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Latest developments in steelmaking capacity

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Executive Summary

- **Steelmaking excess capacity is on the rise again and is expected to be as high as in 2014, at the start of the last steel crisis.** The bleak outlook for steel demand and the increasing relocation of steel capacity from the People’s Republic of China (hereafter “China”) to other regions create a worrying outlook for the coming years. This is also a major obstacle to achieving steel decarbonisation targets.
- **The ongoing steel excess capacity crisis is currently escalating.** Steelmaking capacity is forecast to increase to 2 498 million metric tonnes (mmt) by the end of 2023, marking the 5th consecutive year of growth, and outpacing the latest projections for steel demand. The capacity increase this year of 57 mmt translates into the highest annual volume increase in global capacity in a decade. For purposes of comparison, the global increase this year alone is roughly equivalent to the existing level of capacity of a major steel-producing economy, for example that of Brazil or Germany. Regional developments show significant capacity growth in Africa, ASEAN and the Middle East, while the two largest steel producing economies, China and India, which currently account for 47% and 6% of world capacity respectively, are also contributing to the expansion. Strategic planning is essential to ensure market stability.
- **Unfortunately, the problem of overcapacity is expected to become even more acute in the future.** Global steelmaking capacity is projected to increase significantly over the next three years (2024-2026), with 46 mmt of capacity additions underway and an additional 78 mmt in the planning stage. At the same time, prospects for global steel demand growth are clouded by growing risks of a serious downturn in Chinese steel demand as a consequence of the real estate downturn and its ripple effects on financial markets and the economy.
- **Excess capacity is leading to difficult market conditions and contributes to climate concerns.** The global capacity utilisation rate has deteriorated for two years in a row. In 2023, the global steel capacity-production gap has widened, reaching 610 mmt in annualised terms, in the midst of growing market challenges. Excess capacity is also contributing significantly to emissions from the steel industry. Back-of-the-envelope calculations show that even a partial reduction in global excess capacity (by approximately one-third) would lead to a reduction in the emissions of the global steel sector in the range of 2%-14%, and to much healthier business conditions for steel producers.
- **Chinese steel companies are investing significantly overseas, specifically in ASEAN and other parts of Asia, as well as Africa.** Capacity expansions by Chinese companies in third countries, through cross-border investments, account for 65.1% of total cross-border investments in new steelmaking capacity taking place around the world. Their investments in ASEAN account for 81% of the region's total capacity expansion. Furthermore, the information analysed in this report suggest that outdated induction furnaces, which do not meet environmental and product quality standards, are frequently imported into ASEAN economies, raising concerns in local communities.
- **Most of the new investments in Asia involve traditional blast furnace/basic oxygen furnace (hereafter, BF/BOF) plants.** Other regions are seeing more moderate increases in capacity, with a focus on electric-arc furnaces (EAF). There are also 65 new low-carbon steel projects taking place around the world involving new innovative technologies.

1. Introduction

This report provides an in-depth analysis of recent steelmaking capacity developments taking place around the world, and expectations for the next few years. The report includes data updates and information from news reports and press releases of each individual company, extending until end-June 2023. The insights drawn from this report can help policymakers and stakeholders better assess potential risks that can impact global steel market conditions in the medium to longer term.

Indeed, in the context of significant excess capacity in the global steel industry, it is important to monitor investments and steel plant closures in order to understand the current situation and emerging risks that may impact the industry in the future. This includes general capacity trends but also the technologies being invested in, given the decarbonisation challenges facing the industry in the years ahead.

The data presented in this report indicate that investments in new capacity continue to advance at a robust pace in several regions, particularly in Asia where most of the new investments involve traditional BF/BOF plants. Other regions are seeing more moderate increases in capacity, with a focus on EAF. In the future, the Secretariat aims to enhance its capacity monitoring work to take into account breakthrough and other new technologies used for making steel.

This report also provides important data and explanations for the reader in the annexes. Annex A and B present detailed tables with data on each capacity expansion and closure by project. Annex C provides a table that shows the level of steelmaking capacity (in mmt) by economy, while Annex D contains a table with data on the gap between global steelmaking capacity and production since 2010. Annex E describes the working definitions used throughout this report.

2. Latest updates on steelmaking capacity

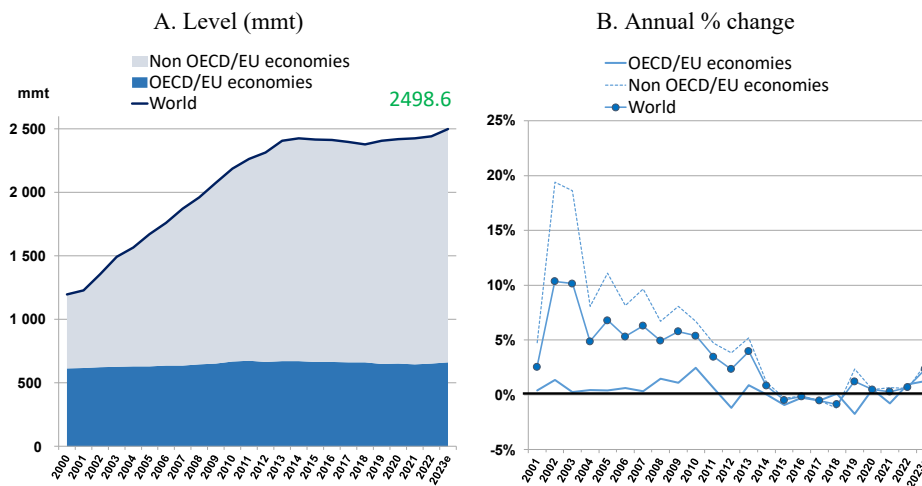
2.1 Global summary

Global steelmaking capacity is on the rise again. Following a gradual decline for several years in the aftermath of the steel crisis of 2015, capacity levels started to climb higher in 2019 and have continued to expand for five consecutive years. This year, global capacity is projected to reach an all-time record level of 2 498.6 mmt, despite increasingly challenging market conditions, according to the latest available information (as of end-June 2023).

The global capacity increase this year alone amounts to 57.1 mmt, i.e. an annual rate of increase of 2.3%, compared to the level observed at the end of 2022 (Figure 1). This is the first time in 10 years that the annual increase in global capacity exceeds 50 mmt. In term of the sources of this growth, Asia accounts for 30.5 mmt or 53.3% of this year's global increase.

China is expected to add 23.4 mmt of capacity in 2023, though this could be the result of an increase that offsets closures in previous years associated with the “Implementation Measures for Capacity Replacement in the Iron and Steel Industry legislation”, which came into force in 2018 (Kallanish, 2021^[1]). No net increase is foreseen under this law, thus the mismatch in timing of new capacity starts that replace closures, and the possibility that information on new capacity and closures may have been under-disclosed, may explain the net increase in capacity in a given year. Indeed, closures in Chinese capacity in 2017 and 2018 are being replaced with capacity in 2023 (S&P Global, 2023^[2]).

Figure 1. Evolution of crude steelmaking capacity in OECD and non-OECD economies



Note: Capacity data are in net terms (taking into account capacity additions and closures) and reflect information available up to June 2023.

Source: OECD

2.2 Regional capacity developments

Regional developments over the last five years show some important trends. Table 1 shows that between 2019 and 2023, steelmaking capacity in the OECD

area increased slightly, doing so by 12.4 mmt (+1.9%) to 662.1 mmt, while in the non-OECD area it increased by 79.2 mmt (+4.5%) to 1 836.5 mmt. In other words, non-OECD capacity grew more than twice as fast as the OECD capacity. As such, the OECD area currently accounts for only 26% of global capacity, a trend that has been in decline during the last two decades. Measures to boost the competitiveness and productivity of the industry in countries that participate in the Steel Committee, including to meet growing demand for green steel, would help preserve market shares over the longer term.

In terms of their growth rates over the last five years, the Middle East, ASEAN and Africa rank highest, although the latter from a relatively low base. Although Asia as a whole has posted a relatively low growth rate of 2.5% during the last five years, it ranks highest of all regions in terms of the sheer tonnage volume of its capacity gain.

The two largest steel-producing economies (China and India) currently account for 47% and 6% of world capacity, respectively. Given China's much larger size, even small growth rates can lead to significant changes in volumes, which can be challenging for international steel markets. China's capacity is expected to reach 1 173.3 mmt in 2023, while India's should climb to 138.4 mmt. However, it should be noted that there are stark differences in steel demand prospects in these economies. While prospects for demand growth are favourable in India, China faces significant risks of emerging market imbalances. From the perspective of global steel market conditions, all participants in the Steel Committee should strive to ensure that growth in capacity remains well aligned with demand prospects, also taking into account their own decarbonisation goals as well.

Table 1. Steelmaking capacity development by region (mmt)

	2019	2020	2021	2022	2023e	2019vs 2023e(%)	2019vs 2023e(volume)
Africa	44.6	44.7	43.5	45.8	51.4	15.1%	6.8
Asia	1,616.5	1,622.5	1622.6	1626.1	1656.6	2.5%	40.1
China	1,148.3	1,147.9	1146.5	1149.9	1173.3	2.2%	25.0
India	128.7	128.7	133.9	133.9	138.4	7.5%	9.7
ASEAN	74.6	78.7	80.4	80.4	82.9	11.1%	8.3
CIS	143.4	142.6	143.9	145.0	145.1	1.2%	1.7
Europe	287.4	287.5	288.1	289.3	294.3	2.4%	7.0
EU	216.0	213.4	213.4	213.4	213.6	-1.1%	-2.32
Other Europe	71.4	74.1	74.7	75.9	80.7	13.0%	9.3
Latin America	73.9	73.4	73.9	73.9	75.9	2.7%	2.0
Middle East	80.7	84.1	89.0	92.3	103.3	28.0%	22.6
North America	154.2	157.5	157.7	162.8	165.8	7.5%	11.6
Oceania	6.4	6.4	6.4	6.4	6.4	0.0%	0.0
OECD/EU economies Total	649.7	653.1	647.8	654.1	662.1	1.9%	12.4
non-OECD/EU economies Total	1,757.3	1,765.5	1777.3	1787.4	1836.5	4.5%	79.2
World Total	2,407.0	2,418.6	2425.2	2441.5	2498.6	3.8%	91.6

Note: "e" denotes estimation. The capacity data reflect information up to June 2023. The table "Europe" includes both OECD/EU economies and non-OECD/EU economies in Europe, as well as Türkiye. Please see Annex C for detailed capacity data by individual economies. Figures for the European Union (EU) include all EU Member States.

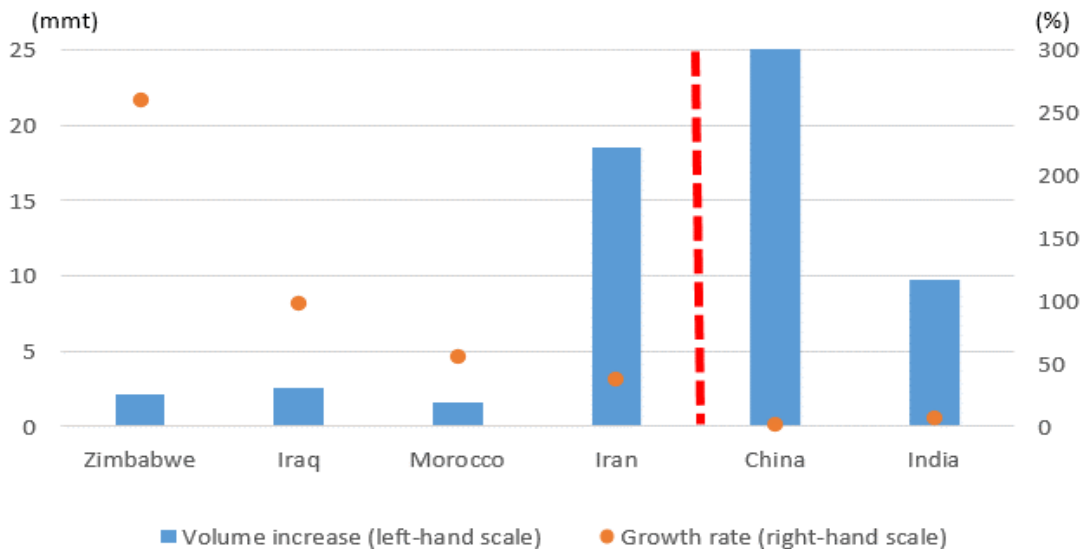
Source: OECD

While much of the focus related to capacity is on major players, it is also important to monitor developments in smaller steel-producing countries that are growing rapidly. Figure 2 shows the economies with the highest growth rates between 2019 and 2023 (of producers with more than 3 mmt capacity), and

compares them with major players (China and India). In Africa, Zimbabwe (3.0 mmt capacity in 2023) is still a very small steel-producing economy, but could increase its capacity by 260.1%, helped by cross-border investment activity. The capacity of Morocco (4.4 mmt) is experiencing higher growth relative to the region's bigger producers such as Algeria, Egypt, Nigeria and South Africa, and now ranks fifth-largest producer in the region.

In the Middle East, Iraq (5.2 mmt) increased its capacity by 2.6 mmt over the last five years, making it the economy with the third largest capacity in the Middle East, after Iran and Saudi Arabia. Iran (already with 66.8 mmt of capacity), has five times the capacity of Saudi Arabia, the second largest steel economy in the Middle East. Indeed, Iran could account for 64.7% of total Middle East capacity by 2023, driving the region's capacity expansion. Iran added 18.5 mmt of capacity during the last five years, which is more than India, the second largest steelmaking economy in the world.

Figure 2. Economies with highest steel capacity growth between 2019 and 2023e

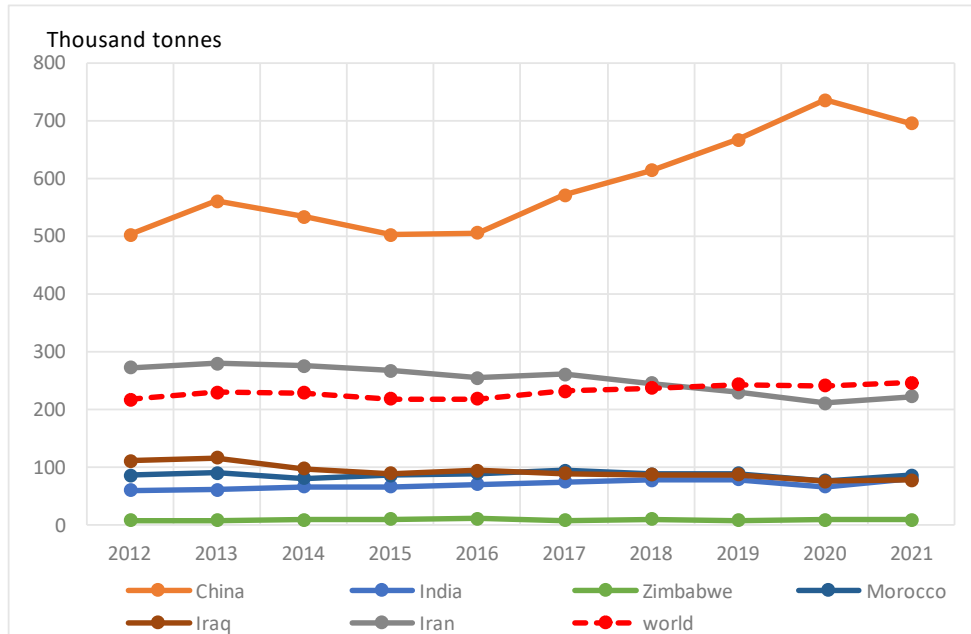


Source: OECD

Much of these capacity expansions reflect the economic development taking place in the relevant economies. Indeed, the rapid expansion of capacity is a regular feature of economic development and industrialisation, particularly in economies that have traditionally been net importers of steel. Figure 3 shows the apparent steel consumption per capita in the six economies mentioned above. Given that the apparent steel consumption per capita in India, Iran, Morocco and Zimbabwe is still low compared to the world average, steel consumption in these countries is expected to increase in the future as their economies grow, and therefore imports and domestic production are expected to increase to meet it.

In order to ensure healthy steel market conditions, it is becoming increasingly important to distinguish capacity growth to meet the needs of economic development and growth from other types of capacity expansion. Capacity growth in excess of demand conditions has a negative impact on the steel industry through falling prices and weak profitability. Indeed, investors in new steel plants should carefully consider the long-term viability of the plants.

Figure 3. Apparent steel consumption per capita



Source: World Steel Association

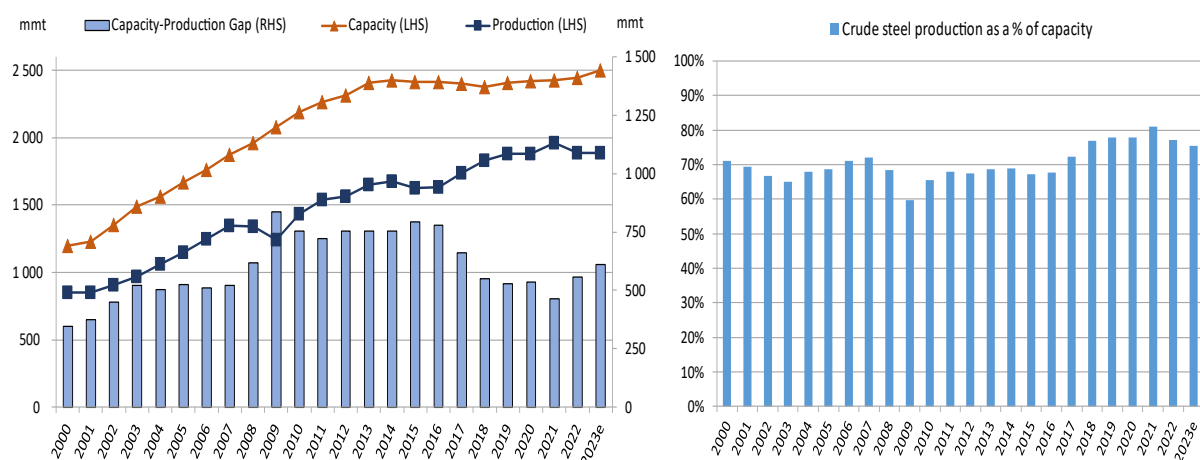
2.3 The gap between global capacity and production

Achieving normal rates of capacity utilisation is important for the steel industry. When utilisation rates are exceptionally low, for instance due to import penetration stemming from excess capacity and unfair trade practices, steel producers face high unit costs of production because of the significant fixed costs of operating their plants. This hurts the profitability and employment of the industry.

The trends in recent years indicate that some decoupling may be taking place between capacity and production. Although both have increased, production growth in the last couple of years has slowed relative to capacity. As a result, the gap between global steelmaking capacity and crude steel production could widen from 556.1 mmt in 2022 to 610.8 mmt in 2023, reflecting renewed weakness in global steel demand and production.

This also means that the global steel capacity utilisation rate could decline for the second consecutive year, falling by 1.7 percentage points to 75.6% in 2023. A persistently low rate of capacity utilisation such as currently observed suggests a need for supply side measures to reduce excess capacity, particularly in an environment where the global economy is slowing due to increasing costs including energy costs, continued inflation and monetary tightening in major economies and regions, and economic uncertainties are expected to last for some time.

Figure 4. Global crude steelmaking capacity, crude steel production and capacity utilisation rate



Note: “e” denotes estimation. Capacity data reflect information up to June 2023. The production figure for 2023 is the annualised level observed during the first six months of the year. All production data are from the World Steel Association: figures for 2023 are based on the monthly release of 25 July 2023 while annual data from 2000 to 2022 are from 2023 World Steel in Figures (worldsteel, 2023^[3]). See Annex D for a table with further data on global crude steelmaking capacity and production.

Source: OECD for crude steelmaking capacity and World Steel Association for crude steel production

Box 1. Reducing excess capacity is good for the climate

Reducing global excess capacity would not only be positive for the economic health, vitality and long-term viability of the steel industry, it would also lead to significantly lower emissions from the sector. While careful and rigorous analysis is needed to explore the link between excess capacity and emissions performance of the sector, this box offers a very simplistic approach to begin thinking about the issue. While entailing numerous caveats, it offers a starting point to help begin shedding light on the possible direction and magnitudes of impacts.

A major part of global excess capacity still sits in China. For example, in 2022, steelmaking capacity exceeded the domestic demand for steel in China by 191 million tonnes. While capacity growth within China has slowed appreciably over the last several years, the ongoing restructuring of its economy towards less steel-intensive activities, exacerbated by the serious downturn in its real estate sector, raises even greater concerns of steel oversupply and its impacts in the years ahead.

In 2022, the integrated steelmaking route accounted for 90.5% of Chinese steel production, while 9.5% took place in electric arc furnaces. A reduction in excess capacity in China would be assumed to be led by the closure of blast furnace/basic oxygen facilities, in line with targets to reduce coking coal consumption and increase the share of EAFs above 20% by 2030.

A capacity reduction of 191 million tonnes in China would lead to a production reduction of 172 million tonnes, assuming that the capacity utilisation rate of 2022, 88%, is maintained. Using the average emissions intensity for the Chinese steel industry

(Journal of Environmental Sciences, 2023^[4]), this would lower emissions by 400 million tonnes in China. Such a capacity reduction would also bring greater market balance in China, softening the difficult financial situation of steel producers who have recently suffered from significant losses and worsening balance sheets.

Such a reduction in Chinese excess capacity and emissions would translate into a 13.6% one-off reduction in global steel emissions, on the basis of 2022 data. Capacity closures, however, are extremely difficult and take a long time to implement. Therefore, the effects would be gradual, taking place slowly over time.

There are, however, a number of caveats, such as the need to consider the dynamic effects that such a capacity reduction would lead to. As Chinese capacity and production are reduced, steel prices would increase, creating incentives for steel companies to increase their production. Assuming that most of this effect would take place outside of China (due to the new capacity constraint in China), then global steel emissions would still fall, doing so by 2.4%, using global average CO₂ intensities published by the World Steel Association (worldsteel, 2023^[5]). At the same time, steel producers outside of China would enjoy profitability gains (the industry's high fixed costs of production would be spread over higher output volumes, as capacity utilisation rates rise, and due to higher steel prices globally).

In conclusion, this "back-of-the-envelope" calculation indicates a potential emission reduction in the global steel industry of 2.4%-13.6%, even when just a fraction of the world's excess capacity is reduced. While beneficial for climate change mitigation, it would also lead to better business conditions for the steel industry. As the steel industry rapidly decarbonises, supported by the 65 low-carbon projects currently underway, the positive effects of excess capacity reductions on the climate are expected to steadily increase.

2.4 Future capacity developments

Table 2 shows the expected future development of capacity by region up to 2026. When looking at potential future capacity additions, the OECD classifies investment projects as "underway" (and thus more likely to be completed during the projection period) or "planned" (which are less certain but could still come on stream). Projects that are underway are those that are already under construction or for which equipment contracts have been awarded and a major financial or state commitment has been made. Planned projects, on the other hand, are more uncertain because they are either at the feasibility or early planning stage, have not yet received financial or government support, or are not scheduled for completion at a specific date.

Information on announced investment projects indicates that 46.0 mmt of gross capacity additions are currently underway worldwide and are therefore expected to come on stream during the next three-year period 2024-26. A further 78.2 mmt of capacity additions are currently in the planning stage for possible commissioning during the same period.

Asia, in particular, will continue to see significant increases in steelmaking capacity in volume terms over the next three years, assuming that all ongoing projects are eventually realised (and not offset by closures). The region currently has a total of 27.7 (+1.7%) mmt of capacity additions underway for commissioning in 2024-26, with a further 43.7 mmt (+4.3%) in the planning

stage. ASEAN and India would account for 88.7% of Asia's steelmaking capacity additions.

With potential double-digit growth over the next three years, ASEAN will lead the global steel capacity expansion. A total of 20.5 mmt (+24.7%) of gross additions are currently underway in this region, with much more in the planning stages.

Of the capacity additions in ASEAN, 88.9% are related to investments by Chinese companies, either cross-border or joint venture (JV) investments. Indeed, while no major new capacity additions are expected to take place in China over the next three years, Chinese companies are contributing to growth outside of their economy (see page 16).

In other regions, steelmaking capacity additions are expected to increase over the next three years by 2.8 mmt (+1.9%) in the Commonwealth of Independent States (CIS), 2.5 mmt (+1.2%) in the EU, 1.0 mmt (+1.3%) in Latin America, 7.2 mmt (+7.0%) in the Middle East, 3.3 mmt (+2.0%) in North America, and 1.5 mmt (+23.5%) in Oceania¹. In Africa, there are currently no specific ongoing projects to start capacity investments in the period 2024-26.

It is important to take into account regional steel demand considerations when assessing capacity developments around the world because of the impact on trade between regions, as noted above. Rapid growth in capacity and steel production can lead to trade disruptions if local demand conditions are less robust than expected.

Table 2. Current nominal capacity and potential gross capacity additions by region

	Nominal capacity (mmt)	Nominal capacity (mmt)	% change	Potential gross capacity additions 2024-26 (mmt)			Capacity in 2026 (mmt)		% change expected (2023e vs 2026)	
	2022	2023e (A)	2023e-2022	Underway (B)	Planned (C)	(B)+(C)	Low (A)+(B)	High (A)+(B)+(C)	Low	High
Africa	45.8	51.4	12.1	0.0	1.6	1.6	51.4	53.0	0.0	3.1
Asia	1626.1	1656.6	1.9	27.7	43.7	71.4	1684.3	1728.0	1.7	4.3
China	1149.9	1173.3	2.0	1.5	2.3	3.8	1174.8	1177.1	0.1	0.3
India	133.9	138.4	3.4	5.0	31.4	36.4	143.4	174.8	3.6	26.3
ASEAN	80.4	82.9	3.1	20.5	6.5	27.0	103.4	109.9	24.7	32.6
CIS	145.0	145.1	0.1	2.8	2.1	4.9	147.9	150.0	1.9	3.4
Europe	289.3	294.3	1.8	2.5	13.0	15.5	296.8	309.8	0.8	5.3
EU	213.4	213.6	0.1	2.5	1.8	4.3	216.1	217.9	1.2	2.0
Other Europe	75.9	80.7	6.3	0.0	11.2	11.2	80.7	91.9	0.0	13.9
Latin America	73.9	75.9	2.6	1.0	0.0	1.0	76.9	76.9	1.3	1.3
Middle East	92.3	103.3	11.9	7.2	6.9	14.1	110.5	117.4	7.0	13.7
North America	162.8	165.8	1.8	3.3	10.7	14.0	169.1	179.8	2.0	8.4
Oceania	6.4	6.4	0.0	1.5	0.0	1.5	7.9	7.9	23.5	23.5
OECD/EU economies Total	652.9	657.3	0.7	8.0	27.2	35.2	665.3	692.5	1.2	5.4
non-OECD/EU economies Total	1787.4	1836.5	2.7	38.0	50.9	88.9	1874.5	1925.4	2.1	4.8
World Total	2441.5	2498.6	2.3	46.0	78.2	124.2	2544.6	2622.8	1.8	5.0

Note: “e” denotes estimation. The capacity data reflect information up to June 2023. The table “Europe” includes both OECD/EU economies and non-OECD/EU economies in Europe, as well as Türkiye. Figures for the EU include all EU Member States. Estimates regarding steelmaking capacity in 2026 and expected percentage changes are based on gross additions only; as such, the actual capacity levels will be affected by closures that may occur during the period.

Source: OECD

Table 3 shows the potential gross capacity additions by region and by type of equipment from 2024 to 2026. Of the world total of 124.2 mmt of capacity currently underway or in the planning stages for completion over the next three

years, BOF projects account for 45.2 % of the total while EAF projects account for 50.5% of the total. The remaining projects, where the technology is unknown, account for 4.4% of the total.

Table 3. Potential gross capacity additions by region and equipment type from 2024 to 2026 (mmt)

	2024			2025			2026			Total in 2024-2026			% Share in 2024-2026		
	BOF	EAF	Others/ Unknown	BOF	EAF	Others/ Unknown	BOF	EAF	Others/ Unknown	BOF	EAF	Others/ Unknown	BOF	EAF	Others/ Unknown
Africa		1.6								0.0	1.6	0.0	0.0	100.0	0.0
Asia	38.3	3.3		14.0	10.4		1.8		3.5	54.1	13.7	3.5	75.9	19.2	4.9
CIS		2.2			1.9		0.8			0.8	4.1	0.0	16.3	83.7	0.0
Europe		2.7	0.2		8.6			4.0		0.0	15.3	0.2	0.0	98.7	1.3
EU		0.7			3.6					0.0	4.3	0.0	0.0	100.0	0.0
Other Europe		2.0	0.2		5.0			4.0		0.0	11.0	0.2	0.0	98.2	1.8
Latin America	1.0									1.0	0.0	0.0	100.0	0.0	0.0
Middle East		5.9			5.5	1.4		1.3		0.0	12.7	1.4	0.0	90.1	9.9
North America		9.9			1.4	0.3		2.3		0.0	13.6	0.3	0.0	97.8	2.2
Oceania					1.5					0.0	1.5	0.0	0.0	100.0	0.0
Total	39.3	25.6	0.2	14.0	29.3	1.7	2.6	7.6	3.5	55.9	62.5	5.4	45.2	50.5	4.4

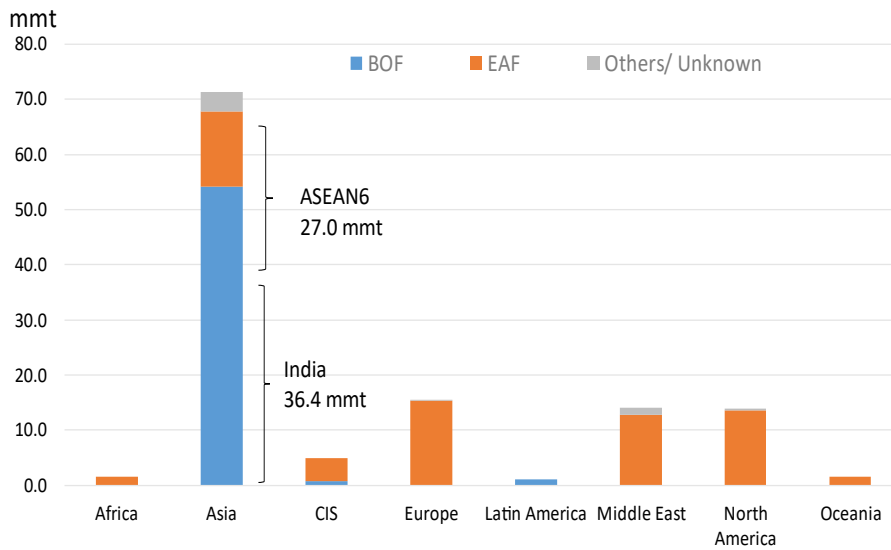
Note: The capacity data are in mmt and contain both underway and planned projects, and do not take into account possible closures that may occur during the period.

Source: OECD

As can be seen in Figure 5, regional investment trends differ considerably in terms of technology. In Asia, BOF plants account for more than 75.9 % of the tonnage volume of capacity additions. Most of the BOF installations will take place in India or ASEAN.

In contrast, investments elsewhere mostly involve the EAF production route, with no new BOF plants expected to start operations in Africa, Europe, the Middle East, North America and Oceania during 2024-26. The reader is referred to Appendix A for details of individual projects.

Figure 5. Potential gross capacity additions by region and equipment type from 2024 to 2026 (mmt)



Note: The capacity data contain both underway and planned projects, and do not take into account possible closures that may occur during the period.

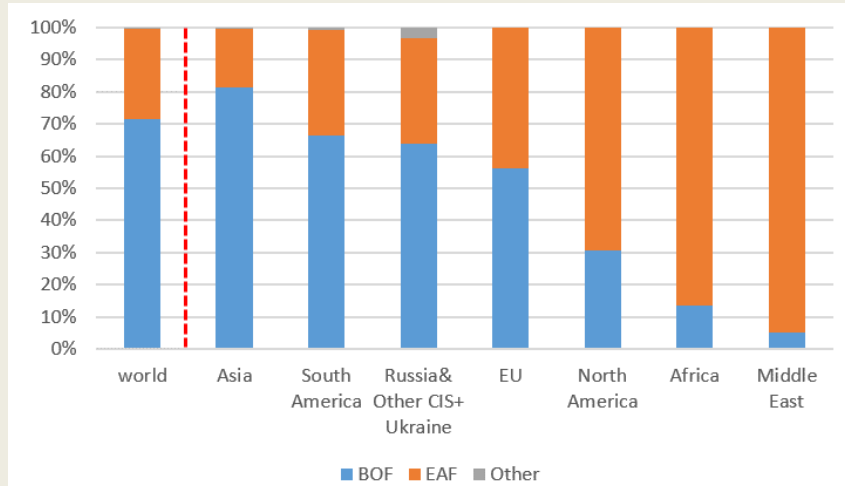
Source: Metal Expert, Platts, Kallanish, and steel company website

Box 2. The challenge of decarbonisation and nature of future steelmaking capacity

Decarbonisation is changing the nature of steel production and, in the future, could lead to a significant shift in the geography of production. The iron and steel sector is responsible for almost 8% of global emissions from the energy sector and is one of the highest emitting industrial sectors (around 30% of industrial carbon emissions) (OECD, 2022_[6]). With such a large carbon footprint, the decarbonisation of the steel sector is key to the achievement of climate change targets.

A multi-pronged approach to decarbonising the steel industry is underway, including energy savings and efficiency improvements in the energy and raw materials used, increased use of scrap and the development of innovative technologies such as hydrogen-reduced steelmaking (worldsteel, 2023_[7]). Steel companies are also working and studying the replacement of ageing BF/BOF with EAF in order to meet their short and longer-term CO2 reduction targets while maintaining quality and supply. A number of measures are being considered and promoted to decarbonise the steel industry, but decarbonising the steel industry as a whole will necessitate time, as each has its own technical and financial challenges, as well as regional challenges in terms of access to energy and raw materials (OECD, 2023_[8]).

Figure 6 shows the share of BOF, EAF and other types of production by region. Although 71.5% of the total number of furnaces in the world are BF/BOF, there are regional differences. Africa, the Middle East and North America have a high proportion of EAF, while other regions have a high proportion of BOF, making the transition to EAF in these regions more challenging than in regions with a high proportion of EAF.

Figure 6. Share of crude steel production by type of process in 2022

Source: World Steel Association

Currently, switching from BF/BOF to EAF is probably the most effective technology for reducing CO₂ emissions from steel production. This is due to the fact that the CO₂ emission intensity of scrap-based EAF is less than a third of that of BF/BOF (worldsteel, 2023^[5]). As shown in Figure 5, with the exception of Asia, the CIS and Latin America, EAF will be the most dominant technology considered for new capacity investment over the next three years, even in Europe where BF/BOF has been the mainstay. However, there are still a number of challenges ahead.

The main challenge in replacing BF/BOF with EAF is the high cost of conversion, which involves significant capital expenditure and increased operating costs. These costs include higher raw material and electricity costs, as well as the need for additional scrap and metal (S&P Global, 2023^[9]) (NIPPON STEEL, 2023^[10]). While the initial investment required to replace equipment may be similar across countries, subsequent access to raw materials and energy is different, with prices varying from country to country. Indeed, anecdotes of companies considering a shift from BF/BOF to EAF highlight the need for energy and domestic scrap steel, along with the right public policy settings and support. For example, in China, Baosteel notes that due to the shortage of scrap steel supply and insufficient supply of green electricity, they will focus on BF smelting to reduce carbon emissions instead of building EAF facilities (Kallanish, 2023^[11]).

Considerations to switch to lower-emission steel production have prompted concerns about the availability of scrap, clean-energy and other materials needed for the transition, as demand for scrap, DRI and renewable energy skyrocket in the period to 2030. Regional differences in the sourcing of energy and raw materials affect sourcing costs. Steel made by BF/BOF is still competitively priced in some regions and the concerns about future scrap supply and rising costs can discourage the switch to EAF in these regions (Kallanish, 2023^[12]) (Kallanish, 2023^[13]).

In this regard, India is working to reduce CO₂ emissions by using hydrogen in existing BF. Tata Steel has conducted trials for four days for hydrogen gas injection at one of the BFs at Jamshedpur-based plant in Jharkhand state. This project is executed in line with

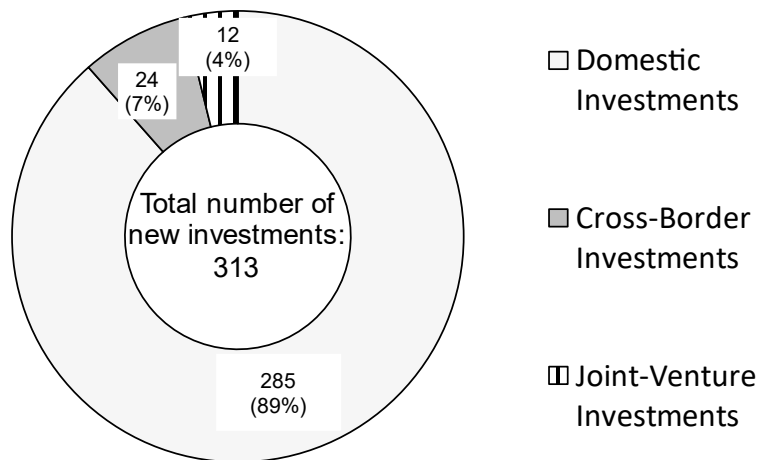
the company's ambition to become carbon-neutral by 2045. The trial, involving the injection of six-kilogram hydrogen gas per tonne of hot metal using 40% of the blast furnace's injection systems, was implemented to reduce the coke rate by 10%, translating into around 7-10% of a reduction in CO2 emissions per tonne of crude steel produced. It is worth noting that this is the first time in the history of world production that a significant amount of hydrogen gas has been injected into a BF on a continuous basis (Metal Expert, 2023^[14]).

Decarbonisation of the steel industry could be achieved by improving energy and raw material efficiency, increasing the use of scrap, shifting from EAF to BF/BOF and developing innovative technologies. Different regions of the world face different challenges and therefore appear to be follow different decarbonisation paths. While policies for decarbonisation may differ, taking into account the specific advantages and disadvantages of each region and economy, they should share a common objective of encouraging a shift to low-carbon steel in all parts of the world.

3. Latest updates on cross-border investment

Figure 7 shows the share of domestic and cross-border investment in steelmaking capacity. In total, there are 313 new steelmaking capacity projects worldwide, classified as either underway or planned, which are scheduled to become operational in 2023 or later. This broad figure includes projects that have already started operations in 2023, as well as projects for which the start date is not available. Of these projects, domestic steelmakers are the investors/owners in 277 (88%) of the cases. Of the remaining steelmaking capacity projects, 24 (8%) entail cross-border investments, representing an investment that is based entirely on one or more foreign investors/owners, and 12 (4%) are structured as joint ventures (JV) between domestic and foreign investors/owners.

Figure 7. The share of domestic and cross-border investments in new steelmaking capacity projects starting in 2023 or later



Note: This figure includes all new investment projects that are underway or planned, and which are scheduled to become operational in 2023 or later — including projects that have started operation in 2023, as well as projects for which the start date is not available. It does not include cancelled projects. A cross-border investment represents an investment that is based wholly on one or several foreign investors/owners. A joint venture, on the other hand, involves both foreign investors/owners and domestic counterparts. Please see Annex A for details on the plant-level investments and their respective investors/owners.

Source: OECD

Table 4 shows the cross-border investment by region. Asia is the largest investment destination, with 13 cross-border and 11 joint venture (JV) investments between domestic and foreign investors. Africa attracts 5 cross-border and 1 JV investment. North America is the destination of 5 cross-border investments. There are currently no cross-border or JV investments in the CIS, Europe, Latin America and Oceania regions.

Table 4. Domestic and cross-border investments in new steelmaking capacity projects

Started in 2023, and underway and planned investments for 2024 or later

Region where the investment is taking place	Domestic Investments		Cross-Border Investments		Joint-Venture Investments	
	Number	Capacity (mmt)	Number	Capacity (mmt)	Number	Capacity (mmt)
Africa	7	5.8	5	7.2	1	?
Asia	120	259.9	13	61.3	11	28.5
CIS	16	16.7	0	0.0	0	0.0
Europe	20	23.1	0	0.0	0	0.0
Latin America	7	8.7	0	0.0	0	0.0
Middle East	92	87.0	1	4.0	0	0.0
North America	13	14.7	5	4.7	0	0.0
Oceania	2	1.5	0	0.0	0	0.0
World Total	277	417.4	24	77.2	12	28.5

Note: This table includes all new investment projects that are, underway or planned, and which are scheduled to become operational in 2023 or later — including projects that have started operation in 2023, as well as projects for which the start date is not available. It does not include cancelled projects. A cross-border investment represents an investment that is based wholly on one or several foreign investors. A joint venture, on the other hand, involves both a foreign investor and a domestic counterpart. Please see Annex A for details on the plant-level investments and their respective investors/owners.

Source: OECD

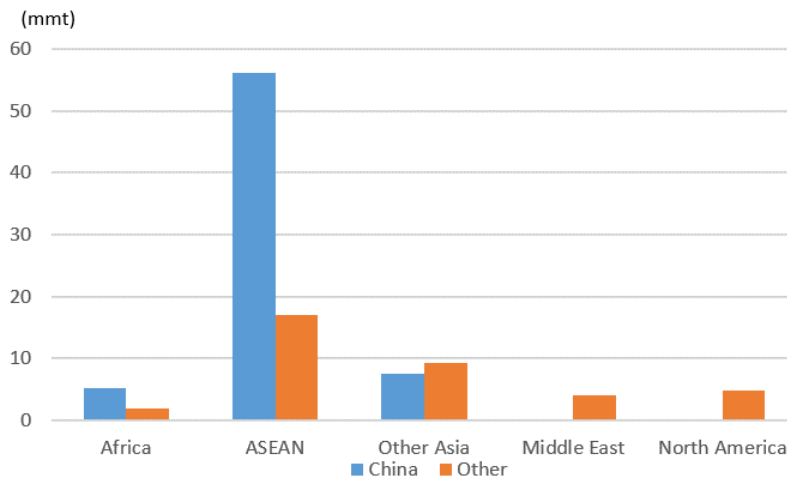
Of the cross-border investments or JV investments, 65.1% of the new investments in 2023 or later will be made by Chinese steel companies in third economies.

Figure 8 shows a breakdown of the amount of new investment capacity in third economies involving Chinese and other firms. The figure shows that ASEAN receives the most foreign investment, with Chinese investment in ASEAN accounting for 81.4% of the total, and 92.4% if other Asian economies are included.

These trends may reflect the effects of the "Implementation Measures for Capacity Replacement in the Iron and Steel Industry" policy, whereby domestic capacity constraints lead to offsetting capacity growth elsewhere. If Chinese domestic demand for steel remains steady, these cross-border or JV investments

by Chinese companies could supply steel to meet Chinese consumption. However, in a scenario of demand decline in China, that steel supply would be directed increasingly to other markets and Chinese exports of steel would also face upward pressures.

Figure 8. Cross-border investment in new steel capacity by Chinese and other companies



Note: This figure includes all new investment projects that are underway or planned, and which are scheduled to become operational in 2023 or later — including projects that have started operation in 2023, as well as projects for which the start date is not available. It does not include cancelled projects. A cross-border investment represents an investment that is based wholly on one or several foreign investors/owners. A joint venture, on the other hand, involves both foreign investors/owners and domestic counterparts. Therefore, in this chart, "China" is used if a Chinese company is involved in cross-border or JV investments.

Source: OECD

In addition to the expansion of new steelmaking investment by Chinese companies that is being implemented in ASEAN, there are reports that the Philippines and other ASEAN economies are being flooded with induction furnaces that were shut down in China when the Chinese government imposed strict environmental controls. These plants are considered to be below environmental and product quality standards, and there are concerns that they will continue to flow into the region (Kallanish, 2023^[15]). As well as being disruptive to the market, this will require close monitoring to ensure that the end products are delivered in a way that is satisfactory to the consumer.

4. Conclusions

Global steelmaking capacity could continue to grow at a rapid pace in a period of weakening steel market conditions. A total of 313 steel investment projects are either currently underway or in the planning stages around the world. In the three-year period of 2024-26, the global steel industry will see an additional 46.0 mmt of capacity coming on stream, with a further 78.2 mmt potentially being added according to announced plans by steel companies. In total, therefore, gross capacity additions could amount to 124.2 mmt worldwide between 2024 and 2026.

Excess capacity is a structural problem that continues to cloud the outlook for the global steel industry. Governments and industry stakeholders should ensure that capacity investment is driven by market considerations and, given the longevity of installed the steel plants, make sure that the investments will be sustainable in the long term, including from a decarbonisation perspective. For example, the installation of very large carbon-intensive plants, as described in this report, or efforts to begin relining outdated furnaces, raise questions about their economic and environmental viability, especially if demand conditions are less favourable than expected. Participants in the Steel Committee could consider ways to discourage new investments in such unsustainable facilities, domestically and through their cross-border investments.

As the industry makes the transition to lower-carbon steel production, it will be important to carefully monitor the nature of the investments, notably if they are new additions or adaptation and replacements of existing facilities, as well as their impacts on net capacity changes. Often, there is little information about the capacity levels of new low-carbon investments, indicating the importance of building better information about such investments to enable careful monitoring of excess capacity.

The OECD Steel Committee will continue to address these issues and publish its findings twice a year. The aim is to raise public awareness of capacity trends and the emerging challenges associated with these trends.

Annex A. AVAILABLE INFORMATION ON PLANT LEVEL INVESTMENTS AND THEIR OWNERS

Table A A.1. Investment data (highlighted blue rows indicate replacement of current capacity and not net capacity increases while highlighted green rows indicate partial replacement of current capacity or unclear to how much of the capacity will be an increase)

REGION	ECONOMIES	COMPANY	OWNER (ECONOMIES) except themselves	STATUS	START	EQUIPMENT	CAPACITY	SOURCES
Africa	Algeria	Emarat Dzayer Steel Company	Imetal Group (51%)	plan	?	EAF	?	Metal Expert
Africa	Algeria	Tosyali Holding		plan	2023	EAF	2000	Company HP (tenova)
Africa	Algeria	ETRHB	The ETRHB HADDAD Group	plan	?	EAF	1150	Company HP (Danieli); Metal Expert
Africa	Egypt	Arabian Steel Industries	Arabian Steel Industries	plan	2024	EAF	1000	Metal Expert, World Steel Capacities
Africa	Egypt	Xin Feng Resources Recycling Investment Holdings	Xin Feng Resources Recycling Investment Holdings	plan	?	EAF	2000	Metal Expert
Africa	Kenya	Sinosteel	Sinosteel	plan	?	Steelmaking	1000	Metal Expert; Ministry of Industry, Trade and Cooperatives of Kenya

Africa	Mozambique	Baobab Resources	Baobab Resources	underway	?	EAF	500	World Steel Capacities, WM, Company HP
Africa	Namibia	Groot Group	Groot Group	underway	2023	EAF	1000	Company HP, Metal Expert
Africa	Nigeria	Ajaokuta Steel Company (ASC)	Ajaokuta Steel Company (ASC)	plan	?	BOF	1300	World Steel Capacities; CompanyHP
Africa	Nigeria	Kam Industries		underway	2023	IF	260	Metal Expert
Africa	South Africa	Scaw Metals Group		plan	2024	EAF	650	World Steel Capacities
Africa	Zimbabwe	Tsingshan Holding Group	Tsingshan Holding Group	underway	2023	EAF	1200	kallanish
Africa	Zimbabwe	Tsingshan Holding Group	Tsingshan Holding Group	plan	?	EAF	1000	kallanish
Asia	China	Shanxi Jinnan Iron and Steel	Shanxi Jinnan Iron and Steel	plan	?	BOF	3400	worldmetals
Asia	China	Anshan Iron & Steel	Ansteel Group	plan	?	Steelmaking	10000	Platts
Asia	China	Shaanxi Hanzhong Iron and Steel	Shaanxi Steel Group	plan	?	EAF	700	陕西发展观察, 汉中时空网
Asia	China	Jinxi Iron and Steel	Jinxi Iron and Steel (河北津西钢铁集团)	plan	?	Steelmaking	?	防城港市新闻网
Asia	China	HBIS Laoting Steel Co., Ltd.	HBIS	plan	?	BOF	7470	Platts, Reuters, Company HP
Asia	China	Baowu Iron & Steel Group	Baowu Steel Group Corporation	plan	?	Steelmaking	?	MySteel (我的钢铁), Platts, Metal Expert, Government of Jinangsu

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Asia	China	Baowu Iron & Steel Group	Baowu Iron & Steel Group	plan	?	Steelmaking	3100	Platts
Asia	China	Sanbao Iron and Steel		underway	2024	EAF	1500	Metal Expert, kallahish
Asia	China	Tangyin Iron and Steel		underway	?	BOF	2000	Metal Expert, kallahish
Asia	China	Zenith Iron and Steel Group		underway	2023	BOF	5850	Metal Expert, kallahish
Asia	China	Rizhao Steel Holding Group Co., Ltd.		underway	2023	BOF	2700	Metal Expert
Asia	China	Sichuan Dazhou Iron and Steel		plan	2024	BOF	2300	ME, kallahish
Asia	China	Luoyuan Minguang Steel		plan	2023	BOF	1250	Metal Expert
Asia	China	Linyi Iron and Steel Investment Group Special Steel		underway	2023	BOF	2700	Metal Expert
Asia	China	Rockcheck Iron and Steel		underway	2023	EAF	500	Metal Expert
Asia	China	Tianzhu Iron and Steel		underway	2023	BOF	2870	Metal Expert
Asia	China	Changli Hongxing Industry		underway	2023	BOF	3450	Metal Expert
Asia	China	Xianfu Iron and Steel		underway	2023	BOF	2600	Metal Expert
Asia	China	Jingye Iron and Steel		underway	?	BOF	1500	Metal Expert
Asia	China	Tongcai Industry and Trade		underway	2023	BOF	2000	Metal Expert
Asia	China	Tongcai Industry and Trade		underway	2023	EAF	780	Metal Expert

Asia	Indonesia	Krakatau POSCO	POSCO (70%)	plan	2025	BOF	3000	SE AISI Presentation, Metal Expert, Company HP
Asia	Indonesia	PT Gunung Raja Paksi	Gunung Steel Group	plan	?	EAF	500	Platts, Metal Expert, Company HP
Asia	Indonesia	Anshan Iron & Steel Group Corporation	Anshan Iron & Steel Group Corporation	plan	?	Steelmaking	5000	Platts
Asia	Indonesia	Fuhai Group & Ansteel Group	Fuhai Group	plan	?	Steelmaking	1750	The Jakarta Post
Asia	Indonesia	Hebel Bishi Steel Group	Hebel Bishi Steel Group	plan	?	Steelmaking	3000	Metal Expert, American Metal Market
Asia	Indonesia	PT Gunung Raja Paksi	Gunung Steel Group (GSG)	plan	?	Steelmaking	3000	Metal Expert
Asia	Indonesia	Shaanxi Iron and Steel Group	Shaanxi Iron and Steel Group	plan	?	Steelmaking	7500	Metal Expert, 陕西日报 (Shaanxi' Daily), China Belt and Road Portal (中国一带一路), 陕西煤业化工集团有限责任公司;
Asia	Indonesia	Wuhan Iron & Steel (Wugang)	Wuhan Iron & Steel (Wugang)	plan	?	EAF	5000	Platts
Asia	India	Tata Steel BSL Ltd.		plan	2030	BOF	6070	WM
Asia	India	Tata Steel BSL Ltd.		plan	2030	EAF	1550	WM
Asia	India	Tata Steel		plan	2024	BOF	5000	Metal Expert
Asia	India	Tata Steel		underway	?	EAF	750	World Steel Capacities

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Asia	India	JSW Steel Limited	JSW Holdings	underway	2024	BOF	5000	Company HP
Asia	India	JSW Steel Limited	JSW Holdings	plan	2026	BOF	1800	WM
Asia	India	JSW Steel Limited	JSW Holdings	plan	2023	EAF	1200	WM
Asia	India	JSW Steel Limited	JSW Holdings	plan	?	EAF	?	Sarralle
Asia	India	NMDC	NMDC	underway	2023	BOF	3000	World Steel Capacities
Asia	India	Shree Uttam Steel and Power Ltd	Uttam Galva Steels Ltd(UGSL)	underway	2023	BOF	1550	World Steel Capacities
Asia	India	Shree Uttam Steel and Power Ltd	Uttam Galva Steels Ltd(UGSL)	plan	?	BOF	1550	Metal Expert
Asia	India	Mono Steel (India) Ltd.		underway	2023	IF	?	World Steel Capacities
Asia	India	Crest Steel (Una) Pvt. Ltd.	Crest Steel	plan	2023	IF	?	Metal Expert, World Steel Capacities
Asia	India	Ramsarup Lohh Udyog Limited (RLUL)		plan	?	EAF	700	World Steel Capacities
Asia	India	Brand Steel and Power ltd		plan	2025	EAF	450	WM
Asia	India	Aloke Steel Industries		plan	2030	EAF	70	WM
Asia	India	Ankur Udyog Limited		plan	2032	EAF	250	WM
Asia	India	Texcon Steels Ltd		plan	2030	EAF	130	WM
Asia	India	Welspun Power and Steel Ltd (WPSL)		plan	2030	BOF	3100	WM

Asia	India	Welspun Power and Steel Ltd (WPSL)		plan	2030	BOF	3300	WM
Asia	India	Xindia Steels		plan	2036	BOF	2500	WM
Asia	India	Xindia Steels		plan	2029	BOF	2500	WM
Asia	India	Kalyani Steel		plan	2030	BOF	3000	WM
Asia	India	KIC Metaliks		plan	2025	EAF	380	WM
Asia	India	Knovus Steels and Infrastructure		plan	2030	EAF	150	WM
Asia	India	Rungta Mines Limited (RML)		plan	2030	EAF	110	WM
Asia	India	Tata Metaliks (TML)		plan	2038	BOF	3000	WM
Asia	India	Ramsarup Industries Limited		plan	2023	EAF	700	WM
Asia	India	Jindal Steel and Power Ltd. (JSPL)	O.P. Jindal Group	plan	2034	BOF	6000	WM
Asia	India	Jindal Steel and Power Ltd. (JSPL)	O.P. Jindal Group	plan	2024	BOF	6000	WM
Asia	India	Jindal Steel and Power Ltd. (JSPL)		plan	?	BOF	2500	Metal Expert
Asia	India	ArcelorMittal	ArcelorMittal	plan	?	Steelmaking	6000	Metal Expert, Company HP(Annual Report 2018)
Asia	India	Godawari Power and Ispat		plan	2025	BOF	1000	Metal Expert
Asia	India	Tata Steel		plan	2030	BOF	5500	WM
Asia	India	Tata Steel		plan	?	?	?	Metal Expert

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Asia	India	Tata Sponge Iron Ltd		plan	2023	BOF	1500	World Steel Capacities
Asia	India	Tata Sponge Iron Ltd		plan	2025	EAF	750	WM
Asia	India	BMM Ispat Limited		plan	2023	BOF	1100	WM
Asia	India	ArcelorMittal Nippon Steel India		plan	2028	BOF	24000	World Steel Capacities, SEASI
Asia	India	ArcelorMittal Nippon Steel India Limited		plan	2025	BOF	6000	World Steel Capacities
Asia	India	JSW Steel Limited		plan	2036	BOF	6000	WM
Asia	India	JSW Steel Limited		plan	2025	BOF	4000	WM
Asia	India	JSW Steel Limited		plan	2032	BOF	3440	WM
Asia	India	JSW Bengal Steel		plan	?	BOF	3000	World Steel Capacities
Asia	India	Jindal Maxsteel		plan	?	EAF	1500	World Steel Capacities
Asia	India	Jai Balaji Industries Limited (JBIL)		plan	2030	EAF	5000	WM
Asia	India	Jai Balaji Jyoti Steels		plan	2030	EAF	860	WM
Asia	India	Jindal Steel and Power Ltd. (JSPL)		plan	2023	BOF	3300	Metal Expert
Asia	India	Jindal Steel and Power Ltd. (JSPL)		plan	2025	EAF	3000	Metal Expert
Asia	India	Jindal Steel and Power Ltd. (JSPL)		plan	2023	BOF	4000	WM
Asia	India	Neelachal Ispat Nigam Limited (NINL)		plan	?	BOF	1000	World Steel Capacities

Asia	India	NMDC		plan	2030	BOF	5000	WM
Asia	India	SAIL		plan	2035	BOF	8800	WM
Asia	India	SAIL		plan	2030	BOF	5600	WM
Asia	India	Bhushan Power and Steel Limited (BPSL)		plan	2023	BOF	2800	WM
Asia	India	Bhushan Power and Steel Limited (BPSL)		plan	2023	EAF	900	WM
Asia	India	Bhushan Power and Steel Limited (BPSL)		plan	2030	EAF	3000	WM
Asia	India	Arjas Steel		plan	2030	BOF	620	WM
Asia	India	MSP Steel & Power Ltd (MSPSPL)		plan	2025	EAF	580	WM
Asia	India	MSP Metalics Ltd		plan	?	IF	240	World Steel Capacities
Asia	India	Visa Steel		plan	2023	EAF	2500	WM
Asia	India	Shyam Steel Industries		plan	?	EAF	320	WM
Asia	India	Action Ispat & Power (P) Ltd.		plan	2024	EAF	680	WM
Asia	India	Chintpurni Steel		plan	2023	EAF	300	WM
Asia	India	Ispat Damodar Ltd.		plan	2025	EAF	190	WM
Asia	India	Jharkhand Ispat Pvt Ltd		plan	2030	EAF	70	WM
Asia	India	Narbheram Power & Steel		plan	2030	EAF	670	WM

28 | LATEST DEVELOPMENTS IN STEELMAKING CAPACITY 2024

Asia	India	Prakash Industries		plan	2025	EAF	1000	WM
Asia	India	Rashmi Metaliks Limited (RML)		plan	2023	EAF	350	WM
Asia	India	Rashi Steel and Power Limited (RSPL)		plan	2030	EAF	240	WM
Asia	India	Jayaswal Neco Industries Limited		plan	2025	EAF	570	WM
Asia	India	AP High Grade Steel	AP High Grade Steel	plan	?	BOF	2000	Metal Expert
Asia	India	Lloyds Metals and Energy		plan	?	IF	250	Metal Expert
Asia	India	JSW Utkal Steel		plan	?	BOF	13200	Kallanish
Asia	Bangladesh	Star Consortium		plan	?	BOF	2000	Company HP
Asia	Bhutan	Druk Metallurgy Limited (DML)	Druk Holding and Investments Limited (DHI)	underway	?	IF	200	Company HP, Platts
Asia	Cambodia	Cambodia Iron and Steel		plan	?	BOF	1000	WM
Asia	Cambodia	Xinjiang Bayi Nanjiang Steel Baicheng Co Ltd-Aksu	Baowu Steel Group Corporation	plan	?	BOF	3100	Reuters, My steel, SEAISI presentation
Asia	Korea	Daehan Steel Co., Ltd.		plan	2025	EAF	1000	World Steel Capacities
Asia	Korea	POSCO		plan	2025	EAF	2500	World Steel Capacities
Asia	Myanmar	Myingyan plant		plan	?	EAF	200	World Steel Capacities
Asia	Myanmar	Kunming Steel	Kunming Iron and Steel Group	plan	?	BOF	4000	Metal Expert

			Company (KISC)					
Asia	Malaysia	Eastern Steel Sdn Bhd	Hiap Teck Venture (HYVB) (55%)	plan	?	Steelmaking	1300	SEAISI
Asia	Malaysia	Kinsteel Bhd		plan	2023	IF	500	Metal Expert, World Steel Capacities
Asia	Malaysia	Kinsteel Bhd		plan	?	EAF	500	Metal Expert
Asia	Malaysia	New project by The Lion Group	The Lion Group	plan	?	BOF	1600	World Steel Capacities
Asia	Malaysia	Sarawak Iron and Steel	Hebei Xinwuan Steel Group	underway	2024	BOF	10000	Metal Expert, SEAISI
Asia	Philippines	Philippine Iron and Steel Project	SteelAsia Manufacturing	plan	2023	Steelmaking	4500	SEAISI
Asia	Philippines	Philippine Iron and Steel Project	SteelAsia Manufacturing	plan	2026	Steelmaking	3500	SEAISI
Asia	Philippines	Panhua Group	Panhua Group	underway	2024	BOF	10000	Metal Expert
Asia	Philippines	SteelAsia Manufacturing Corporation	SteelAsia Manufacturing	plan	?	EAF	500	Metal Expert
Asia	Philippines	SteelAsia Manufacturing Corporation	SteelAsia Manufacturing	plan	?	EAF	800	Metal Expert, Company HP, Platts
Asia	Philippines	SteelAsia Manufacturing Corporation	SteelAsia Manufacturing	underway	2024	EAF	500	Metal Expert
Asia	Philippines	SteelAsia Manufacturing Corporation	SteelAsia Manufacturing	plan	?	EAF	?	World Steel Capacities
Asia	Philippines	SteelAsia Manufacturing Corporation	SteelAsia Manufacturing	plan	?	EAF	800	Metal Expert

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Asia	Philippines	SteelAsia Manufacturing Corporation	SteelAsia Manufacturing	plan	?	EAF	600	Metal Expert
Asia	Philippines	SteelAsia Manufacturing Corporation	SteelAsia Manufacturing	plan	?	EAF	1200	Metal Expert
Asia	Viet Nam	Formosa Plastics Group	Formosa Plastics Group	plan	?	BOF	7000	SEAISI
Asia	Viet Nam	Formosa Plastics Group	Formosa Plastics Group	plan	?	BOF	7000	SEAISI
Asia	Viet Nam	Hoa Sen Group	Hoa Sen Group	plan	?	EAF	800	World Steel Capacities
Asia	Viet Nam	Hoa Sen Group	Hoa Sen Group	plan	?	EAF	500	World Steel Capacities
Asia	Viet Nam	Vietnam Steel Corporation	Vietnam Steel Corporation (VSC)	plan	?	BOF	500	Metal Expert
Asia	Viet Nam	Viet - Trung Metallurgy Company	Vietnam Steel Corporation	plan	?	BOF	500	Company HP
Asia	Viet Nam	Hoa Phat Group		plan	2025	BOF	?	World Steel Capacities
Asia	Pakistan	Ittehad Steel	Ittehad Steel	underway	?	IF	600	Metal Expert
Asia	Pakistan	Indus Consortium Mining & Steel Industry	Mughal Steel, Star Cotton Corporation, Pak Steel, Ittehad Steel Mills	plan	?	BOF	1000	World Steel Capacities
Asia	Pakistan	Naveena Steel Mills		plan	?	IF	80	Metal Expert

Asia	Pakistan	Century Steel	Fuzhou Julitaihe International Company	underway	?	?	500	Metal Expert
Asia	Pakistan	FF Steel		underway	?	IF	250	Metal Expert
Asia	Pakistan	FF Steel		plan	?	?	?	Metal Expert
Asia	Pakistan	Mughal Steel		underway	?	IF	395	Metal Expert
Asia	Pakistan	Kamran Steel Re-Rolling Mills (Pvt) Ltd.		underway	2023	IF	100	World Steel Capacities
Asia	Japan	Chubu Steel Plate Co.		underway	2024	EAF	700	World Steel Capacities
CIS	Azerbaijan	Baku Steel Company	Baku Steel Company	plan	?	EAF	?	Company HP, Metal Expert
CIS	Russia	Usolye Metallurgical Plant		underway	?	Steelmaking	?	Metal Expert
CIS	Russia	Don-Metal	Don-Metal	plan	2025	EAF	160	Metal Expert, Comments from Russia
CIS	Russia	Hrombur		plan	?	EAF	500	Metal Expert
CIS	Russia	Ishstal plant		plan	?	EAF	300	World Steel Capacities
CIS	Russia	Don-Metal		plan	?	EAF	160	Metal Expert
CIS	Russia	United Metallurgical Company (OMK)		underway	2025	EAF	1800	Metal Expert
CIS	Russia	Novostal-M		plan	2024	EAF	1200	World Steel Capacities
CIS	Russia	Surgutskiy MK		underway	2023	EAF	100	Metal Expert

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CIS	Russia	Rostov Electrometallurgical Plant / REMZ		underway	2024	EAF	1000	kallanish, Metal Expert
CIS	Russia	Metalloinvest		plan	2023	EAF	1200	kallanish
CIS	Ukraine	Metinvest	Metinvest	plan	2023	BOF	3200	World Steel Capacities, Platts
CIS	Ukraine	Metinvest	Metinvest	plan	2030	EAF	4500	Metal Expert
CIS	Ukraine	Donetsksteel		plan	?	EAF	1800	Platts, Metal Expert
CIS	Kazakhstan	QazSpecSteel		plan	2026	BOF	400	Metal Expert
CIS	Kazakhstan	QazSpecSteel		plan	2026	BOF	400	Metal Expert
Europe	Austria	Böhler Edelstahl GmbH		underway	2023	EAF	205	Company HP, Metal Expert
Europe	Belgium	ArcelorMittal		plan	2026	EAF	?	World Steel Capacities
Europe	Germany	ArcelorMittal		plan	2026	EAF	?	World Steel Capacities
Europe	Italy	Acciaierie d'Italia		plan	?	EAF	?	Metal Expert, Platts
Europe	Italy	Acciaierie d'Italia		plan	?	EAF	?	Metal Expert, Platts
Europe	Netherlands	Van Merksteijn International	Van Merksteijn International	plan	?	EAF	1000	Danieli PR
Europe	Romania	Galati Steelworks		plan	?	EAF	4000	Company HP
Europe	Romania	AFV Beltrame		plan	2024	EAF	700	World Steel Capacities

Europe	Sweden	H2 Green Steel		underway	2025	EAF	2500	Metal Expert, Company HP, World Steel Capacities
Europe	Spain	ArcelorMittal		plan	2025	EAF	1100	Company HP
Europe	France	ArcelorMittal		plan	2027	EAF	?	Company HP
Europe	France	ArcelorMittal		plan	2027	EAF	?	Company HP
Europe	United Kingdom	Liberty House	Liberty House Group	plan	?	EAF	?	Company HP
Europe	United Kingdom	South Tees Development Corporation (STDC)		plan	?	EAF	?	Metal Expert
Europe	Türkiye	Izmir Demir Celik		underway	2023	EAF	1400	Metal Expert, kallanish
Europe	Türkiye	Kaptan Demir Celik		plan	2024	EAF	2000	World Steel Capacities
Europe	Türkiye	Ekinciler Demir Celik		plan	2023	EAF	1000	World Steel Capacities
Europe	Türkiye	Icdas		plan	2025	EAF	5000	World Steel Capacities
Europe	Türkiye	Tufan Metalurji		plan	2024	IF	244	World Steel Capacities
Europe	Türkiye	Yildizlar Holding		plan	2026	EAF	4000	World Steel Capacities
Middle East	Iran	Mobarakeh Steel	Morarakeh Steel (65%)	underway	2023	EAF	1000	World Steel Capacities
Middle East	Iran	Mobarakeh Steel		plan	?	EAF	1000	World Steel Capacities
Middle East	Iran	Khouzestan Oxin Steel		plan	?	EAF	1200	World Steel Capacities

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Middle East	Iran	Khouzestan Steel		underway	2024	EAF	800	World Steel Capacities
Middle East	Iran	Esfahan Steel		plan	?	BOF	2280	World Steel Capacities
Middle East	Iran	Esfahan Steel		plan	?	EAF	1650	World Steel Capacities
Middle East	Iran	Khouzestan Steel	Khouzestan Steel	plan	?	EAF	1250	World Steel Capacities
Middle East	Iran	Khouzestan Steel	Khouzestan Steel	plan	?	EAF	1250	World Steel Capacities
Middle East	Iran	Khouzestan Steel	Khouzestan Steel	plan	?	EAF	1250	World Steel Capacities
Middle East	Iran	Khouzestan Steel	Khouzestan Steel	plan	?	EAF	1250	World Steel Capacities
Middle East	Iran	Khouzestan Steel	Khouzestan Steel	underway	2023	EAF	1000	Company HP(IMIDRO), Metal Expert
Middle East	Iran	Khouzestan Steel	Khouzestan Steel	plan	?	EAF	1300	World Steel Capacities
Middle East	Iran	Khouzestan Steel	Khouzestan Steel	plan	?	EAF	1300	World Steel Capacities
Middle East	Iran	Iran Alloy Steel Company (IASCO)		underway	2023	EAF	1000	Metal Expert, World Steel Capacities
Middle East	Iran	Iran Alloy Steel Company		underway	2023	EAF	700	World Steel Capacities
Middle East	Iran	Iran National Steel Industrial Group (INSIG)		underway	2023	EAF	430	World Steel Capacities
Middle East	Iran	Kaavian Steel		plan	?	EAF	700	World Steel Capacities
Middle East	Iran	Mianeh Steel	IMIDRO	underway	2023	EAF	800	Metal Expert

Middle East	Iran	Sabzevar Steel Complex	IMIDRO	underway	?	EAF	800	Metal Expert, World Steel Capacities
Middle East	Iran	Ghaenat Steel Complex	IMIDRO	underway	2023	EAF	800	Metal Expert
Middle East	Iran	Saeb Steel Complex	Daric Investment Group	plan	?	EAF	550	Metal Expert
Middle East	Iran	Shams Iron & Steel Complex		plan	?	EAF	1500	World Steel Capacities
Middle East	Iran	Sabalan Iron and Steel Complex		plan	?	EAF	500	World Steel Capacities
Middle East	Iran	Zonouz steel complex	Daric Investment Group	plan	?	EAF	500	Company HP
Middle East	Iran	Bonab Steel Complex		plan	2025	?	1450	Metal Expert
Middle East	Iran	East Kaveh Steel Company (EKSC)		plan	?	EAF	1000	World Steel Capacities, Metal Expert
Middle East	Iran	Arvand Kaveh Steel		plan	?	EAF	2500	World Steel Capacities
Middle East	Iran	Makran Steel Complex	IMIDRO	plan	2030	EAF	3200	Metal Expert
Middle East	Iran	Gambron Steel		plan	?	EAF	2000	World Steel Capacities
Middle East	Iran	Jahan Foulad Gharb		plan	2025	EAF	500	WM
Middle East	Iran	GHADIR Industries and Mines International Company	Ghadir International Mines and Industries Development Company	underway	2023	EAF	1000	World Steel Capacities, Company HP

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Middle East	Iran	Afa Steel		plan	?	EAF	600	World Steel Capacities, Company HP
Middle East	Iran	Amir Kabir Khazar Steel		plan	?	EAF	500	World Steel Capacities
Middle East	Iran	Arian Steel		plan	?	EAF	550	World Steel Capacities
Middle East	Iran	Arvand Jahanara Steel Company (AJSCO)	Arvand Jahanara Steel Company	plan	2023	EAF	1200	World Steel Capacities
Middle East	Iran	Azna Steel		plan	?	EAF	700	World Steel Capacities
Middle East	Iran	Bafgh Mineral Complex Iron & Steel Company (B-MISCO)	Bafgh Mineral Complex Iron and Steel Industry Company (B-MISCO)	underway	2024	EAF	800	World Steel Capacities
Middle East	Iran	Boyer Ahmad Steel Complex (Boyer Sanat)		plan	?	EAF	300	World Steel Capacities
Middle East	Iran	Ardakan Steel		plan	?	EAF	1000	World Steel Capacities
Middle East	Iran	Abar Kouh Steel & Rolling	Chadormalu Mining & Industrial Co.	underway	2023	EAF	600	Metal Expert
Middle East	Iran	Eghlid Pars Steel		plan	?	EAF	1000	Metal Expert
Middle East	Iran	Fasa Steel Complex Co (Fasco)		plan	?	EAF	1500	World Steel Capacities
Middle East	Iran	Foolad Alborz Iranian Company (FAICO)		plan	?	EAF	800	World Steel Capacities
Middle East	Iran	MIDHCO		plan	?	EAF	1500	World Steel Capacities

Middle East	Iran	MIDHCO		plan	?	EAF	1500	World Steel Capacities
Middle East	Iran	Kavir Damghan Steel Complex (KADASCO)		plan	?	IF	200	World Steel Capacities
Middle East	Iran	Kavir Damghan Steel Complex (KADASCO)		plan	?	EAF	?	World Steel Capacities
Middle East	Iran	Khayyam Steel	Khayyam Steel Neyshabour	underway	2024	EAF	500	Metal Expert
Middle East	Iran	Kurdistan Steel Company	IMIDRO	underway	2023	EAF	1000	Platts, Company HP, Metal Expert
Middle East	Iran	Malayer Steel Company		plan	?	IF	300	World Steel Capacities
Middle East	Iran	Malekan Steel	Malekan Steel	plan	?	EAF	400	Metal Expert, World Steel Capacities
Middle East	Iran	Malekan Steel	Malekan Steel	plan	?	EAF	400	World Steel Capacities
Middle East	Iran	Natanz Steel Company	Natanz Steel Industries	plan	?	EAF	850	Metal Expert
Middle East	Iran	Neyshabur Steel Complex		plan	?	EAF	800	World Steel Capacities
Middle East	Iran	North West Steel Industries (NWSI)		plan	?	EAF	800	World Steel Capacities
Middle East	Iran	Orumieh Steel Company	Orumieh Steel Group	plan	?	EAF	1200	World Steel Capacities, Metal Expert, Company HP
Middle East	Iran	Orumieh Steel Company	Orumieh Steel Group	plan	?	IF	400	World Steel Capacities
Middle East	Iran	Orumieh Steel Company	Orumieh Steel Group	plan	?	EAF	800	World Steel Capacities
Middle East	Iran	Persian Gulf Saba Steel		plan	?	EAF	1500	World Steel Capacities
Middle East	Iran	Persian Gulf Saba Steel		plan	?	EAF	1500	World Steel Capacities

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Middle East	Iran	Persian Gulf Saba Steel		plan	?	EAF	1500	World Steel Capacities
Middle East	Iran	Qeshm Steel Development Co.(QE.S.D.Co)	Qeshm Steel Development Co.(QE.S.D.Co)	plan	?	EAF	1500	Platts, Metal Expert, Company HP
Middle East	Iran	Qeshm Steel Development Co.(QE.S.D.Co)	Qeshm Steel Development Co.(QE.S.D.Co)	plan	?	EAF	1500	Platts, Metal Expert, Company HP
Middle East	Iran	Saba Foulad Zagros	Saba Foulad Zagros	underway	2023	EAF	460	Company HP
Middle East	Iran	Sadrfulad complex	Sadr Steel Company	plan	?	EAF	400	World Steel Capacities
Middle East	Iran	Samangan Steel Industries		plan	?	EAF	750	Metal Expert, World Steel Capacities
Middle East	Iran	Samangan Steel Industries		plan	?	EAF	750	Metal Expert, World Steel Capacities
Middle East	Iran	South Rouhina Steel		plan	?	EAF	550	World Steel Capacities
Middle East	Iran	Torbat Heydariyeh Steel	Torbat Heydariyeh Steel	plan	?	EAF	1450	World Steel Capacities, Metal Expert
Middle East	Iran	Torbat Heydariyeh Steel		plan	?	EAF	1450	World Steel Capacities
Middle East	Iran	Brojen Steel		plan	2025	EAF	1000	WM
Middle East	Iran	Kavir Damghan Steel Complex (KADASCO)	Kavir Damghan Steel Complex (KADASCO)	plan	?	IF	200	Metal Expert
Middle East	Iran	GolGohar Mining & Industrial Co	Golgozar Mining & Industrial Co.	underway	2024	EAF	1500	World Steel Capacities
Middle East	Iran	GolGohar Mining & Industrial Co		underway	2024	EAF	1500	World Steel Capacities

Middle East	Iran	GolGohar Mining & Industrial Co		underway	2026	EAF	1300	World Steel Capacities
Middle East	Iran	National Iranian Steel Company (NISCO)	IMIDRO	underway	2023	EAF	800	Metal Expert
Middle East	Iran	North West Steel Industries (NWSI)		plan	?	EAF	800	World Steel Capacities
Middle East	Iran	Kavand Nahand Zamin (KNZ)		plan	?	EAF	100	Metal Expert
Middle East	Iran	Kavir Steel Cooperative		underway	2023	IF	150	Metal Expert
Middle East	Iran	Sepid Farab Kavir Steel		underway	2024	EAF	800	Metal Expert
Middle East	Iran	Gohar Zamin Iron Ore Company		plan	?	EAF	3000	Metal Expert
Middle East	UAE	BILDCO		plan	?	EAF	1000	Metal Expert
Middle East	UAE	Arabian Gulf Steel Industries (AGSI)		underway	2023	IF	150	World Steel Capacities
Middle East	Iraq	State Company for Iron & Steel (SCIS)	United Brothers Holding	underway	2023	EAF	500	Metal Expert
Middle East	Oman	Muscat Steel Industries	Muscat Steel	plan	?	EAF	200	World Steel Capacities
Middle East	Oman	Shumookh Investment and Services (SIS)		plan	?	?	400	Metal Expert
Middle East	Saudi Arabia	Al-Qaryan Steel Company	Al-Qaryan Steel Company	plan	?	EAF	300	Metal Expert
Middle East	Saudi Arabia	Al-Yamamah Steel Industries	Private	plan	?	EAF	1000	Platts, Metal Expert
Middle East	Saudi Arabia	Arkan Steel	Al-Watania Group	plan	?	EAF	600	World Steel Capacities
Middle East	Saudi Arabia	Atoun Steel Industry		plan	?	EAF	910	Platts, Metal Expert

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Middle East	Saudi Arabia	Gulf Tubing Co	Gulf Tubing Co	plan	?	EAF	600	Company HP
Middle East	Saudi Arabia	Madina Metal		underway	2023	IF	300	World Steel Capacities
Middle East	Saudi Arabia	Essar Group	Essar Group	plan	2025	EAF	4000	World Steel Capacities
USMCA	United States	U.S. Steel		plan	2024	EAF	2720	Metal Expert
USMCA	United States	Nucor Corporation		plan	2024	EAF	570	Metal Expert
USMCA	United States	North Star BlueScope Steel	BlueScope Steel	underway	2023	EAF	850	Company HP
USMCA	United States	AM/NS Calvert LLC	ArcelorMittal	underway	2023	EAF	1500	Metal Expert, Company HP
USMCA	United States	Commercial Metals Company (CMC)		underway	2023	EAF	453	Metal Expert
USMCA	United States	Commercial Metals Company (CMC)		plan	2025	EAF	453	Metal Expert
USMCA	United States	JSW USA	JSW Holdings	plan	?	EAF	?	Platts
USMCA	United States	Liberty House Group	Liberty House Group	plan	?	EAF	?	Company HP
USMCA	United States	Nucor Corporation		plan	2024	EAF	544	Metal Expert
USMCA	United States	Nucor Corporation		plan	2024	EAF	2721	Metal Expert
USMCA	United States	Pacific Steel		plan	2025	Steelmaking	380	Company HP
USMCA	United States	Highbar		plan	2025	EAF	544	World Steel Capacities
USMCA	United States	72 Steel		plan	2025	EAF	454	World Steel Capacities

USMCA	Canada	Algoma		underway	2024	EAF	3356	World Steel Capacities
USMCA	Canada	ArcelorMittal	ArcelorMittal	plan	2028	EAF	2400	Metal Expert
USMCA	Canada	Gerdau Ameristeel		underway	2023	EAF	181	World Steel Capacities
USMCA	Mexico	Deacero		plan	2024	EAF	?	World Steel Capacities
USMCA	Mexico	Ternium		plan	2026	EAF	2350	World Steel Capacities
Latin America	Brazil	Aco Cearense		plan	2025	EAF	?	World Steel Capacities
Latin America	Brazil	ArcelorMittal		underway	2024	BOF	1000	Company HP
Latin America	Brazil	Grupo Simec		underway	2023	EAF	730	Metal Expert, Kallanish
Latin America	Brazil	Grupo Simec		plan	?	EAF	200	Metal Expert
Latin America	Brazil	Usiminas		plan	2023	BOF	4900	Metal Expert
Latin America	Argentina	Tenaris		plan	?	EAF	950	World Steel Capacities
Latin America	Bolivia	Empresa Siderurgica del Mutun	Empresa Siderurgica del Mutun	underway	2023	EAF	1000	Platts, Company HP, Metal Expert
Oceania	Australia	Liberty House Group		underway	2025	EAF	1500	World Steel Capacities
Oceania	New Zealand	New Zealand Steel		plan	2026	EAF	?	World Steel Capacities

Source: Company HP (CHP) and media sources in the table

Annex B. AVAILABLE INFORMATION ON PLANT-LEVEL CLOSURES

Table summarises the plant-level closure information reported by public and commercial sources up to June 2023. Please note that this does not represent an exhaustive list of closures.

Table A 0.1. Closure data

Status	Region	Economies	Location	Company	Equipment	capacity (thousand metric tonnes)	Sources
expected	Asia	China	Fuzhou City, Fujian	Luoyuan Minguang Steel	BOF	1500	Metal Expert
expected	Asia	China	Dazhou City, SicHunan	Sichuan Dazhou Iron and Steel	BOF	2600	ME, Kallanish
expected	Asia	China		Tangyin Iron and Steel	BOF	2800	ME, Kallanish
expected	Asia	China	Zhangzhou City, Fujian	Sanbao Iron and Steel	EAF	300	
expected	Asia	China	Zhangzhou City, Fujian	Sanbao Iron and Steel	EAF	600	
expected	Asia	China	Zhangzhou City, Fujian	Sanbao Iron and Steel	EAF	650	
expected	NAFTA	Mexico	Celaya	Deacero	EAF	1100	World Steel Capacities
expected	South America	Argentina	Campana	Tenaris	EAF	475	World Steel Capacities
expected	Oceania	Australia	Whyalla, South Australia	Liberty House Group	BOF	1300	World Steel Capacities
expected	Oceania	New Zealand	Glenbrook industrial area, Franklin district	New Zealand Steel	BOF	650	World Steel Capacities

Source: Company HP, government HP and media sources in the table.

Annex C. STEELMAKING CAPACITY DATA BY ECONOMY

Table A 0.1. Crude Steelmaking capacity developments

	Nominal crude steelmaking capacity					
	2010	2019	2020	2021	2022	2023e
Africa	33.6	44.6	44.7	43.5	45.8	51.4
Algeria	3.3	7.9	9.3	9.3	9.3	9.3
Angola	0.0	0.5	0.5	0.5	0.5	0.5
Botswana	0.0	0.1	0.1	0.1	0.1	0.1
Cameroon	0.2	0.2	0.2	0.2	0.2	0.2
Democratic Republic of Congo	0.1	0.1	0.1	0.1	0.1	0.1
Cote d'Ivoire	0.0	0.0	0.0	0.0	0.0	0.0
Egypt	9.5	15.6	15.6	14.4	15.2	16.0
Ethiopia	0.5	0.8	0.8	0.8	0.8	0.8
Gabon	0.0	0.1	0.1	0.1	0.1	0.1
Ghana	0.5	0.5	0.5	0.5	0.5	0.5
Kenya	0.5	0.6	0.6	0.6	0.6	0.6
Libya	1.7	1.7	1.7	1.7	1.7	1.7
Mauritius	0.0	0.0	0.0	0.0	0.0	0.0
Morocco	1.5	2.8	2.8	2.8	4.4	4.4
Mozambique	0.0	0.0	0.0	0.0	0.0	0.0
Namibia	0.0	0.0	0.0	0.0	0.0	1.0
Nigeria	2.7	3.1	3.1	3.1	3.1	4.6
South Africa	12.0	9.4	8.1	8.1	8.1	8.1
Sudan	0.1	0.1	0.1	0.1	0.1	0.1
Tanzania	0.0	0.0	0.0	0.0	0.0	0.0
Togo	0.0	0.0	0.0	0.0	0.0	0.0
Tunisia	0.2	0.2	0.2	0.2	0.2	0.2
Uganda	0.1	0.1	0.1	0.1	0.1	0.1
Zambia	0.1	0.1	0.1	0.1	0.1	0.1
Zimbabwe	0.8	0.8	0.8	0.8	0.8	3.0

	2010	2019	2020	2021	2022	2023e
Asia	1437.9	1616.5	1622.5	1622.6	1626.1	1656.6
Non-OECD Asia	1229.9	1406.4	1412.4	1418.7	1422.1	1452.6
Bangladesh	3.2	6.1	7.0	7.3	7.3	7.3

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Bhutan	0.0	0.0	0.0	0.0	0.0	0.0
Cambodia	0.0	0.0	0.0	0.0	0.0	0.0
China (People's Republic of)	1 057.9	1148.3	1147.9	1146.5	1149.9	1173.3
Chinese Taipei	26.9	29.4	29.4	29.4	29.4	29.4
Hong Kong (China)	0.0	0.0	0.0	0.0	0.0	0.0
India	84.4	128.7	128.7	133.9	133.9	138.4
Indonesia	10.8	17.8	19.6	21.3	21.3	23.8
Japan	132.0	128.5	128.5	122.4	122.4	122.4
Korea	76.0	81.6	81.6	81.6	81.6	81.6
Democratic People's Republic of Korea	11.2	11.2	11.2	11.2	11.2	11.2
Lao People's Democratic Republic	0.2	0.2	0.2	0.2	0.2	0.2
Malaysia	12.9	19.2	19.2	19.2	19.2	19.2
Mongolia	0.1	0.1	0.1	0.1	0.1	0.1
Myanmar	0.1	0.3	0.3	0.3	0.3	0.3
Nepal	0.3	0.3	0.3	0.3	0.3	0.3
Pakistan	3.1	7.1	8.6	9.0	9.0	9.1
Philippines	1.8	1.8	1.8	1.8	1.8	1.8
Singapore	0.8	0.8	0.8	0.8	0.8	0.8
Sri Lanka	0.2	0.2	0.2	0.2	0.2	0.2
Thailand	9.7	11.4	11.4	11.4	11.4	11.4
Viet Nam	6.5	23.7	26.0	26.0	26.0	26.0
ASEAN-6	42.4	74.6	78.7	80.4	80.4	82.9

CIS	139.6	143.4	142.6	143.9	145.0	145.1
Armenia	0.0	0.2	0.2	0.2	0.2	0.2
Azerbaijan	0.9	1.6	1.6	1.6	1.6	1.6
Belarus	2.8	3.0	3.0	3.0	3.0	3.0
Georgia	0.1	0.1	0.4	0.4	0.4	0.4
Kazakhstan	7.1	7.7	7.7	7.7	7.7	7.7
Kyrgyzstan	0.0	0.0	0.0	0.0	0.0	0.0
Moldova	1.0	1.0	1.0	1.0	1.0	1.0
Russia	77.7	88.3	88.8	90.1	90.8	90.9
Turkmenistan	0.2	0.2	0.2	0.2	0.2	0.2
Ukraine	48.8	40.2	38.7	38.7	38.7	38.7
Uzbekistan	1.1	1.1	1.1	1.1	1.4	1.4

	2010	2019	2020	2021	2022	2023e
Europe	305.4	287.4	287.5	288.1	289.3	294.3
Non-OECD Europe	13.9	12.9	12.9	12.9	12.9	12.9
EU	235.4	216.0	213.4	213.4	213.4	213.6

Austria	8.5	8.5	8.5	8.5	8.5	8.7
Belgium	15.1	8.9	8.9	8.9	8.9	8.9
Bulgaria	1.2	1.2	1.2	1.2	1.2	1.2
Croatia	0.5	0.3	0.3	0.3	0.3	0.3
Cyprus	0.0	0.0	0.0	0.0	0.0	0.0
Czechia	7.8	6.8	6.8	6.8	6.8	6.8
Denmark	0.0	0.0	0.0	0.0	0.0	0.0
Estonia	0.0	0.0	0.0	0.0	0.0	0.0
Finland	5.1	4.5	4.5	4.5	4.5	4.5
France	22.3	19.1	19.1	19.1	19.1	19.1
Germany	58.4	58.1	58.1	58.1	58.1	58.1
Greece	3.7	3.9	3.9	3.9	3.9	3.9
Hungary	2.0	2.0	2.0	2.0	2.0	2.0
Ireland	0.0	0.0	0.0	0.0	0.0	0.0
Italy	38.8	34.7	34.7	34.7	34.7	34.7
Latvia	0.8	0.9	0.9	0.9	0.9	0.9
Lithuania	0.0	0.0	0.0	0.0	0.0	0.0
Luxembourg	3.7	2.4	2.4	2.4	2.4	2.4
Malta	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	7.8	7.8	7.8	7.8	7.8	7.8
Poland	12.0	12.0	9.4	9.4	9.4	9.5
Portugal	1.7	1.7	1.7	1.7	1.7	1.7
Romania	6.0	5.2	5.2	5.2	5.2	5.2
Slovak Republic	5.5	4.9	4.9	4.9	4.9	4.9
Slovenia	0.7	0.7	0.7	0.7	0.7	0.7
Spain	27.9	26.6	26.6	26.6	26.6	26.6
Sweden	6.0	6.0	6.0	6.0	6.0	6.0
Other Europe	70.0	71.4	74.1	74.7	75.9	80.7
Albania	0.9	0.9	0.9	0.9	0.9	0.9
Bosnia Herzegovina	1.8	1.8	1.8	1.8	1.8	1.8
Iceland	0.0	0.0	0.0	0.0	0.0	0.0
Macedonia	0.5	0.5	0.5	0.5	0.5	0.5
Montenegro	0.4	0.4	0.4	0.4	0.4	0.4
Norway	1.0	1.0	1.0	1.0	1.0	1.0
Serbia	2.7	2.7	2.7	2.7	2.7	2.7
Switzerland	1.4	1.4	1.4	1.4	1.4	1.4
Türkiye	42.7	50.7	53.4	54.0	55.2	60.0
United Kingdom	18.7	12.1	12.1	12.1	12.1	12.1

	2010	2019	2020	2021	2022	2023e
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Latin America	66.3	73.9	73.4	73.9	73.9	75.9
South America	63.6	72.2	71.7	72.2	72.2	73.9
Non-OECD Latin America	62.2	69.8	69.3	69.9	69.9	71.8
Argentina	6.7	7.3	7.3	7.3	7.3	7.3
Brazil	44.6	51.4	50.9	50.9	50.9	51.6
Bolivia	0.0	0.0	0.0	0.2	0.2	1.2
Chile	2.0	2.0	2.0	2.0	2.0	2.0
Colombia	2.0	2.0	2.0	2.0	2.0	2.0
Costa Rica	0.0	0.0	0.0	0.0	0.0	0.0
Cuba	0.7	0.7	0.7	0.7	0.7	0.9
Dominican Republic	0.4	0.4	0.4	0.4	0.4	0.4
Ecuador	0.6	1.3	1.3	1.3	1.3	1.3
El Salvador	0.2	0.2	0.2	0.2	0.2	0.2
Guatemala	0.5	0.5	0.5	0.5	0.5	0.5
Panama	0.0	0.0	0.0	0.0	0.0	0.0
Paraguay	0.1	0.3	0.3	0.3	0.3	0.3
Peru	1.6	2.0	2.0	2.4	2.4	2.4
Puerto Rico	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad Tobago	1.0	0.0	0.0	0.0	0.0	0.0
Uruguay	0.2	0.2	0.2	0.2	0.2	0.2
Venezuela	5.6	5.6	5.6	5.6	5.6	5.6

Middle East	38.5	80.7	84.1	89.0	92.3	103.3
Non-OECD Middle East	37.9	80.1	83.6	88.5	91.8	102.7
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0
Bahrain	0.0	1.0	1.0	1.0	1.0	1.0
Iran	22.5	48.3	50.3	54.8	57.4	66.8
Iraq	0.2	2.6	2.9	3.3	4.0	5.2
Israel	0.6	0.6	0.6	0.6	0.6	0.6
Jordan	0.6	1.2	1.2	1.2	1.2	1.2
Kuwait	1.4	1.4	1.4	1.4	1.4	1.4
Lebanon	0.2	0.2	0.2	0.2	0.2	0.2
Oman	0.5	3.0	4.2	4.2	4.2	4.2
Qatar	2.8	3.2	3.2	3.2	3.2	3.2
Saudi Arabia	6.7	11.6	11.6	11.6	11.6	11.9
Syrian Arab Republic	0.1	2.6	2.6	2.6	2.6	2.6
United Arab Emirates	2.8	4.8	4.8	4.8	4.8	4.9
Yemen	0.1	0.3	0.3	0.3	0.3	0.3

	2010	2019	2020	2021	2022	2023e

North America	156.7	154.2	157.5	157.7	162.8	165.8
Canada	18.6	16.2	16.2	16.2	16.2	16.4
Mexico	20.3	27.7	27.7	27.7	27.7	27.7
United States	117.9	110.4	113.6	113.9	118.9	121.7

Oceania	9.1	6.4	6.4	6.4	6.4	6.4
Australia	8.1	5.4	5.4	5.4	5.4	5.4
New Zealand	1.0	1.0	1.0	1.0	1.0	1.0

OECD TOTAL	669.9	649.7	653.1	647.8	654.1	662.1
Non-OECD TOTAL	1517.2	1757.3	1765.5	1777.3	1787.4	1836.5

WORLD TOTAL	2187.1	2407.0	2418.6	2425.2	2441.5	2498.6
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Note on China:

The data on nominal crude steelmaking capacity provided for China do not include production capacity by “illegal” (“*违法 Wéifǎ*”) induction furnaces, nor do they reflect any changes in steelmaking capacity associated with those furnaces.

Note on ASEAN-6:

ASEAN-6 denotes the aggregate of member economies of SEAISI (The South East Asia Iron and Steel Institute) in the ASEAN region, i.e. Indonesia, Malaysia, Philippines, Singapore, Thailand and Viet Nam.

Source: OECD.

Annex D. DATA FOR GLOBAL CRUDE STEELMAKING CAPACITY AND CRUDE STEEL PRODUCTION

Table A 0.1. Global crude steelmaking capacity and crude steel production (data from 2010)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023e
Capacity (LHS)	2 191	2 263	2 316	2 407	2 427	2 415	2 412	2 399	2 378	2 407	2 419	2 425	2 441	2 499
Production (LHS)	1,435	1,540	1,562	1,652	1,674	1,623	1,633	1,737	1,829	1,877	1,881	1,962	1,885	1,888
Capacity-Production Gap (RHS)	755	723	753	755	753	792	779	662	549.4	529.9	537.3	462.9	556.1	610.8
Crude steel production as a % of capacity	65.5%	68.1%	67.5%	68.6%	69.0%	67.2%	67.7%	72.4%	76.9%	78.0%	77.8%	80.9%	77.2%	75.6%

Note: Capacity data reflect information up to June 2023

Source: OECD for crude steelmaking capacity and World Steel Association for crude steel production

Annex E. WORKING DEFINITIONS USED

Steelmaking capacity

The OECD Secretariat employs a definition of nominal crude steelmaking capacity based on maximum theoretical equipment capacity². This definition does not take into account yield losses, maintenance and other factors affecting the productivity of installed steelmaking equipment. Therefore, steelmaking capacity figures provided by the OECD should not be regarded as effective capacity.

Capacity is defined in volume (tonnes) and annual capacity data figures reflect all existing steelmaking capacity at the end of a calendar year.

Steelmaking equipment

The OECD Secretariat considers as steelmaking equipment any equipment used to produce crude steel. The definition excludes iron-making equipment considered here as upstream, as well as casting, rolling or finishing equipment considered here as downstream. More specifically, the following equipment types are considered as crude steelmaking:

Type	Code
Electric arc furnace	EAF
Energy Optimising Furnace	EOF
Induction furnace	IF
LD Basic Oxygen furnace	BOF
Open hearth furnace	OHF
Steelmaking - not specified	STEELMKG

Assessing capacity developments

Information from the three databases described in Annexes A-C (existing capacity, new investments and closures) in this paper are used to assess capacity developments³. More specifically, changes in capacity are derived by taking into account new capacity additions and permanent closures in a given economy. In order to assess potential gross capacity additions in the future, investment projects are classified as “underway” or “planned”. A project classified as “underway” is one which is under construction or for which contracts for equipment have been awarded and a major financial or state commitment has been made. “Planned” projects are more uncertain because they are either at the feasibility or early planning stage, yet to receive financial or state backing, or not scheduled for completion at a specified time. The classification of projects and comments on their progress do not in any way represent a judgement or imply a view on the advisability or feasibility of the projects.

Because closures cannot be forecasted, the tables in this document provide only potential gross capacity additions and do not provide projections of net changes in capacity. It should

be noted that planned or underway investments are sometimes altered due to changes in market conditions. Postponements refer to projects that were put on hold for a definite or indefinite period, while cancellations are previously announced projects that will no longer be implemented.

Principle of overestimate

The Secretariat assumes that in the absence of any further information, any projects classified as “underway” with a start date that expired, have since become “operating”. These projects are taken into account for the calculation of the annual capacity aggregate of the corresponding economy. The Secretariat may adjust the data retrospectively if it obtains new information of the status of the specific investment projects.

Steelmaking capacity closures

The OECD Secretariat distinguishes between "permanent" and "temporary" steelmaking capacity closures. Permanent closures of capacity are considered to involve dismantling and scrapping of the equipment used for producing crude steel, or otherwise rendering such equipment permanently unusable for manufacturing crude steel. Temporary closures entail measures other than permanent closures as defined above, whereby production can be resumed in the future. Temporary closures include, for example, the idling of a plant's furnace. Only permanent closures are used for the purpose of calculating existing capacity. In practice, when compiling the database, it is unfortunately not always possible to understand from media sources if a closure is only temporary or permanent. This explains why the field value of “Type of closures” is sometimes set to “Others (unidentified)” in the OECD database on closures.

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Endnotes

¹ Double-digit growth is also planned for Oceania, but it should be noted that one of the new plants is to be built at the same level as existing facilities, so it is not a net capacity increase. In the other case, the volume of new capacity has not yet been announced, but it has been announced that the existing plant will be closed (see Annex B).

² This definition is also commonly referred to as nominal, rated or nameplate capacity.

³ The list of data sources is available at <http://www.oecd.org/sti/ind/steelcapacity-methodology.htm>