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## **Steel Market developments: Q4 2022**

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Contact:

Anthony De Carvalho, [Anthony.DECARVALHO@oecd.org](mailto:Anthony.DECARVALHO@oecd.org);

Fabien Mercier, [Fabien.MERCIER@oecd.org](mailto:Fabien.MERCIER@oecd.org);

Gianpiero Mattera, [Gianpiero.MATTERA@oecd.org](mailto:Gianpiero.MATTERA@oecd.org);

Luciano Giua, [Luciano.GIUA@oecd.org](mailto:Luciano.GIUA@oecd.org).

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## Executive summary

The outlook for global steel markets has deteriorated sharply. Factors contributing to weaker prospects include the global economic slowdown, high energy prices and accelerating inflation, the impacts of the Russian Federation's (hereafter "Russia") war of aggression against Ukraine and supply chain disruptions, and a sharp downturn in the People's Republic of China (hereafter "China") due to an ailing real estate sector and strict COVID lockdown policies.

World crude steel production has decreased sharply in 2022 as global demand for steel contracts. The destruction of steel production facilities in Ukraine has led to a collapse in steel production, while soaring energy prices have led to widespread plant idling and production stoppages, especially in Europe. While the financial performance of steel firms had improved in 2021, steel prices have recently plunged more than steel raw material prices, which is putting pressure on steel firms' margins. This is on top of unresolved structural problems, as OECD data show that continued growth in global steelmaking capacity will increase in 2022 for the fourth year in a row, contributing to market imbalances and lower capacity utilisation rates in many countries [DSTI/SC(2022)12].

This report provides an overview of recent steel market developments – including demand, supply, and prices – during the first half of 2022, and reflections on the outlook for steel markets going forward:

- **World GDP growth is expected to decelerate** to 3.0% in 2022 and 2.2% in 2023. Ukraine and Russia are large exporters of key minerals and energy which are essential not only for steel production but broader economic growth. Economic risks are on the downside: a continuation or escalation of Russia's large-scale war against Ukraine, a resurgence of the COVID pandemic, a sharper than expected downturn in the Chinese real estate sector, and high inflation pressures that erode household's purchasing power would all tilt growth forecasts lower.
- **World crude steel production decreased sharply** during the first half of 2022, falling to 158.1 million metric tonnes in June 2022, a 5.9% decrease compared to June 2021. Steel production in Ukraine completely collapsed (-58.2%) due to the war (see Box 1). Africa and the European Union also experienced sharp double-digit declines in production, with more moderate contractions in South America, Asia and North America.
- **Steelmaking capacity will increase** in 2022 for the fourth year in a row, while capacity utilisation will shrink. Global steelmaking capacity will increase to 2 460.8 mmt in 2022 while capacity utilisation will decrease from 78.5% in 2021 to 77.1% in 2022.
- **Steel exports are falling significantly.** Annualised figures for global exports are down by 7.8% so far in 2022, reflecting weak demand conditions.
- **Steel prices have fallen sharply and more than steel raw material prices.** Steel prices peaked in June 2021 and have been decreasing sharply since then, erasing most of their 2021 gains. Iron ore prices and scrap prices have followed a similar trajectory, whereas coking coal prices have remained high.
- **Profit margins are getting squeezed.** With prices of steel products falling more than the prices of the raw materials necessary to make them, steel company margins are being squeezed and stand at historic lows in 2022.

- **Steel consumption is expected to decline by 2.3% in 2022 and to rebound by 1% in 2023.** Energy and commodity price increases, inflationary pressure, lower demand from China and political instability have worsened steel demand trends globally. Rising interest rates and the tightening of monetary policy, high inflation, weak consumer spending and higher energy prices are expected to impact steel demand significantly going forward, and risks to the outlook are on the downside.

## 1. The OECD economic outlook

*Russia's war of aggression against Ukraine has generated a huge humanitarian crisis in Europe, and its impact on the global commodity trade was felt around the world. It has worsened the outlook for inflation, as the embargo on coal and seaborne oil imports from Russia in Europe add to the challenges already facing policymakers from rising inflationary pressures and the imbalanced recovery from the pandemic. Consequently, the OECD expects world GDP growth to be a modest 3% in 2022 and 2.2% in 2023, and to be weaker than previously projected in most economies, especially in Europe.*

*In spite of their relatively small joint share in terms of global output, Ukraine and Russia are large producers and exporters of key minerals and energy, which are fed into global added value chains as basic yet essential inputs. A risk to the outlook is thus that the war continues, which will reduce global GDP further and increase inflation around the world through higher food and oil prices. Elevated inflation erodes households' real disposable income and living standards, resulting in lower aggregate consumption. Uncertainty and lower consumption deter business investment, which results in lower aggregate output. Besides a continuation and aggravation of the war, significant risks surrounding the outlook include a resurgence of the COVID pandemic that could disrupt supply chains further, a sharp downturn in the Chinese real estate sector, as well as uncertainties related to power supply, rising cost pressures, high levels of government debt, and increased geopolitical tensions.*

*The estimates provided in the rest of this section are taken from the OECD's November 2022 Economic Outlook. Further information and estimation of the effects of Russia's war against Ukraine can be accessed through the OECD webpage.<sup>1</sup>*

### 1.1. Global prospects

The economic recovery is expected to decelerate to 3.1% in 2022 and 2.2% in 2023, according to the OECD's November 2022 Economic Outlook<sup>2</sup> (OECD, 2022<sub>[1]</sub>). Even prior to Russia's full-scale invasion of Ukraine, the recovery had been fragile and unequal across sectors and jurisdictions, with hardest-hit, contact-intensive sectors' recovery lagging behind. Persisting supply bottlenecks, rising input costs and the continued effects of the pandemic weighed down on the pace of the recovery. A stronger inflation that lasted longer than expected had emerged worldwide prior to the start of Russia's war against Ukraine, led by a strong rise in food and energy prices that only worsened once the war started. Inflation generally affects medium to low-income households disproportionately, weighting on final consumers' consumption, creating uncertainties for the economic outlook and raising significant policy challenges.

The war is having significant consequences for economic growth world-wide, in combination with the shutdowns in major cities and ports in China due to the country's zero-COVID policy and the general tightening of monetary policy amid concerns of accelerating inflation world-wide. Growth is expected to be considerably weaker than previously foreseen in most economies, especially in Europe, where an embargo on oil and coal imports from Russia is incorporated in the projections for 2023. Commodity prices have continued to rise substantially, reflecting the importance of supply from Russia and Ukraine in many markets, adding to already existing inflationary pressures and hitting real incomes and spending, particularly for the most vulnerable households. In many emerging-market economies, the risks of food shortages are high given the reliance on agricultural

exports from Russia and Ukraine. Supply-side pressures have also intensified as a result of the war, as well as the shutdowns in China due to the country's zero-COVID policy.

Significant risks remain around GDP growth projections. New, more contagious or aggressive forms of COVID variants may emerge, including variants more prone to escape previously acquired immunity, impacting the economy if stringent lockdowns or zero-COVID policies are implemented. Outcomes in China could disappoint if the issues related to the Chinese real estate sector and with power supply persist or intensify, which could have adverse effects on other economies through global trade linkages. Power disruptions can reduce manufacturing activity and output, thus reducing steel demand, while a decrease in real estate construction would directly impact steel. Inflation could continue to surprise the upside markets and policymakers alike, with more persistent supply pressures than anticipated or a stronger and more sustained surge in energy costs. In most economies inflationary pressures have already broadened beyond food and energy and became more entrenched, as businesses around the world are starting to pass their higher costs to their consumers, hurting consumer finances and consumer confidence. This in turn could trigger a financial market repricing in anticipation of a more restrictive monetary policy, and expose vulnerabilities stemming from high levels of debt and stretched asset valuations. Furthermore, a protracted war may have larger global impacts than currently assumed, especially in Europe where challenges to reduce gas consumption and a colder winter could lead to gas shortages and push many European countries into a recession in 2023. A continued escalation of the war would lead to even direr consequences.

(Table 1) below presents the GDP growth forecasts according to the OECD's November 2022 Economic Outlook (OECD, 2022<sub>[1]</sub>).

**Table 1. The OECD economic projections (November 2022)**

	2019	2020	2021	2022	2023	2024
<b>World</b> <sup>1</sup>	2.8	-3.2	5.9	3.1	2.2	2.7
United States	2.3	-2.8	5.9	1.8	0.5	1.0
Euro area	1.6	-6.3	5.3	3.3	0.5	1.4
Germany	1.1	-4.1	2.6	1.8	-0.3	1.5
France	1.9	-7.9	6.8	2.6	0.6	1.2
Italy	0.5	-9.1	6.7	3.7	0.2	1.0
Spain	2.0	-11.3	5.5	4.7	1.3	1.7
Japan	-0.4	-4.6	1.6	1.6	1.8	0.9
United Kingdom	1.6	-11.0	7.5	4.4	-0.4	0.2
Mexico	-0.2	-8.1	4.8	2.5	1.6	2.1
Korea	2.2	-0.7	4.1	2.7	1.8	1.9
Canada	1.9	-5.2	4.5	3.2	1.0	1.3
Türkiye	0.9	1.8	11.4	5.3	3.0	3.4
Australia	2.0	-2.2	4.9	4.0	1.9	1.6
China (People's Republic of)	6.0	2.2	8.1	3.3	4.6	4.1
India <sup>2</sup>	3.7	-6.6	8.7	6.6	5.7	6.9
Russia	2.2	-2.6	4.7	-3.9	-5.6	-0.2
Brazil	1.2	-4.2	4.9	2.8	1.2	1.4
Indonesia	5.0	-2.1	3.7	5.3	4.7	5.1
South Africa	0.1	-6.4	4.9	1.8	1.3	1.6
<b>OECD</b> <sup>1</sup>	1.7	-4.4	5.6	2.8	0.8	1.4
<b>Non-OECD</b> <sup>1</sup>	3.8	-2.1	6.2	3.4	3.3	3.8
<b>World real GDP growth</b>	2.8	-3.2	5.9	3.1	2.2	2.7

Note: 1. Moving nominal GDP weights using purchasing power parities. 2. Fiscal years starting in April  
Source: OECD Economic Outlook, November 2022, available at: <http://www.oecd.org/eo/outlook/economic-outlook> Manufacturing indices

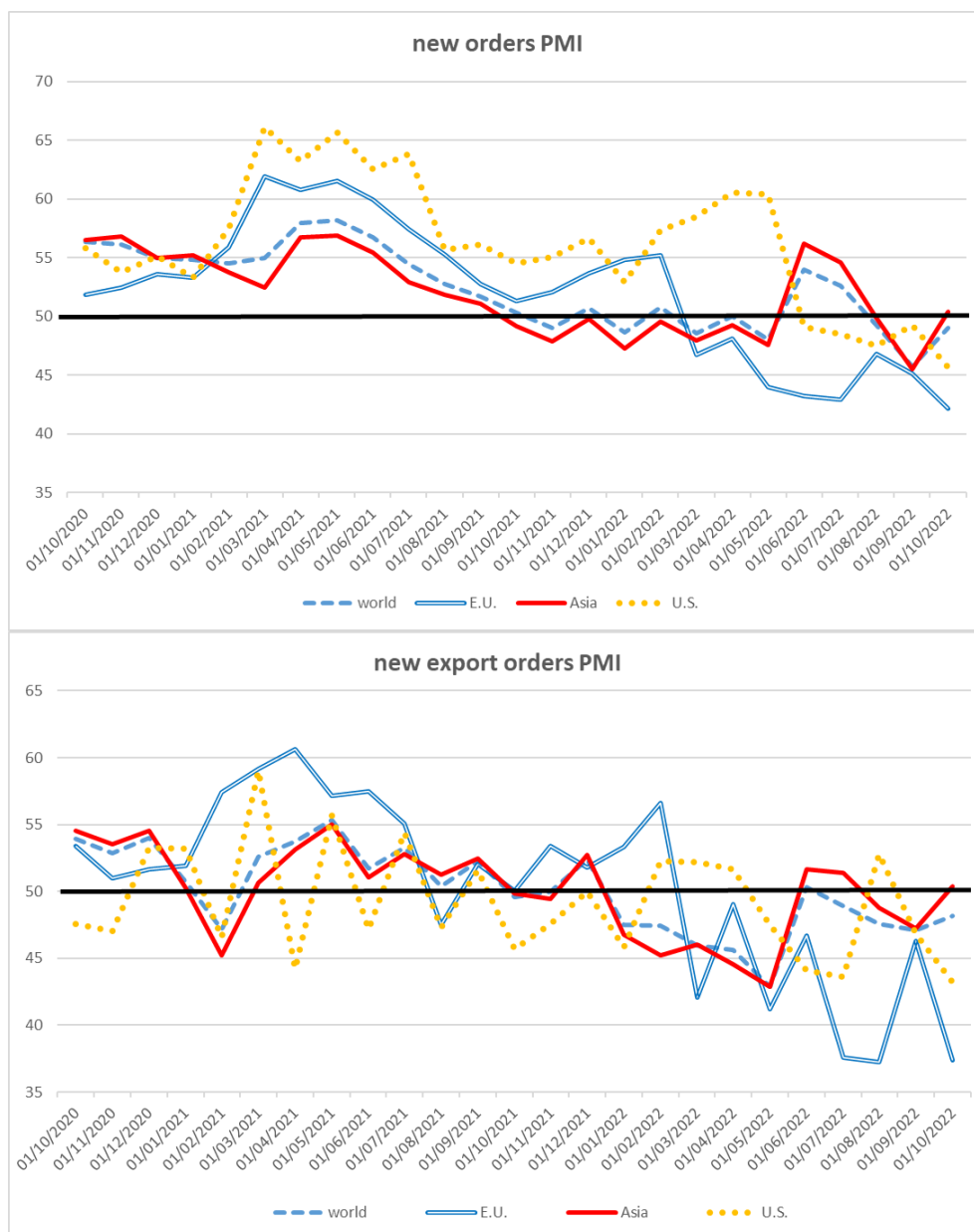
### 1.1.1. Manufacturing indices

Manufacturing activity expectations have diverged across regions during the first semester of 2022. The IHS-Markit indices for new orders and new export orders of steel-intensive

sectors, two forward-looking sub-indices of the broad Markit’s Purchasing Managers’ Index (PMI), are depicted in Figure 1. Both indices show that purchasing managers in the European Union’s steel-intensive sectors expect activity to contract the most, while those in the United States expect activity to contract to a lesser extent, and those in Asia expect a similar level of activity to be maintained, both in terms of new orders in general and in terms of new orders for export (index equal to 50). Understandably, it is in Europe that Russia’s war against Ukraine is having the largest economic impact compared to the two other regions for which the index is compiled (Asia and the United States).

**Figure 1. Markit Purchasing Managers’ Indices: new orders and new export orders among Steel-Intensive Sectors**

Latest data point: October 2022



Note: An index reading of less than 50 indicates that more purchasing managers expect a decrease over the next month than an increase.

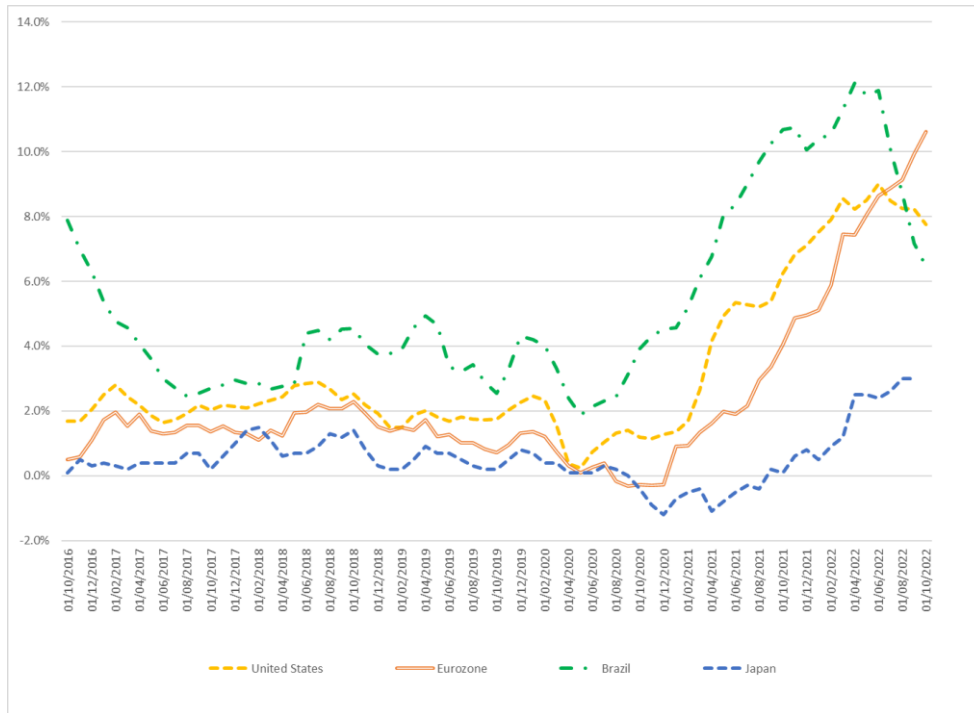
Source: Markit economics, via Refinitiv.

**1.1.2. Increasing prices for consumers and producers can weigh on demand**

A downside risk to the manufacturing sector, but also to the general economy, are the higher prices paid by consumers in most economies for a representative basket of goods (Figure 2). Higher prices weigh down on customers’ demand in general as they decrease purchasing power and erode household consumption in real terms. This could impact the housing construction sector through lower disposable income for mortgage payments of a potential house purchase, as well as the automotive sector and the household appliances sector, all of which are significant steel-consuming sectors.

**Figure 2. Prices increases have slowed down but remain at elevated levels**

Consumer Price Indices (CPI) percentage increase, year-on-year, for selected economies

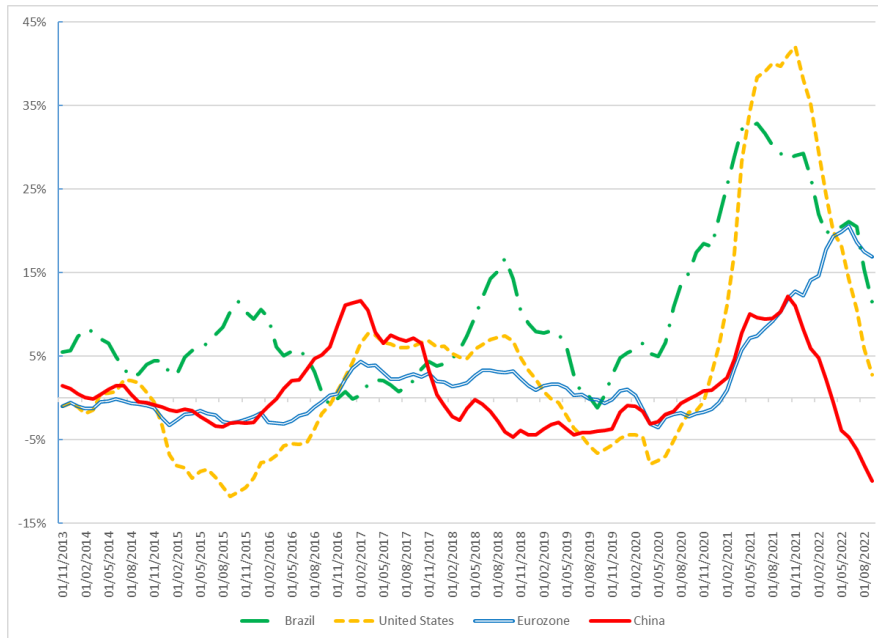


Source: Refinitiv

Producer prices have been decreasing in China, while they continued to increase in Brazil, the United States, and the European Union, albeit at a slower pace (Figure 3). Producer prices had previously increased much more than consumer prices. This suggests that corporations and businesses shielded their consumers from larger price increases for a while, but may start increasing their prices to a larger extent as inflation pressures become entrenched, in order to preserve sufficient operating margins.

**Figure 3. Producer inflation have decreased since their peak**

Producer Price Indices (PPI) percentage increase, year-on-year, for a few selected economies



Source: Refinitiv.

## 1.2. Regional prospects

In the euro area, GDP is expected to grow by 3.3% in 2022 and by 0.5% in 2023, and is set to be significantly damped in the first half of 2022 by Russia's war against Ukraine and the lockdowns in China. These factors are also pushing inflation up further, to a projected 8.1% this year. Inflation is weighing on households' consumption and increasing uncertainty. With the Russian oil embargo from 2023 pushing oil prices up, growth is expected to remain subdued in 2023, while inflation is expected to decline only gradually. Risks to economic activity are tilted to the downside: severe disruptions in energy, notably gas, supply would hit growth in Europe while pushing inflation further up. The ECB had signalled the gradual removal of monetary policy accommodation and raised its main refinancing operation rate from 0% to 0.5% on 27 July 2022. The ECB further plans to end net asset purchases in the third quarter of 2022, although maturing bonds will still be reinvested, thus keeping the size of the ECB's balance sheet unchanged.

In the United States, GDP is projected to grow by 1.8% in 2022 and by 0.5% in 2023. Supply disruptions may take some time to fully ease, especially given the impacts of Russia's war against Ukraine and COVID-related lockdowns in China. Nominal wage growth is expected to stay strong, as the labour market is expected to remain tight, despite an increase in labour force participation as receding health risks prompt workers to return to the labour force. Inflation is expected to remain above the Federal Reserve's target at the end of 2023. Monetary policy support is unwinding rapidly. Monetary policy normalisation has begun, and the Federal Open Market Committee gradually lifted the Federal Funds Rate from its pandemic lows to 2.50% as of August 2022. The normalisation of monetary policy, although necessary, will weigh on economic growth.

In Japan, GDP is projected to expand by 1.6% in 2022 and 1.8% in 2023 due to pent-up demand. Indeed confinement measures, weak external demand and surging prices for energy, materials and commodities in the context of COVID and the war have suppressed domestic demand early in 2022. In those conditions, pent-up demand has risen, further boosted by substantial policy support, and is expected to sustain growth going forward. While Japan had comparatively very low infection numbers until the end of 2021, the arrival of the Omicron variant caused a surge in the number of cases. The Japanese government applied state-of-emergency type measures during the first quarter of 2022 in most prefectures. These measures limited the operation of restaurants, bars and events. While the confinement measures have been lifted, Russia's war against Ukraine and lockdowns in China have affected trade and prices. Headline inflation has risen largely due to high energy prices. In addition, price rises have been announced for utility fees including electricity and water supply, and some food products. The fiscal and monetary policies have been supportive of economic activity. To address high energy prices, the government introduced a new subsidy from January 2022 for fuel wholesalers in order to moderate fuel price increases. In addition to the extension of this subsidy in March, the authorities announced a new policy package to counter surging prices on 26 April, whose total scale (including private sector spending) will be around 2.4% of GDP. Monetary policy has also remained supportive, with the Bank of Japan maintaining 10-year Japanese government bond yields at around zero within a range of plus or minus 0.25 percentage points and with no limit on bond purchases.

In the People's Republic of China (hereafter "China"), GDP growth is expected to slide to 3.3% in 2022 and to rebound to 4.6% in 2023. Amid mounting headwinds, growth will be supported by investment and the frontloading of infrastructure projects. Steel products used in construction account for slightly more than half of Chinese apparent steel consumption. In terms of infrastructure, steel products most typically used are rebar, but sections, plates and rail track are also important inputs. Real estate investment will remain weak due to the continuing defaults across developers and falling price expectations following Evergrande's default on part of its debt obligations on December 2021 (see Box 2). Exports will remain relatively strong as companies continue to increase their market shares in foreign markets. Adverse confidence effects related to continuing lockdowns could weigh down on consumption. China's large stockpiles of oil and grain reserves can mitigate the impact of rising global energy and food prices. Monetary policy has become more supportive of activity with a series of interest rate and reserve requirement rate cuts, but is still refraining from significant easing. Fiscal policy is also expected to be supportive as the composition of spending shifts towards infrastructure, boosting steel consumption.

In India, after a strong GDP rebound in 2021, the economy is progressively losing momentum as inflation expectations remain elevated, monetary policy normalises and global conditions deteriorate. Real GDP is projected to grow by 6.6% in the fiscal year 2022-23 and 5.7% in 2023-24. Merchandise exports rose to a record level, validating India's strategy of managed liberalisation through preferential trade agreements with major partners. The direct impact of Russia's war against Ukraine is relatively limited, as trade between India and both Russia and Ukraine is small. Russia accounts for less than 1% of India's crude oil consumption in 2015-21 and 1% of 2020 coal consumption. The indirect impact, through global commodity and energy market shifts, is much larger. In the 2015-21 period, India imported 88% of its annual consumption of oil and 29% for coal in 2020, and has the largest energy demand of any country going forward to the next 20 years. To anchor inflation expectations and limit second-round effects, the Reserve Bank of India (RBI) began monetary policy tightening in May 2022.

In Brazil, after a strong recovery of 4.9% in 2021, GDP growth is expected to slow in 2022 to 2.8%, before picking up to 1.2% in 2023. Rising inflation, Russia's war against Ukraine,

and tighter financial conditions have eroded the country's economic sentiment and households' purchasing power, which is expected to strongly dent domestic demand in the first half of 2022. The 2022 presidential election is compounding uncertainty, which deters investment. The labour market recovery has been slow, and the participation rate and real labour incomes have remained below pre-pandemic levels. Strong commodity prices are supporting fiscal outcomes in the short term. Oil revenues, coming from royalties and dividends, are benefiting both the central government and regional governments, which posted robust budget results in 2021 and early 2022. However, public expenditure is expected to increase in 2022, driven by higher social transfers with the new Auxílio Brasil programme, adjustments in civil servant wages, and higher discretionary expenses, resulting in an expansionary fiscal stance in 2022. Permanent increases in public expenditures could be a threat to the fiscal outlook in the longer term. Furthermore, debt-servicing will continue to increase due to the tightening of monetary policy. Indeed, the Central Bank of Brazil lifted its Selic rate by 50 bps to 13.75% on 3 August 2022 to fight inflation. This represented the 12th consecutive interest rate hike since the central bank started tightening in March of 2021.

## 2. Steel Production

World crude steel production decreased significantly during the first semester of 2022, falling to 158.1 million metric tonnes in June 2022, a 5.9% decrease compared to June 2021.

The decrease was felt across the board, as highlighted by Table 2 below. Ukraine and the Commonwealth of Independent States (CIS) fell the most, with a 21.2% decrease as of June 2022 compared to June 2021, followed by Africa (-18.7%), the European Union (-12.2%) and Other Europe (-10.9%). The decrease in crude steel production was much more moderate in South America (-4.9%), Asia (-3.1%) and North America (-2.4%).

**Table 2. World crude steel production developments in the first half of 2022**

	Level, thousand tonnes		% change, year-on-year		
	Jun 2022	2021	Jun 2022	Jan-Jun 2022 /Jan-Jun 2021	2021 / 2020
EU	11,766	152,759	-12.2	-6.2	-8.9
Other Europe	3,812	51,101	-10.9	-5.0	25.2
Russia & other CIS (4)	5,590	83,459	-21.2	-7.6	4.7
North America	9,609	117,862	-2.4	-2.3	-2.5
South America	3,657	45,566	-4.9	-2.8	1.4
Africa	1,196	15,965	-18.7	-9.1	9.9
Middle East	3,360	40,656	-5.0	-5.9	14.3
Asia, of which:	118,245	1,374,486	-3.1	-4.7	9.3
China (People's Republic of)	90,730	1,032,524	-3.3	-6.3	11.8
Oceania	553	6,425	3.0	-1.8	1.3
World	158,083	1,909,644	-5.9	-5.4	6.7

Note: Data are based on monthly production data and can differ from annual data published after December of each year. Furthermore, monthly production data can be revised at any time. The 4 CIS covered by the statistics are the Republic of Belarus, the Republic of Kazakhstan, the Republic of Moldova and the Republic of Uzbekistan.

Source: worldsteel data, as released in August 2022.

### 2.1. Americas

In North America, total crude steel production decreased by about 2.3% during the first half of 2022 compared to the same period one year earlier (henceforth, year-on-year), mainly driven by the fall in production in the United States (-2.2%) and Canada (-4.2%). Mexico's steel production decreased at a slower pace (-1.0%). Steel producers in North America were less affected by high energy prices hitting steel producers in Europe. The drop in production in the region seems to have more to do with annual capacity rates trending down since early May 2021. In the United States, steelmakers are focusing on keeping the more productive plants in activity while shutting down their less economical mills (Argus Media, 2022<sup>[2]</sup>). In recent months, steel production and capability utilisation rates in the United States have shown signs of recovery, with the Southern region leading the highest production and utilisation rates in the country (Kallanish, 2022<sup>[3]</sup>). The changing regional dynamics have been driven by increasing electric arc furnace (EAF) steel production capacity in the south of the United States and curtailments or idling of blast furnace capacity in the Great Lakes region, as EAFs require less capital to build and generally have lower labour costs than blast furnaces (Argus Media, 2021<sup>[4]</sup>).

In South America, steel production also decreased by 2.8% during the first half of 2022, year-on-year. Production decreased sharply in Chile (-14.2%), partially due to the interruptions of production of the largest steel producer in the country Compañía Siderúrgica Huachipato (CSH). The unit halted production at the beginning of February after it had trouble restarting following maintenance works (Platts, 2022<sup>[5]</sup>) (Kallanish, 2022<sup>[6]</sup>). The decrease was more moderate in Brazil (-2.9%) and steel production was roughly stable in Colombia (-0.4%). Argentina, on the contrary, managed to increase its steel production by 4.1% in June 2022 year-on-year, as the country experienced a rise in both its crude steel and its rolled steel output for the second consecutive month, reaching its best performance in the last five years (Kallanish, 2022<sup>[7]</sup>). The increased production reflects the higher demand from the auto industry, agricultural machinery production, civil construction and energy (Steel Orbis, 2022<sup>[8]</sup>).

## 2.2. Africa and the Middle East

African steel production decreased by 9.1% during the first half of 2022, year-on-year. South Africa experienced the largest steel production drop, with a 16.3% decrease. Egypt's steel production dropped by 5.6%. Burdened by rising production costs and poor availability of steel, South Africa's steelmaking industry, which has been an exporter before 2020, has become a net importer as the sector reels from the closure of a number of plants (Business Day, 2022<sup>[9]</sup>). Moreover, in the first half of 2022, the country's largest producer, ArcelorMittal, experienced numerous disruptions in its operations: strikes, transportation issues, and energy supplies interruptions (Kallanish, 2022<sup>[10]</sup>) (Kallanish, 2022<sup>[11]</sup>).

In the Middle East, steel production decreased by 5.9% during the first half of 2022, year-on-year, due to Iran's production decreasing by 10.8%. The Iranian steel sector has suffered from low domestic demand, a depreciating local currency, stiff price competition from Russian discounted semi-finished steel products, and subdued demand in its largest export market, China. These issues were further compounded by electricity supply curtailment effective from June (Kallanish, 2022<sup>[12]</sup>). Steel production increased for the other jurisdictions in the region, with Saudi Arabia's steel production increasing the most (+6.0%).

## 2.3. Asia and Oceania

Steel production in Asia decreased by 4.7% during the first half of 2022, year-on-year, driven by a significant Chinese decrease of 6.3%. Lower steel prices, limited energy supplies and weak steel demand due to domestic adverse conditions such as an ailing real estate sector (Box 2) lead to a decrease in Chinese steel output. The market had expected steel mills' output curbs to continue, and it was even noted among steel market participants that crude steel output could be cut by as much as 10% 10% due to moderate fixed asset investment and a real estate sector crisis (Kallanish, 2022<sup>[13]</sup>). Nevertheless, later figures by WSD indicate a meagre 2% cut in steel production for 2022 (World Steel Dynamics, 2022<sup>[14]</sup>).

Other Asian economies experienced similar decreases: Japan decreased by 4.3%, and South Korea by 3.9%. Viet Nam's steel production fell the most, with its steel production decreasing by 7.3% during the first half of 2022, year-on-year. On the contrary, India increased its steel production by 8.8% in June 2022 and by 8% in the first seven months of 2022 year-on-year (World Steel Association, 2022<sup>[15]</sup>). However, high inflation has raised concerns that steel demand may slow down. In early June, the Reserve Bank of India increased its projection for India's inflation rate to 6.7% from an April estimate of 5.7%,

mentioning the now protracted nature of Russia’s war against Ukraine which will keep putting upward pressure on commodity prices globally. In Oceania, steel production decreased by 1.8% during the first half of 2022, year-on-year, with Australian steel production decreasing by 1.4%. The exceptional rainfall experienced in Australia during the first six months of the year, along with worker absences related to COVID, a tight labour market, supply chain disruptions, higher diesel prices and other inflationary cost pressures weighted down on steel production (Kallanish, 2022<sub>[16]</sub>)

#### 2.4. Europe and CIS Economies

In the European Union, steel production fell by 6.2% during the first half of 2022, year-on-year. Amongst the larger steel producers of the European Union, the decrease was more pronounced in Poland (-12.8%), Spain (-14.3%), France (-10.7%) and Germany (5.5%). European steel makers have been very heavily impacted by rising energy prices in the first half of 2022 (S&P Global, 2022<sub>[17]</sub>). For steelmakers, the squeeze from rising fuel and energy costs has happened on two fronts simultaneously: steel firms use either blast furnaces or electric arc furnace technologies to produce steel. The former relies heavily on metallurgical coal, while the latter requires other energy inputs such as electricity from a grid (S&P Global, 2022<sub>[17]</sub>).

Steel production in the United Kingdom decreased by 15.4% during the first half of 2022, year-on-year.

In the “Other Europe” region, steel output decreased by 5.0% during the first half of 2022, year-on-year, driven by the Republic of Türkiye’s (hereafter, Türkiye) decrease in steel production of 4.6%. Türkiye’s billet imports from Russia rose fivefold quarter on quarter over April-June, hitting steel mills' output (Platts, 2022<sub>[18]</sub>).

In Ukraine, the war has taken a large toll on steel production, which dropped by 58.2% during the first half of 2022, year-on-year (see Box 1).

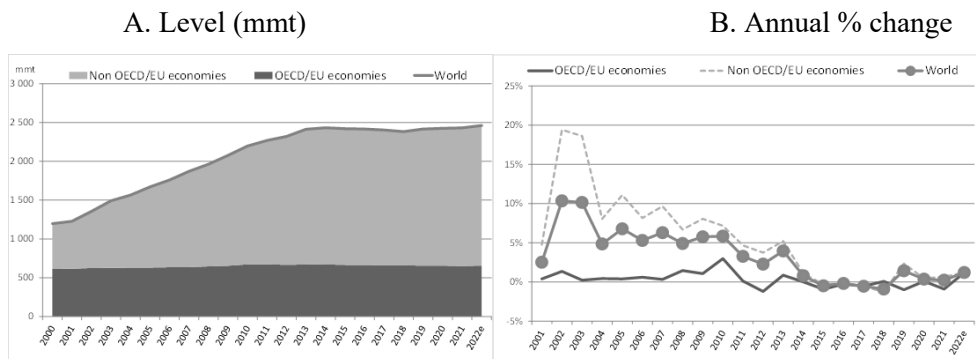
### 3. The global steelmaking capacity situation

Global steelmaking capacity would increase to 2 460.8 mmt in 2022, i.e. by 1.2% (29.5 mmt) from its 2021 level, according to the available information as of June 2022. World steel production as a share of capacity would decrease from 78.5% in 2021 to 77.1% in 2022.

As discussed in document [DSTI/SC(2022)12], the latest available information (as of June 2022) suggests that global steelmaking capacity would increase in 2022 for the fourth year in a row (Figure 4). Global steelmaking capacity would increase to 2 460.8 mmt by the end of 2022, resulting in a 1.2% increase (i.e. 29.5 mmt) from the level at the end of 2021, taking into account the latest information on new capacity additions and closures.

In 2022, crude steelmaking capacity would increase mainly in the Middle East, where an additional 8.6 mmt of capacity is expected to start operations this year. Steelmaking capacity additions are also expected to take place in Asia (by 7.9 mmt, i.e. 0.5% over the previous year), North America (by 6.1 mmt, i.e. 3.9% over the previous year), Africa (4.1 mmt, i.e. 9.5% over the previous year), Europe (1.6 mmt, i.e. 0.6% over the previous year) and the CIS (1.1 mmt, i.e. 0.8% over the previous year). Box 1 below provides an overview of recent developments in steelmaking plants in Ukraine. Steelmaking capacity would not change in Latin America and Oceania because new investments and permanent closures are not expected to take place during 2022, according to the sources used to update the OECD’s capacity databases.

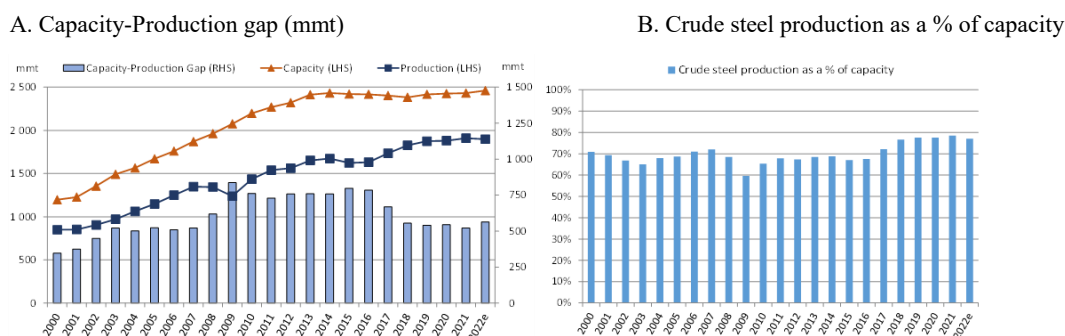
**Figure 4. Evolution of crude steelmaking capacity in OECD/EU economies and non OECD/EU economies**



Note: Capacity data reflect information available to June 2022.  
Source: OECD

The gap between global capacity and production could potentially increase to 562.9 mmt in 2022 from 521.6 mmt in 2021, in view of the weak trend in world steel production in the first half of 2022 (to an annualised level 1 897.9 mmt), and given the expected increase in capacity (Figure 5). The annualised data from the first half of 2022 suggest that global steel production as a share of capacity, a rough indicator of the global utilisation rate, could decrease from 78.5% in 2021 to 77.1% in 2022 (Figure 5).

Figure 5. Global crude steelmaking capacity and crude steel production



Note: “e” denotes estimation. Capacity data reflect information up to June 2022. Production figure for 2022 is calculated by multiplying the production for the six months of 2022 (January to June) by 2. Annual production data for 2021 and 2022 are based on worldsteel (released on 22 July 2022). Annual production data from 2000 to 2020 are from “Steel Statistical Yearbook 2021”, published by worldsteel (worldsteel, 2022<sub>[19]</sub>). Source: OECD for capacity and worldsteel for production.

### Box 1. Ukraine’s steelmaking infrastructure is being wrecked by the on-going war

ArcelorMittal Kryvyi Rih fully stopped operations in March 2022 due to Russia’s full-scale invasion (ArcelorMittal, 2022<sub>[20]</sub>). Nevertheless one of the three blast furnaces in this plant, BF No.6 (1.36 mmt) which represents approximately 20% of Kryvyi Rih’s capacity, restarted in April 2022 (ArcelorMittal, 2022<sub>[21]</sub>). The company decided to postpone the construction of a new 5 mmt pellet plant, which was originally planned to be completed in the fourth quarter of 2023 (ArcelorMittal, 2022<sub>[21]</sub>).

Metinvest Group has been badly impacted by Russia’s aggression. According to its report from the second quarter of 2022, its Azovstal plant (6.2 mmt capacity) and its Ilyich plant (3.6 mmt capacity) could not produce crude steel at all in the period. Kamet Steel (formerly known as Dneprovsky Iron & Steel Works, with about 3.8 mmt capacity) could produce only 0.45 mmt, a drop of 26% from the first quarter of 2022. As a result, the total production of the company dropped sharply by 77% to 0.45 mmt during the same period (METINVEST, 2022<sub>[22]</sub>).

Zaporizhstal (4.1 mmt capacity) produced 1 mmt in the first seven months of 2022, down by 56.3% year-on-year. According to the company, this decline was associated with a shortage of raw materials and logistical problems caused by the war (Kallanish, 2022<sub>[23]</sub>).

Interpipe Steel (1.3 mmt capacity) reduced crude steel production by 16% year-on-year to 0.16 mmt in the first quarter of 2022. According to the acting CEO of the company, the reasons for this decline are broken supply chains, Ukraine’s Black Sea seaports being blocked, the national motor fuel shortage, and transport infrastructure constantly being destroyed by Russian missile strikes (kallanish, 2022<sub>[24]</sub>).

Dnepropetsstal (0.8 mmt capacity) suspended steel melting and hot deformation process only, but is reported to continue other operations in March 2022. No further information has been available since then (GMK center, 2022<sub>[25]</sub>).

Energomashpetsstal (0.6 mmt capacity) was subjected to rocket fire from Russian troops in April 2022. The details of the damage are unknown (GMK center, 2022<sub>[26]</sub>).

Novokramatorsky Mashinobudivny Zavod (NKMZ, 0.3 mmt capacity) suspended its production in February 2022 (GMK center, 2022<sup>[27]</sup>). In July 2022, the legislature of Ukraine decided to transfer the property of the company to state ownership (GMK center, 2022<sup>[28]</sup>).

## 4. World steel trade

### 4.1. Russia's war of aggression against Ukraine, COVID-19 containment measures in East Asia and several trade distortions are impacting steel trade

The war and COVID-19 containment measures in certain economies in East Asia are reducing global demand growth prospects for 2022 and placing further pressures on already strained global supply chains. According to worldsteel figures, apparent steel use of finished products (hereafter, ASU) is expected to grow marginally by 0.4% in 2022 y-o-y, in contrast to an increase of 2.7% in 2021. Uncertainty with respect to steel demand is expected to linger until the end of 2022, and potentially longer depending upon developments in Russia's war against Ukraine.

Preliminary trade figures point towards an important decline in steel exports for 2022. Taking advantage of trade data for January-May this year, annualised export figures are expected to decrease by 7.8% in 2022. When excluding EU-intra trade, these figures are slightly lower (-10.5%), which implies that EU intra-trade was not severely impacted by the consequences of the war and by the slowdown in steel demand figures in China (0.6%).

Furthermore, COVID-19 containment measures in East Asia have contributed to contracting steel demand prospects in China in 2022. Worldsteel forecasts for 2022 indicate a zero percent steel demand growth in 2022.<sup>3</sup> This is also having an impact on Chinese trade figures. Chinese imports fell by 28.8% in the first five months of the year in y-o-y terms. Steel shipments from China in the period January – May 2022 decreased only moderately (5.3%). Despite the moderate increase in steel demand in China, exporters have been experiencing difficulties in shipping goods through some important ports including Shanghai, as few lockdowns across the country have heavily affected operations in some key infrastructure hubs.<sup>4</sup> It must be noted that preliminary figures for the period May-June 2022 show a significant increase in exports from China, with monthly figures that reached the levels observed in 2021 (about 8 mmt on a monthly basis – see Figure 6). If this increasing trend continues, it is likely that final 2022 export figures will show a positive sign.

In the first five months of 2022, EU economies have seen their net import position widening despite the sudden contraction in import figures observed in February-March. Trade data reveal that EU imports increased quite substantially, with an expansion of about 8.7% reaching 49.7 mmt in annualised terms. Despite the reduction in import figures from Ukraine of 1.5 mmt, shipments to the European Union from nearly all major trade partners increased considerably in the period under consideration (notably, Türkiye, China and India) EU export figures instead dropped by 10.8%, amounting to 23 mmt in annualised terms. If confirmed, this would be the lowest EU export levels since 2012.

Amongst other important steelmaking economies, Indian export and import figure fell by 18.2% and 7.2% respectively. Despite a positive demand outlook for 2022 and 2023, this negative trade growth may already incorporate the Indian government decision to restrict export of steel finished and semi-finished products in a bid to reduce upward pressures on prices and secure its domestic steel supply chain. Japan, the second largest steel exporter at global level, has registered a moderate drop in annualised export volumes by 3.2%. This appears as being induced by reduction in steel shipments towards China and Thailand, despite the significant increase in exports to Korea.

Russia and Ukraine have seen their steel trade figures fall in the first months of the year.<sup>5</sup> Russian exports decreased quite significantly in the first part of the year. Trade figures indicate that steel exports from Russia declined by 34.3% in annualised terms.

Steel outbound shipments from Ukraine also fell in the first five months of the 2022. Export figures have plummeted by more than 57% in y-o-y terms. This significant drop results from the forced stoppage of steel operations in multiple plants, destruction and loss of control of key steelmaking facilities and the consequent decrease in production.<sup>6</sup>

The US imports of steel continue to increase amid positive demand forecasts for 2022.<sup>7</sup> The contraction in imports of steel products observed in 2020 has been counterbalanced by a continuous growth in steel inbound shipments in 2021-early 2022. According to OECD data, steel imports are expected to reach 31.1 mmt in 2022 – well above pre-COVID levels. The United States is the only economy among the top-10 steelmaking economies to register an increase in steel export figures in early 2022, which is particularly owing to the fact that US steel trade tends to rely more on geographically closer partners such as Canada, Mexico and Brazil, which are expected to experience a moderate increase in steel demand in 2022.

**Table 3. Steel exports, yearly data**

2015-22, major steelmaking economies, volumes

	2015	2016	2017	2018	2019	2020	2021	2022 (Jan. May.)	2022 (ann.)	Change (%)
CHN	111,724.6	108,348.5	75,091.6	68,988.0	63,841.7	53,236.0	66,349.4	26,179.2	62,830.1	-5.3%
EU27	34,848.9	33,328.1	34,547.4	33,180.5	33,202.6	25,432.4	25,815.4	9,596.1	23,030.5	-10.8%
IND	7,167.0	9,995.4	16,061.5	10,766.6	13,069.2	17,131.4	19,999.4	6,816.8	16,360.2	-18.2%
JPN	40,730.0	40,461.7	37,428.1	35,795.8	33,081.9	31,041.3	33,731.0	13,605.1	32,652.2	-3.2%
USA	9,727.6	9,008.5	10,164.8	8,567.9	7,226.0	6,562.3	8,109.8	3,596.4	8,631.5	6.4%
RUS	29,697.2	31,185.8	31,152.9	33,334.4	29,454.1	28,653.4	32,547.6	8,911.8	21,388.2	-34.3%
KOR	31,094.7	30,527.8	31,278.7	29,980.2	29,913.8	28,517.3	26,702.7	10,943.5	26,264.5	-1.6%
TUR	14,835.7	15,291.5	16,276.4	19,764.3	19,542.0	18,527.9	21,928.1	7,854.2	18,850.0	-14.0%
BRA	13,702.2	13,392.0	15,313.7	13,914.4	12,727.2	10,710.5	11,488.2	5,616.5	13,479.6	17.3%
TWN	11,185.2	12,240.1	12,125.7	12,291.7	11,240.4	10,564.6	10,803.7	4,437.3	10,649.6	-1.4%
UKR	17,717.0	18,227.8	15,221.1	15,079.1	15,554.7	15,205.2	15,699.4	2,777.4	6,665.8	-57.5%
MEX	3,847.6	4,046.0	5,129.1	5,781.8	5,105.1	5,150.6	5,889.9	4,073.4	9,776.2	66.0%
CAN	6,038.2	5,848.0	6,481.7	6,435.0	5,686.3	5,140.6	7,538.8	2,843.7	6,824.8	-9.5%
SAU	1,134.2	1,145.7	1,142.8	3,128.6	2,500.0	1,302.4	1,522.6	352.0	844.7	-44.5%
IDN	2,009.9	1,606.4	2,427.9	3,792.2	4,238.9	5,802.9	9,847.7	4,092.7	9,822.4	-0.3%
EGY	462.5	808.8	1,477.8	1,453.8	1,164.1	2,009.9	1,990.5	306.3	735.2	-63.1%
GBR	7,266.4	4,572.5	4,698.6	4,598.4	4,095.4	4,409.3	3,437.4	1,608.1	3,859.4	12.3%
MYS	1,807.0	1,419.6	1,734.5	1,709.1	5,170.1	8,500.1	8,327.4	3,102.0	7,444.8	-10.6%
ZAF	2,178.7	2,179.1	2,547.0	2,849.8	2,637.9	1,487.2	1,537.7	694.2	1,666.1	8.3%
<b>Global aggregate (excl. EU intra trade)</b>	<b>363,855.4</b>	<b>361,912.8</b>	<b>338,178.3</b>	<b>329,278.8</b>	<b>314,904.2</b>	<b>293,911.6</b>	<b>327,282.1</b>	<b>122,048.7</b>	<b>292,916.9</b>	<b>-10.5%</b>
<b>Global aggregate (incl. EU intra trade)</b>	<b>460,586.8</b>	<b>463,794.1</b>	<b>445,647.6</b>	<b>437,889.5</b>	<b>417,954.5</b>	<b>385,718.1</b>	<b>433,916.2</b>	<b>166,735.1</b>	<b>400,164.3</b>	<b>-7.8%</b>

Note: values expressed in thousands of metric tonnes. The column 2022 (Jan-May.) reports actual trade data for the period January-May 2022. The column 2022 (ann.) includes 2022 annualised trade data so as to make comparison with other years feasible. EU27 data refer to external trade.

Source: OECD calculations based on ISSB data.

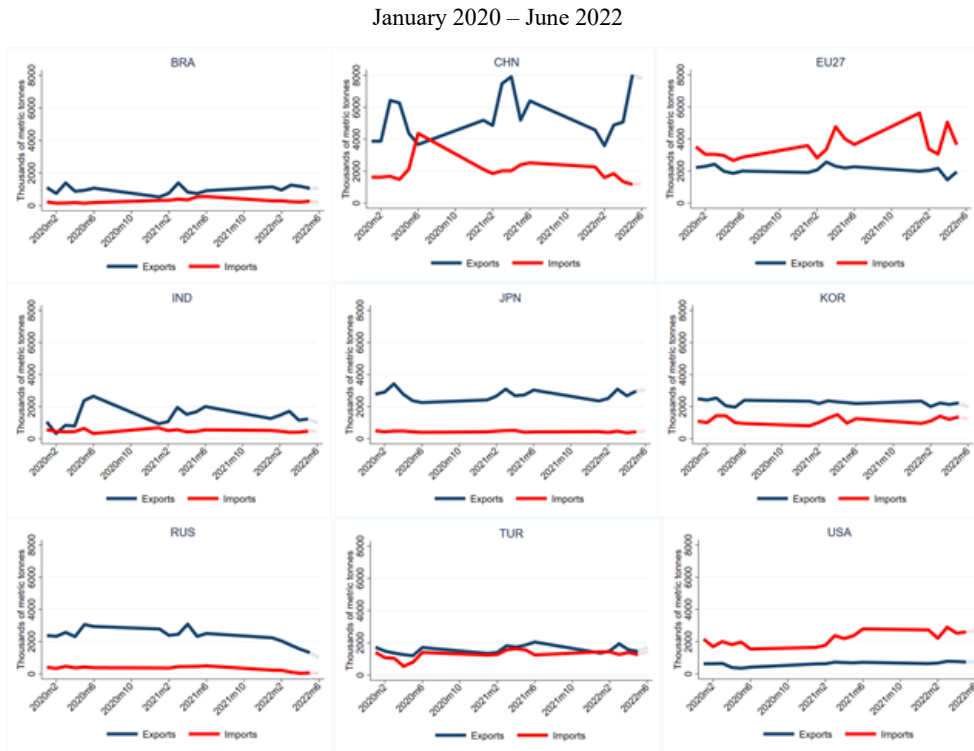
**Table 4. Steel imports, yearly data**

2015-22, selected economies, volumes

	2015	2016	2017	2018	2019	2020	2021	2022	2022 (ann.)	Change (%)
CHN	13,082.7	13,495.0	13,818.8	14,246.3	15,407.2	38,626.7	27,741.1	8,231.2	19,754.8	-28.8%
EU27	39,095.9	42,177.6	42,511.8	46,760.0	41,558.1	34,576.3	45,777.3	20,738.5	49,772.5	8.7%
IND	13,259.3	9,876.5	8,853.2	8,980.9	8,888.5	5,289.0	5,853.6	2,263.5	5,432.3	-7.2%
JPN	5,876.8	5,989.5	6,211.9	6,021.4	6,442.0	5,194.3	5,446.0	2,109.6	5,063.0	-7.0%
USA	36,013.3	30,691.8	35,322.3	31,703.6	27,063.6	20,126.0	29,503.1	12,958.1	31,099.5	5.4%
RUS	4,354.1	4,432.8	6,475.9	6,348.9	6,792.4	5,010.3	4,935.6	657.0	1,576.8	-68.1%
KOR	21,601.5	23,230.1	19,280.3	14,888.9	16,315.5	11,944.2	14,020.7	6,021.8	14,452.2	3.1%
TUR	18,606.0	17,004.6	15,810.2	14,041.4	12,313.5	12,943.0	16,142.6	6,847.8	16,434.8	1.8%
BRA	3,165.7	1,842.5	2,290.4	2,355.0	2,319.4	2,008.6	4,900.6	1,315.6	3,157.4	-35.6%
TWN	7,538.5	7,887.3	7,452.0	7,717.2	7,325.1	7,429.9	9,577.4	3,511.2	8,426.9	-12.0%
UKR	805.1	1,138.5	1,401.2	1,580.0	1,533.7	1,314.3	1,261.9	181.3	435.0	-65.5%
MEX	9,928.9	9,607.9	11,509.7	10,923.7	11,626.6	9,917.6	14,512.0	5,010.8	12,025.9	-17.1%
CAN	8,052.3	7,761.1	8,844.4	9,149.2	7,284.3	6,963.0	9,908.3	3,869.1	9,285.9	-6.3%
SAU	8,173.1	7,357.4	4,617.3	5,341.0	7,952.0	7,050.2	3,888.8	938.0	2,251.2	-42.1%
IDN	11,413.9	12,576.4	11,413.1	11,692.8	13,434.9	9,704.5	10,228.3	4,032.2	9,677.2	-5.4%
EGY	659.1	879.0	1,653.6	437.3	600.9	195.5	1,263.0	1,185.4	2,845.0	125.3%
GBR	7,117.3	7,611.8	7,613.2	7,833.1	7,063.6	4,961.8	6,460.4	2,603.5	6,248.4	-3.3%
MYS	7,785.9	9,057.9	7,732.7	7,937.7	7,356.2	5,832.7	6,335.7	2,627.7	6,306.4	-0.5%
ZAF	1,665.6	1,378.8	1,163.5	1,009.5	1,104.0	1,117.6	1,712.7	476.9	1,144.7	-33.2%
<b>Global (ex.intra EU trade)</b>	<b>281,427.4</b>	<b>283,467.3</b>	<b>277,352.0</b>	<b>270,533.4</b>	<b>259,595.5</b>	<b>239,556.8</b>	<b>270,971.4</b>	<b>101,759.3</b>	<b>244,222.4</b>	<b>-9.9%</b>
<b>Global (incl..intra EU trade)</b>	<b>374,080.2</b>	<b>382,020.5</b>	<b>382,243.6</b>	<b>378,069.9</b>	<b>362,762.9</b>	<b>331,748.2</b>	<b>378,158.2</b>	<b>145,472.7</b>	<b>349,134.5</b>	<b>-7.7%</b>

Note: values expressed in thousands of metric tonnes. The column 2022 (Jan-May.) reports actual trade data for the period January-April 2022. The column 2022 (ann) includes 2022 annualised trade data so as to make comparison with other years feasible. Data for Iran are not available. EU27 data refer to external trade  
Source: OECD based on ISSB data.

Figure 6. Steel trade balances, monthly data



Note: The chart presents steel trade balances at monthly level for major steelmaking economies. Blue and red lines correspond respectively to exports and imports. Light coloured lines represent not confirmed or partial data. At the time of writing, data related to June 2022 for EU27 are not available. EU27 data refer to external trade

Source: OECD calculations based on ISSB data.

#### 4.2. Steel capacity and exports relation

Figure 7. Total exports as a share of total steelmaking capacity



Note: The figure shows the average total exports as a share of steel capacity and average capacity of the 20 largest global steel producers throughout the period 2015-2022 (estimates).

Source: Steel Unit research desk

To better understand the nexus of capacity and exports, Figure 7 and Figure 8 classify countries in four quadrants according to their capacity and (net) export as a share of this. These figures give an indication to what extent capacity in a country is oriented towards world markets or domestic demand. Many countries with comparably modest capacity show a relatively strong export orientation.

In Figure 7, Japan is the only country with a capacity over 100 mmt<sup>2</sup> and high export shares at around 28%. However in Japan, steelmaking capacity and total steel exports decreased by 6.4% and 21.6% respectively in the last five year.

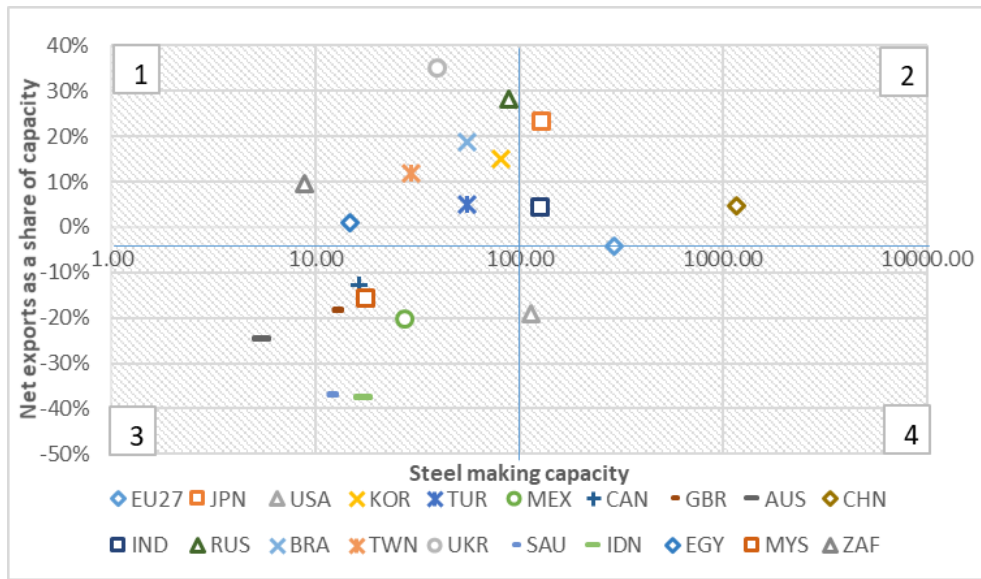
India, China, the European Union, and the United States appear in the same quadrant 4 in Figure 7, highlighting these regions high steelmaking capacity but lower total exports as a share of this. However, in Figure 8, Only China, India and Japan are displayed as net exporters of steel with large steelmaking capacity.

In Figure 8 quadrant 1, Ukraine is the country with the largest shares of net exports over steel capacity despite the fact that between 2021 and 2022, Ukraine is expected to lose 46% of its net steel exports because of the war.

In Figure 8 quadrant 3, Indonesia is the country with the lowest percentage of steel net exports over its capacity, however, in the last five year, Indonesia steel export grew by 397.9% and its steelmaking capacity almost doubled. In the near future, Indonesia is among few other Southeast Asian nations, such as Malaysia and Viet Nam expected to expand their capacity and become a major steel producers and exporters (Steel Orbis, 2022<sup>[29]</sup>)

In the fourth quadrant of Figure 8, South Africa appears as a county with a steelmaking capacity over 100 mmt<sup>2</sup> but low steel exports. In the last five years, the county experienced a decrease in exports and steelmaking capacity while imports have increased up to last year. Various problems have contributed to the worsening of the steel market in the country over the last five year, among them rising production costs, poor availability of steel, and disruptions of the largest steel firm's operation over strikes, transportation issues, and energy supplies interruptions (Kallanish, 2022<sup>[10]</sup>) (Kallanish, 2022<sup>[11]</sup>) (Kallanish, 2022<sup>[7]</sup>).

Figure 8. Net exports as a share of total steelmaking capacity



Note: The figure shows the average net exports as a share of steel capacity and average capacity of the 20 largest global steel producers throughout the period 2015-2022 (estimates).

Source: Steel Unit research desk

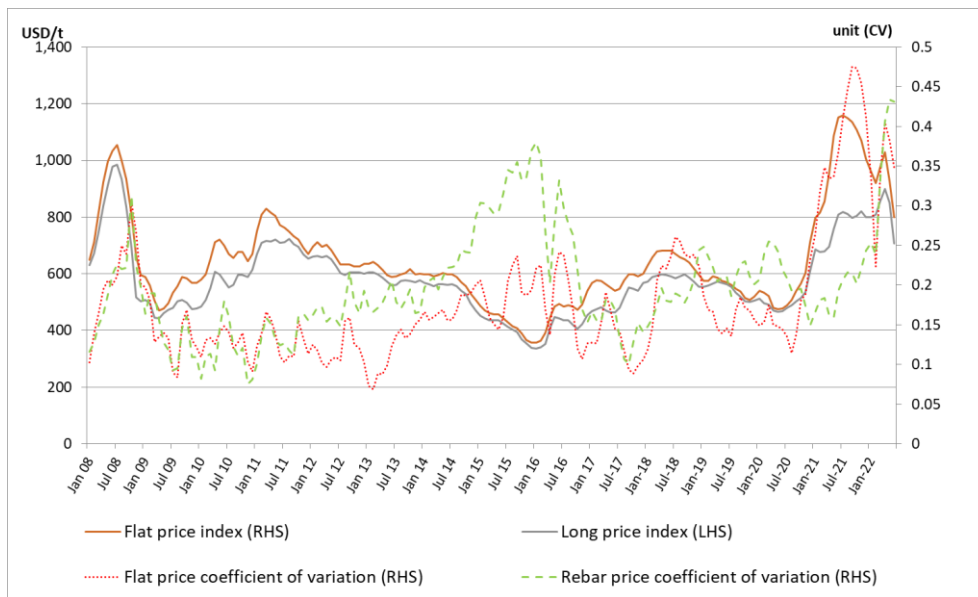
## 5. Steel and raw material prices

Steel prices peaked in June 2021 and have been decreasing sharply since then, erasing most of their 2021 gains. As of June 2022, flat steel prices and rebar prices are standing 31% and 12% lower than one year earlier. Iron ore prices and scrap prices followed a similar trajectory, being 32% and 19% lower respectively than one year earlier, but coking coal prices have not receded, even gaining 1% in June 2022 compared to one year earlier. As prices of steel products fell more than the prices of the raw materials necessary to make them, margins are being squeezed and stand at historically lows in 2022.

### 5.1. Steel Prices

Broad indices of both flat steel prices and long prices have fallen significantly from their June 2021 heights, and as of June 2022 stood respectively -31% and -12% lower than in June 2021, as shown in Figure 9.

Figure 9. Aggregate flat and long steel price averages



Note: The flat price and long steel price indices are defined as the arithmetic average of the individual regional Platts price series for the United States, North Europe, China, Japan, India and Russia, when available. This indicator had the closest fit to the two global Platts price indices used in Steel Market Developments reports prior to being discontinued (in September 2017). The coefficients of variation (CV) are the ratio of the standard deviation of the regional Platts price series making up the indices to their mean, thus capturing price dispersion across regions.

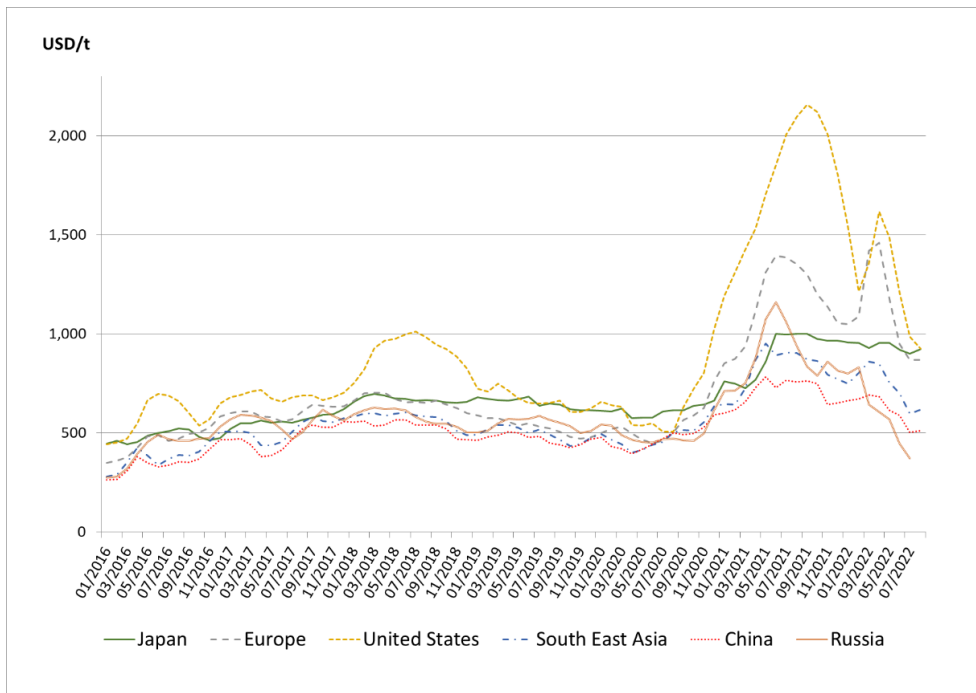
Source: Platts Steel Business Briefing.

Flat steel products prices displayed a similar price dynamic for all regions during the first half of 2022, with regions where the price had increased the most also experiencing the sharpest declines, which highlights the probable speculative motive for the 2021 increase of the prices of flat steel products (Figure 10).

Before March 2022, market participants in the European flats steel industry started to panic buying flat steel products expecting prices to continue to rise, driven by scrap availability

issues and high energy costs. However, some market participants noted that although some panic purchasing was subsiding, the market had already reached a peak (Platts, 2022<sup>[30]</sup>). Indeed, prices levels started to drop in April 2022. Prices for flat products in China, and, to a lesser extent, Southeast Asia, fell all the way back to their levels previous the 2021 price increase, flat prices in other regions have maintained some gains compared to their pre-peak levels. On one hand of the spectrum, Japanese flat product prices have held their elevated levels remarkably well, while on the other side of the spectrum Russian flat product prices have fallen even below their 2020 lows, most likely due to the impact of economic sanctions and the closure of the Russian economy to exports.

**Figure 10. Flat steel products’ prices have erased most of their 2021 gains for most regions**

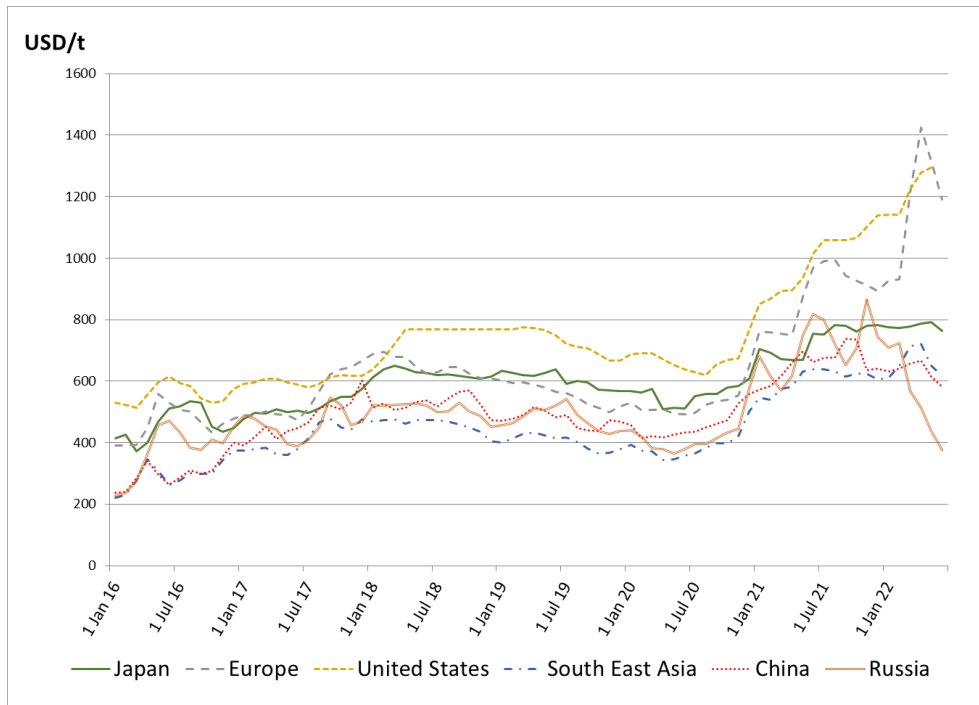


Note: Latest price: June 2022.

Source: Platts Steel Business Briefing.

Supply concerns were a main driver behind the move up of long steel products prices in early April 2022. Russia’s war against Ukraine altered ferrous trade flows almost overnight, which had a huge distortive impact on the global long product steel markets (Kallanish, 2022<sup>[31]</sup>). After the sudden rise, long product steel prices have proved more stable: with the exception of Russian long product prices, which fell below their 2020 levels in similar way than other Russian steel products, price increases of long products have been maintained, resulting in overall historically high long product steel prices (Figure 11).

Figure 11. Steel price for rebar have remained historically high for most regions

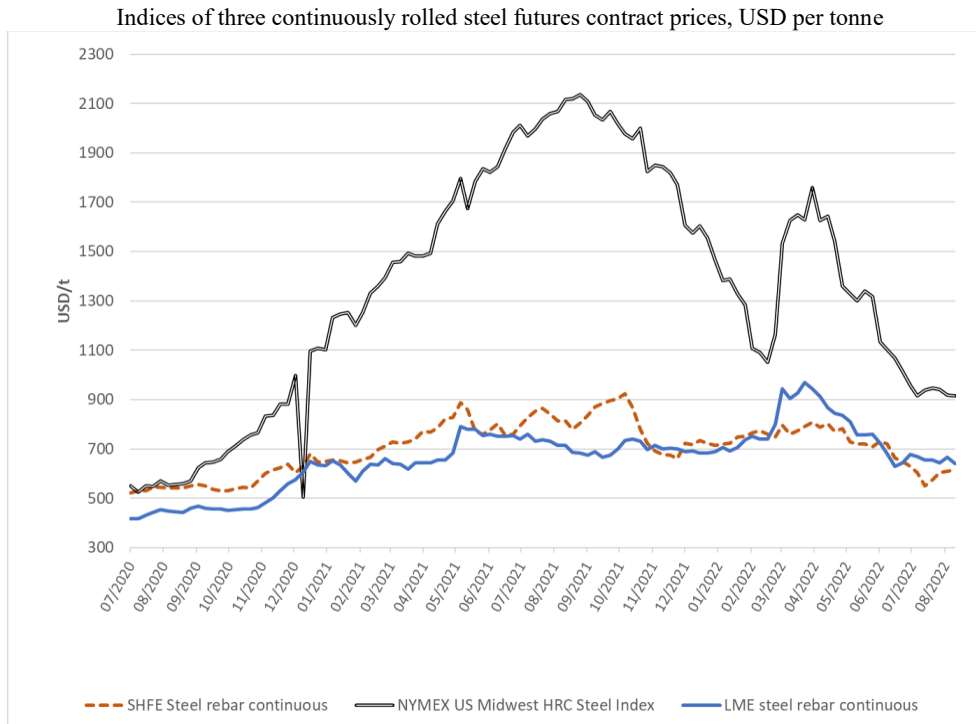


Note: The latest price is June 2022.

Source: Platts Steel Business Briefing.

Steel futures prices tend to move slightly in advance of spot prices, suggesting that they may be able to predict steel spot price dynamics at short frequencies by being quicker to incorporate new market information. Figure 12 below shows three steel futures prices obtained by rolling short-term futures provided by Refinitiv. Steel futures prices dynamics confirm the trends described above: a decrease of prices of long steel product and more stable prices for long steel products.<sup>8</sup>

Figure 12. Steel futures prices (as of 15 August 2022)



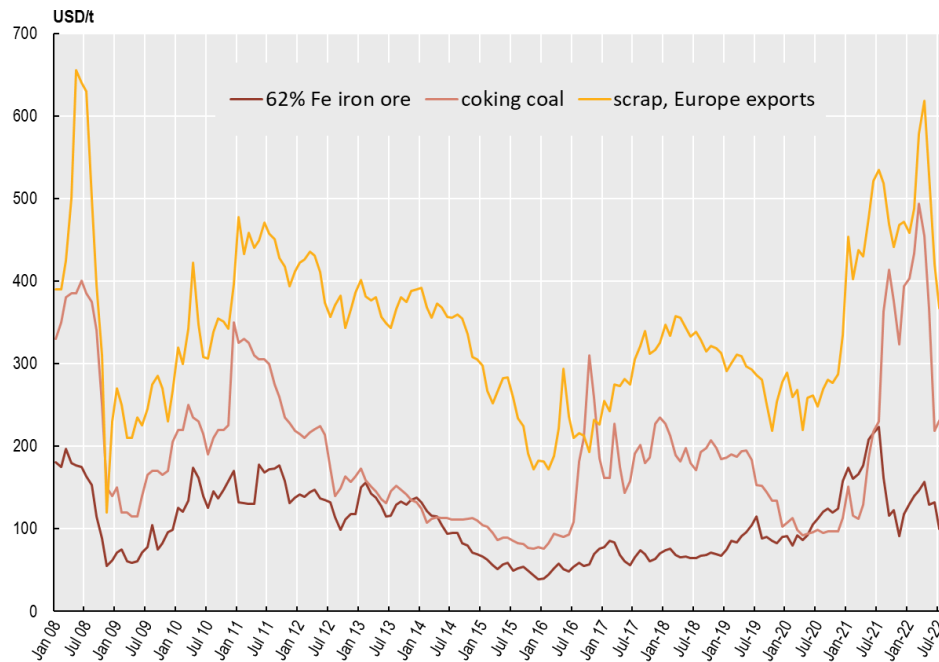
Note: NYMEX US Midwest futures prices were converted to correspond to metric tonnes rather than short tons. SHFE Steel rebar futures prices were converted from RMB to USD using daily exchange rates at closing. For more information on contract specifications, please refer to <https://www.lme.com/en-GB/Metals/Ferrous/Steel-Rebar#tabIndex=0> for LME steel rebar contracts; to <http://www.shfe.com.cn/en/products/SteelRebar/contract/9220216.html> for SHFE steel rebar continuous contracts, and to <https://www.cmegroup.com/education/files/hot-rolled-coil-steel-index-futures-options.pdf> for NYMEX US Midwest HRC contracts. For a more detailed description of steel futures market, see (OECD, 2018<sup>[32]</sup>).

Source: Refinitiv.

## 5.2. Steel raw material prices

Prices of the main steelmaking raw materials have been crashing down since the beginning of the year 2022, erasing previous gains. As of June 2022, iron ore prices are 32% lower than one year earlier, scrap prices 19% lower, while coking coal prices maintained a meagre 1% gain (Figure 13). In recent months, recession concerns are pulling down steel demand and raw material prices globally, while the war is also pressuring prices lower by changing trade routes (Platts, 2022<sup>[33]</sup>).

Figure 13. Prices for key steel-making raw materials (as of July 2022)



Note: The iron ore price series is Platts's "Forwards / SGX 62% Fe Iron Ore cash-settled swaps (dry metric tonne) / China import CFR Tianjin port USD /t"; the coking coal price series is Refinitiv's "Premium Coking Coal Australia"; the scrap price series is Platts "Scrap / Shredded / N.Europe domestic delivered UDS /t"

Source: Platts Steel Business Briefing (SBB), Refinitiv.

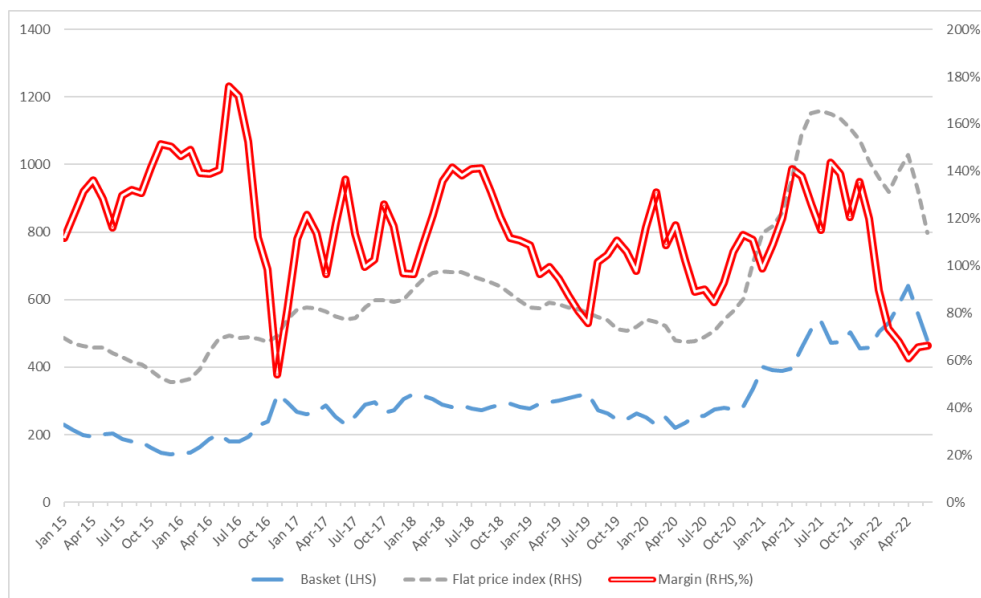
Iron ore prices had continued to increase steadily during the first quarter of 2022, however since April, lower than expected growth in China started to drive down iron ore prices in fear of a recession (Kallanish, 2022<sup>[34]</sup>). Indeed, at the beginning of the year, iron ore traders had expected an imminent recovery of Chinese steel demand driven by policy support from the government, especially in infrastructure. In March, iron ore prices reached their highest level for the year, supported by those positive outlooks. However, in the second quarter of the year, COVID related lockdowns and troubles in the Chinese real estate sector impacted the steel sector and iron ore prices, which ended up dropping by about 40% in late July compared to March (Financial review, 2022<sup>[35]</sup>). In July, China's pig iron production dropped 3.6% year-on-year, indicating low steel output amid sluggish demand and poor steel profit margins (Platts, 2022<sup>[36]</sup>). Iron ore prices tumbled again in August, following weak downstream demand caused by power cuts in China. Extremely hot weather in several provinces forced local authorities to reduce power supply to industrial enterprises to ensure normal consumption among residents (Metal Expert, 2022<sup>[37]</sup>). China's medium-term demand for iron ore is expected to decrease as crude steel production plateaus, and the scrap-to-steel ratio rises (Kallanish, 2022<sup>[38]</sup>).

Coking coal prices reached its highest level on record around mid-March 2020, coming close to 500 USD/t for premium coking coal from Australia, following supply shortages caused by Russia's war against Ukraine and flood on Australia's east coast that paralyzed export activity (Kallanish, 2022<sup>[39]</sup>). Weak steel demand and seasonal slowdowns of the blast furnaces in Asian and European countries decreased coking coal prices steadily throughout the second quarter (Wood Mackenzie, 2022<sup>[40]</sup>). After a four month wind down period for existing contract, the European ban on imports of Russian coal came into full force in August 2022. The ban is part of the European Union's fifth package of sanctions

intended to reinforce pressure on the Russian government and economy to prompt them to interrupt their aggression against Ukraine. The Commission estimates that the ban will result an annual EUR 8 billion loss for Russia (SteelOrbis, 2022<sup>[41]</sup>). According to Wood Mackenzie, inflationary pressures on steel demand and renewed metallurgical coal supply from Australia will keep pressure on prices for the rest of 2022. However, another increase in metallurgical coal supply in 2023 from major exporters could bring down prices further (Wood Mackenzie, 2022<sup>[42]</sup>). Global scrap prices jumped following Russia’s large-scale aggression against Ukraine in late February and the high pricing persisted in March and April before falling in May (Platts, 2022<sup>[43]</sup>). In China, power supply shortages impacted scrap processing and output while on the demand side, power cuts disrupted EAF steel mills’ scrap consumption. EAF steel mills in Sichuan, Jiangsu, Zhejiang and Anhui stopped production, reducing by 8000 tonnes per day their demand for scrap (Kallanish, 2022<sup>[44]</sup>). Global scrap prices could remain above historical levels in the longer terms as steel producers focus on reducing carbon emission (Kallanish, 2022<sup>[45]</sup>). By 2025, China intends to increase consumption of steel scrap by 23%, up to 320 million tons, and this target is expected to support high steel scrap prices globally. However, as the Chinese steel industry continues to cut steel production, the import of scrap to China has not yet affected the global trade flow (GMK center, 2022<sup>[46]</sup>).

The steel raw material price margin, measured by the difference between the price of steel and a generic basket of steel inputs, decreased significantly during the first semester of 2022 as a consequence of steel products’ prices falling more quickly than their raw material prices (Figure 14). As of June 2022, the margin indicator between steel products’ prices and a representative basket of raw materials needed to obtain steel products is 47% lower than one year earlier, and stands at historical lows.

**Figure 14. The margin between steel and raw material prices fell sharply and is at historical lows**



Note: Last data point is June 2022. The raw materials basket for steel production is made up of 70% of the usual quantities of iron ore (1.6 tonne) and coking coal (0.77 tonne) needed to produce steel in the integrated process and 30% of the quantity of ferrous scrap (1.07 tonne) needed to produce steel in the electric arc furnace process (see OECD, 2016). Prices used are as follows: Iron ore Fines, 62% Fe, SPOT, CFR China; Hard coking coal spot, FOB Australia; Scrap, shredded North Europe domestic price. The basket is compared against HRC world prices. The margin is defined as the per cent difference between the steel flat price and the raw materials basket price.

Source: OECD based on data from Refinitiv and Platts Steel Business Briefing (SBB).

## 6. Financial performance of steel companies

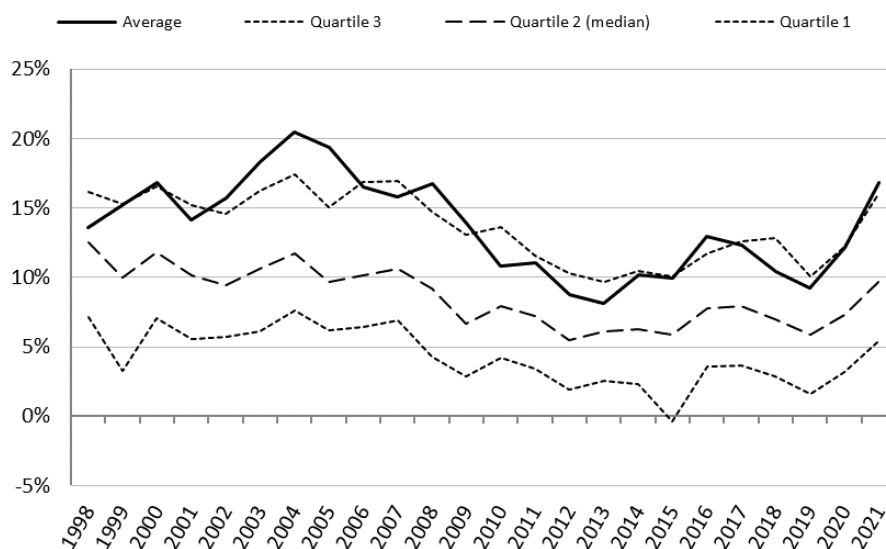
The year 2021 saw higher profit margins for steel firms across the board as well as the continuation of steel firms' deleveraging.<sup>9</sup> Nevertheless going forward those improvements are most likely temporary due to the dire economic outlook and the recent collapse of steel prices, which fell faster than steel raw material prices during the first half of 2022.

### 6.1. Profitability

The average operating profitability<sup>10</sup> of the global steelmaking industry increased from 12% in 2020 to 16% in 2021 (Figure 15). Median operating profitability increased from 2% in 2020 to 5% in 2021, suggesting that the increase in profitability affected steel firms across the board. Operating profitability is thus hovering around its 1998-2006 levels, although the slower decrease of raw material prices compared to steel product prices (Section 5.2) casts a doubt on the sustainability of those higher levels of profit margins for steel firms going into the year 2022. The recent rise of profitability across the board may have more to do with the relative price changes of steel products and their raw material than with structural improvement of steel markets or with stronger and more resilient steel sectors.

Furthermore, profitability is probably still below sustainable levels for a number of steel firms. For example, the third quartile line in Figure 15 indicates that in 2021, 25% of the companies had operating profitability levels below 5%.

Figure 15. Evolution of operating profits between 1998 and 2021

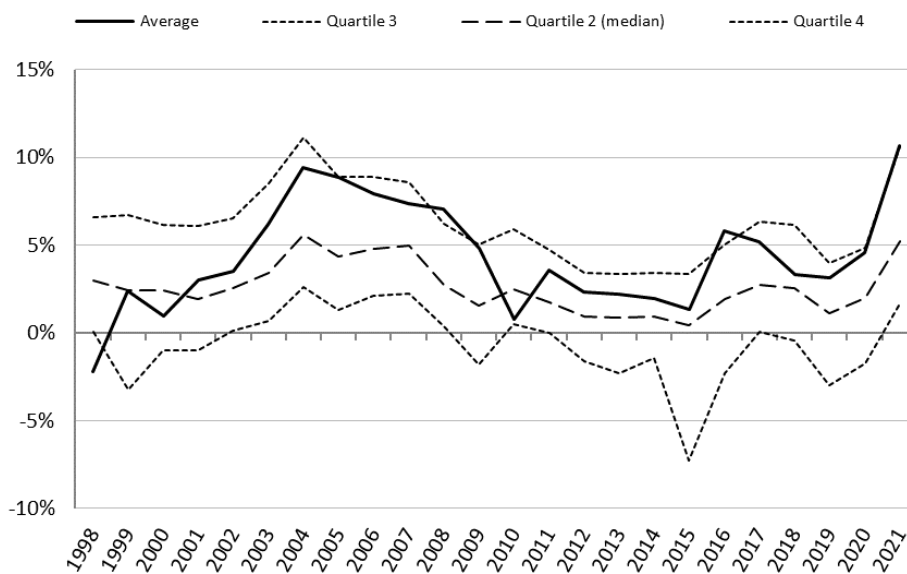


Note: Operating profitability is defined as EBITDA (earnings before interest, taxes, depreciation and amortisation) to sales revenue in per cent. The dotted lines provide information on the distribution (first and third quartiles) of operating profitability across the firms in the sample: 25% of the companies have operating profitability below (above) the first (third) quartile line. The long dashed line provides information on median operating profitability across firms in the sample: this line divides the distribution in two halves with 50% of the companies having operating profitability below the line. The heavy line depicts the industry average operating profitability, weighted by total sales.

Source: OECD calculations based on data from Refinitiv.

The steel industry’s net profit, which is derived from operating profit by deducting all expenses incurred by firms, including taxes, interest paid on debt, depreciation and amortisation, paints a similar picture of improved margin conditions in the year 2021 (Figure 16). Median net profit margins were 5% in 2021, compared to 2% in 2020. Again, the fact that the increase is homogeneous across all quartiles of the distributions suggests that it is mainly due to broad market conditions affecting all steel firms equally and that are related to steel prices and raw material prices dynamics. For instance, EAF Europeans and American firms had seen their profit margins hit a record high in the third quarter of 2021 as the average selling prices of their products increased while the cost of ferrous scrap used in production rose comparatively less (Platts, 2022<sub>[47]</sub>).

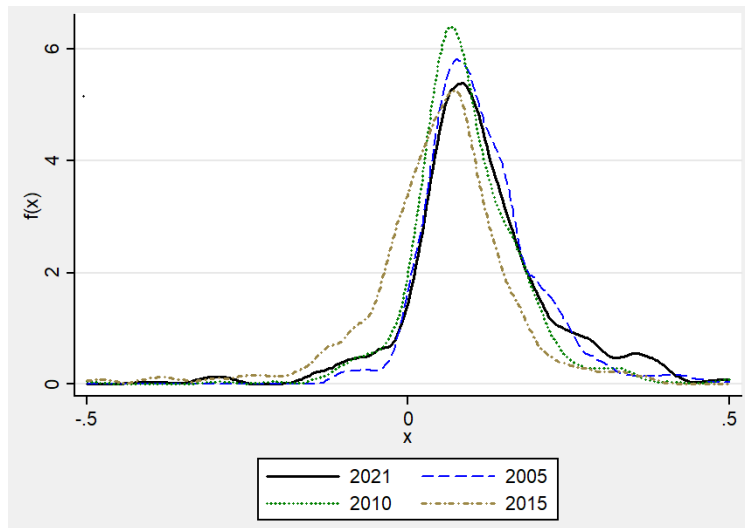
Figure 16. Evolution of net profit margin between 1998 and 2021



Note: The dotted lines provide information on the distribution (first and third quartiles) of net profits across the firms in the sample: 25% of the companies have net profits below (above) the first (third) quartile line. The long dash line provides information on median net profits across firms in the sample: this line divides the distribution in two halves with 50% of the companies having net profits below the line. The heavy line depicts the industry average net profits, weighted by sales.  
 Source: OECD calculations based on data from Refinitiv.

Figure 17 below shows how the distribution of (a logarithmic transformation of) net profit margins across steelmaking companies has changed between 2005, 2010, 2015 and 2021. After a strong shift in the distribution towards the left (i.e. lower profitability) between 2005 and 2015, the distribution has shifted back to the right in 2021, and has partially regained the position it had in 2005. Nevertheless, the distribution has fatter tails on both sides in 2021 that it had in 2005, which indicates a greater number of underperforming and better performing firms financially in 2021 compared to 2005.

Figure 17. The distribution of steel firms' profits, as measured by EBITDA, shifted over the years



Note: This figure plots the distributions of net profit margin in different years using kernel density estimates. The kernel density estimate gives an approximation of the probability density function of a given distribution — up to a given point  $x$  in the horizontal axis, the area under this function provides the percentage of observations that have values that are lower or equal to  $x$ . The total area below the curve for each year equals one. For presentation purposes, the net profit values shown on the X axis of the chart range between 50% and 50%.

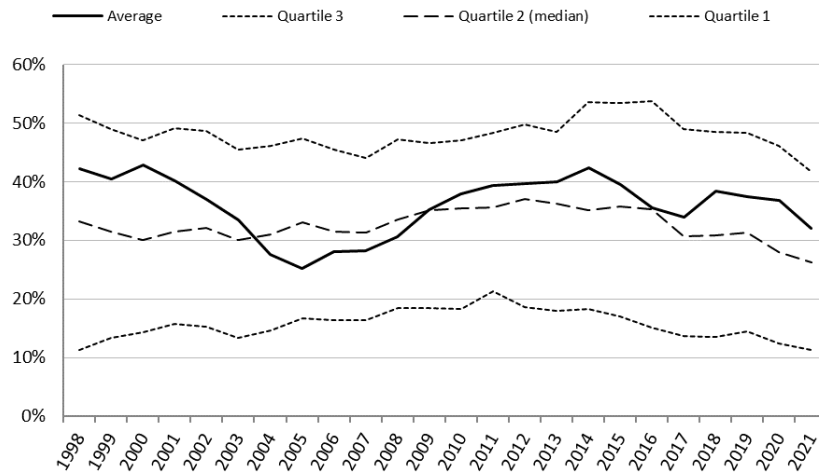
Source: OECD calculations based on data from Refinitiv.

## 6.2. Indebtedness

Overall, the steel sector seems to have continued its process of deleveraging, with debt levels relative to total sales revenues falling to 26% in 2021 from 28% in 2020 (Figure 18).

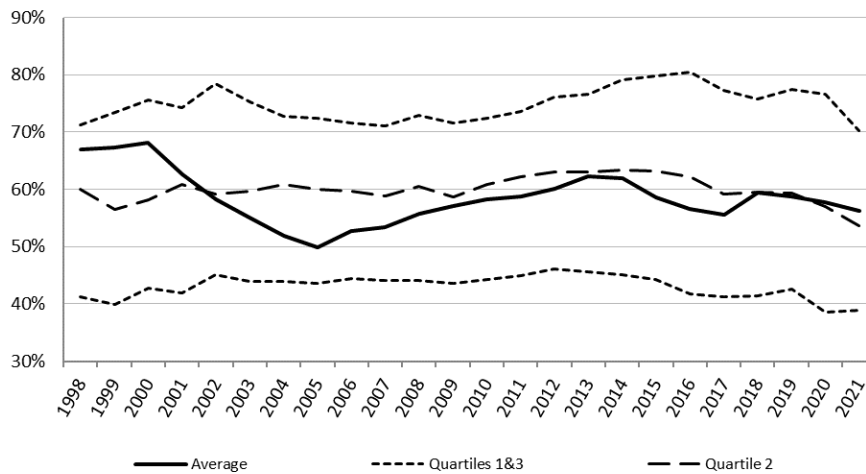
As in previous reports, caution is warranted in interpreting steel companies' indebtedness. First, there are sample limitations in the data presented in this section as only debt of publicly listed companies is included in the Refinitiv data used for this report. Hence, debt levels represented in Figure 18 exclude data for unlisted firms (including state-owned companies), some of which are possibly large and indebted. Second, in some large steel-producing economies, debt has been reduced by using debt-for-equity swaps that are not necessarily market-driven and lack clarity concerning losses in cases of bankruptcy. Finally, the maturity of the debt and the average interest rate paid are two other relevant aspects to consider for assessing corporate indebtedness. This means that the total indebtedness represented in Figure 18 does not completely capture steel firms' financial conditions, which may be more precarious than they seem. Nevertheless, Figure 19, which tries to capture the ratio of total liabilities<sup>11</sup> of steel firms to their assets, paints a similar picture of a slowly deleveraging steel sector.

Figure 18. Evolution of indebtedness between 1998 and 2021



Note: The dotted lines provide information on the distribution (first and third quartiles) of indebtedness across the firms in the sample: 25% of the companies have debt to asset ratios below the quartile line at the bottom of the chart, and 25% have ratios above the quartile line at the top. The remaining 50% of companies have debt to asset ratios between the first and third quartile lines. The long dash line provides information on median indebtedness across firms in the sample: this line divides the distribution in two halves with 50% of the companies having debt to assets ratios below the line and 50% above the line. The heavy line depicts the industry average indebtedness, weighted by sales.  
 Source: OECD calculations based on data from Refinitiv.

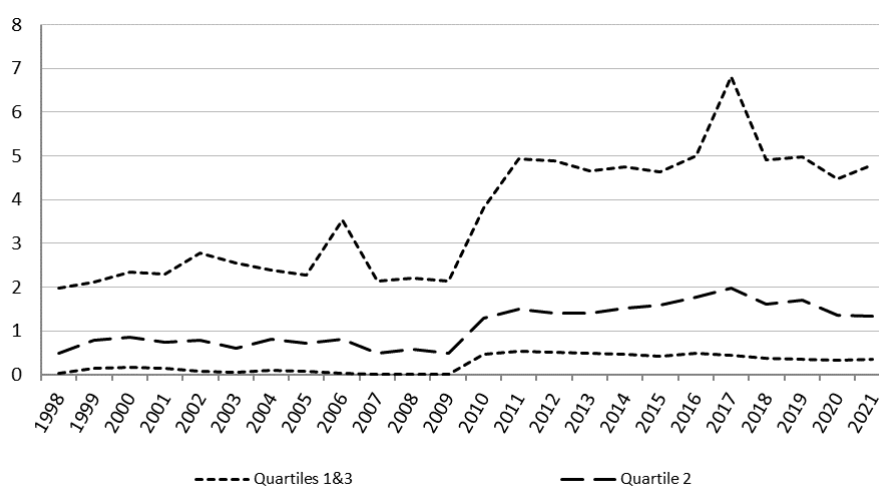
Figure 19. Ratio of steel firms' liabilities over assets



Note: Liabilities are defined here as total liabilities, including short-term and long-term debt, account payables and deferred income tax. Assets are defined as total assets, which includes properties, plants, long-term investments, but also intangibles (e.g. patents). The dotted lines provide information on the distribution (first and third quartiles) of the ratio of liabilities over assets across the firms in the sample: 25% of the companies have liabilities to assets ratios below the quartile line at the bottom of the chart, and 25% have ratios above the quartile line at the top. The remaining 50% of companies have liabilities to assets ratios between the first and third quartile lines. The long dash line provides information on median ratio of liabilities over assets across firms in the sample. The heavy line depicts the industry average ratio, weighted by sales.  
 Source: OECD calculations based on data from Refinitiv.

Figure 20 consider the composition of steel firms' debt in more detail, as it compares the level of long-term (debt of maturity superior to one year) versus short-term debt (debt of maturity less or equal to one year). It shows that the median amount of short-term debt relative to the amount of long term debt of steel companies in the sample ("Quartile 2" in Figure 15) has remained stable in 2021.

**Figure 20. Ratio of short term debt over long term debt of steel firms**



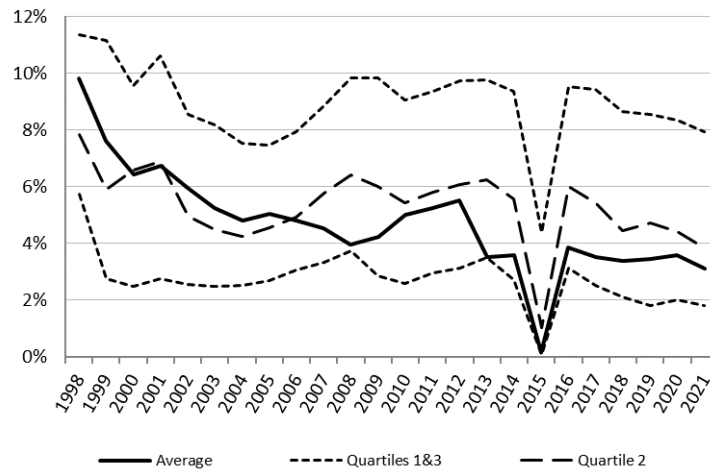
Note: The dotted lines provide information on the distribution (first and third quartiles) of debt composition, represented by the ratio of short term debt over long term debt, across all the firms in the sample: 25% of the companies have a short term debt over long term debt ratio below the quartile line at the bottom of the chart, and 25% have ratios above the quartile line at the top. The remaining 50% of companies have debt to asset ratios between the first and third quartile lines. The long dash line provides information on the median short term debt over long term debt ratio across firms in the sample: this line divides the distribution in two halves with 50% of the companies having debt to assets ratios below the line and 50% above the line.

Source: OECD calculations based on data from Refinitiv.

In 2021, steel firms paid an average (weighted by sales) interest of 3.8% on their outstanding debt (across all maturities) in 2021, as shown in Figure 21. This is an historical low, consistent with steel firms deleveraging and higher profits in 2021 – which improves their creditworthiness and thus decrease their risk premia. The current low interest rate environment is also a factor that could explain the low average interest rate paid by steel firms on their outstanding debt.

Nevertheless, there are significant differences in debt's costs across steel firms, as can be seen by the large differences between the first and third quartile: from the third quartile line we can see that 25% of steel firms pay higher than 8% interest rates on their debt, while the first quartile indicates that 25% of steel firms pay lower than 2% on their debt.

Figure 21. Evolution of interest paid on total debt from 1998 to 2021



Note: The dotted lines provide information on the distribution (first and third quartiles) of interest paid over total debt across the firms in the sample: 25% of the companies have a ratio of interest paid over total debt below the quartile line at the bottom of the chart, and 25% have ratios above the quartile line at the top. The remaining 50% of companies have ratios of interest paid over total debt between the first and third quartile lines. The long dash line provides information on the ratio of interest paid over total debt across firms in the sample. The heavy line depicts the industry average indebtedness, weighted by sales.

Source: OECD calculations based on data from Refinitiv.

## 7. Steel consumption and outlook

*In its October 2022 SRO, worldsteel forecasts that steel demand will decrease by 2.3% to 1 797 mmt in 2022, and rebound slightly by about 1% in 2023 to 1 814.7 mmt. The effect of Russia's war against Ukraine on energy and commodity prices, higher than anticipated inflationary pressures especially in Europe, the tightening of central banks' monetary policies especially in the United States, as well as weaker demand from China and the impact of Chinese strict COVID policies have worsened steel demand trends globally. Rising interest rates, weak consumer spending and higher energy prices are expected to impact significantly steel demand in the coming months.*

### 7.1. Global steel market outlook

Global apparent steel consumption outside China has declined about 3.2% during the first half of 2022 and is expected to contract by 4% in 2022 and to stay stagnant in 2023. During the second half of 2022, both developing and developed economies are expected to experience rising interest rates which will reduce investments in fixed assets and directly impact steel demand. High energy costs are expected to slow industrial output, especially in the European Union, where industrial rationing could potentially force major industrial users to halt production. Consumer spending could decrease impacted by growing inflation. World Steel Dynamics expects global steel consumption outside China to decline by 7.5% during the second half of 2022 compared to the same period last year. In 2023, demand was previously expected to experience a 1% increase as inflation is expected to slow down, central banks ends their credit “tightening” and consumption and employment recover (World Steel Dynamics, 2022<sup>[14]</sup>), but the slowdown of the Chinese real estate and strict COVID policies are weighting down on demand Overall, steel demand is expected to grow at a significantly slower pace than previously projected. The largest steel consuming sector, real estate and infrastructure, is under pressure from high debts and bankruptcies that have resulted in a sharp contraction in real estate investment and price declines (see Box 2). The government introduced a set of 16 measures<sup>12</sup> to prop up the real estate sector, but it is unclear if they will significantly boost investment in the sector. Strict COVID policies are expected to continue to weigh down on demand.

### 7.2. Regional steel market outlook

#### 7.2.1. Americas

In Central and South America, finished-steel demand to rebounded by a robust 30.0% in 2021 but worldsteel forecasts it will decrease by 7.8% in 2022 (worldsteel, 2022<sup>[48]</sup>). In 2021, Central and South Americas steel consumption rebounded following COVID related restrictions in 2020 (Reuters, 2022<sup>[49]</sup>). Due to high inflation, Russia's aggression against Ukraine and an expected economic slowdown, the Latin American Steel Association (Alacero) revised downward its total consumption outlook for 2022. The group expects an 8% decrease in steel consumption compared to a 2.1% drop projected at the start of the year. However, Alacero estimates that in 2023 steel consumption will rebound by 4% compared to 2021 (Metal Expert, 2022<sup>[50]</sup>). In Latin America, the construction sector experienced a strong recovery in 2021, however the pace of growth in 2022 is expected to slow down as depreciating local currency, inflationary pressure, rising interests rates and tightening budgets continue to weight on output growth (Globaldata, 2022<sup>[51]</sup>)

In Argentina, the automotive, agricultural machinery, civil construction and energy sectors accompanied by resumption of steel operations after maintenance shutdowns boosted Argentina's steel consumption (Steel Orbis, 2022<sup>[8]</sup>). Car production, sales and registration continued to improve in June. (Metal Expert, 2022<sup>[52]</sup>). However, remaining problems with the supply of natural gas and power could impact the sector in the short to medium term (Metal Expert, 2022<sup>[53]</sup>).

In Brazil, apparent steel consumption fell in June, by 5.8% to 1.97 mmt compared with the previous month (worldsteel, 2022<sup>[48]</sup>). This was also down 15.6% year-on-year. Flats demand represented 1.16 mmt. Consumption in January-June remained 15.6% lower at almost 11.7 mmt, IAB data show (Kallanish, 2022<sup>[54]</sup>). Despite the increase in raw material and energy inputs caused by the Russian aggression against Ukraine, the Brazil Steel Institute chose to maintain the forecast for the year 2022 made in December 2021 which projects a 2.2% and a 1.5% increase in crude steel production and consumption, respectively (Brazil Steel Institute, 2022<sup>[55]</sup>). Domestic steel demand, growing investment in renewable energy, new infrastructure projects, a strong construction sector and sustained demand for machinery and equipment in the agricultural sector are expected to support steel consumption in 2022 (Brazil Steel Institute, 2022<sup>[56]</sup>). The Brazilian National Association of Automotive Vehicles Producers (ANFAVEA) revised downward its prior estimation for 2022, Brazilian car production is expected to increase by 4.1% as compared to 9.4% projected at the start of the year (Anfavea, 2022<sup>[57]</sup>).

In Chile, the steel sector is under pressure due to volatile steel prices, general investment scepticism and economic uncertainty (Kallanish, 2022<sup>[58]</sup>). At the beginning of the year, the Chilean Chamber of Construction (CChC) projected that the growth of investment in construction would be in a range between 0.1% and 1.9% in 2022, today it estimated that investments will contract at least 3% compared to 2021 (Chilean Chamber of Construction, 2022<sup>[59]</sup>). According to the National Automotive Association of Chile (ANAC), sales of electric vehicles registered a 84% increase year-on-year in June (ANAC, 2022<sup>[60]</sup>). Despite the positive results, it is important to highlight that Chile has no auto production, therefore new vehicles are imported mainly from China, US and Brazil.

In Colombia, the National Administrative Department of Statistics (DANE) noted that the number of construction licenses has grown in May by 2.4% year-on-year (DANE, 2022<sup>[61]</sup>). However, according to the data provided by the Colombian Chamber of Construction (CAMACOL), increasing construction costs could negatively affect the sector in the coming months (Camacol, 2022<sup>[62]</sup>).

In North America, steel-demand grew by 18.6% in 2021 and worldsteel expects it to grow at a 0.9% rate in 2022 and a 1.8% rate in 2023 (worldsteel, 2022<sup>[48]</sup>). Despite ongoing semiconductor shortages along with additional supply chain, labour, and logistics issues, the Alliance for Automotive Innovation revised upward the 2022 outlook for North America light vehicle production by 21,000 units and by 22,000 units for 2022 and 2023, respectively (The Alliance for Automotive Innovation, 2022<sup>[63]</sup>).

In Canada, the rise in construction prices continue to pose a downside risk to the industry's outlook (Statistics Canada, 2022<sup>[64]</sup>). Investment for non-residential building construction projects fell in Canada during May after months of rising spending levels. This marks the first monthly decline in commercial construction spending after 13 months of consecutive growth (Kallanish, 2022<sup>[65]</sup>). Despite increasing costs, the sector is expected to grow in real terms in 2022 supported by investment in transport infrastructure projects as part of the Investing in Canada Plan and provincial governments' efforts to invest in transport projects (Globaldata, 2022<sup>[66]</sup>). In the energy sector, the Canadian association of energy contractors (CAOEC) expects to drill 2,254 wells in 2022, a 48% increase compared to 2021 (Caoec, 2022<sup>[67]</sup>).

In Mexico, the automotive sector continues to show signs of recovery despite ongoing pressure from the lack of semiconductors and the inflationary effects on the industry due to the war and pandemic (Metal Expert, 2022<sub>[68]</sub>). According to the Mexico National Institute of Statistics and Geography (INEGI) cars production rose by 6% year-on-year in June registering the best figure since March 2022 (INEGI, 2022<sub>[69]</sub>). Although the Mexican Association of the Automotive Industry estimates that the supply of semiconductors will begin to improve from the second half of this year, the total recovery of the automotive production to the pre-COVID levels is forecast to take between four and five years (Metal Expert, 2022<sub>[68]</sub>). Despite increasing construction costs, in May the value of production generated by construction companies (seasonally adjusted) increased 2.2% in real terms compared to last April (INEGI, n.d.<sub>[70]</sub>).

In the United States, the construction sector has experienced a weaker than expected performance. High interest rates, supply chain issues and prices pressures have impacted construction output in the first quarter of 2022 (Globaldata, 2022<sub>[51]</sub>). Despite these challenges, construction spending increased by 9.7% year-on-year in May (U.S Census Bureau, n.d.<sub>[71]</sub>). In the coming months the sector will likely be supported by a broad basket of project types in both the public and private sector and the best indicators of future construction activity continue to point toward expansion ahead (Kallanish, 2022<sub>[72]</sub>). Overall, supply chain disruptions, volatility and pandemic-induced supply shortages are expected to be among the biggest challenges for the sector in 2022 (Deloitte, 2022<sub>[73]</sub>).

To address supply chain issues, the American Iron and Steel Institute (AISI) urged the senate to pass the “Chips Act” which provides certain forms of support related to semiconductors. According to AISI, the CHIPS act would promote new investments in the sector and would boost the entire automotive supply chain (AISI, 2022<sub>[74]</sub>). Car sales could fall short in 2022 as rising interest rates, high fuel prices and the increased risk of a recession impact consumers ‘confidence (The Alliance for Automotive Innovation, 2022<sub>[63]</sub>). The U.S Energy Information Administration (EIA) expects an increase in drilling activity in 2022 and 2023 supported by rising crude oil and domestic natural gas prices. Dry natural gas production is planned to increase by 3% and 4% in 2022 and 2023 respectively (EIA, 2022<sub>[75]</sub>).

### *7.2.2. Africa and the Middle East*

According to worldsteel’s October 2022 SRO, African steel demand is expected to grow by 3.2% and 4.4% respectively in 2022 and 2023, after a 6.1% growth in 2021 (worldsteel, 2022<sub>[48]</sub>). Foreign direct investment (FDI) to African countries hit a record \$83 billion in 2021, although the fallout of Russia’s war against Ukraine with the increase in energy and food prices, along with the ongoing COVID pandemic and climate disruption, are adding stresses to the African economies (UNCTAD, 2022<sub>[76]</sub>).

In South Africa, the construction industry is expected to register a growth of 4.5% in 2022. The government announced a series of infrastructure projects in the areas of transportation, energy, housing, and sanitation that are expected to stabilize the construction industry at an annual average growth rate of 3.1% from 2023 to 2026 (Research and Markets, 2022<sub>[77]</sub>). The South African automotive industry, the country’s biggest manufacturing sector, registered positive sales and export in July. The Automotive Business Council and the National Association of Automobile Manufacturers of South Africa (NAAMSA) are developing a roadmap that will aim to integrate South Africa in the global electric vehicle value chain and support sales and production (Naamsa, 2022<sub>[78]</sub>).

In the Middle East and North Africa (MENA), steel demand is expected to increase by 3.5% and 3.9% in 2022 and 2023 respectively (worldsteel, 2022<sub>[48]</sub>). Despite a surge in material costs, the construction output is forecasted to increase in the MENA region at an

annual average growth rate of 2.3% during 2022-2030 (Metal Expert, 2022<sup>[79]</sup>). Due to high commodity prices, extractive industries (mining, oil and gas) have revised their forecasts upward. Industries that require commodities as production inputs or that depend on fuel have revised their earnings forecasts downwards. Geographically, companies in Eastern Europe and North Africa are expected to face relatively more downward pressure on earnings (UNCTAD, 2022<sup>[76]</sup>).

Morocco leads the African automotive industry with a production capacity of 700,000 vehicles a year (Morocco Now, 2022<sup>[80]</sup>). Morocco's automotive exports are expected to grow by 33.7% and 10.5 % in 2022 and 2023 respectively (MWN, 2022<sup>[81]</sup>). Although Morocco's central bank raised concerns over Russia's war against Ukraine and its implications both internationally and domestically (Bank Al-Maghrib, 2022<sup>[82]</sup>).

In Egypt, ongoing economic instability in the form of high inflation and currency depreciation, along with rising prices for energy and construction materials could pose downside risks in the short term, however the general outlook for construction output remains strong (Research and Markets, 2022<sup>[83]</sup>). The construction industry is expected to grow at an average annual growth rate (AAGR) of approximately 10% between 2023 and 2026 (GlobalData, 2022<sup>[84]</sup>).

In its October 2022 SRO, worldsteel forecasts steel consumption to increase by 2.4% in the Middle East in 2022 and 3.4% in 2023, following a 4.9% growth in 2021 (worldsteel, 2022<sup>[48]</sup>). Key drivers for investment projects in the region will revolve around accommodating an increasing population, energy transition into the hydrogen economy and replacing existing old infrastructure (Kallanish, 2022<sup>[85]</sup>).

In Iraq, the government is working on the implementation of new infrastructure and residential facilities in cooperation with the United Arab Emirates (UAE). The projects include the construction of a smart city that is expected to use local steel to support domestic mills (Metal Expert, 2022<sup>[86]</sup>).

Worldsteel forecasts a 4 to 5% increase in Saudi Arabia steel demand in 2022 (worldsteel, 2022<sup>[87]</sup>). The rise in oil prices are expected to increment the funds needed for the ambitious infrastructure projects. The construction industry in Saudi Arabia is expected to expand by 3.2% in real terms in 2022 and register annual growth in the range of 3.5 to 4.5% from 2023 to 2026 (Research and Markets, 2022<sup>[88]</sup>).

According to the US trade administration, The UAE's construction sector is expected to see a solid recovery in the next five years, with construction industry value growing between 3.7 to 4.7%. The main infrastructure projects will focus on energy, transportation, utilities, decarbonization, renewable and nuclear energy generation, and resolving ongoing water scarcity (International Trade Administration, 2022<sup>[89]</sup>).

In Iran, Iranian apparent finished steel consumption increased 12.4% year- on-year between March and May following Iran's export duty implementation in March that decreased domestic prices. (Kallanish, 2022<sup>[90]</sup>). Although, significant price hikes in food items, depreciated local currency, failed nuclear negotiations and a lack of construction and infrastructure projects in the country are expected to impact steel demand in the coming months (Kallanish, 2022<sup>[91]</sup>).

### 7.2.3. *Asia and Oceania*

In worldsteel's October 2022 SRO, steel consumption in Asia and Oceania is forecast to decrease by 2.2% in 2022 and increase by 1.2% in 2023 after a 1.3% decrease in 2021 (worldsteel, 2022<sup>[48]</sup>).

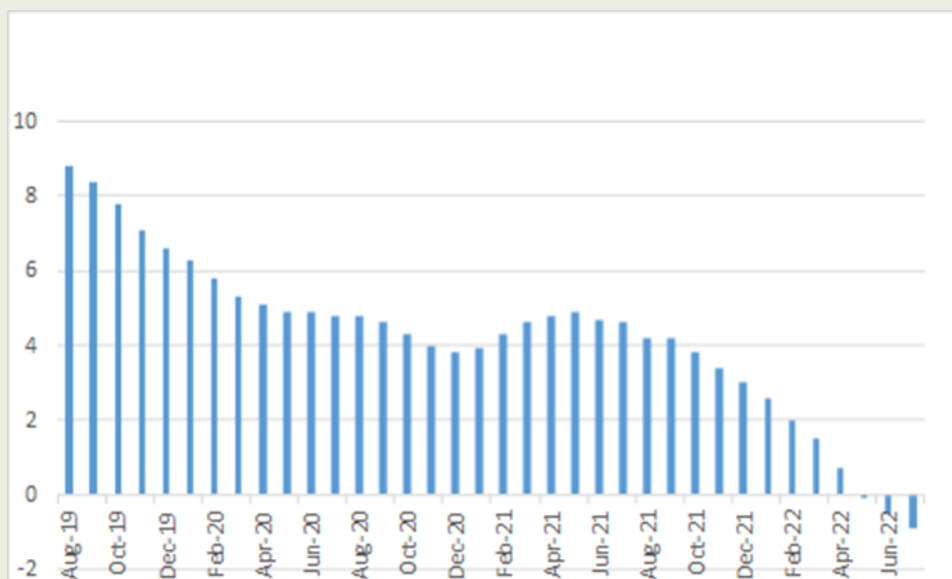
In China, steel demand decreased by 5.4% in 2021 and is expected to decrease by 4% in 2022 and to remain stable 0%. Manufacturing activity contracted in July, however steel demand is expected to slightly recover in late August or September as infrastructure construction starts to pick up in the country. In its July 2022 report, World Steel Dynamics (WSD) expects China's steel consumption to decline for the second consecutive year by 2.2% on the base of a 3.1% decline in 2021. During the second semester, China is expected to face numerous challenges as rising interest rates are rapidly reducing fixed assets investments, high energy prices push down industrial output and consumer confidence continues to weaken (World Steel Dynamics, 2022<sup>[14]</sup>).

### Box 2. China's real estate sector

Construction and its related manufacturing sectors accounts for about 70% of China's total steel demand, but the expected recovery of the construction sector comes amid increasing concerns over the debt-laden property sector (Platts, 2022<sup>[92]</sup>). In China, many years of rapid debt expansion have been backed by non-productive investment in infrastructure and property and by a systematic overvaluation of real estate property (Carnegie Endowment, 2022<sup>[93]</sup>).

In 2020 the real estate sector experienced a slowdown caused by an initial speculative fervour followed by a decrease of the average cost of a new home (Figure 22). The COVID pandemic, which forced work to stop at all construction sites, further exacerbated the structural issues of the sector. In August 2020, the Ministry of Housing and Urban-Rural Development and other departments established several rules to curb speculative behaviour and control the rising debt. The new regulations imposed "three red lines" that real estate enterprises had to respect – 1) a debt-to-asset ratio below 70% and 2) a net debt to equity ratio below 100%, and a "cash short-term debt ratio" of real estate companies lower than 1 (Chinese Government, 2021<sup>[94]</sup>).

Figure 22. China Newly Built House Prices YoY Change



Note: The surveyed cities are 70 large and medium-sized cities, including 35 cities including municipalities directly under the Central Government, provincial capitals, capital cities of autonomous regions (excluding Lhasa) and cities under separate state planning, as well as 35 cities including Tangshan and Qinhuangdao.

Source: National Bureau of Statistics of China (NBS)

Most of the listed real estate companies exceed at least one of the standards, especially because of bad practices in the real estate sector such as selling apartments long before the projects have been completed, but Evergrande, which had pursued an aggressive expansion, had stepped on all three red lines. As a result, since the beginning of 2021, financing has been severely restricted, and many debts have not been repaid, including those debt obligations towards upstream suppliers, cooperative building materials suppliers and contractors (Epoch Times, 2021<sup>[95]</sup>).

The crisis spread beyond Evergrande, and other property developers experienced enormous liquidity pressure. When the property market was booming, pre-sales became a low-cost financing mechanism that allowed property developers to ratchet up their activity rapidly and this, in turn, boosted the property market further. However, once conditions reversed, the financing mechanism was likely to dry up very quickly, increasing debt and disrupting construction operations of real estate enterprises and driving the market down even further (Carnegie Endowment, 2022<sup>[93]</sup>).

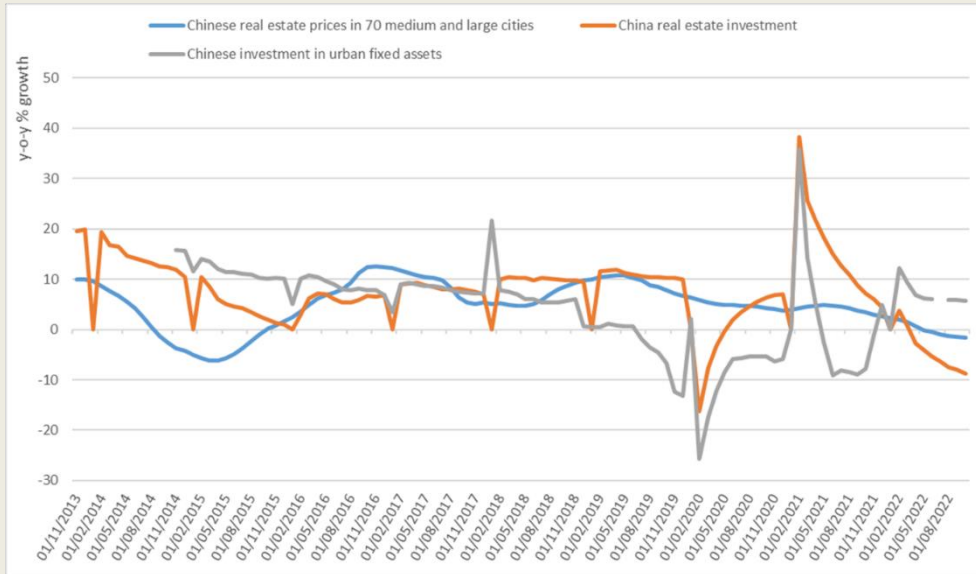
Working-class or lower-middle-class residents waiting for the apartments took action in July 2022, including through a mortgage boycott, which further disrupted the real estate market that consequently registered a 48.1% decrease in sales in July (NBS, 2022<sup>[96]</sup>). Cities and Provincial governments' immediate response was to prohibit disruptive practices in the real estate sector. For instance, in August 2022, Fuzhou City has listed land for sale, requiring the buyer to complete house construction before the sale is completed. However, the policy is not expected to boost confidence in the market as similar policies have been carried by other Chinese cities in the past without success (Kallanish, 2022<sup>[97]</sup>).

According to the National Bureau of Statistic of China (NBS), in October 2022 investment in real estate projects decreased by 8.8% year-on-year and real estate prices decreased by 1.6% year-on-year (NBS, 2022<sup>[96]</sup>). The sharp fall of investment can be seen in the Figure below Figure 23.

**Figure 23. China's real estate investment is falling, fixed urban assets investment raised, and top 70 cities' price index's growth turned negative for the first time since 2015**

Last data point November 2022

Note:



At present, provincial and city government have rolled out hundreds of policies aimed at stimulating the real estate sector, and increased investment in fixed urban assets (Figure 23). Measures to stimulate the households' real estate sector include increasing the supply of mortgages by adjusting the down payment ratio for house purchases (Chengde City, 2022<sup>[98]</sup>) (Shanghai Changning District People's Government, 2022<sup>[99]</sup>) subsidies for home purchase (Jinhua City Government, 2022<sup>[100]</sup>) and easing access requirements to the "Provident fund", a state-run savings plan that support citizens that want to buy homes (Baotou City, 2022<sup>[101]</sup>). Recent measures introduced on 23 November 2022 by the Chinese government to support the real estate sector include an easing of financial conditions to households through a decrease of required down payment and a decrease of interest rates, incentivising policy banks to provide loans to households for the purchase of real estate, and support for the construction and operation of rental housing through bonds and other financial products.<sup>13</sup>

According to China Association of Automobile Manufacturers, the Chinese automotive sector has registered a 1.8 month-to-month decrease in cars production in July while car sales have decreased by 0.6% month-to-month (CAAM, 2022<sup>[102]</sup>). In the first half of 2022, the automotive sector in China experienced a slowdown caused by supply disruptions, weakening expectations and demand contractions in areas such as Jilin and Shanghai which experienced new COVID outbreaks. In the second half of the year, chip shortages, high costs of new-energy vehicles (NEV), fewer policies to promote consumption, and weak commercial vehicles demand is expected to impact auto sales (Kallanish, 2022<sup>[103]</sup>).

In India, steel demand is expected to grow by 6.1% in 2022 and 6.7% in 2023 (worldsteel, 2022<sup>[48]</sup>). Despite input increases due to the Russian aggression against Ukraine, high level self-sufficiency in raw materials has been continuously supporting Indian steelmakers (Steel Orbis, 2022<sup>[104]</sup>). The construction sector, which accounts for 9% of India's GDP, will be supported by government sponsored projects such as the construction of roads, railways, ports and airports (Kallanish, 2022<sup>[105]</sup>). The Indian automotive industry is expected to record strong growth in 2022-23 after recovering from the disruptive effects of the COVID pandemic. Under the program "Automotive Mission Plan 2016-26", the Indian Government is targeting to increase export of vehicles by five times to reach US \$ 300 billion of value by 2026 (IBEF, 2022<sup>[106]</sup>).

In Japan, steel demand increased by 9.1% in 2021 and is expected to stagnate with a meagre 0.2% growth rate in 2022 before increasing by 1.7% in 2023 (worldsteel, 2022<sub>[48]</sub>). Japan's steel demand decreased in April amid a weaker automotive industry impacted by auto parts and chips shortages (Metal Expert, 2022<sub>[107]</sub>). In the coming months, supply chain disruption, energy and materials prices increases, and the impact of Yen depreciation on Japan's trade balance could have a negative impact on demand for steel (Kallanish, 2022<sub>[108]</sub>).

In Korea, steel demand rebounded by 13.9% in 2021 and is expected to increase by 2.5% in 2022 as investments in construction and manufacturing increase (worldsteel, 2022<sub>[48]</sub>). The Ministry of Trade, Industry and Energy (MOTIE) announced that during the first six months of 2022 Korea's automobile exports rose 1.5% by unit while output dropped 2.0% due to chips' supply chain bottlenecks and China's COVID lockdowns (MOTIE, 2022<sub>[109]</sub>). Investments in innovation and green technology are expected to support the Korean automotive sector in the coming years (Kallanish, 2022<sub>[110]</sub>).

In the ASEAN-5 region (Indonesia, Malaysia, Philippines, Thailand and Viet Nam), steel demand increased by 3.5% in 2021 and is expected to increase by 5.8% in 2022 and 6.0% in 2023 (worldsteel, 2022<sub>[48]</sub>). The main barrier to recovery is rising inflation rates amid Russia's war against Ukraine. According to ISEAS–Yusof Ishak Institute, the average inflation rate in ASEAN countries increased from 0.9% in January 2021 to 3.1% in December 2021 and 4.7% in April 2022. (S&P Global, 2022<sub>[111]</sub>).

Trends of construction industry differed by economy in the first quarter of 2022. In the Philippines, the construction sector continues to experience double digit growth rates and it grew by 13.5% in the first quarter of 2022 (SEAISI, 2022<sub>[112]</sub>). In the first quarter of 2022, the country embarked in various large construction projects such as the San Fernando cement plant expansion project, the Pangasinan bulk water supply project and the Penaranda solar power facility project (Design Build Network, 2022<sub>[113]</sub>). Construction activities declined by 6.2% in Malaysia in the first quarter of 2022 (SEAISI, 2022<sub>[112]</sub>). This negative performance was due to a decline of 16.1% in civil engineering sector and 15.3% in residential building subsectors (Department of Statistics Malaysia, 2022<sub>[114]</sub>). In the coming years, steel demand by construction sector in Indonesia may increase sharply as the economy plans to relocate its capital from Jakarta to East Kalimantan in 2024 (S&P Global, 2022<sub>[111]</sub>).

In the automotive industry, positive growth in automotive production was recorded in all ASEAN countries except the Philippines in the first half of 2022. Automotive production in Indonesia, Malaysia, Myanmar, Thailand and Viet Nam increased by 28.0%, 31.8%, 187.1%, 7.9% and 28.3%, year-on-year respectively during the same period (AAF, 2022<sub>[115]</sub>). In Thailand, ASEAN's largest automotive producer, market participants have a positive outlook for automotive production through 2022 as the government continues to ease restrictions on COVID and adopts economic stimulus packages, including electric vehicle (EV) promotion. Its production is expected to achieve the target of 1.8 million units in 2022 (Pattaya Mail, 2022<sub>[116]</sub>). Positive dynamics also continue in Indonesia, the second largest automotive producer in ASEAN region, thanks to the extension of tax relaxation initiative which was approved by Indonesian authorities in January 2022 (Metal Expert, 2022<sub>[117]</sub>).

#### *7.2.4. Europe and CIS economies*

In the European Union and the UK<sup>14</sup>, worldsteel forecasts finished steel consumption has rebounded by 18.1% in 2021 but is forecast to decrease by 3.5% in 2022 and 1.3% in 2023 (worldsteel, 2022<sub>[48]</sub>). The impact of Russia's war of aggression against Ukraine is expected to be larger in the European Union compared to other regions due to its close trade and

energy links with Russia (worldsteel, 2022<sub>[87]</sub>). According to Eurofer, steel demand in EU is expected to decrease by 1.9% in 2022 and rebound by 5.1% in 2023. The reasons of negative growth in 2022 are ongoing supply chain issues and Russia's war against Ukraine (Eurofer, 2022<sub>[118]</sub>).

Construction output in the European Union rebounded by 5.9% in 2021 after decreasing by 4.2% in 2020. The sector was supported by the restart in economic activity across the European Union in tandem with the generous housing and renovation supporting schemes that were implemented across many EU member states, especially in the first three quarters of 2021 (Eurofer, 2022<sub>[118]</sub>). According to the latest forecast by Eurofer, construction output is expected to grow by 2.3% in 2022 supported by governmental housing and public construction schemes, although increasing uncertain due to Russia's war against Ukraine and persisting supply chain issues continue to challenge the sector (Eurofer, 2022<sub>[118]</sub>).

Passenger car registrations in the European Union declined by 14.0% year-on-year to about 4.6 million units in the first half of 2022 as supply chain issues continue to limit vehicle production, according to the European Automobile Manufacturers' Association (ACEA) (ACEA, 2022<sub>[119]</sub>). In addition to supply chain issues, soaring inflation has caused people to reconsider expensive purchases, including cars (Fortune, 2022<sub>[120]</sub>). In fact, annual average inflation is expected to reach a historical high of 7.6% in the euro area in 2022 (European Union, 2022<sub>[121]</sub>). As a result of these issues, all four of the major EU markets experienced a decrease in new passenger car registrations: Germany (-11.0%), France (-16.3%), Italy (-22.7%) and Spain (-10.7%) (ACEA, 2022<sub>[119]</sub>). As of February 2022, ACEA projected that EU passenger car registrations would return to 10.5 million units in 2022, up 7.9% from the previous year, but the latest above data was clearly below this level (ACEA, 2022<sub>[122]</sub>).

In Other Europe, steel consumption grew by 12% in 2021 and is expected to decrease by 4% in 2022 before rebounding by 3% in 2023 (worldsteel, 2022<sub>[48]</sub>). Türkiye's economy is suffering from high inflation. Indeed, annual inflation rate in Türkiye jumped to 78.6% in June 2022, which was the highest rate in the past 24 years. This was driven by the impact of Russia's war against Ukraine; soaring commodity prices and a slide in the Turkish lira (Reuters, 2022<sub>[123]</sub>). As a result of this, steel demand of Türkiye in the first six months of 2022 was estimated to be about 17.6 mmt, which was 3.4% lower than the previous year. This decrease is of a similar magnitude, yet slightly less, than the drop in Türkiye's domestic steel production for the same period. The country's economic slowdown impacted also the automotive sector which experienced a decrease in car sales by 8.8% year-on-year in the first half of 2022 (OSD, 2022<sub>[124]</sub>).

Steel demand in the CIS region (which includes Russia) and Ukraine grew by only 1.4% in 2021 and is expected to decrease significantly by 9.2% in 2022 and 6.7% in 2023 (worldsteel, 2022<sub>[48]</sub>). As of August 2022, Russian aggression against Ukraine continues to create uncertainties in the development of the steel market in the region. Worldsteel expects Russian steel demand to decrease by 20% in 2022 and register zero growth in 2023 (worldsteel, 2022<sub>[87]</sub>). In addition, The Ministry of Industrial Development and Trade of the Russian Federation published a strategy for steel industry until 2030 that envisions two scenarios (basic and conservative) of steel industry development. Even under the base scenario, steel production in Russia may reach only 77.4 million tons by 2030 (+0.5% compared with the level of 2021), and production is expected to worsen only under the conservative scenario (GMK Cente, 2022<sub>[125]</sub>). Russian construction investments reached 4.76 trillion Russian rouble (RUB) in the first half of 2022, up 4% from the same period last year thanks to strong trend in the housing construction sector (Metal Expert, 2022<sub>[126]</sub>). According to the Automobile Manufacturers Committee of the Association Of European

Business (AEB), Russia's sales of new cars and light commercial vehicles had decreased by 60.5% year-on-year from January 2022 to July 2022, (AEB, 2022<sub>[127]</sub>).

Ukraine's economy and steel industry have been severely affected by Russian war of aggression. Worldsteel did not mention specific figures for Ukraine's demand forecast, noting only that a major decline of steel demand in Ukraine is expected (worldsteel, 2022<sub>[87]</sub>) (see Box 1).

## References

- AAF (2022), *Asean Automotive Statistics as at June 2022*. [115]
- AAPC (2022), *American Automakers Applaud Congressional Efforts to Strengthen U.S. Semiconductor Production* | AAPC, <https://www.americanautomakers.org/american-automakers-applaud-congressional-efforts-strengthen-us-semiconductor-production> (accessed on 11 February 2022). [155]
- ACEA (2022), *Car sales: return to growth expected in 2022, but concerns on charging infrastructure persist - ACEA - European Automobile Manufacturers' Association*, <https://www.acea.auto/press-release/car-sales-return-to-growth-expected-in-2022-but-concerns-on-charging-infrastructure-persist/> (accessed on 11 February 2022). [122]
- ACEA (2022), “Passenger car registrations: -12.3% first quarter of 2022; -20.5% in March”, <http://www.acea.auto> (accessed on 29 April 2022). [208]
- ACEA (2022), *Passenger car registrations: -14.0% first half of 2022*, [https://www.acea.auto/files/20220715\\_PRPC\\_2206\\_FINAL.pdf](https://www.acea.auto/files/20220715_PRPC_2206_FINAL.pdf) (accessed on 16 August 2022). [119]
- Acero Argentino (2021), *Mejoran las expectativas en el sector de la construcción – Cámara Argentina del Acero*, <http://www.acero.org.ar/mejoran-las-expectativas-en-el-sector-de-la-construccion/> (accessed on 2 February 2021). [131]
- AEB (2022), “New cars sales decrease is -62,9% in March 2022”, <http://www.aeb.ru> (accessed on 29 April 2022). [213]
- AEB (2022), *New cars sales decreased by 74,9% in July 2022*. [127]
- African Development Bank (2022), *Building today, a better Africa tomorrow*, <https://www.afdb.org/pt/news-and-events/press-releases/african-development-bank-sets-course-close-infrastructure-gap-board-approval-its-first-public-private-partnerships-strategic-framework-48875> (accessed on 11 February 2022). [158]
- AISI (2022), *AISI Urges Senate Passage of CHIPS Bill - American Iron and Steel Institute*, <https://www.steel.org/2022/07/aisi-urges-senate-passage-of-chips-bill/> (accessed on 27 July 2022). [74]
- Alacero (2021), *América Latina en Cifras 2021*, [http://www.acero.org.ar/wp-content/uploads/2021/12/america\\_latina\\_en\\_cifras\\_2021\\_es-en\\_capa2\\_0.pdf](http://www.acero.org.ar/wp-content/uploads/2021/12/america_latina_en_cifras_2021_es-en_capa2_0.pdf) (accessed on 10 February 2022). [132]
- Alliance for Automotive Innovation (2022), *Reading the meter*, [https://www.autosinnovate.org/default\\_upload\\_bucket/Reading%20the%20Meter%201-26-2022.pdf](https://www.autosinnovate.org/default_upload_bucket/Reading%20the%20Meter%201-26-2022.pdf) (accessed on 11 February 2022). [143]
- American Metal Market (2021), “China pushes further to boost steel scrap supply”, *American Metal Market*. [241]
- ANAC (2022), “2021 SE POSICIONA COMO EL SEGUNDO MEJOR AÑO EN LA HISTORIA DEL SECTOR AUTOMOTOR CHILENO”. [140]
- ANAC (2022), “VENTAS DE VEHÍCULOS CERO Y BAJAS EMISIONES CONTINÚAN RÉCORD EN JUNIO”. [60]
- Anfavea (2022), *2022 Projections*, <https://anfavea.com.br/site/wp-content/uploads/2022/07/previsao.pdf> (accessed on 26 July 2022). [57]

- Anfavea (2022), “COLETIVA DE IMPRENSA Desempenho da Indústria Automobilística Brasileira RESULTADOS DO SETOR EM 2021 e PROJEÇÕES 2022”. [135]
- Ansteel Group (2021), 鞍钢集团“5G 工业专网+ 智慧炼钢”全球首发, [246]  
<http://www.ansteelgroup.com/mtzx/xwzx/3406-5g> (accessed on 17 August 2022).
- ArcelorMittal (2022), *ArcelorMittal halts production at its Ukrainian steelmaking operations*, [20]  
<https://corporate.arcelormittal.com/media/press-releases/arcelormittal-halts-production-at-its-ukrainian-steelmaking-operations> (accessed on 19 August 2022).
- ArcelorMittal (2022), *ArcelorMittal reports first quarter 2022 results*, [262]  
<https://corporate.arcelormittal.com/media/fd2fnptd/1q-2022-earnings-release.pdf> (accessed on 19 July 2022).
- ArcelorMittal (2022), *ArcelorMittal reports second quarter 2022 and half year 2022 results*, [21]  
<https://corporate.arcelormittal.com/media/2mshw545/2q22-earnings-release.pdf> (accessed on 19 August 2022).
- Archyde (2022), *In 2021, the Moroccan automotive market grew by 5.7% compared to 2019 - Archyde*, [168]  
<https://www.archyde.com/in-2021-the-moroccan-automotive-market-grew-by-5-7-compared-to-2019/> (accessed on 11 February 2022).
- Argus Media (2022), *US steel production trended lower through April | Argus Media*, [2]  
<https://www.argusmedia.com/en/news/2334658-us-steel-production-trended-lower-through-april> (accessed on 24 August 2022).
- Argus Media (2021), *US southern steel's rise signals market shift | Argus Media*, [4]  
<https://www.argusmedia.com/en/news/2196949-us-southern-steels-rise-signals-market-shift> (accessed on 25 August 2022).
- Atradius (2021), *Construction Industry Trends China 2021*, [182]  
<https://atradiuscollections.com/global/reports/industry-trends-construction-china-2021.html> (accessed on 14 February 2022).
- Banco Central (2021), *Informe de politica monetaria*, [137]  
[https://www.bcentral.cl/documents/33528/3318512/IPoM\\_Diciembre\\_2021.pdf/565eddc6-6f73-054e-4b98-0608eef904f0](https://www.bcentral.cl/documents/33528/3318512/IPoM_Diciembre_2021.pdf/565eddc6-6f73-054e-4b98-0608eef904f0) (accessed on 11 February 2022).
- Bank Al-Maghrib (2022), *BANK AL-MAGHRIB - Report on monetary policy*, [82]  
<https://www.bkam.ma/en/Publications-statistics-and-research/Analysis-and-reference-documents/Report-on-monetary-policy> (accessed on 5 August 2022).
- Baotou City (2022), *Since the official implementation of the new provident fund policy, the business volume has increased significantly-Baotou Municipal People's Government*, [101]  
<https://www.baotou.gov.cn/info/2424/245928.htm> (accessed on 19 August 2022).
- Bauindustrie (2022), *Detail – The German construction industry*, <https://www.bauindustrie.de/pm/bau-startet-gut-ins-jahr-jetzt-drohen-probleme-und-kurzarbeit> (accessed on 4 May 2022). [206]
- BIR (2021), *China: The Ministry of Ecology and Environment and other five departments issued the “Announcement on Regulating the Import Management of Recycling Iron and Steel Raw Materials” No. 78 of 2020*, <https://www.bir.org/news-press/news/item/china-the-ministry-of-ecology-and-environment-and-other-five-departments-issued-the-announcement-on-regulating-the-import-management-of-recycling-iron-and-steel-raw-materials-no-78-of-2020> (accessed on 10 February 2021). [239]

- BIR (2020), *China: National standard enabling imports of “Recycling Iron and Steel Raw Materials” to be implemented January 1, 2021*, <https://www.bir.org/news-press/news/item/china-national-standard-enabling-imports-of-recycling-iron-and-steel-raw-materials-to-be-implemented-january-1-2021> (accessed on 10 February 2021). [238]
- Bloomberg Linea (2021), *Tasas e incertidumbre política podrían impactar el auge del acero en América Latina*, <https://www.bloomberglinea.com/2021/11/18/tasas-e-incertidumbre-politica-podrian-impactar-el-auge-del-acero-en-america-latina/> (accessed on 10 February 2022). [129]
- Bouckley, E. (2022), “Two Russian steel majors to exit coal business in 2022”, [https://www.steelbb.com/?PageID=157&article\\_id=203460](https://www.steelbb.com/?PageID=157&article_id=203460) (accessed on 14 February 2022). [236]
- Brazil Steel Institute (2022), *Aço Brasil maintains projections for 2022 - Instituto Aço Brasil*, <https://acobrasil.org.br/site/noticia/aco-brasil-mantem-projecoes-para-2022/> (accessed on 26 July 2022). [55]
- Brazil Steel Institute (2022), *Steel producers maintain growth forecast in 2022 - Instituto Aço Brasil*, <https://acobrasil.org.br/site/noticia/produtores-de-aco-mantem-previsao-de-crescimento-em-2022/> (accessed on 27 July 2022). [56]
- Business Day (2022), *SA can become net steel exporter again by shoring up underutilised capacity*, <https://www.businesslive.co.za/bd/companies/2022-07-06-sa-can-become-net-steel-exporter-again-by-shoring-up-underutilised-capacity/> (accessed on 25 August 2022). [9]
- CAAM (2022), *Sales of Automobiles in June 2022 - China Association of Automobile Manufacturers (CAAM)*, <http://en.caam.org.cn/Index/show/catid/58/id/1872.html> (accessed on 8 August 2022). [102]
- Camacol (2022), *Economic information | Camacol*, <https://camacol.co/nuestro-sector/informacion-economica> (accessed on 27 July 2022). [62]
- Camera Chilena de la Construction (2022), *CChC - Cámara Chilena de la Construcción*, <https://cchc.cl/centro-de-informacion/indicadores/inversion-en-construccion> (accessed on 11 February 2022). [138]
- CAOEC (2021), “STATE OF THE INDUSTRY 2022”. [146]
- Caoec (2022), *CAOEC Member Portal*, [https://caoec.ca/drilling\\_forecast](https://caoec.ca/drilling_forecast) (accessed on 29 July 2022). [67]
- Carnegie Endowment (2022), *What’s in Store for China’s Mortgage Market? - Carnegie Endowment for International Peace*, <https://carnegieendowment.org/chinafinancialmarkets/87664> (accessed on 19 August 2022). [93]
- Chengde City (2022), *Chengde Municipal People’s Government City News Chengde Housing Provident Fund Management Center implements new policies to promote the steady and healthy development of the city’s real estate market*, [http://www.chengde.gov.cn/art/2022/6/2/art\\_360\\_856335.html](http://www.chengde.gov.cn/art/2022/6/2/art_360_856335.html) (accessed on 19 August 2022). [98]
- Chilean Chamber of Construction (2022), “CÁMARA CHILENA DE LA CONSTRUCCIÓN // VALPARAÍSO CONFERENCIA CONSTRUYENDO REGIÓN 2022: CRISIS HÍDRICA REGIONAL: ¡ALERTA EXTREMA! INFORME INFRAESTRUCTURA PARA UN DESARROLLO SOSTENIBLE: LA URGENCIA DE LA INVERSIÓN PORTUARIA COMITÉS DE VIVIENDA DEL PAÍS ACUERDAN TRABAJO COLABORATIVO CON MINISTRO MINVU CARLOS MONTES SEMANA CONSTRUCCIÓN 2020: COLABORACIÓN RADICAL E INNOVACIÓN PARA COMBATIR EL DÉFICIT HABITACIONAL MESA DIRECTIVA CONSEJEROS REGIONALES CONSEJEROS NACIONALES EDITOR GENERAL”. [59]

- China Association of Automobile Manufacturers (2021), *Production of Automobiles in December 2021*, [183]  
<http://en.caam.org.cn/Index/show/catid/51/id/1608.html> (accessed on 11 February 2022).
- Chinese Government (2022), *Guiding Opinions of Three Ministries and Commissions on Promoting the High-quality Development of the Iron and Steel Industry\_Machinery Manufacturing and Heavy Industry\_China Government Network*, [http://www.gov.cn/zhengce/zhengceku/2022-02/08/content\\_5672513.htm](http://www.gov.cn/zhengce/zhengceku/2022-02/08/content_5672513.htm) (accessed on 17 August 2022). [244]
- Chinese Government (2022), *推进新能源汽车发展, 2022 年将有哪些举措?\_滚动新闻\_中国政府网*, [http://www.gov.cn/xinwen/2022-01/31/content\\_5671473.htm](http://www.gov.cn/xinwen/2022-01/31/content_5671473.htm) (accessed on 11 February 2022). [184]
- Chinese Government (2022), *钢铁业控量提质优结构\_滚动新闻\_中国政府网*, [http://www.gov.cn/xinwen/2022-02/11/content\\_5673008.htm](http://www.gov.cn/xinwen/2022-02/11/content_5673008.htm) (accessed on 17 August 2022). [257]
- Chinese Government (2021), *金融土地等措施系统发力——楼市调控不松懈 全年将以稳为主\_滚动新闻\_中国政府网*, [http://www.gov.cn/xinwen/2021-03/01/content\\_5589400.htm](http://www.gov.cn/xinwen/2021-03/01/content_5589400.htm) (accessed on 19 August 2022). [94]
- Chinese Government (2016), *国务院关于钢铁行业化解过剩产能实现脱困发展的意见\_政府信息公开专栏*, [http://www.gov.cn/zhengce/content/2016-02/04/content\\_5039353.htm](http://www.gov.cn/zhengce/content/2016-02/04/content_5039353.htm) (accessed on 17 August 2022). [256]
- Chinese Government (2011), *关于印发《钢铁工业“十二五”发展规划》的通知*, [http://www.gov.cn/zwggk/2011-11/07/content\\_1987459.htm](http://www.gov.cn/zwggk/2011-11/07/content_1987459.htm) (accessed on 17 August 2022). [250]
- Chinese Government (2010), *国务院办公厅关于进一步加大节能减排力度加快钢铁工业结构调整的若干意见\_政府信息公开专栏*, [http://www.gov.cn/zhengce/content/2010-06/17/content\\_4864.htm](http://www.gov.cn/zhengce/content/2010-06/17/content_4864.htm) (accessed on 17 August 2022). [249]
- Cluster Industrial (22), *Mexican automotive industry in 2021: full year data and analysis*, <https://www.clusterindustrial.com.mx/noticia/4388/mexican-automotive-industry-in-2021-full-year-data-and-analysis> (accessed on 11 February 2022). [150]
- Colombian Mining Information System (2021), *Materiales de construccion*, <https://www1.upme.gov.co/simco/Cifras-Sectoriales/Paginas/materialesdeconstruccion.aspx> (accessed on 11 February 2022). [142]
- Consensus Economics (2022), *Surveys of International Economic Forecasts*. [265]
- Csteel (2021), *看本钢矿业如何打造智能矿山—中国钢铁新闻网*, [http://www.csteelnews.com/xwzx/znzz/202106/t20210608\\_50967.html](http://www.csteelnews.com/xwzx/znzz/202106/t20210608_50967.html) (accessed on 17 August 2022). [245]
- DANE (2022), *construction licenses*, <https://www.dane.gov.co/index.php/en/statistics-by-topic-1/construction/licencias-de-construccion> (accessed on 27 July 2022). [61]
- DANE (2021), *Licencias de construcción*, <https://www.dane.gov.co/index.php/estadisticas-por-tema/construccion/licencias-de-construccion> (accessed on 11 February 2022). [141]
- Deloitte (2022), *2022 Engineering and Construction Industry Outlook | Deloitte US*, <https://www2.deloitte.com/us/en/pages/energy-and-resources/articles/engineering-and-construction-industry-trends.html> (accessed on 11 February 2022). [153]

- Deloitte (2022), *2022 Engineering and Construction Industry Outlook* | Deloitte US, [73]  
<https://www2.deloitte.com/us/en/pages/energy-and-resources/articles/engineering-and-construction-industry-trends.html> (accessed on 29 July 2022).
- Deloitte (2022), “Omicron clouds the outlook”. [144]
- Department of Statistics Malaysia (2022), *Malaysia Economic Performance First Quarter 2022*, [114]  
[https://www.dosm.gov.my/v1/index.php?r=column/cthemByCat&cat=100&bul\\_id=Zm8xRXoyVitzKzVUbG9Cc0pPQ0s3Zz09&menu\\_id=TE5CRUZCblh4ZTZMODZlBmk2aWRRQT09#:~:text=GDP%20performance%20in%20January%202022,9%20billion.](https://www.dosm.gov.my/v1/index.php?r=column/cthemByCat&cat=100&bul_id=Zm8xRXoyVitzKzVUbG9Cc0pPQ0s3Zz09&menu_id=TE5CRUZCblh4ZTZMODZlBmk2aWRRQT09#:~:text=GDP%20performance%20in%20January%202022,9%20billion.) (accessed on 10 August 2022).
- Design Build Network (2022), *Five largest construction projects initiated in Philippines in Q1 2022*, [113]  
<https://www.designbuild-network.com/marketdata/top-five-construction-projects-philippines-q1-2022/> (accessed on 10 August 2022).
- Economics, C. (2022), *Surveys of International Economic Forecasts*. [264]
- EIA (2022), “Short-Term Energy Outlook”. [75]
- EIA (2021), *Short-Term Energy Outlook - U.S. Energy Information Administration (EIA)*, Short-term energy outlook, <https://www.eia.gov/outlooks/steo/report/prices.php> (accessed on 4 February 2021). [157]
- El Economista (2021), *Industria automotriz en Chile tiene su mejor octubre en ventas desde que hay registro* | *El Economista*, <https://www.eleconomista.com.mx/empresas/Industria-automotriz-en-Chile-tiene-su-mejor-oktubre-en-ventas-desde-que-hay-registro-20211104-0119.html> (accessed on 11 February 2022). [139]
- Engineering News (2021), *Upward trend expected for construction industry in 2022*, [163]  
[https://www.engineeringnews.co.za/article/upward-trend-expected-for-construction-industry-in-2022-2021-12-14/rep\\_id:4136](https://www.engineeringnews.co.za/article/upward-trend-expected-for-construction-industry-in-2022-2021-12-14/rep_id:4136) (accessed on 11 February 2022).
- Epoch Times (2021), *The CCP’s “Three Red Lines” Overwhelm Evergrande Experts: No Surprise* | *Evergrande Crisis* | *Lehman Brothers* | *The Epoch Times*, [95]  
<https://www.epochtimes.com/gb/21/9/24/n13258204.htm> (accessed on 19 August 2022).
- Erdemir (2022), *2022 Six Months Interim Report*, [243]  
[https://www.oyakmadenmetalurji.com.tr/Sites/1/upload/files/EREGL\\_FR\\_ENG\\_2Q\\_22-5024.PDF](https://www.oyakmadenmetalurji.com.tr/Sites/1/upload/files/EREGL_FR_ENG_2Q_22-5024.PDF) (accessed on 16 August 2022).
- ET Auto: Auto News (2022), *Volkswagen seeks purchaser for Russian auto-making plant*, [225]  
<https://auto.economictimes.indiatimes.com/news/passenger-vehicle/cars/volkswagen-seeks-purchaser-for-russian-auto-making-plant/93174587?redirect=1> (accessed on 12 August 2022).
- Eurofer (2022), *Economic and steel market outlook 2022-2023*, [118]  
[https://www.eurofer.eu/assets/publications/economic-market-outlook/economic-and-steel-market-outlook-2022-2023-first-quarter-2/EUROFER\\_ECONOMIC\\_REPORT\\_Q2\\_2022-23\\_final.pdf](https://www.eurofer.eu/assets/publications/economic-market-outlook/economic-and-steel-market-outlook-2022-2023-first-quarter-2/EUROFER_ECONOMIC_REPORT_Q2_2022-23_final.pdf) (accessed on 17 August 2022).
- European Union (2022), *Summer 2022 Economic Forecast*, [121]  
[https://ec.europa.eu/commission/presscorner/detail/en/ip\\_22\\_4511](https://ec.europa.eu/commission/presscorner/detail/en/ip_22_4511) (accessed on 17 August 2022).
- Eurostat (2022), *Confidence indicators by sector*, [205]  
<https://ec.europa.eu/eurostat/databrowser/view/teibs020/default/table?lang=en> (accessed on 11 February 2022).

- Eurostat (2021), “Monthly comparison by construction sector and by Member State”. [204]
- Financial review (2022), *Morgan Stanley sees ‘little reason to be bullish’ on iron ore*, [35]  
<https://www.afr.com/markets/commodities/morgan-stanley-sees-little-reason-to-be-bullish-on-iron-ore-20220810-p5b8mg> (accessed on 18 August 2022).
- Financial Times (2021), “Iron ore miners struggle to boost output even as demand soars”, [231]  
<https://www.ft.com/content/d7db853f-2d85-45de-970b-baff930fc9f> (accessed on 21 July 2021).
- Financial Times (2018), “China debt maturities reflect financial fragility”, *Financial times*. [223]
- Financial Tribune (2022), *A Grounded Industry*, <https://financialtribune.com/articles/domestic-economy/112427/a-grounded-industry> (accessed on 11 February 2022). [177]
- Fitch Ratings (2021), “Global Steel Price Rally Will Be Short-Lived”, *Fitch Ratings*. [227]
- Forster, H. (2022), “Europe steel margin recovery in 2021 offset by current cost concern”, [230]  
[https://www.steelbb.com/?PageID=157&article\\_id=205101](https://www.steelbb.com/?PageID=157&article_id=205101) (accessed on 8 February 2022).
- Forster, H. (2021), “Higher ferrous scrap price trends as China’s steel curbs weaken iron ore”, [237]  
[https://www.steelbb.com/?PageID=157&article\\_id=202444](https://www.steelbb.com/?PageID=157&article_id=202444) (accessed on 9 February 2022).
- Fortune (2022), *European car sales are at their lowest point since 1996 because of supply-chain issues and plummeting demand*, <https://fortune.com/2022/07/15/european-car-sales-lowest-since-1996/> [120]  
 (accessed on 17 August 2022).
- Fortune (2021), “Steel prices 2021 chart: Price of steel up 200%. When will the bubble pop?”, [228]  
<https://fortune.com/2021/07/08/steel-prices-2021-going-up-bubble/> (accessed on 26 July 2021).
- Foster, H. (2021), “Europe steel-raw materials spreads continue to rise in June, Q2 hits record”, [242]  
[https://www.steelbb.com/?PageID=157&article\\_id=199143](https://www.steelbb.com/?PageID=157&article_id=199143) (accessed on 21 July 2021).
- GlobalData (2022), *Egypt Construction Market Size, Trends and Forecasts by Sector - Commercial, Industrial, and Residential Market Analysis, 2022-2026*, [84]  
<https://www.globaldata.com/store/report/egypt-construction-market-analysis/> (accessed on 5 August 2022).
- GlobalData (2022), *Inflationary pressures from Russia-Ukraine crisis will cause Eastern European construction output to fall by 3.4% in 2022, finds GlobalData - GlobalData*, [207]  
<https://www.globaldata.com/inflationary-pressures-russia-ukraine-crisis-will-cause-eastern-european-construction-output-fall-3-4-2022-finds-globaldata/> (accessed on 29 April 2022).
- Globaldata (2022), *Canada Construction Market Size, Trends and Forecasts by Sector - Commercial, Industrial, Infrastructure, Energy and Utilities, Institutional and Residential Market Analysis, 2022-2026*, [66]  
<https://www.globaldata.com/store/report/canada-construction-market-analysis/> (accessed on 29 July 2022).
- Globaldata (2022), *Construction Market Size, Trends and Growth Forecast by Key Regions and Countries, 2022-2026*, [51]  
<https://www.globaldata.com/store/report/construction-market-analysis/> (accessed on 29 July 2022).
- GMK Cente (2022), *The Russian Federation authorities predict an 8-year stagnation of steel industry due to sanctions*, [125]  
<https://gmk.center/en/news/the-russian-federation-authorities-predict-an-8-year-stagnation-of-steel-industry-due-to-sanctions/> (accessed on 12 August 2022).

- GMK center (2022), “Dneprospetsstal” suspended the work of hot production sites, <https://gmk.center/en/news/dneprospetsstal-suspended-the-work-of-hot-production-sites/> (accessed on 19 August 2022). [25]
- GMK center (2022), *Energomashspetsstal was subjected to rocket attack*, <https://gmk.center/en/news/energomashspetsstal-was-subjected-to-rocket-attack/> (accessed on 19 August 2022). [26]
- GMK center (2022), *NKMZ suspend temporarily production from February 28*, <http://NKMZ.suspendtemporarilyproductionfromFebruary28> (accessed on 19 August 2022). [27]
- GMK center (2022), *Scrap prices are falling due to a decrease in steel production – Steel News*, <https://gmk.center/en/posts/world-scrap-metal-prices-are-falling-due-to-reduced-steel-production/> (accessed on 18 August 2022). [46]
- GMK center (2022), *Verkhovna Rada decided to transfer the property of NKMZ to state ownership*, <https://gmk.center/en/news/the-rada-decided-to-transfer-the-property-of-nkmz-to-state-ownership/> (accessed on 19 August 2022). [28]
- Graham, B. (2021), *Iron ore price: Early sign China’s crackdown is headed for failure*, <https://www.news.com.au/finance/economy/australian-economy/early-sign-china-is-headed-for-failure-in-its-push-to-drive-iron-ore-price-down/news-story/eb7f943d9805996990dd4ea6316a83b> (accessed on 21 July 2021). [232]
- Hebei Government (2020), *河北省人民政府关于印发河北省数字经济发展规划（2020-2025年）的通知*, <http://www.hebei.gov.cn/shoujiapp/15087116/15087151/15087165/15009913/index.html> (accessed on 17 August 2022). [248]
- IBEF (2022), *AUTOMOBILE INDUSTRY REPORT*, [https://www.ibef.org/download/1658816508\\_Automobile-PPT-June-2022.pdf](https://www.ibef.org/download/1658816508_Automobile-PPT-June-2022.pdf) (accessed on 8 August 2022). [106]
- IHS Markit (2021), *Fuel for Thought: Auto demand levels remain depressed on chip famine alongside race between vaccine & variants; 2022 Light Vehicle demand set to post 82.4 million (+3.7%) | IHS Markit*, <https://ihsmarkit.com/research-analysis/fuel-for-thought-auto-demand-levels-remain-depressed-on-chip-famine.html> (accessed on 11 February 2022). [156]
- IMF (2022), *World Economic Outlook Update, July 2022: Gloomy and More Uncertain*, <https://www.imf.org/en/Publications/WEO/Issues/2022/07/26/world-economic-outlook-update-july-2022> (accessed on 10 August 2022). [224]
- Indonesian Government (2022), *Memompa Pertumbuhan Ekonomi 2022 Tetap Positif*, <https://www.indonesia.go.id/kategori/indonesia-dalam-angka/4043/memompa-pertumbuhan-ekonomi-2022-tetap-positif> (accessed on 11 February 2022). [197]
- INEGI (2022), *Administrative record of the light vehicle automotive industry*, <http://en.www.inegi.org.mx/datosprimarios/iavl/> (accessed on 29 July 2022). [69]
- INEGI (n.d.), *News - National Survey of Construction Companies*, <http://en.www.inegi.org.mx/app/saladeprensa/noticia.html?id=7460> (accessed on 29 July 2022). [70]
- International Trade Administration (2022), *United Arab Emirates - Design and Construction*, <https://www.trade.gov/country-commercial-guides/united-arab-emirates-design-and-construction> (accessed on 5 August 2022). [89]

- Invest India (2022), *Construction Industry in India | Construction Sector Investments*, [187]  
<https://www.investindia.gov.in/sector/construction> (accessed on 11 February 2022).
- Jinhua City Government (2022), *When the housing subsidy comes, those who meet these conditions can apply for it*, [100]  
[http://www.jinhua.gov.cn/art/2022/8/3/art\\_1229160410\\_4003288.html](http://www.jinhua.gov.cn/art/2022/8/3/art_1229160410_4003288.html) (accessed on 19 August 2022).
- Kallanish (2022), *AMSA's production, sales shrink, earnings grow*, [11]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/amsas-production-sales-shrink-earnings-grow-0722/> (accessed on 24 August 2022).
- Kallanish (2022), *Argentina's June steel production hits five-year high*, [7]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/argentinas-june-steel-production-hits-five-year-high-0722/> (accessed on 24 August 2022).
- Kallanish (2022), *Argentinian construction sector activity improves in November*, [130]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/argentinian-construction-sectors-activity-improves-in-november-2021-0122/> (accessed on 10 February 2022).
- Kallanish (2022), *BFs support Chinese scrap prices amid EAF stoppages*, [44]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/chinese-scrap-boosts-eaf-mills-shut-down-0822/> (accessed on 18 August 2022).
- Kallanish (2022), *BHP expects volatile near-term operating environment*, [38]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/bhp-expects-volatile-operating-environment-in-near-term-0822/> (accessed on 18 August 2022).
- Kallanish (2022), *Brazil's steel production, consumption fall in June*, [54]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/brazils-steel-production-decelerates-in-june-0722/> (accessed on 26 July 2022).
- Kallanish (2022), *Chile's CSH posts lower first-quarter results*, [6]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/chiles-csh-posts-lower-first-quarter-results-0522/> (accessed on 25 August 2022).
- Kallanish (2022), *Chile's rebar sales fall in May*, [58]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/chiles-may-rebar-sales-fall-0722/> (accessed on 27 July 2022).
- Kallanish (2022), *Chinese auto industry ends June with full recovery*, [103]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/chinese-auto-industry-ends-june-with-full-recovery-0722/> (accessed on 8 August 2022).
- Kallanish (2022), *Chinese stimulus, green transition support metals: Fitch Solutions*, [178]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/chinese-stimulus-green-transition-support-metals-fitch-solutions-0122/> (accessed on 11 February 2022).
- Kallanish (2022), *CIS disruption raises prices, climate policy doubts: JSW*, [39]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/cis-disruption-raises-prices-climate-policy-doubts-jsw-0322/> (accessed on 18 August 2022).
- Kallanish (2022), *CMC expects strong short-term domestic rebar demand*, [72]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/cmc-expects-strong-short-term-domestic-rebar-demand-0622/> (accessed on 27 July 2022).

- Kallanish (2022), *Cold weather-induced gas cuts hit Iranian steel production*, [176]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/cold-weather-in-iran-hits-steel-production-0122/> (accessed on 11 February 2022).
- Kallanish (2022), *Europe demand will lift Ukrainian steel exports: Zaporizhstal*, [220]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/europes-demand-will-lift-ukrainian-steel-exports-zaporizhstal-0422/> (accessed on 4 May 2022).
- Kallanish (2022), *GCC construction lags behind expectations in 2022: MEED*, [85]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/gcc-construction-performance-is-disappointing-in-h1meed-0722/> (accessed on 5 August 2022).
- Kallanish (2022), *GCC output shrinks sequentially in June, grows on-year*, [12]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/gcc-output-shrinks-in-june-grows-against-2021-0722/> (accessed on 24 August 2022).
- Kallanish (2022), *Hyundai develops high-performance steel for automotive*, [110]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/hyundai-develops-high-performance-steel-for-automotives-0622/> (accessed on 8 August 2022).
- Kallanish (2022), *India, Turkey see strong 2022 growth amid slowdown*, [185]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/steel-consumption-to-slowdown-in-2022-worldsteel-0422/> (accessed on 5 May 2022).
- Kallanish (2022), *Indian demand, exports to grow: Moody's*, [105]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/indian-annual-steel-demand-exports-to-grow-moodys-0522/> (accessed on 8 August 2022).
- Kallanish (2022), *Indian steel demand, prices to remain elevated: Tata*, [186]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/indian-steel-demand-prices-to-remain-elevated-tata-0222/> (accessed on 11 February 2022).
- Kallanish (2022), *Iran, South Africa see May steel output plunge*, [10]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/iran-south-africa-sees-shrink-in-steel-output-0622/> (accessed on 24 August 2022).
- Kallanish (2022), *Iranian devalued currency depresses steel export prices*, [91]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/iranian-devaluated-local-currency-depresses-steel-export-prices-0622/> (accessed on 5 August 2022).
- Kallanish (2022), *Iranian two-month apparent steel consumption surges*, [90]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/iranian-apparent-steel-consumption-surge-in-two-months-0622/> (accessed on 5 August 2022).
- Kallanish (2022), *Iron ore collapses on recession fears*, [34]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/iron-ore-collapses-on-recession-fears-0422/> (accessed on 18 August 2022).
- Kallanish (2022), *Iron ore continues losses on weak economy*, [13]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/iron-ore-continues-loss-on-weak-economy-0722/> (accessed on 24 August 2022).
- Kallanish (2022), *Latin American finished steel demand to decrease: worldsteel*, [133]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/latin-american-finished-steel-demand-to-decrease-worldsteel-0422/> (accessed on 29 April 2022).

- Kallanish (2022), *More German mills operate intermittently on energy disruption*, [202]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/more-german-mills-in-start-and-stop-modus-0322/> (accessed on 4 May 2022).
- Kallanish (2022), *Most Ukrainian steelmakers resume production despite war continuation*, [219]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/most-ukrainian-steelmakers-resumed-production-despite-russian-invasion-0422/> (accessed on 4 May 2022).
- Kallanish (2022), *Nippon Steel's business profit breaks quarterly records*, [108]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/nippon-steels-business-profit-breaks-quarterly-records-0822/> (accessed on 8 August 2022).
- Kallanish (2022), *Non-residential building investment spending falls in Canada*, [65]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/non-residential-building-investment-spending-falls-in-canada/> (accessed on 29 July 2022).
- Kallanish (2022), *Russia's stainless imports decline on logistics restrictions*, [217]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/russias-stainless-imports-declines-due-to-supply-problems-0422/> (accessed on 4 May 2022).
- Kallanish (2022), *Russian steel seeks buyers; financing, freight pose problems*, [218]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/russian-steel-is-still-available-but-financing-freight-is-difficult-0322/> (accessed on 4 May 2022).
- Kallanish (2022), *Steel futures fluctuate higher against geopolitical tensions*, [97]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/steel-futures-fluctuate-higher-against-geopolitical-tensions-0822/> (accessed on 8 August 2022).
- Kallanish (2022), *Steel prices will move off peaks: Moody's*, [45]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/moodys-steel-prices-will-move-off-peaks-but-remain-high-0622/> (accessed on 18 August 2022).
- Kallanish (2022), *Supply concerns drive distorted longs market: Irepas*, [31]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/supply-concerns-drive-distorted-longs-market-irepas-0422/> (accessed on 24 August 2022).
- Kallanish (2022), *US steel production creeps up*, [3]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/weekly-us-steel-production-creeps-up-0822/> (accessed on 24 August 2022).
- Kallanish (2022), *Yancoal Australia cuts 2022 saleable coal production forecast*, [16]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/yancoal-australia-cuts-2022-saleable-coal-production-forecast-0822/> (accessed on 24 August 2022).
- Kallanish (2022), *Zaporizhstal's July production falls on raw materials shortage*, [23]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/zaporizhstals-july-production-falls-shortage-of-raw-materials-0822/> (accessed on 19 August 2022).
- Kallanish (2021), *Saudi demand seen growing despite reduced 2022 budget*, [171]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/saudi-economical-growth-in-2022-will-boost-steel-demand-1221/> (accessed on 11 February 2022).
- Kallanish (2021), *South Africa steelmaking minerals exports remain strong*, [160]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/south-africas-steel-making-minerals-export-generate-handsome-income-1221/> (accessed on 11 February 2022).

- Kallanish (2021), *South Africa strike curbs automotive steel supply: reports*, [161]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/strike-curbs-steel-supply-for-automotive-industry-in-south-africa-1021/> (accessed on 11 February 2022).
- Kallanish (2021), *Steel sector applauds UAE weekend shift, international alignment*, [174]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/uaes-weekend-days-changes-to-saturday-and-sunday-1221/> (accessed on 11 February 2022).
- Kallanish (2021), *Turkey's December construction, consumer confidence indices dip*, [209]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/turkeys-december-construction-consumer-confidence-indices-dip-1221/> (accessed on 11 February 2022).
- kallanish (2022), *Interpipe production decreases, revenue surges in first quarter*, [24]  
<https://www.kallanish.com/en/news/steel/market-reports/article-details/interpipe-decreases-production-revenue-surged-in-first-quarter-0622/> (accessed on 19 August 2022).
- Malaysian Automotive Association (2022), *PRODUCTION & SALES FOR DECEMBER 2021*, [200]  
<http://www.maa.org.my/pdf/2021/pressreleasefordec2021.pdf> (accessed on 11 February 2022).
- Marcus, P. et al. (2020), *World Steel Dynamics - Financial Dynamics of International Steelmakers 2019*, [221]  
<http://www.worldsteeldynamics.com>.
- MEE (2012), *Discharge Standard of Water Pollutants in Iron and Steel Industry\_Ministry of Ecology and Environment of the People's Republic of China*, [252]  
[https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/shjhb/swrwpfbz/201207/t20120731\\_234144.shtml](https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/shjhb/swrwpfbz/201207/t20120731_234144.shtml)  
 (accessed on 17 August 2022).
- MEE (2012), *Emission standard of air pollutants for sintering and pelletizing of iron and steel industries*, [253]  
<https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/dqhjbh/dqgdwrywrwpfbz/201207/W020200622311052107329.pdf> (accessed on 17 August 2022).
- MEE (2012), *炼钢工业大气污染物排放标准\_中华人民共和国生态环境部*, [255]  
[https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/dqhjbh/dqgdwrywrwpfbz/201207/t20120731\\_234142.shtml](https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/dqhjbh/dqgdwrywrwpfbz/201207/t20120731_234142.shtml)  
 (accessed on 17 August 2022).
- MEE (2012), *炼铁工业大气污染物排放标准\_中华人民共和国生态环境部*, [254]  
[https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/dqhjbh/dqgdwrywrwpfbz/201207/t20120731\\_234141.shtml](https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/dqhjbh/dqgdwrywrwpfbz/201207/t20120731_234141.shtml)  
 (accessed on 17 August 2022).
- Metal Bulletin (2022), *Tight energy supply weighs on Iranian steel industry, trading muted | Metal Bulletin.com*, [175]  
<https://www.metalbulletin.com/Article/5082517/Search-results/Tight-energy-supply-weighs-on-Iranian-steel-industry-trading-muted.html> (accessed on 11 February 2022).
- Metal Expert (2022), *Alacero downgrades steel consumption forecast for 2022*, [50]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=Alacero-downgrades-steel-consumption-forecast-for-2022&unid=77C1610EDED10D35C225887E0034AFF3Q> (accessed on 26 July 2022).
- Metal Expert (2022), *Algeria's steelmakers keep focus on exports in 2022 amid slow local market*, [166]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=Algerias-steelmakers-keep-focus-on-exports-in-2022-amid-slow-local-market&unid=049908C8F9E7D86FC22587D00047D90BQ> (accessed on 11 February 2022).
- Metal Expert (2022), *Argentina's auto production up 21% in June*, [52]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=Argentinas-auto-production-up-21-in-June&unid=A23FB4AADE5A87A0C225887700284EF7Q> (accessed on 26 July 2022).

- Metal Expert (2022), *Argentina's steel production recovers after April maintenance shutdowns*, [53]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=Argentinas-steel-production-recovers-after-April-maintenance-shutdowns&unid=9DCC321D57B5EC1DC225886B0030CFC4Q> (accessed on 26 July 2022).
- Metal Expert (2022), *ASEAN vehicles output shows double-digit growth in 2021*, [196]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=ASEAN-vehicles-output-shows-double-digit-growth-in-2021&unid=CF049791D3C0A34FC22587DD0046F42CQ> (accessed on 11 February 2022).
- Metal Expert (2022), *Development of Diriyah gigaproject to support steel consumption in Saudi Arabia*, [172]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=Development-of-Diriyah-gigaproject-to-support-steel-consumption-in-Saudi-Arabia&unid=C1AEDE864998CC99C22587D4004EF5B3Q> (accessed on 11 February 2022).
- Metal Expert (2022), *In brief: Mexico's auto production up by 6% in June*, [68]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=In-brief-Mexicos-auto-production-up-by-6-in-June&unid=9F61FE570CFC4B94C225887C00340965Q> (accessed on 27 July 2022).
- Metal Expert (2022), *Indonesian auto output and sales post double-digit growth in 2021*, [199]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=Indonesian-auto-output-and-sales-post-double-digit-growth-in-2021-&unid=9E16E530DF1A4C0AC22587CD003F739FQ> (accessed on 11 February 2022).
- Metal Expert (2022), *Indonesian auto sector on rise in H1, outlook optimistic*. [117]
- Metal Expert (2022), *Iraq to build smart city in cooperation with UAE*, [86]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=Iraq-to-build-smart-city-in-cooperation-with-UAE&unid=32C13712D8DFCD51C2258894004D6566Q> (accessed on 5 August 2022).
- Metal Expert (2022), *Iron ore sinks further as steel plummets*, [37]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=Iron-ore-sinks-further-as-steel-plummets&unid=0457ECAFD05DFFA9C22588A10048A44BQ> (accessed on 18 August 2022).
- Metal Expert (2022), *Japan's steel demand down in April on slow auto sector*, [107]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=Japans-steel-demand-down-in-April-on-slow-auto-sector&unid=047C7340DDD41FA1C2258863004F243BQ> (accessed on 8 August 2022).
- Metal Expert (2022), *News*, <https://metalexpert.com/en/news/htmlinetnewsbus?head=MENA-construction-sector-to-grow-by-23-by-2030&unid=6EA0415950F7FE69C2258853004C5C84Q> (accessed on 5 August 2022). [79]
- Metal Expert (2022), *Russia boosts passenger car production by 8% in 2021*, [214]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=Russia-boosts-passenger-car-production-by-8-in-2021&unid=147663D1BDE57679C22587DF00500A37Q> (accessed on 11 February 2022).
- Metal Expert (2022), *Russian construction market grows by 4% in H1 2022*, [126]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=Russian-construction-market-grows-by-4-in-H1-2022&unid=DE6942FDA3BB6565C225888D004613D3Q> (accessed on 16 August 2022).
- Metal Expert (2022), *South Korea's crude steel output dips 4% in Q1*, [192]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=South-Koreas-crude-steel-output-dips-4-in-Q1&unid=213D4EBDA904F2D0C225883800394F43Q> (accessed on 5 May 2022).
- Metal Expert (2022), *Thailand's steel sector performs better in 2021*, [195]  
<https://metalexpert.com/en/news/htmlinetnewsbus?head=Thailands-steel-sector-performs-better-in-2021&unid=7F7CB9B314763D42C22587E20041057EQ> (accessed on 11 February 2022).

- Metal Expert (2021), *Bahrain to begin 2022 with 10% VAT*, [173]  
<https://metalexper.com/en/news/htmlinetnewsbus?head=Bahrain-to-begin-2022-with-10-VAT&unid=6337F89B9F84505DC22587AB00465880Q> (accessed on 11 February 2022).
- Metal Expert (2021), *Egypt eyes massive steel capacity expansion*, [170]  
<https://metalexper.com/en/news/htmlinetnewsbus?head=Egypt-eyes-massive-steel-capacity-expansion&unid=0898FBBE252580DCC225878B0054755AQ> (accessed on 11 February 2022).
- Metal Expert (2021), *Hyundai Steel returns to profit in 2021*, [193]  
<https://metalexper.com/en/news/htmlinetnewsbus?head=Hyundai-Steel-returns-to-profit-in-2021&unid=005149D5D2EAC455C22587D70049E433Q> (accessed on 11 February 2022).
- Metal Expert (2021), *MENA Billet & Flats Conference: Steel sector enters new era of firm profitability, but more challenging and costlier production*, [165]  
<https://metalexper.com/en/news/htmlinetnewsbus?head=MENA-Billet--Flats-Conference-Steel-sector-enters-new-era-of-firm-profitability-but-more-challenging-and-costlier-production&unid=13C65556ADD550A3C2258787003A00BBQ> (accessed on 11 February 2022).
- Metal Expert (2020), *Vietnam's steel sector to benefit from infrastructure development in Bac Giang province*, [201]  
<https://metalexper.com/en/news/HTMLInetNewsBus?head=Vietnams-steel-sector-to-benefit-from-infrastructure-development-in-Bac-Giang-province&unid=679D167E4029FA33C22585AE0036DB4BQ> (accessed on 1 August 2020).
- METI (2022), *2022 年度第1 四半期 (2022 年4-6 月期) 鋼材*, [189]  
[https://www.meti.go.jp/policy/mono\\_info\\_service/mono/iron\\_and\\_steel/20221q.pdf](https://www.meti.go.jp/policy/mono_info_service/mono/iron_and_steel/20221q.pdf) (accessed on 4 May 2022).
- METINVEST (2022), *METINVEST ANNOUNCES 2Q AND 1H 2022 OPERATIONAL RESULTS*. [22]
- Mexican Government (2021), *El sector de la construcción creció 9.4% anual en noviembre | Gaceta económica | Gobierno | gob.mx*, [149]  
<https://www.gob.mx/shcp/gacetaeconomica/articulos/el-sector-de-la-construccion-crecio-9-4-anual-en-noviembre> (accessed on 11 February 2022).
- Ministry of Ecology (2021), *钢铁行业低碳标准体系建设方案正在研究 - 生态中国网*, [261]  
[http://www.eco.gov.cn/news\\_info/49407.html](http://www.eco.gov.cn/news_info/49407.html) (accessed on 17 August 2022).
- Ministry of Finance (2022), *Pemerintah Lanjutkan Insentif PPN DTP Sektor Perumahan di 2022*, [198]  
<https://www.kemenkeu.go.id/publikasi/berita/pemerintah-lanjutkan-insentif-ppn-dtp-sektor-perumahan-di-2022/> (accessed on 11 February 2022).
- Ministry of Housing and Urban-Rural Development of the People's Republic of China (2022), *住房和城乡建设部关于印发“十四五”建筑业发展规划的通知*, [179]  
[https://www.mohurd.gov.cn/gongkai/fdzdgnr/zfhcxjsbwj/202201/20220125\\_764285.html](https://www.mohurd.gov.cn/gongkai/fdzdgnr/zfhcxjsbwj/202201/20220125_764285.html) (accessed on 11 February 2022).
- Ministry of Trade, I. (2021), *Korea's automobile export value turns to positive growth in November*, [191]  
[http://english.motie.go.kr/en/pc/pressreleases/bbs/bbsView.do?bbs\\_cd\\_n=2&bbs\\_seq\\_n=899](http://english.motie.go.kr/en/pc/pressreleases/bbs/bbsView.do?bbs_cd_n=2&bbs_seq_n=899) (accessed on 11 February 2022).
- MLIT (2021), *令和4年度国土交通省税制改正概要 令和3年12月国土交通省*. [190]
- MLN (2022), *more than 175,000 units sold in 2021 - Morocco Latest News*, [167]  
<https://moroccolatestnews.com/more-than-175000-units-sold-in-2021/> (accessed on 11 February 2022).

- Morocco Now (2022), *Automotives*, <https://www.morocconow.com/automotives/> (accessed on 5 August 2022). [80]
- MOTIE (2022), *Press Releases | Ministry of Trade, Industry and Energy*, [https://english.motie.go.kr/en/pc/pressreleases/bbs/bbsView.do?bbs\\_seq\\_n=1023&bbs\\_cd\\_n=2&currentPage=1&search\\_key\\_n=&search\\_val\\_v=&cate\\_n=](https://english.motie.go.kr/en/pc/pressreleases/bbs/bbsView.do?bbs_seq_n=1023&bbs_cd_n=2&currentPage=1&search_key_n=&search_val_v=&cate_n=) (accessed on 8 August 2022). [109]
- MWN (2022), *Morocco's Automotive Exports Reach 5-Year High of \$5.1 Billion as of June*, <https://www.moroccoworldnews.com/2022/08/350631/moroccos-automotive-exports-reach-5-year-high-of-5-1-billion-as-of-june> (accessed on 5 August 2022). [81]
- Naamsa (2022), *naamsa | Industry's EV Roadmap aims to accelerate Sales and Production*, <https://naamsa.net/auto-industrys-ev-roadmap-aims-to-accelerate-sales-and-production/> (accessed on 4 August 2022). [78]
- Naamsa (2022), "PRESS RELEASE FOR IMMEDIATE RELEASE |", <http://www.naamsa.co.za> (accessed on 11 February 2022). [162]
- NBS (2022), *National Data*, <https://data.stats.gov.cn/english/easyquery.htm?cn=A01> (accessed on 8 August 2022). [96]
- NDRC (2017), *【钢铁工业调整升级规划（2016-2020年）】-国家发展和改革委员会*, [https://www.ndrc.gov.cn/fggz/fztlgh/gjjzxgh/201706/t20170621\\_1196816.html?code=&state=123](https://www.ndrc.gov.cn/fggz/fztlgh/gjjzxgh/201706/t20170621_1196816.html?code=&state=123) (accessed on 17 August 2022). [251]
- NIESR (2022), *Fraying at the Edges - NIESR*, <https://www.niesr.ac.uk/publications/fraying-edges?type=global-economic-outlook> (accessed on 19 August 2022). [266]
- OECD (2022), *OECD Economic Outlook, Interim Report September 2022: Paying the Price of War*. [1]
- OECD (2022), *OECD Economic Outlook, Volume 2022 Issue 1*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/62d0ca31-en>. [269]
- OECD (2018), *Steel Market Developments Q2 2018*, [http://www.oecd.org/industry/ind/SteelMarketDevelopments\\_Q2\\_2018\\_FINAL.pdf](http://www.oecd.org/industry/ind/SteelMarketDevelopments_Q2_2018_FINAL.pdf) (accessed on 14 January 2019). [32]
- OSD (2022), "2022 MART Ayı Özeti". [212]
- OSD (2022), *AUTOMOTIVE INDUSTRY MONTHLY REPORT June 2022*, [https://www.osd.org.tr/saved-files/PDF/2022/07/25/06-2022\\_OSD\\_Aylik\\_Degerlendirme\\_Raporu.pdf](https://www.osd.org.tr/saved-files/PDF/2022/07/25/06-2022_OSD_Aylik_Degerlendirme_Raporu.pdf) (accessed on 16 August 2022). [124]
- Oxford Economics (2022), *EMEA | Global construction sector continuing to rebound in 2022*. [128]
- Pattaya Mail (2022), *Thai automotive market anticipated to continue to expand through 2022*. [116]
- Platts (2022), *Asia prices surge on robust demand*, [https://www.steelbb.com/?PageID=157&article\\_id=200796](https://www.steelbb.com/?PageID=157&article_id=200796) (accessed on 14 February 2022). [234]
- Platts (2022), *Brazilian flat steel distributors expect 3%-5% 2022 sales growth: Inda*, [https://www.steelbb.com/?PageID=157&article\\_id=204750](https://www.steelbb.com/?PageID=157&article_id=204750) (accessed on 10 February 2022). [134]
- Platts (2022), *Brazil's slowing demand to limit steel pricing in 2022*, [https://www.steelbb.com/?PageID=157&article\\_id=204641](https://www.steelbb.com/?PageID=157&article_id=204641) (accessed on 11 February 2022). [136]

- Platts (2022), *Buyers shun Russian steel amid conflict; seek alternative suppliers*, [216]  
[https://www.steelbb.spglobal.com/?PageID=157&article\\_id=205770](https://www.steelbb.spglobal.com/?PageID=157&article_id=205770) (accessed on 4 May 2022).
- Platts (2022), *Chilean CSH resumes crude steel production*, [5]  
[https://www.steelbb.spglobal.com/?PageID=157&article\\_id=206197](https://www.steelbb.spglobal.com/?PageID=157&article_id=206197) (accessed on 24 August 2022).
- Platts (2022), *China manufacturing posts surprise contraction in July, but steel demand starts to stabilize*, [92]  
[https://www.steelbb.spglobal.com/?PageID=157&article\\_id=210178](https://www.steelbb.spglobal.com/?PageID=157&article_id=210178) (accessed on 8 August 2022).
- Platts (2022), *China stimulus boosts steel sentiment, but property remains a drag*, [181]  
[https://www.steelbb.spglobal.com/?PageID=157&article\\_id=205185](https://www.steelbb.spglobal.com/?PageID=157&article_id=205185) (accessed on 9 March 2022).
- Platts (2022), *China's crude steel output to remain low due to poor property sector demand*, [36]  
[https://www.steelbb.spglobal.com/?PageID=157&article\\_id=210519](https://www.steelbb.spglobal.com/?PageID=157&article_id=210519) (accessed on 18 August 2022).
- Platts (2022), *CMC's North American steel production margins hit record high in fiscal Q3*, [47]  
[https://www.steelbb.spglobal.com/?PageID=157&article\\_id=208793](https://www.steelbb.spglobal.com/?PageID=157&article_id=208793) (accessed on 24 August 2022).
- Platts (2022), *German steel market expects significant decrease in inventory, output: survey*, [30]  
[https://www.steelbb.spglobal.com/?PageID=157&article\\_id=206769](https://www.steelbb.spglobal.com/?PageID=157&article_id=206769) (accessed on 23 August 2022).
- Platts (2022), *Global recession impacting steel demand, raw material prices: Kocaer*, [33]  
[https://www.steelbb.spglobal.com/?PageID=157&article\\_id=210218](https://www.steelbb.spglobal.com/?PageID=157&article_id=210218) (accessed on 24 August 2022).
- Platts (2022), *India's Q2 crude steel output rises 12% on year to 31.39 million mt*, [268]  
[https://www.steelbb.spglobal.com/?PageID=157&article\\_id=209382](https://www.steelbb.spglobal.com/?PageID=157&article_id=209382) (accessed on 24 August 2022).
- Platts (2022), *Low-priced billet imports from Russia hit Turkish steel output: TCU*, [18]  
[https://www.steelbb.spglobal.com/?PageID=157&article\\_id=210256](https://www.steelbb.spglobal.com/?PageID=157&article_id=210256) (accessed on 24 August 2022).
- Platts (2022), *Mexican auto sales rise 6% in 2021; expectations positive for 2022*, [148]  
[https://www.steelbb.com/?PageID=157&article\\_id=204334](https://www.steelbb.com/?PageID=157&article_id=204334) (accessed on 8 February 2022).
- Platts (2022), *Steel pricing, shipment expectations strong for Q2 earnings as Q3 pricing weakens*, [43]  
[https://www.steelbb.spglobal.com/?PageID=157&article\\_id=209689](https://www.steelbb.spglobal.com/?PageID=157&article_id=209689) (accessed on 18 August 2022).
- Platts (2022), *US sheet steel market eyes potential supply cuts to stop collapsing prices*, [154]  
[https://www.steelbb.spglobal.com/?PageID=157&article\\_id=209837](https://www.steelbb.spglobal.com/?PageID=157&article_id=209837) (accessed on 27 July 2022).
- Randheer Singh et al. (2022), "Banking on Electric Vehicles in India A Blueprint for Inclusion of EVs in Priority Sector Lending Guidelines [www.rmi-india.org](http://www.rmi-india.org) / 2 Banking on Electric Vehicles in India", [188]  
<https://rmi.org/insight/banking-on-electric-vehicles-in-india>. (accessed on 11 February 2022).
- Ren, S. (2017), "China's Debt Machine Gets Another Sausage Factory", *Bloomberg*, [222]  
 pp. <https://www.bloomberg.com/gadfly/articles/2017-08-24/debt-swaps-open-pandora-s-box-for-china-s-banks>.
- Research and Markets (2022), *Egypt Construction Market - Growth, Trends, COVID-19 Impact, and Forecasts (2022 - 2027)*, [169]  
<https://www.researchandmarkets.com/reports/5529588/egypt-construction-market-growth-trends-covid#relc0-5275102> (accessed on 11 February 2022).
- Research and Markets (2022), *Egypt Construction Market Size, Trends and Forecasts by Sector - Commercial, Industrial, Infrastructure, Energy and Utilities, Institutional and Residential Market Analysis, 2022-2026*, [83]  
<https://www.researchandmarkets.com/reports/5614885/egypt-construction-market-size-trends-and#src-pos-5> (accessed on 5 August 2022).

- Research and Markets (2022), *Manufacture and Wholesale of Basic Iron and Steel in South Africa 2022*, [267]  
[https://www.researchandmarkets.com/reports/5600355/manufacture-and-wholesale-of-basic-iron-and-steel?utm\\_source=CI&utm\\_medium=PressRelease&utm\\_code=wd54rw&utm\\_campaign=1711182+-+South+Africa+Iron+and+Steel+Manufacture+and+Wholesale+Market+2022%3a++Oversupply+of+Steel+as+Prices+Drop+and+Supply+Increases&utm\\_exec=cari18prd](https://www.researchandmarkets.com/reports/5600355/manufacture-and-wholesale-of-basic-iron-and-steel?utm_source=CI&utm_medium=PressRelease&utm_code=wd54rw&utm_campaign=1711182+-+South+Africa+Iron+and+Steel+Manufacture+and+Wholesale+Market+2022%3a++Oversupply+of+Steel+as+Prices+Drop+and+Supply+Increases&utm_exec=cari18prd) (accessed on 24 August 2022).
- Research and Markets (2022), *Saudi Arabia Construction Market Size, Trends and Forecasts by Sector - Commercial, Industrial, Infrastructure, Energy and Utilities, Institutional and Residential Market Analysis, 2022-2026*, [88]  
[https://www.researchandmarkets.com/reports/5606467/saudi-arabia-construction-market-size-trends-and?utm\\_source=BW&utm\\_medium=PressRelease&utm\\_code=vb2gxl&utm\\_campaign=1733412+-+Saudi+Arabia+Construction+Market+Size%2c+Trends+and+Forecasts+Report+2022-2026%3a+Commercial%2c+Industrial%2c+Infrastructure%2c+Energy+and+Utilities%2c+Institutional+and+Residential+Market+Analysis&utm\\_exec=chdo54prd](https://www.researchandmarkets.com/reports/5606467/saudi-arabia-construction-market-size-trends-and?utm_source=BW&utm_medium=PressRelease&utm_code=vb2gxl&utm_campaign=1733412+-+Saudi+Arabia+Construction+Market+Size%2c+Trends+and+Forecasts+Report+2022-2026%3a+Commercial%2c+Industrial%2c+Infrastructure%2c+Energy+and+Utilities%2c+Institutional+and+Residential+Market+Analysis&utm_exec=chdo54prd) (accessed on 5 August 2022).
- Research and Markets (2022), *South Africa Construction Market Size, Trends and Forecasts by Sector - Commercial, Industrial, Infrastructure, Energy and Utilities, Institutional and Residential Market Analysis, 2022-2026*, [77]  
[https://www.researchandmarkets.com/reports/5606501/south-africa-construction-market-size-trends-and?utm\\_source=BW&utm\\_medium=PressRelease&utm\\_code=zg3h26&utm\\_campaign=1733396+-+South+Africa+Construction+Market+Report+2022-2026%3A+Size%2C+Trends+and+Forecasts+-+Commercial%2C+Industrial%2C+Infrastructure%2C+Energy+and+Utilities%2C+Institutional+and+Residential&utm\\_exec=chdo54prd](https://www.researchandmarkets.com/reports/5606501/south-africa-construction-market-size-trends-and?utm_source=BW&utm_medium=PressRelease&utm_code=zg3h26&utm_campaign=1733396+-+South+Africa+Construction+Market+Report+2022-2026%3A+Size%2C+Trends+and+Forecasts+-+Commercial%2C+Industrial%2C+Infrastructure%2C+Energy+and+Utilities%2C+Institutional+and+Residential&utm_exec=chdo54prd) (accessed on 4 August 2022).
- Reuters (2022), *Latin America steel demand to fall in 2022 -industry report* | Reuters, [49]  
<https://www.reuters.com/markets/commodities/latin-america-steel-demand-fall-2022-industry-report-2022-07-13/> (accessed on 26 August 2022).
- Reuters (2022), *Tracking sanctions against Russia*, <https://graphics.reuters.com/UKRAINE-CRISIS/SANCTIONS/byvrvjenzmve/> (accessed on 29 April 2022). [215]
- Reuters (2022), *Turkey's annual inflation climbs to near 79%*, <https://www.reuters.com/world/middle-east/turkeys-annual-inflation-climbs-near-79-2022-07-04/> (accessed on 16 August 2022). [123]
- Reuters (2022), *U.S. housing starts fall in January amid freezing weather; permits surge* | Reuters, [152]  
<https://www.reuters.com/business/us-housing-starts-fall-january-amid-freezing-weather-permits-surge-2022-02-17/> (accessed on 18 February 2022).
- Reuters (2021), *Turkey's currency crash hammers the nation's builders* | Reuters, [210]  
<https://www.reuters.com/markets/europe/turkeys-currency-crash-hammers-nations-builders-2021-12-14/> (accessed on 11 February 2022).
- Reuters (n.d.), *European steel prices to extend rally as Ukraine conflict cuts supply* | Reuters, [203]  
<https://www.reuters.com/world/europe/european-steel-prices-extend-rally-ukraine-conflict-cuts-supply-2022-03-25/> (accessed on 5 May 2022).
- Ruggiero, N. (2021), "Input costs for steel, aluminum on the rise as global demand picks up", [229]  
[https://www.steelbb.com/?PageID=157&article\\_id=202095](https://www.steelbb.com/?PageID=157&article_id=202095) (accessed on 9 February 2022).
- Russel, C. (2021), "Iron ore stumbles as rising supply runs into China steel discipline", Reuters, [233]  
<https://www.reuters.com/article/column-russell-ironore/column-iron-ore-stumbles-as-rising-supply-runs-into-china-steel-discipline-russell-idUSL1N2P203X> (accessed on 26 July 2021).
- S&P Global (2022), *Headwinds threaten to deflate ASEAN steel recovery*. [111]

- S&P Global (2022), *High energy prices turn metals supply chain into global inflation engine* | S&P Global Market Intelligence, <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/high-energy-prices-turn-metals-supply-chain-into-global-inflation-engine-69360838> (accessed on 24 August 2022). [17]
- SASAC (2021), *中国宝武：为实现碳达峰、碳中和目标贡献钢铁智慧和力量—国务院国有资产监督管理委员会*, <http://www.sasac.gov.cn/n4470048/n16518962/n20249022/n20249032/c20268809/content.html> (accessed on 17 August 2022). [260]
- SEAIISI (2022), *ASEAN-6 Q1 2022 Macroeconomic Results*. [112]
- Seaisi (2022), *COVID-19 Pandemic and The Developments in ASEAN-6*, [https://www.seaisi.org/newsroom-details?news\\_id=eyJpdil6ImNtVUx0SIZNQkY1S2ILYjhZOFdYQkE9PSIsInZhbHVlIjoiaHM2R1BCblwvdlVqT0tRemZxeGNYaHc9PSIsIm1hYyI6IjU4MzUwZDcyNmZlZDQwZDZkMTZhNmM4M2Y2OGY0ZDU5MDM4OGIwZWVjNWU4OTBjMDVIODQ0ODNmMmVmMmRiNmMifQ==#cont](https://www.seaisi.org/newsroom-details?news_id=eyJpdil6ImNtVUx0SIZNQkY1S2ILYjhZOFdYQkE9PSIsInZhbHVlIjoiaHM2R1BCblwvdlVqT0tRemZxeGNYaHc9PSIsIm1hYyI6IjU4MzUwZDcyNmZlZDQwZDZkMTZhNmM4M2Y2OGY0ZDU5MDM4OGIwZWVjNWU4OTBjMDVIODQ0ODNmMmVmMmRiNmMifQ==#cont) (accessed on 11 February 2022). [194]
- Shanghai Changning District People’s Government (2022), *Shanghai Changning District People’s Government-Changning District Housing Security and Housing Administration-Housing Management Information-Adjusting property market policies in many places to reduce the down payment ratio for home purchases*, <https://www.shcn.gov.cn/col5943/20220620/1217025.html> (accessed on 19 August 2022). [99]
- Shanghai Government (2021), *一份具有开创意义的“路线图”正在制定 低碳冶金“新百强”宝武的新起点*, <https://www.shanghai.gov.cn/nw4411/20210811/742a722006ac415cb37139600e1aba2f.html> (accessed on 17 August 2022). [259]
- Staff (2022), “China’s 2021 crude steel output slips 3%, marks first on year fall since 2016”, [https://www.steelbb.com/?PageID=157&article\\_id=204491](https://www.steelbb.com/?PageID=157&article_id=204491) (accessed on 12 February 2022). [180]
- State Council (2021), *国务院关于印发2030年前碳达峰行动方案的通知（国发〔2021〕23号）\_政府信息公开专栏*, [http://www.gov.cn/zhengce/content/2021-10/26/content\\_5644984.htm](http://www.gov.cn/zhengce/content/2021-10/26/content_5644984.htm) (accessed on 17 August 2022). [258]
- Statistics Canada (2022), *Building Construction Price Indexes Data Visualization Tool*, <https://www150.statcan.gc.ca/n1/pub/71-607-x/71-607-x2022013-eng.htm> (accessed on 29 July 2022). [64]
- Statistics Canada (2021), *The Daily — Building permits, November 2021*, <https://www150.statcan.gc.ca/n1/daily-quotidien/220105/dq220105a-eng.htm> (accessed on 11 February 2022). [145]
- stats sa (2021), *Key Findings | Statistics South Africa*, [http://www.statssa.gov.za/?page\\_id=1856&PPN=P3043&SCH=73012](http://www.statssa.gov.za/?page_id=1856&PPN=P3043&SCH=73012) (accessed on 18 February 2022). [226]
- Steel Orbis (2022), *Moody’s: Indian domestic steel demand to grow at 10% in 2022*, <https://www.steelorbis.com/steel-news/latest-news/moodys-indian-domestic-steel-demand-to-grow-at-10-in-2022-1244474.htm> (accessed on 8 August 2022). [104]
- Steel Orbis (2022), *SEAIISI webinar: Malaysia and Indonesia to drive capacity expansion in ASEAN region*, <https://www.steelorbis.com/steel-news/latest-news/seaisi-webinar-malaysia-and-indonesia-to-drive-capacity-expansion-in-asean-region-1250150.htm> (accessed on 26 August 2022). [29]

- Steel Orbis (2022), *Steel production increases in Argentina in March*, <https://www.steelorbis.com/steel-news/latest-news/steel-production-increases-in-argentina-in-march-1241862.htm> (accessed on 25 August 2022). [8]
- SteelOrbis (2022), *EU ban on Russian coal import comes into force*, <https://www.steelorbis.com/steel-news/latest-news/eu-ban-on-russian-coal-import-comes-into-force-1256098.htm> (accessed on 18 August 2022). [41]
- Steelorbis (2022), *Automotive sales in Turkey down 4.6 percent in 2021*, <https://www.steelorbis.com/steel-news/latest-news/automotive-sales-in-turkey-down-46-percent-in-2021-1228747.htm> (accessed on 11 February 2022). [211]
- Tangshan Iron and Industry Association (2022), *新闻详情*, <https://www.tsgangxie.com/gx/newsdetails.htm?articleId=1515619> (accessed on 17 August 2022). [247]
- Tema, K. and P. Nagle (2021), *Energy market developments: natural gas and coal prices surge amid constrained supply*, World Bank Blogs, <https://blogs.worldbank.org/opendata/energy-market-developments-natural-gas-and-coal-prices-surge-amid-constrained-supply> (accessed on 14 February 2022). [235]
- The Alliance for Automotive Innovation (2022), *Reading the meter*, [https://www.autosinnovate.org/default\\_upload\\_bucket/Reading%20the%20Meter%207-22-2022.pdf](https://www.autosinnovate.org/default_upload_bucket/Reading%20the%20Meter%207-22-2022.pdf) (accessed on 29 July 2022). [63]
- The Conference Board (2022), *Global Economic Outlook*, <https://www.conference-board.org/topics/global-economic-outlook> (accessed on 19 August 2022). [263]
- The U.S. Census Bureau (2021), *Monthly Construction Spending, may 2021*, The U.S. Census Bureau, <https://www.census.gov/construction/c30/pdf/release.pdf> (accessed on 21 July 2021). [151]
- U.S Census Bureau (n.d.), *MONTHLY CONSTRUCTION SPENDING, MAY 2022*, <https://www.census.gov/construction/c30/pdf/release.pdf> (accessed on 29 July 2022). [71]
- UNCTAD (2022), *Global Investment Trends Monitor, No. 40*. [159]
- UNCTAD (2022), “World Investment Report 2022: International tax reforms and sustainable investment”. [76]
- WHBO (2022), “INTEGRATED REPORT”. [164]
- Wood Mackenzie (2022), *Global metallurgical coal market short-term outlook July 2022 Report | Wood Mackenzie*, <https://www.woodmac.com/reports/coal-global-metallurgical-coal-market-short-term-outlook-july-2022-150052276> (accessed on 18 August 2022). [40]
- Wood Mackenzie (2022), *Global metallurgical coal market short-term outlook June 2022 Report | Wood Mackenzie*, <https://www.woodmac.com/reports/coal-global-metallurgical-coal-market-short-term-outlook-june-2022-150042123> (accessed on 18 August 2022). [42]
- World Steel Association (2022), *MONTHLY IRON and CRUDE STEEL PRODUCTION*. [15]
- World Steel Dynamics (2022), *Truth and Consequences #88*. [14]
- worldsteel (2022), *Steel Statistical Yearbook 2021 concise version*, <https://worldsteel.org/media-centre/press-releases/2021/2021-steel-statistical-yearbook-published/> (accessed on 11 March 2022). [19]

- worldsteel (2022), *worldsteel Short Range Outlook April 2022* - *worldsteel.org*, [87]  
<https://worldsteel.org/media-centre/press-releases/2022/worldsteel-short-range-outlook-april-2022/>  
(accessed on 29 April 2022).
- worldsteel (2022), *worldsteel Short Range Outlook October 2022*. [48]
- worldsteel (2021), *worldsteel Short Range Outlook October 2021*, <https://worldsteel.org/wp-content/uploads/Press-release-worldsteel-Short-Range-Outlook-October-2021.pdf> (accessed on [147]  
10 February 2022).
- Zhang, M. (2021), “China to boost steel scrap usage by 23% in next five years”, *Reuters*, [240]  
<https://www.reuters.com/world/china/china-boost-steel-scrap-usage-by-23-next-five-years-2021-07-07/>  
(accessed on 23 July 2021).

## *Endnotes*

- <sup>1</sup> Please refer to <https://www.oecd.org/economic-outlook> and <https://www.oecd-ilibrary.org/sites/4181d61b-en/index.html?itemId=/content/publication/4181d61b-en>
- <sup>2</sup> Please refer to <https://www.oecd.org/economic-outlook> and <https://www.oecd-ilibrary.org/sites/4181d61b-en/index.html?itemId=/content/publication/4181d61b-en>
- <sup>3</sup> Worldsteel, Short range outlook, April 2022, retrieved at: [https://worldsteel.org/wp-content/uploads/worldsteel-Short-Range-Outlook-April-2022\\_press-release-table.pdf](https://worldsteel.org/wp-content/uploads/worldsteel-Short-Range-Outlook-April-2022_press-release-table.pdf) .
- <sup>4</sup> Metal Expert, 2022, China’s steel export inches up in April.
- <sup>5</sup> Note that Russia suspended the publication of trade data in April 2022. Because of this, trade export and import data reported in this paper are obtained by mirroring bilateral trade flows between Russia and its trading partners.
- <sup>6</sup> According to Eurometal, Ukraine’s steel production fell by 64% in 2022, link: [Ukraine’s steel output to fall 64% on year to 7.6 mil mt in 2022: GMK - EUROMETAL](#) .
- <sup>7</sup> Ibid – Worldsteel, Short range outlook April 2022.
- <sup>8</sup> NYMEX US Midwest futures are based on a flat product, the other two indices are based on rebar (long) products.
- <sup>9</sup> Contrary to the other sections of this paper, this section looks back at the year 2021 in its entirety and not at the first semester of 2022, due to the delays for obtaining firms’ annual reports and financial performance once they are audited and released to the public.
- <sup>10</sup> Average operating profitability is defined here by the ratio of earnings before interest, taxes and depreciation (EBITDA) to sales revenues (weighted by total sales).
- <sup>11</sup> Although debt usually constitutes the bulk of the liabilities that a steel firm carries, there are other forms of liabilities. For example, outstanding bills to suppliers, also known as account payables, are another type of liability and so are wages due and pensions. Technically, a steel firm could reduce its debt by delaying the payment it makes to its suppliers. To avoid misinterpreting the situation due to these possible substitution effects, it is useful to consider the ratio of total liabilities over assets as presented in Figure 19.
- <sup>12</sup> [http://www.gov.cn/xinwen/2022-11/23/content\\_5728454.htm](http://www.gov.cn/xinwen/2022-11/23/content_5728454.htm)
- <sup>13</sup> [http://www.gov.cn/xinwen/2022-11/23/content\\_5728454.htm](http://www.gov.cn/xinwen/2022-11/23/content_5728454.htm)
- <sup>14</sup> Worldsteel and Eurofer’s forecasts refer to the EU 27 + UK (worldsteel, 2022<sub>[87]</sub>).