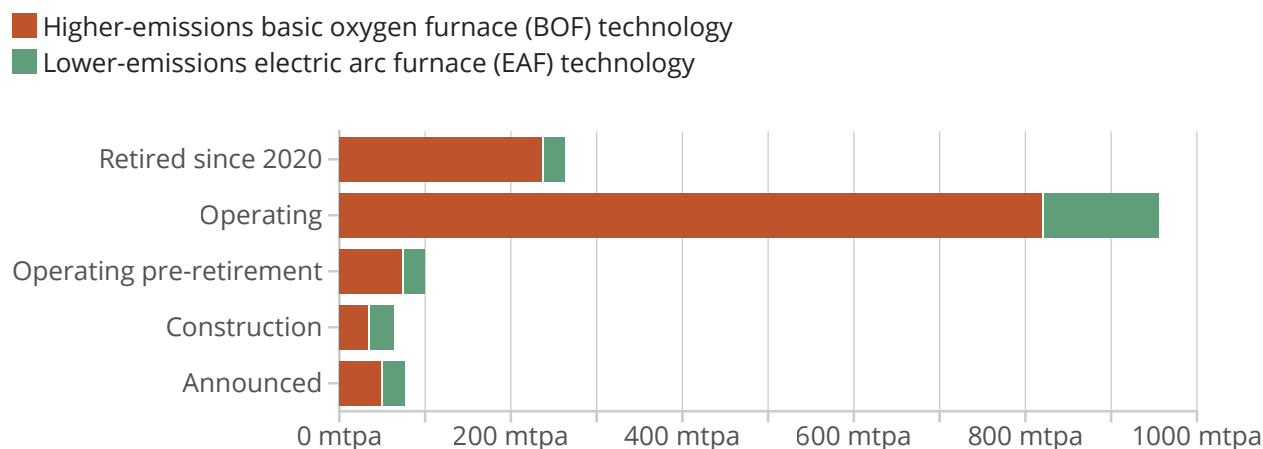
(11 billion tonnes), the majority consists of [low-grade magnetite](#). This leads China to import [80%](#) of its iron ore requirements, primarily from Australia and Brazil.

Transition updates and key policies: China is implementing [a dual control system](#) for carbon emissions to support the low-carbon transition of its steel and iron industries. The sector is also being integrated into China's [national carbon market](#), with facilities emitting over 26,000 tonnes of CO₂-equivalent annually included in the trading scheme. As of August 2024, all regions have [suspended new steel capacity swap plans](#), reflecting efforts to change from capacity control to production control, which may indicate an evolving approach to emissions governance. At the same time, [shifting goals](#) for EAF production shares indicate a step back from earlier ambitions. Further, the government's focus on retrofits and marginal emissions reductions underscore the importance of assessing whether these incremental measures can truly drive structural change, given that over 90% of China's steel production still relies on coal-based BF-BOF routes. [A recent study](#) highlights that under favorable carbon pricing scenarios (e.g., US\$50 per tonne CO₂), scrap-based EAF production could become more cost-competitive — but scaling it requires addressing bottlenecks such as scrap quality, prices, and renewable energy access. In 2022, China introduced the [Cornerstone Plan](#) to enhance resource security and reduce iron ore import reliance.

Coal-based production: China has 894 mtpa BF capacity in operation and 105 mtpa BF capacity in development. Coal-based production is still the mainstream production method in China, and it is unlikely to see a rapid decrease in the near future. Meanwhile, BF operating capacity stayed relatively steady with a 1% increase from 2023 to 2024.

Majority of operating steelmaking capacity in China uses emissions-intensive, coal-based technologies

Steelmaking capacity by status and technology type, million tonnes per year (mtpa)



Source: Global Iron and Steel Tracker, Global Energy Monitor

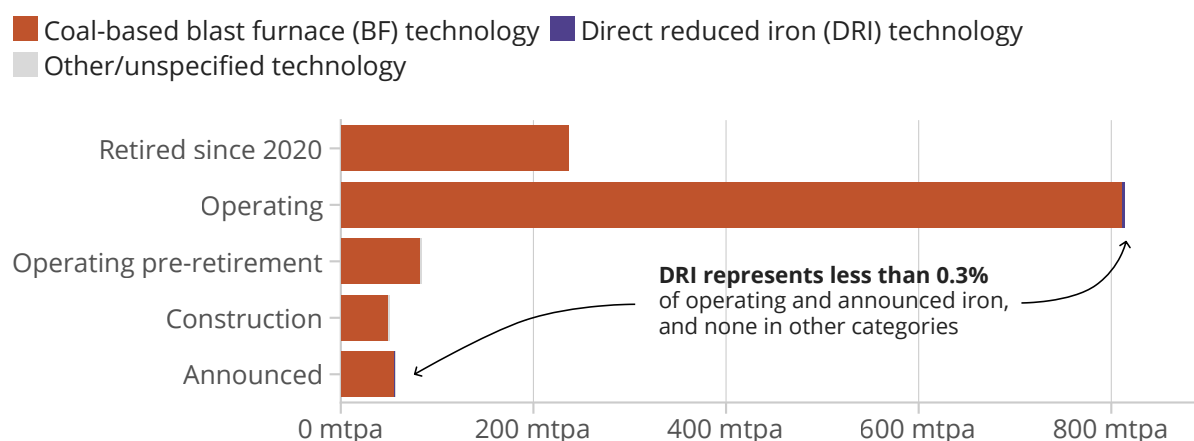
This visual separates “operating” and “operating pre-retirement” statuses unlike visuals for other countries. This is due China’s capacity swap practice that means much of the developing capacity pictured is actually replacing pre-retirement capacity.



Figure 12

Operating and developing ironmaking capacity in China relies almost completely on emissions-intensive coal-based technology

Ironmaking capacity by status and technology type, million tonnes per year (mtpa)



Source: Global Iron and Steel Tracker, Global Energy Monitor

This visual separates “operating” and “operating pre-retirement” statuses unlike visuals for other countries. This is due China’s capacity swap practice that means much of the developing capacity pictured is actually replacing pre-retirement capacity.



Figure 13

India

Operating iron and steel: India has one of the [highest emissions intensities](#) across all production routes globally. India operates 82 mtpa of BOF capacity, 113 mtpa of BF capacity, 31 mtpa of EAF capacity, and 35 mtpa of DRI capacity. India also has a high induction furnace (IF) capacity, with IFs producing around [68.8 mtpa of steel](#), 38% of India's total steel.⁹ India operates 13% of the operating iron ore mine capacity and holds 6% of the capacity in development. In 2023, while India produced [7% \(141 million tonnes\)](#) of the world's steel, GIOMT tracked an iron ore production of 226 million tonnes (11% of global production). India exports around [6%](#) of its iron ore production.

Transition updates and key policies: India has a net-zero 2070 target and aims to reduce their national average emissions intensity of steel from [2.54 tCO₂/tcs to 2.2 tCO₂/tcs by 2030](#). The year 2024 was significant in India's steel decarbonisation journey. India's Ministry of Steel released a [roadmap and action plan for greening the steel sector](#), based on recommendations from fourteen task forces addressing key decarbonization levers. Following this, the ministry introduced a [Green Steel Taxonomy](#), the first of its kind by any country, defining 'greenness' of finished steel based on the emissions intensity of the producing plant. Additionally, India is developing a "[Green Steel Mission](#)" to catalyze industry-wide carbon reduction efforts and drive progress toward its net-zero goal. While these initiatives are momentous, the current approach [largely prioritizes expanding production capacity](#), with decarbonization strategies being applied later.

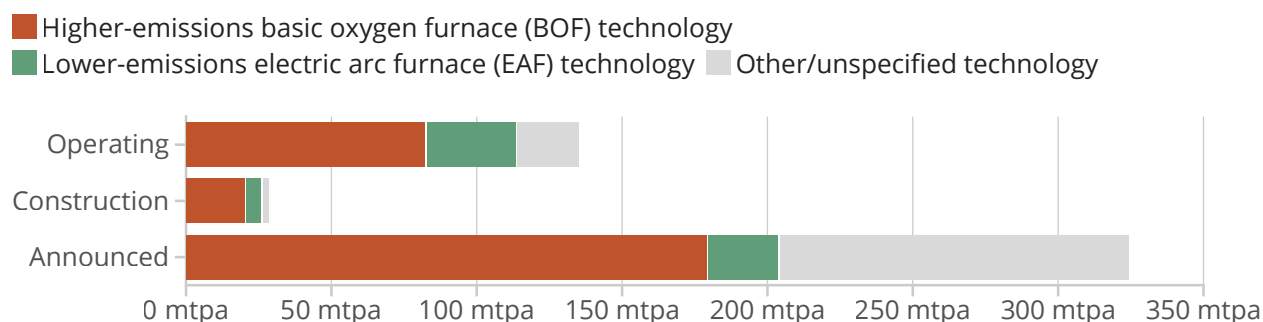
Coal-based production: The relatively young blast furnace fleet in India (average operating BF age of 25 years) poses a challenge in phasing out existing BFs. India

9. Much of India's IF capacity is located at facilities that produce less than GEM's threshold of 500 ttpa. Because of this, GIST data shows IF capacity representing a smaller percentage of overall steelmaking.

has 142 mtpa of new BF capacity under development. Around 60% of operating DRI capacity (21 mtpa) in India uses coal as a reducing agent.

Emissions-intensive coal-based technologies dominate India's operating and developing steelmaking capacity

Steelmaking capacity by status and technology type, million tonnes per year (mtpa)



Source: Global Iron and Steel Tracker, Global Energy Monitor

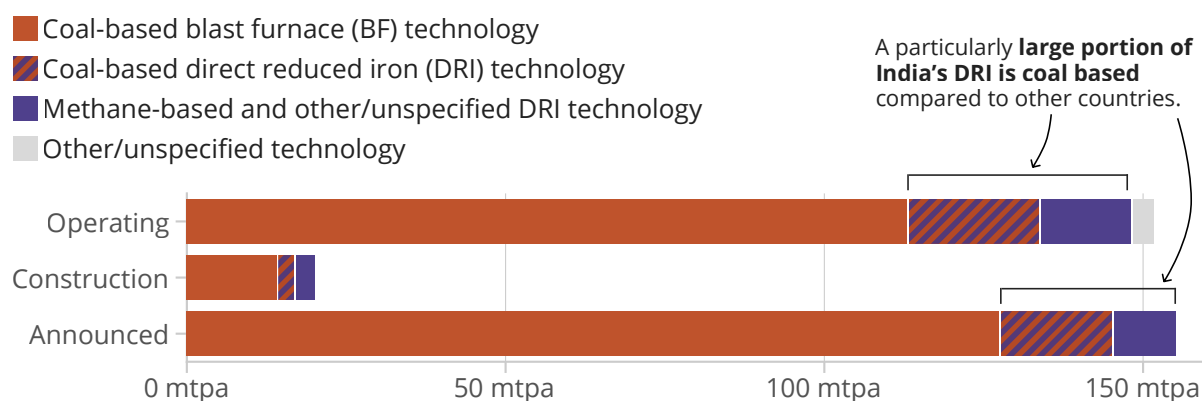
Note: India utilizes large amounts of induction furnace (IF) capacity, which is currently tracked under "other/unspecified technology" in the GIST.



Figure 14

Emissions-intensive coal-based technologies dominate India's operating and developing ironmaking capacity

Ironmaking capacity by status and technology type, million tonnes per year (mtpa)



Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 15

United States

Operating iron and steel: Among the top steel-producing countries, the United States has maintained a relatively low average emissions intensity for steelmaking, mainly due to the high share of electric arc furnaces (71%), which are largely scrap-based, with scrap constituting 89% of EAF feedstock. The United States operates 33 mtpa of BOF capacity and 80 mtpa of EAF capacity. The country has almost 26 mtpa of operating BF capacity and 6.6 mtpa of DRI capacity, with 35 mtpa of total integrated steelmaking. The United States operates 1.5% of the operating iron ore mine capacity, or 52 mtpa, with another 7 mtpa in development.

Transition updates and key policies: The United States has an official goal of reaching net zero by 2050, but recent political developments have added uncertainty regarding this commitment. The second Trump administration departs from the policy approach of prioritizing the clean energy transition. While the Biden administration pushed several key policies in support of clean energy and industrial decarbonization such as the Energy Act of 2020, the 2021 Infrastructure Investment and Jobs Act, the 2022 Inflation Reduction Act (IRA), and the 2022 CHIPS and Science Act, the Trump administration has [halted or attempted to roll back](#) much of this funding that would support green steel development. Trump is framing coal's use as [central to his agenda](#) of revitalizing domestic industry, despite the clear risks coal dependence poses.

The proposed acquisition of U.S. Steel by Japan's largest steelmaker, Nippon Steel, has been stalled repeatedly since its [announcement in 2023](#) due to national security concerns, political resistance, and [union opposition](#). Since President Biden [blocked the takeover in January 2025](#), President [Trump has ordered a review of the deal](#), giving it a renewed chance to move forward.

Coal-based production: The United States has the world's oldest fleet of blast furnaces with an average operating age of 74 years. Though there are no new blast furnaces planned, Cleveland-Cliffs has announced three relining investments

planned before 2030 on BF units at the Burns Harbor and Middletown plants. Of the twelve operating units in the United States, only one (Cleveland-Cliffs' Middletown BF #3) has an announced retirement plan. This transition plan [relies on](#) federal grant funding, [threatening](#) implementation and leaving this unit's future up in the air. Additionally, Nippon Steel has [pledged](#) to invest in the relining of BF #14 in U.S. Steel's Gary Works plant if the proposed acquisition of U.S. Steel goes through.

All developing steelmaking in the United States uses electric arc furnace, with no plans to retire coal-based capacity

Steelmaking capacity by status and technology type, million tonnes per year (mtpa)

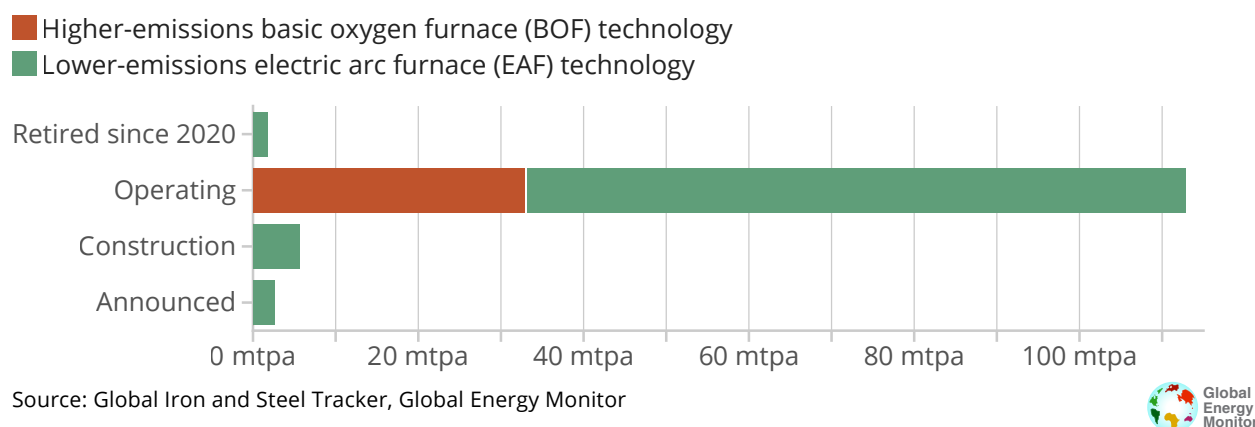


Figure 16

While BF ironmaking remains, all new iron capacity in United States is DRI, set to more than double

Ironmaking capacity by status and technology type, million tonnes per year (mtpa)

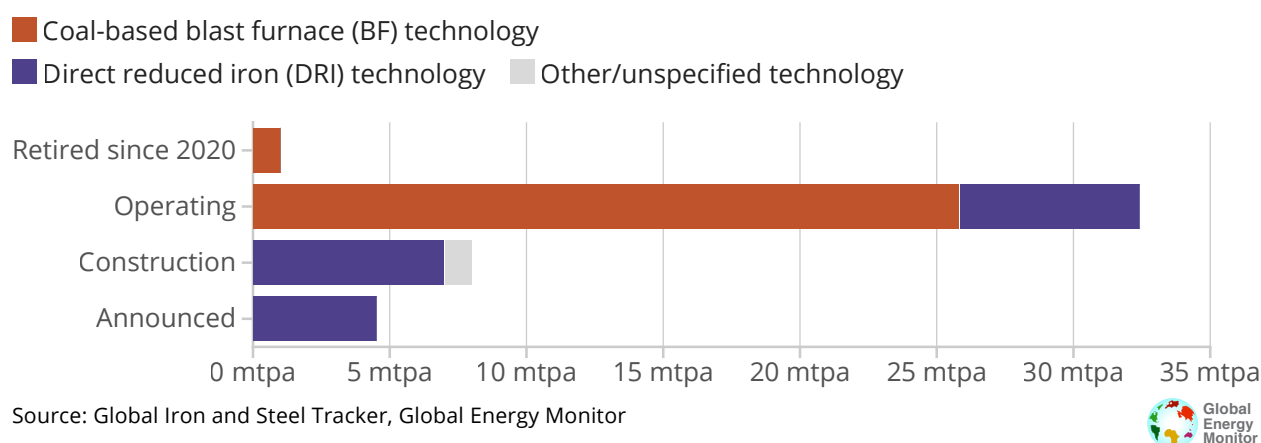


Figure 17

Japan

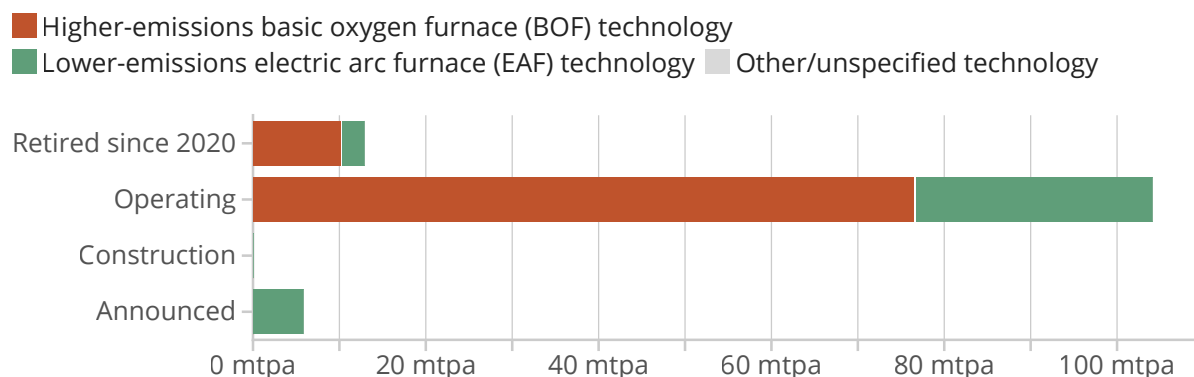
Operating iron and steel: Steelmaking in Japan is heavily BF-BOF-based. Japan operates 77 mtpa of BOF capacity, 27 mtpa of EAF capacity, 86 mtpa of BF capacity, and around 0.8 DRI capacity. Around 26% of steel in Japan is produced via EAF; if all announced closures and new projects are realized, this percentage will only move up to 31% by 2030. Japan's iron ore reserves are [small and of poor quality](#), and its steel production is entirely dependent on imports. In [2023](#), Japan imported 102 million tonnes of iron ore while producing 87 million tonnes of steel.

Transition updates and key policies: Japan has a net-zero 2050 target. The Japanese steel industry aims to [cut emissions by 30%](#) by 2030, which does not align with the country's decarbonisation goals of [reducing emissions by 46%](#) compared to the 2013 baseline by 2030. Japan is also developing its [Green Transformation 2040 vision](#), a national strategy integrating decarbonisation and industrial policy. Many Japanese companies are relying on mass balance approaches to show emissions reductions per tonne of steel, like Kobe Steel's "Kobenable" and JFE Steel's JGreeX, and retrofitting blast furnaces through COURSE50 projects. These companies are projected to substantially [exceed their carbon budgets](#) by 2050.

Coal-based production: Operating Japanese blast furnaces have an average age of 50 years, creating a strategic opportunity to accelerate the transition as these older units near the end of their campaigns. While only around 12 mtpa of BF capacity was retired in Japan in the last five years, the relining of over 17 mtpa of BF capacity has been planned before 2030. Additionally, only 10% of operating BF capacity in Japan is slated for retirement.

All developing steelmaking in Japan uses lower-emissions technologies, but operating capacity is still heavily coal based

Steelmaking capacity by status and technology type, million tonnes per year (mtpa)



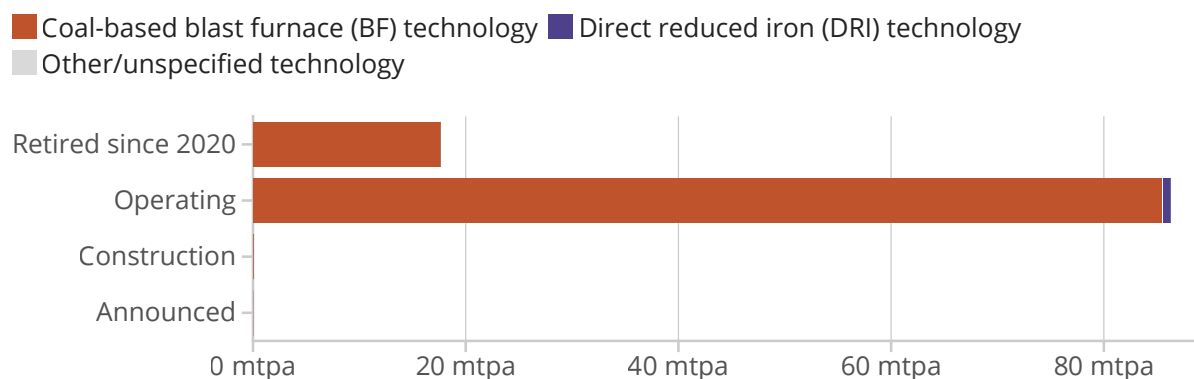
Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 18

All operating ironmaking capacity in Japan uses emissions-intensive, coal-based technologies

Ironmaking capacity by status and technology type, million tonnes per year (mtpa)



Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 19

Russia

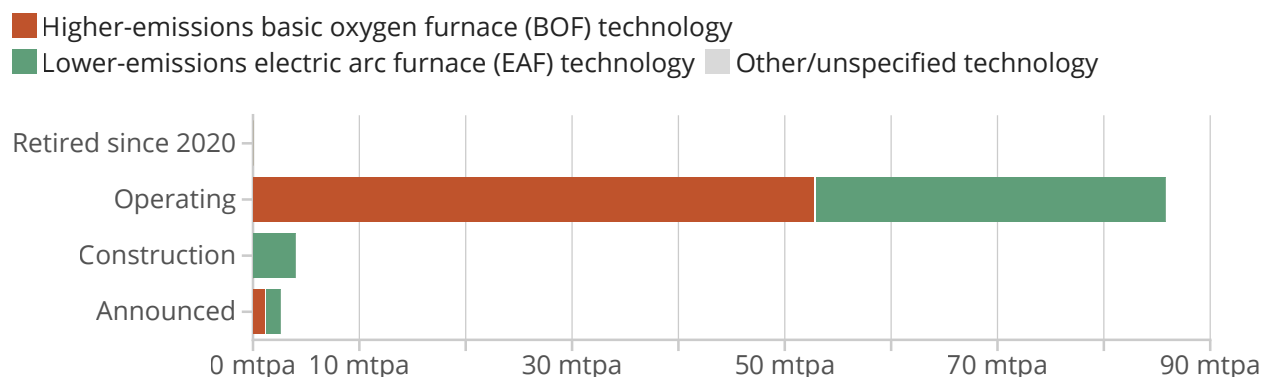
Operating iron and steel: Russia's operating steel capacity relies heavily on BF-BOF-based capacity, with 64 mtpa of BF capacity and 53 mtpa of BOF capacity. Russia operates a DRI capacity of 8 mtpa and an EAF capacity of 33 mtpa. Russia houses the world's largest iron ore reserves (25 billion tonnes), operates 7% (248 mtpa) of the global operating iron ore mine capacity and holds 8% (42 mtpa) of that in development.

Transition updates and key policies: Russia has set a 2060 net-zero target, but the steel industry's current trajectory falls short of achieving Paris Agreement goals. Major steel companies like [Severstal](#) and [NLMK](#) have announced decarbonization strategies, yet these plans lack actionable implementation steps and continue [relying heavily on emissions-intensive technologies](#) for production. Russia's steel sector is facing mounting decarbonization pressures due to international climate policies, domestic challenges, and geopolitical shifts. Starting in 2026, the EU's CBAM will [impose tariffs on carbon-intensive imports](#), forcing Russia to either decarbonize or lose competitiveness in EU markets. The EU's [Corporate Sustainability Reporting Directive](#) (CSRD) and the [US Securities and Exchange Commission's Climate Rule](#) mandate detailed disclosures on carbon emissions, which will result in Russian companies facing compliance issues due to outdated technologies and reliance on coal-based methods.

Coal-based production: Russia [continues to invest](#) in its blast furnaces, with over 30 million tonnes of blast furnace capacity set for relining in the next decade. Russia's blast furnace fleet is aging, with an average operating age of 55 years. In the last five years, Russia relined eleven blast furnaces with a combined capacity of 22 mtpa. Nine of these furnaces were 56–93 years old. To align with its climate goals, the country will need to actively retire many of its older, carbon-intensive blast furnaces. While Russia's ironmaking capacity in development is predominantly DRI-based, it has not increased from last year.

Russia's steel sector is dominated by coal-based technologies, but developing capacity is mostly lower-emissions EAF based

Steelmaking capacity by status and technology type, million tonnes per year (mtpa)



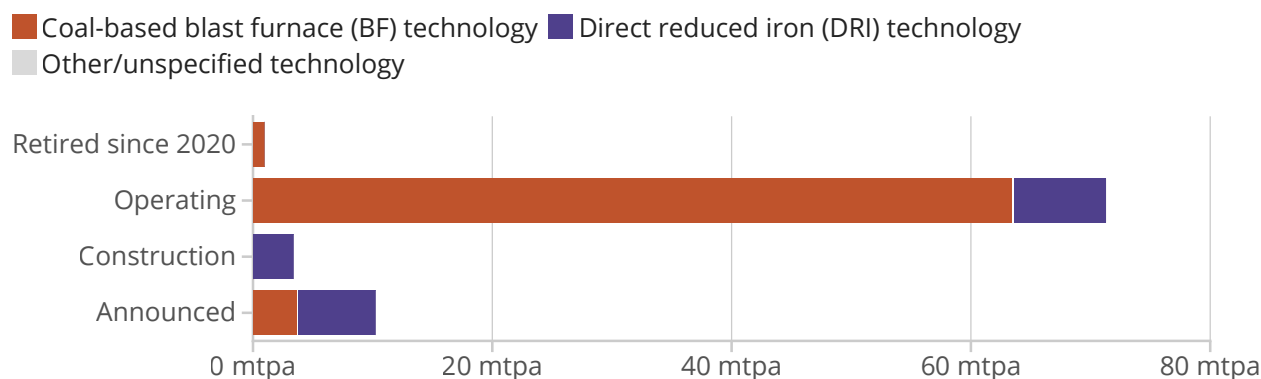
Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 20

Developing ironmaking capacity in Russia is predominantly direct reduced iron

Ironmaking capacity by status and technology type, million tonnes per year (mtpa)



Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 21

South Korea

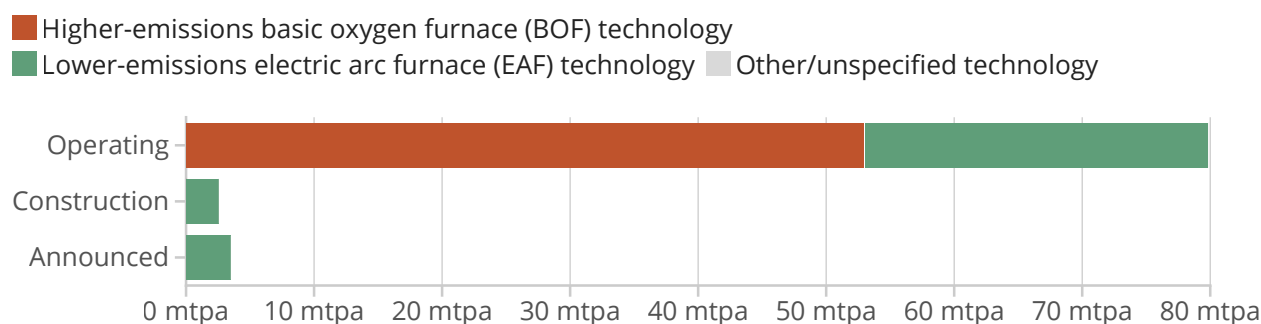
Operating iron and steel: South Korea's steelmaking capacity is largely high-emissions integrated BF-BOF capacity, with 53 mtpa of BOF capacity, 27 mtpa of EAF capacity, and 50 mtpa of BF capacity. South Korea has very little iron ore production, relies heavily on imports for steel production, and ranked [third](#) in global iron ore imports in 2023.

Transition updates and key policies: South Korea has a net-zero target of 2050. The country's [steel decarbonization strategy](#) involves hydrogen reduction, hydrogen injection in blast furnaces, and increasing scrap utilisation. POSCO, the country's largest steelmaking company, announced its plans to [cut emissions by 37%](#) by 2030 from 2021 levels and is developing its [HyREX process](#), a H₂-DRI-based green steelmaking process with a [commercialization plan](#) by 2030. However, POSCO, which houses some of the largest BFs in the world, has relined three BFs in the last five years and is set to reline a fourth one.

Coal-based production: Operating blast furnaces in South Korea have an average age of 32 years. None of the 50 mtpa of operating BF capacity is currently set to retire, and there are currently no announced plans for blast furnace developments.

All developing steelmaking in South Korea uses lower emissions technology, but operating capacity is predominantly coal based

Steelmaking capacity by status and technology type, million tonnes per year (mtpa)



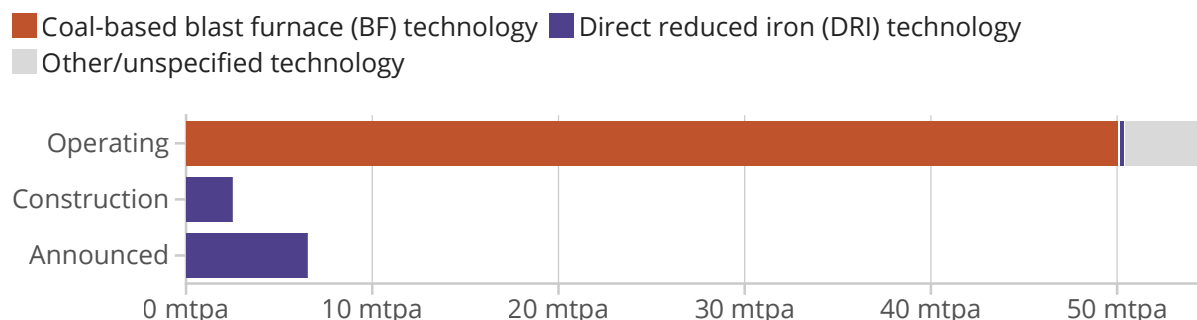
Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 22

All developing ironmaking in South Korea is direct reduced iron capacity, but operating capacity is heavily coal based

Ironmaking capacity by status and technology type, million tonnes per year (mtpa)



Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 23

Türkiye

Operating iron and steel: Most of Türkiye's operating steelmaking (76%) uses EAF technology, with 42 mtpa of EAF-based and 13 mtpa of BOF-based capacity. However, all operating ironmaking (14 mtpa) uses blast furnace technology. This indicates that Türkiye has developed significant secondary steelmaking capacity but has not yet invested in any primary steelmaking that is not coal based. Türkiye has an operating iron ore mine capacity of 18 mtpa, reserves of 1,398 million tonnes, and resources of 885 million tonnes.

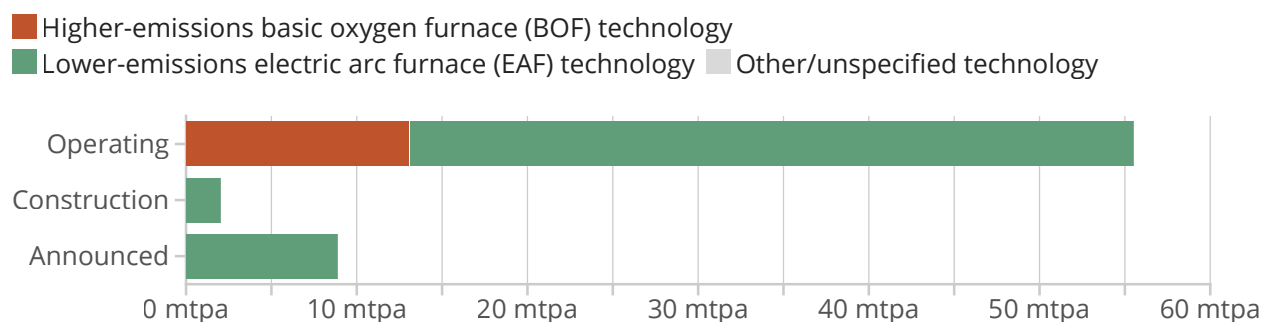
Transition updates and key policies: Türkiye has set a 2053 net-zero target. Türkiye launched a [low-carbon pathways \(LCP\)](#) initiative in 2024 to align the industry with 2053 net-zero goals, [outlining](#) a 17% emission reduction by 2030 and 99% by 2053. The LCP initiative's [decarbonization plan](#) utilizes high levels of DRI-EAF and DRI-Melt-BOF production, with this making up 45% of primary steel production in 2050. The plan is also heavily reliant on unproven CCUS technologies. Türkiye also announced a European Bank-funded [Türkiye Industrial Decarbonization Investment Platform](#) to deploy \$5 billion in investments toward

overall industrial decarbonization by 2030, though it is projected that the steel sector alone will need \$31 billion in investments by 2053 to reach these goals.

Coal-based production: Türkiye currently operates eleven blast furnaces with a capacity of at least 14 mtpa and has no announced plans to retire any of these units. The average age of its operating blast furnaces is 34 years. It has another 1 mtpa of blast furnace capacity under construction at the Kardemir Merkez steel plant.

Most operating and all developing steelmaking capacity in Türkiye uses lower-emissions technologies

Steelmaking capacity by status and technology type, million tonnes per year (mtpa)



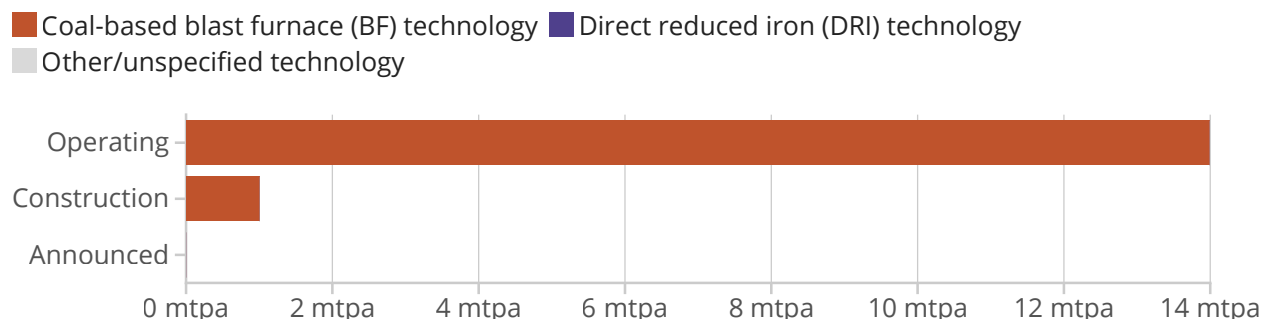
Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 24

All operating and developing ironmaking in Türkiye is coal-based blast furnace capacity

Ironmaking capacity by status and technology type, million tonnes per year (mtpa)



Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 25

Germany

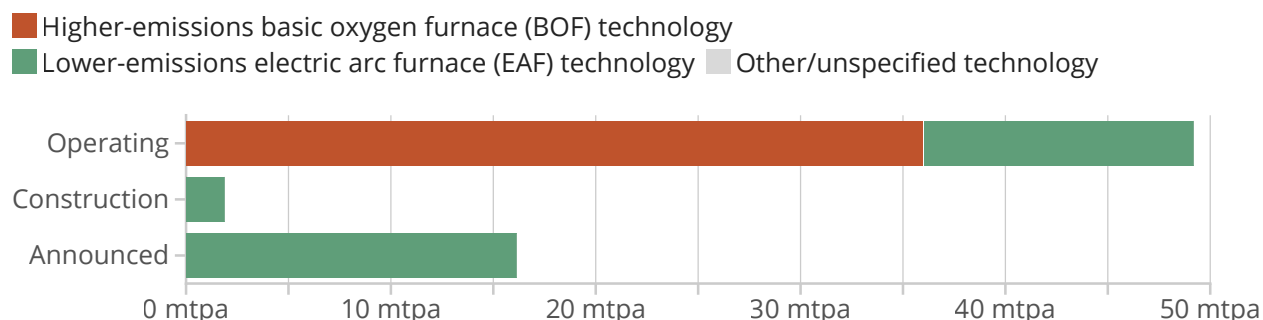
Operating iron and steel: Germany's operating steel industry is heavily coal based, with 73% of steelmaking using BOF technology. Germany has 32 mtpa of operating BF capacity, 36 mtpa of operating BOF capacity, 13 mtpa of operating EAF capacity, and <1 mtpa of operating DRI capacity. Germany has no reported operating iron ore mine capacity in GIOMT and imported [38 million tonnes](#) of iron ore in 2022.

Transition updates and key policies: Germany has a net-zero goal by 2045. As a member of the G7 and the European Union, Germany is part of some of the most ambitious emissions reduction goals. This includes Europe's [Carbon Border Adjustment Mechanism](#), set up to advantage green industry on the continent. Germany is also pursuing a [national hydrogen strategy](#) that could further support industrial decarbonization. However, walkbacks from major steel producers have raised concerns about the future of these goals. ArcelorMittal has delayed investment decisions for its European green steel projects, including the replacement of blast furnaces with green hydrogen DRI units at several plants, citing [slow policy progress](#) and [high costs](#). Similarly, Thyssenkrupp has [cast doubt](#) on its green steel transition plan at the Duisburg plant, also citing [economic uncertainty](#). Such backpedaling threatens Germany's the green steel transition.

Coal-based production: Germany has 14 operating blast furnaces with a combined capacity of 32 mtpa. All but one of these (BF #2 at the ArcelorMittal Bremen steel plant) have announced retirement plans, though as mentioned above these retirement plans are uncertain. Operating German blast furnaces have an average age of 55 years. Germany has 29 mtpa of operating blast furnace capacity planned for retirement and 9 mtpa of DRI capacity under development if all transition plans go forward.

Germany's operating steelmaking is mostly coal based, but all developing capacity uses lower-emissions technologies

Steelmaking capacity by status and technology type, million tonnes per year (mtpa)



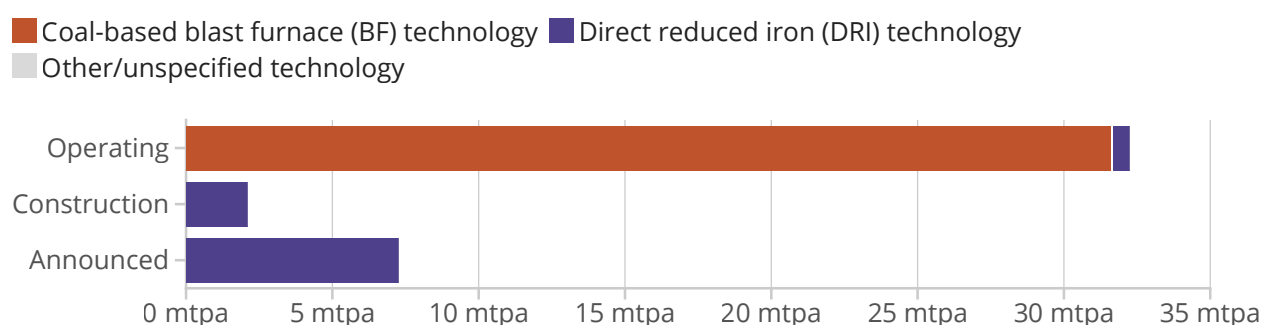
Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 26

Germany's operating ironmaking is almost all coal-based blast furnace capacity, but developments are direct reduced iron

Ironmaking capacity by status and technology type, million tonnes per year (mtpa)



Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 27

Iran

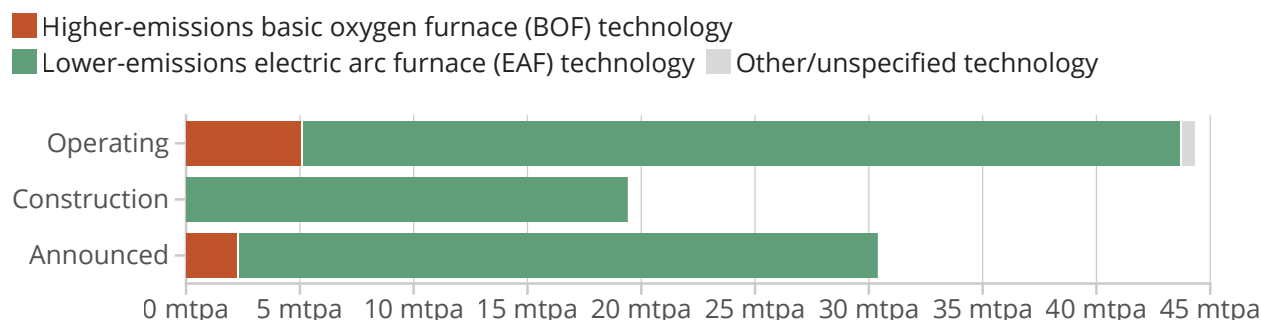
Operating iron and steel: Iran's operating capacity is dominated by methane-based DRI-EAF steelmaking, with around 12% using the BF-BOF route and the remainder using DRI-EAF. Iran has 5 mtpa of BF and BOF capacity, 39 mtpa of EAF capacity, and 44 mtpa of DRI capacity. Iron ore reserves of 329 million tonnes and resources of 2,798 million tonnes are reported in Iran, which has an operating iron ore mine capacity of 51 mtpa.

Transition updates and key policies: Iran has not set a net-zero target. Iran has seen large growth in the industry over the past decade due to [goals](#) set over ten years ago by the Iranian Mines & Mining Industries Development and Renovation Organization (IMIDRO) for approximately 55 mtpa of DRI capacity, 46 mtpa of EAF capacity, and 6 mtpa of BF-BOF capacity by 2025. Though the heavy reliance on DRI-EAF processes could facilitate a transition toward green hydrogen-based production, all of the DRI capacity with a known reductant in the GIST uses methane. Due to the country's [abundant](#) methane resources alongside its lack of industry transition plans, it is likely that this fossil-based production will continue.

Coal-based production: Iran has 5 mtpa of blast furnace capacity across four operating units. It has not announced retirement plans for any of these units. Steelmaking in Iran is not heavily coal dependent, instead using the country's methane reserves in DRI production. Though this is [less emissions-intensive](#) than coal-based DRI or BF-BOF production, this fossil-based production is still not aligned with net-zero goals for the industry.

Iran's operating and developing steelmaking largely uses lower-emissions technology

Steelmaking capacity by status and technology type, million tonnes per year (mtpa)



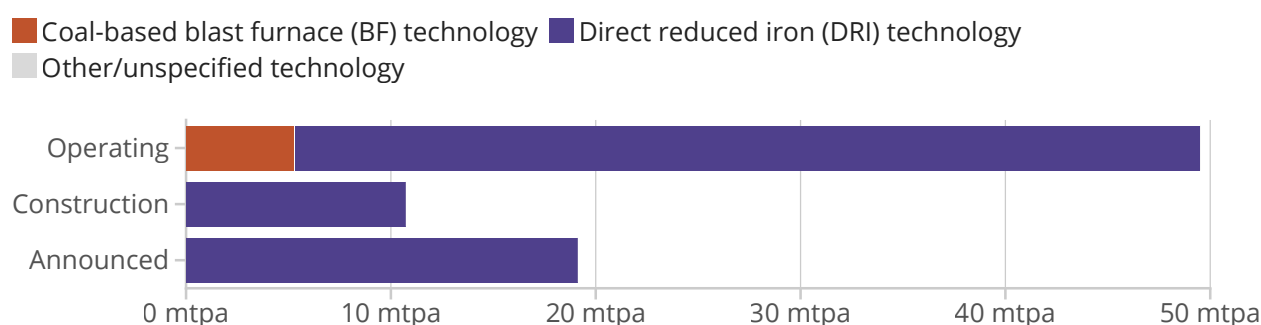
Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 28

Most of Iran's operating and all of its developing ironmaking capacity uses direct reduction technology

Ironmaking capacity by status and technology type, million tonnes per year (mtpa)



Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 29

Brazil

Operating iron and steel: Brazil currently relies on coal-based iron and steel production, with operating capacity comprising 33 mtpa of BOF capacity, 34 mtpa of BF capacity, 10 mtpa of EAF capacity, and zero DRI capacity. Brazil has the world's second-largest operating iron ore mine capacity (602 mtpa) after Australia and contributed to 21% of the 2023 global iron ore production. It has iron ore reserves of 19 billion tonnes and resources of 53 billion tonnes. While it constitutes only 2% of the global ironmaking capacity, it exports over [80%](#) of its iron ore production.

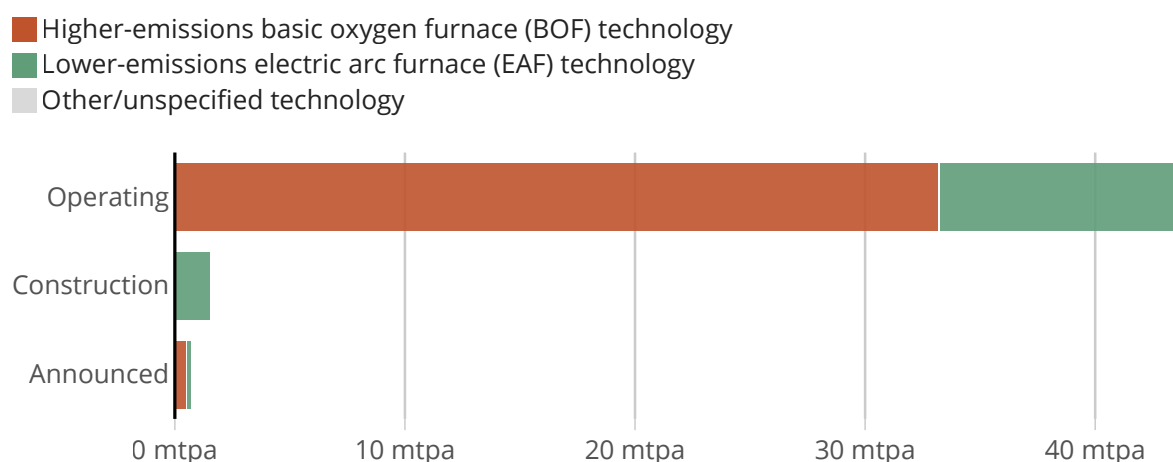
Transition updates and key policies: Brazil has set a goal for climate neutrality by 2050 and has outlined its commitment to cut emissions by [59–67%](#) by 2035 from 2005 levels. The Brazilian government is currently drafting a climate plan to identify the policies and actions needed to drive the sectoral reductions required to reach its net-zero goals. At the end of 2024, the Brazilian government passed a law setting the framework of its [GHG cap-and-trade system](#) (known as SBCE in Portuguese), which will be fully operational by 2030 and includes the steel sector. Brazil has the potential to develop low-carbon steel hubs by leveraging its high-grade iron ore capacity and renewable energy for hydrogen-based DRI production. The mining company Vale has continued to attract [partnerships](#) to develop the construction of large industrial hubs in Brazil to facilitate low-emissions iron and steel in Brazil.

Coal-based production: Despite the renewed commitments to reduce emissions, Brazil has yet to announce any detailed plan to phase out or reduce its coal-based iron facilities. The Brazilian iron and steel industry has attempted to reduce its carbon emissions in seven plants by using biochar from harvested eucalyptus instead of traditional coal. The effort has rendered limited results and scalability, with some sources indicating that the upstream impacts of biochar

such as deforestation [can negate or even exceed](#) the emissions saved in the direct ironmaking process. Brazil currently operates 29 blast furnaces with a total capacity of 34 mtpa, none of which have announced retirement plans.

Steel capacity in development in Brazil is mostly electric arc furnace, while legacy production is emissions intensive

Steelmaking capacity by status and technology type, million tonnes per year (mtpa)



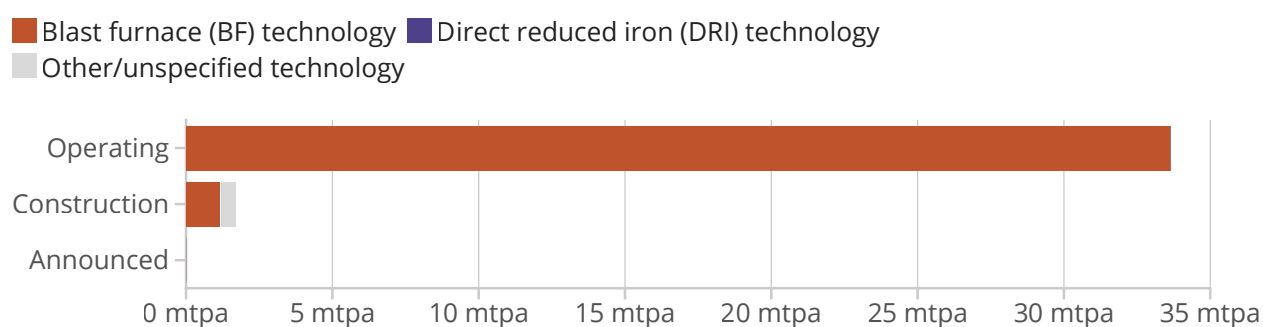
Source: Global Iron and Steel Tracker, Global Energy Monitor



Figure 30

Virtually all operating and developing ironmaking in Brazil uses coal-based blast furnace technology

Ironmaking capacity by status and technology type, million tonnes per year (mtpa)



Source: Global Iron and Steel Tracker, Global Energy Monitor

Note: Some blast furnace units in Brazil use biochar rather than coal.

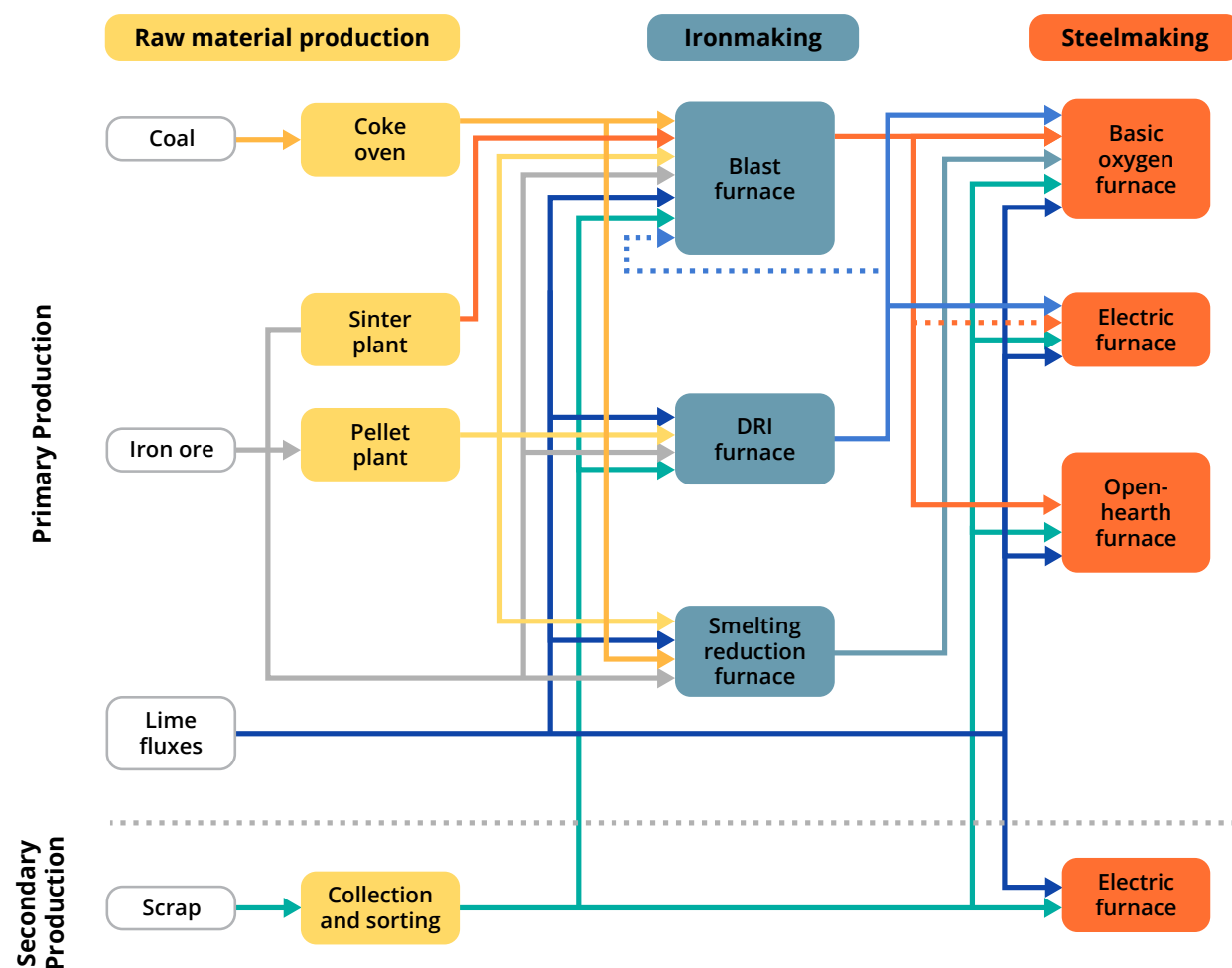


Figure 31

Appendix A

Main steel production pathways

Steelmaking currently uses two main production routes: (1) integrated blast furnace-basic oxygen furnace (BF-BOF) and (2) electric arc furnace (EAF) steelmaking, which typically uses a feed mix of direct reduced iron (DRI) and/or steel scrap. Open-hearth furnaces (OHF) are less commonly used, accounting for <1% of global steel capacity. The figure below displays the main steelmaking pathways, though there are increasingly additional pathways emerging as decarbonization potential is explored.



Source: [Iron and Steel Technology Roadmap](#), IEA, October 2020, as modified by Global Energy Monitor. All rights reserved.

Appendix B

Sector emissions

There are generally three categories used to describe steel emissions: Scope 1 or “direct” emissions result from onsite processes and fuel use during production at the plant; scope 2 emissions are from purchased electricity, often estimated using the approximate CO₂ intensity of the grid supplying the power; and scope 3 emissions include processes upstream and downstream of the plant’s production, covering, for example, raw materials transportation and processing the steel into final products. Reported steel emissions intensities typically include scope 1 and 2 emissions only.

Process emissions

In most production configurations, EAFs emit carbon with far less intensity than the traditional BF-BOF steelmaking route. The BF-BOF process, which uses coal as a reducing agent, produces enormous amounts of CO₂ — around 2.2 tonnes of CO₂/tonne of steel (t CO₂/t steel) when including both scope 1 and scope 2 emissions. Coal is the primary source of carbon emissions in global steel production. The blast furnace process can never be fully decarbonized because of the integral nature of coal in production, making it an unsustainable technology for the industry in the long run.

EAFs cut emissions dramatically when using recycled scrap, which is the dominant feedstock today. However, EAF carbon emissions vary widely depending on each unit’s unique operation. Considering scope 1 and 2 emissions, EAFs using scrap as the primary feedstock emit around 0.3 t CO₂/t steel on average, whereas those using methane-based¹⁰ direct reduced iron (DRI) have higher carbon intensities of around 1.4 t CO₂/t steel. In scrap-based EAF steel production, most CO₂ emissions

10. Methane-based DRI is also known as natural gas-based DRI.

come from the generation of the electricity consumed by the EAF, whereas in methane-DRI-EAF, most emissions are produced directly in ironmaking, in addition to a comparable level of indirect EAF steelmaking emissions. Additionally, EAF production typically does not account for the [embodied emissions](#) of scrap used as feed.

DRI process emissions can vary widely depending on the reductant used. Coal-based DRI can produce [three times](#) the direct emissions as methane-based DRI, whereas DRI produced using green hydrogen can be configured to produce iron with net-zero scope 1 and 2 emissions. Established steel decarbonization pathways [rely heavily](#) on green H₂-DRI-EAF production, as this is the most commercially available near-zero emissions technology.

There is also a distinction between DRI unit types and their decarbonization potential. For example, most methane-based shaft furnace models are [hydrogen-capable](#), meaning they can switch to this lower-emissions reductant, but most coal-based rotary kiln capacity cannot be easily transitioned to hydrogen. So, while DRI ironmaking can lend itself to decarbonization more so than blast furnace-based production, operators need to commit to clear green hydrogen transition plans alongside any DRI developments in order to align with net-zero goals.

Carbon capture, use, and storage (CCUS) technologies have [yet to be proven on a large scale](#), and while they are incorporated into net-zero scenarios, they can not represent the bulk of emissions reduction measures.

Indirect emissions

In addition to direct emissions from production, indirect emissions from energy use add another [1.1 gigatonnes](#) (42% the size of direct emissions) to total steelmaking emissions.¹¹ Scope 2 emissions produced in electricity generation

11. This figure only reflects emissions from indirect energy use, not all indirect emissions. This is a total of 3.7 Gt, consisting of 2.6 Gt from direct emissions and 1.1 Gt indirect energy use emissions.

can vary greatly depending on the carbon intensity of the electricity source, oftentimes the local grid, meaning that the development of energy systems using renewable power is another important element in working toward net zero. This is particularly relevant in EAF production, where the [bulk of emissions are scope 2](#), but is a critical piece in decarbonizing all facilities.

There are also significant unreported emissions from metallurgical coal mining-related methane that are not included in most estimates. If these emissions were factored into steelmaking emissions models, the actual footprint could be as much as [27%](#) higher than currently reported. Please see GEM's [2022 Pedal to the Metal report](#), which describes coal mine methane leaks in more detail, and visit the [Global Methane Emitters Tracker](#) for more data on methane emissions from various sources including coal mines.

Benchmarking emissions reductions

This report references several emissions reduction roadmaps or benchmarking tools in looking at 2030 progress. The International Energy Agency's [Iron and Steel Technology Roadmap](#), [2021 Net Zero by 2050 Roadmap](#), and [2023 revised Net Zero Roadmap](#) are a few of these evaluation mechanisms. The clearest points of comparison between these sources and GEM's data are iron and steel production breakdowns by technology. The IEA states that in order to align with [2050 net-zero goals by 2030](#), scrap should represent 38% of metallic inputs, and DRI should represent 17% of iron production, nearly 30% of which should use hydrogen as a reductant. However, because many of these goals have not been updated in several years, it is important to note that some milestones might have changed or may need to be adjusted given the industry's actual decarbonization progress.

Appendix C

Average emissions and energy intensities of main steelmaking pathways

Production Route ¹²	Average Emissions Intensity (tonnes CO ₂ per tonne of steel; indirect + direct)	Average Energy Intensity (GJ per tonne of steel)	Source/Notes
BF-BOF	2.2 ^a	20.8 ^{b,13}	^a IEA Iron and Steel Technology Roadmap; ^b Hasanbeigi, A. and Springer, C. 2019
EAF (scrap-based)	0.3 ¹⁴	2.1	IEA Iron and Steel Technology Roadmap
EAF (natural gas-based DRI)	1.4	17.1	IEA Iron and Steel Technology Roadmap
EAF (natural gas-based DRI with CCUS)	0.57		IEA Iron and Steel Technology Roadmap
EAF (coal-based DRI; rotary kiln) ¹⁵	3.2		Sohn (2019)
EAF (coal-based DRI; COREX/FINEX) ¹⁶	1.3–1.8		Sohn (2019)
EAF (hydrogen-based DRI)	0.71 ¹⁷		IEA Iron and Steel Technology Roadmap

12. Open hearth furnace (OHF) steelmaking emissions intensity is not included because it accounts for <1% global steelmaking capacity.

13. Weighted average final energy intensity from top fifteen steel producing countries in 2016.

14. Embodied emissions of scrap not included in estimate. [Fan, Z. and Friedmann, J. 2021](#) offers an estimate of 0.8 t CO₂/t crude steel when considering embodied emissions of scrap steel.

15. Emissions from coal-based DRI range widely based on the production process used. Rotary kilns, which provide continuous DRI production from a cylindrical rotating vessel, result in 3.2 t CO₂/t crude steel while the COREX/FINEX process, which produces DRI in batches from a series of fluidized bed reactors, results in 1.3–1.8 t CO₂/t crude steel. The majority of coal-based DRI occurs in India where both rotary kiln and COREX/FINEX processes are used, giving India a blended national carbon intensity of [2.1 t CO₂ / t crude steel](#) for coal-based DRI steel production. [Fan, Z. and Friedmann, J. 2021](#) also offers an estimate of 2.0 t CO₂/t crude steel.

16. Ibid.

17. The CO₂ intensity for hydrogen-based DRI-EAF steelmaking varies widely based on electricity source. This estimate uses an electricity CO₂ intensity of 144 g CO₂/kWh, which is the global average CO₂ intensity assumed under the IEA's Sustainable Development Scenario in 2035. This average is roughly 60% [below](#) the 2020 CO₂ intensity of the United States power sector (366 g CO₂/kWh). Using variable renewable energy (VRE) could potentially eliminate CO₂ emissions in steelmaking.

Appendix D

Operating steelmaking capacity by country/area and production process

Country/area	Total Capacity	BOF	EAF	Other/unspecified
China	1,055,830	894,959	160,871	0
India	135,179	82,394	31,278	21,507
United States	112,806	33,023	79,783	0
Japan	104,073	76,600	27,473	0
Russia	85,806	52,801	33,005	0
South Korea	79,828	53,000	26,828	0
Türkiye	55,533	13,102	42,431	0
Germany	49,200	36,000	13,200	0
Iran	44,299	5,100	38,599	600
Brazil	43,602	33,211	10,391	0
Vietnam	34,428	20,876	9,202	4,350
Italy	31,236	7,800	23,436	0
Taiwan	23,602	15,001	8,601	0
Mexico	22,391	2,500	19,891	0
Indonesia	20,200	11,980	8,220	0
Spain	19,440	5,400	14,040	0
France	18,245	11,850	6,395	0
Ukraine	17,505	12,255	2,320	2,930
Egypt	16,600	0	16,600	0
Canada	15,700	9,000	6,700	0
Malaysia	13,170	6,200	6,170	800
Saudi Arabia	12,000	0	11,650	350
Algeria	11,350	350	11,000	0
North Korea	10,252	4,500	3,502	2,250
Poland	9,691	5,001	4,690	0
Thailand	9,285	0	8,555	730
Belgium	8,000	5,000	3,000	0
Argentina	7,871	3,501	4,370	0
Austria	7,570	7,570	0	0

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Operating steelmaking capacity by country/area and production process — *Continued*

Country/area	Total Capacity	BOF	EAF	Other/unspecified
Netherlands	7,500	7,500	0	0
South Africa	6,709	5,259	1,450	0
Czech Republic	6,400	6,200	200	0
United Kingdom	6,121	3,201	2,920	0
Kazakhstan	6,000	6,000	0	0
Australia	5,930	4,400	1,530	0
Bangladesh	5,676	0	3,040	2,636
Romania	5,035	3,200	1,835	0
Sweden	4,813	3,800	1,013	0
Slovakia	4,500	4,500	0	0
Finland	4,375	2,600	1,775	0
Oman	4,300	0	4,300	0
United Arab Emirates	4,200	0	3,600	600
Morocco	4,000	0	4,000	0
Iraq	3,335	0	3,335	0
Belarus	3,000	0	3,000	0
Greece	2,850	0	2,850	0
Serbia	2,699	2,199	500	0
Qatar	2,574	0	2,574	0
Pakistan	2,398	0	450	1,948
Luxembourg	2,350	0	2,350	0
Syria	2,200	0	2,200	0
Peru	2,000	0	2,000	0
Bosnia and Herzegovina	1,940	1,140	800	0
Portugal	1,700	0	1,700	0
Libya	1,614	0	1,614	0
Hungary	1,600	1,600	0	0
Philippines	1,500	0	1,500	0
Bulgaria	1,400	0	1,400	0
Switzerland	1,370	0	1,370	0

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Operating steelmaking capacity by country/area and production process — *Continued*

Country/area	Total Capacity	BOF	EAF	Other/unspecified
Kuwait	1,200	0	1,200	0
Bahrain	1,100	0	1,100	0
Venezuela	1,020	0	1,020	0
Kenya	1,000	0	1,000	0
Moldova	1,000	0	1,000	0
Uzbekistan	900	0	900	0
Azerbaijan	800	0	800	0
Ghana	800	0	800	0
Norway	770	0	770	0
Slovenia	726	0	726	0
Singapore	720	0	720	0
New Zealand	670	670	0	0
Nigeria	600	0	600	0
Zimbabwe	600	0	600	0
North Macedonia	550	0	550	0
Chile	520	0	520	0
Angola	500	0	0	500
Guatemala	500	0	500	0
Uganda	450	0	450	0
World	2,199,407	1,461,243	698,963	39,201

Appendix E

Operating ironmaking capacity by country/area and production process

Country/area	Total Capacity	BF	DRI	Other/unspecified
China	898,060	894,023	2,410	1,627
India	151,617	113,134	35,083	3,400
Japan	86,290	85,514	776	0
Russia	71,305	63,525	7,780	0
South Korea	54,690	50,090	300	4,300
Iran	49,509	5,300	44,209	0
Brazil	33,636	33,636	0	0
United States	32,485	25,825	6,660	0
Germany	32,247	31,647	600	0
Ukraine	18,882	18,882	0	0
Taiwan	16,020	16,020	0	0
Vietnam	15,920	15,920	0	0
Türkiye	13,988	13,988	0	0
Indonesia	12,060	10,560	1,500	0
Algeria	9,500	1,500	8,000	0
Canada	9,048	7,398	1,650	0
France	8,900	8,900	0	0
Egypt	8,120	0	8,120	0
Mexico	7,312	1,452	5,860	0
Malaysia	7,300	6,400	900	0
Saudi Arabia	6,700	0	6,700	0
Austria	6,651	6,650	1	0
South Africa	6,648	5,244	1,404	0
Kazakhstan	6,450	6,450	0	0
Netherlands	6,310	6,310	0	0
Venezuela	6,310	0	6,310	0
Argentina	5,575	4,015	1,560	0
North Korea	5,249	5,249	0	0
Belgium	5,000	5,000	0	0

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Operating ironmaking capacity by country/area and production process — *Continued*

Country/area	Total Capacity	BF	DRI	Other/unspecified
Slovakia	5,000	5,000	0	0
Spain	4,700	4,700	0	0
Poland	4,500	4,500	0	0
Australia	4,200	4,200	0	0
United Arab Emirates	4,200	0	4,200	0
Sweden	4,114	4,105	9	0
Italy	4,000	4,000	0	0
United Kingdom	3,000	3,000	0	0
Finland	2,600	2,600	0	0
Czech Republic	2,100	2,100	0	0
Trinidad and Tobago	2,000	0	2,000	0
Oman	1,820	0	1,820	0
Libya	1,806	0	1,806	0
Qatar	1,700	0	1,700	0
Bahrain	1,600	0	1,600	0
Serbia	1,300	1,300	0	0
Uganda	1,200	0	1,200	0
Bosnia and Herzegovina	1,100	1,100	0	0
New Zealand	652	0	652	0
Zimbabwe	600	600	0	0
Kenya	500	0	500	0
Syria	300	300	0	0
Angola	96	96	0	0
World	1,644,870	1,480,233	155,310	9,327

Appendix F

Steel capacity under development by technology type

Basic Oxygen Furnace

Country/area	Announced BOF capacity (ttpa)	BOF capacity under construction (ttpa)	Total BOF capacity under development (ttpa)
India	179,407	20,412	199,819
China	49,165	35,088	84,253
Vietnam	14,000	4,700	18,700
Philippines	0	12,000	12,000
Malaysia	6,600	5,000	11,600
Indonesia	7,000	0	7,000
Myanmar	4,000	0	4,000
Cambodia	3,100	0	3,100
Iran	2,280	0	2,280
Nigeria	0	1,300	1,300
Czech Republic	1,300	0	1,300
Russia	1,141	0	1,141
Kazakhstan	818	0	818
Sri Lanka	0	600	600
Brazil	500	0	500
World	269,311	79,100	348,411

Electric Arc Furnace

Country/area	Announced EAF capacity (ttpa)	EAF capacity under construction (ttpa)	Total EAF capacity under development (ttpa)
China	26,897	28,553	55,450
Iran	28,100	19,413	47,513
India	24,693	5,690	30,383
Germany	16,150	1,900	18,050
Vietnam	17,180	0	17,180
Türkiye	8,900	2,000	10,900
Sweden	5,000	4,000	9,000
Philippines	7,000	1,800	8,800

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Steel capacity under development by technology type — *Continued*

Electric Arc Furnace — *Continued*

Country/area	Announced EAF capacity (ttpa)	EAF capacity under construction (ttpa)	Total EAF capacity under development (ttpa)
Saudi Arabia	8,000	630	8,630
United States	2,650	5,616	8,266
Australia	7,000	0	7,000
France	6,800	0	6,800
Netherlands	6,580	0	6,580
United Kingdom	6,380	0	6,380
Canada	2,400	3,700	6,100
Italy	6,100	0	6,100
Japan	5,900	115	6,015
South Korea	3,500	2,500	6,000
Romania	5,300	500	5,800
Russia	1,470	4,030	5,500
Finland	5,100	0	5,100
Oman	0	5,100	5,100
Czech Republic	1,300	3,500	4,800
Mexico	1,500	3,250	4,750
Namibia	0	4,500	4,500
Spain	2,600	1,100	3,700
Bangladesh	1,400	2,250	3,650
South Africa	3,600	0	3,600
Austria	0	3,300	3,300
Nigeria	3,000	0	3,000
Hungary	3,000	0	3,000
Libya	2,700	0	2,700
Uzbekistan	1,500	1,040	2,540
Belgium	2,500	0	2,500
Thailand	2,500	0	2,500
Egypt	2,000	0	2,000
Algeria	1,800	0	1,800

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Steel capacity under development by technology type — *Continued*

Electric Arc Furnace — *Continued*

Country/area	Announced EAF capacity (ttpa)	EAF capacity under construction (ttpa)	Total EAF capacity under development (ttpa)
Brazil	200	1,500	1,700
Taiwan	1,500	0	1,500
Pakistan	1,280	0	1,280
Luxembourg	0	1,250	1,250
Indonesia	1,200	0	1,200
Kazakhstan	1,200	0	1,200
Zimbabwe	1,200	0	1,200
Angola	1,000	0	1,000
Bolivia	500	200	700
Hong Kong	700	0	700
New Zealand	0	650	650
Malaysia	500	0	500
Iraq	0	500	500
Mozambique	0	500	500
Myanmar	0	200	200
World	239,780	109,287	349,067

Appendix G

Iron capacity under development by technology type

Blast Furnace

Country/area	Announced BF capacity (ttpa)	BF capacity under construction (ttpa)	Total BF capacity under development (ttpa)
India	127,559	14,300	141,859
China	55,696	49,532	105,228
Vietnam	7,800	6,180	13,980
Malaysia	6,600	5,000	11,600
Zimbabwe	5,270	0	5,270
Pakistan	4,500	0	4,500
Myanmar	4,000	0	4,000
Russia	3,700	0	3,700
Cambodia	3,100	0	3,100
Indonesia	3,000	0	3,000
Philippines	0	1,790	1,790
Nigeria	0	1,355	1,355
Brazil	0	1,200	1,200
Türkiye	0	1,000	1,000
Kazakhstan	728	0	728
Angola	423	0	423
Japan	0	50	50
World	222,376	80,407	302,783

Direct Reduced Iron

Country/area	Announced DRI capacity (ttpa)	DRI capacity under construction (ttpa)	Total DRI capacity under development (ttpa)
India	27,602	5,752	33,354
Iran	19,100	10,710	29,810
Australia	17,500	0	17,500
United States	4,500	7,000	11,500
Libya	10,100	0	10,100
Russia	6,540	3,400	9,940

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Iron capacity under development by technology type — *Continued*

Direct Reduced Iron — *Continued*

Country/area	Announced DRI capacity (ttpa)	DRI capacity under construction (ttpa)	Total DRI capacity under development (ttpa)
Oman	5,000	4,500	9,500
Germany	7,250	2,100	9,350
South Korea	6,500	2,500	9,000
Saudi Arabia	7,500	0	7,500
Sweden	4,800	2,100	6,900
France	6,500	0	6,500
Netherlands	5,655	0	5,655
Italy	5,000	0	5,000
Spain	4,300	0	4,300
Kazakhstan	4,000	0	4,000
Finland	4,000	0	4,000
Uzbekistan	0	3,600	3,600
Malaysia	2,500	0	2,500
Canada	2,500	0	2,500
Romania	2,500	0	2,500
Belgium	2,500	0	2,500
Thailand	2,500	0	2,500
Egypt	2,500	0	2,500
Algeria	2,500	0	2,500
Bangladesh	2,200	0	2,200
Mexico	0	2,100	2,100
Angola	1,200	0	1,200
Mozambique	0	1,100	1,100
China	1,000	0	1,000
Nigeria	0	1,000	1,000
Namibia	0	1,000	1,000
Myanmar	0	500	500
Bolivia	0	250	250
World	167,747	47,612	215,359