



# Steel

## Australian steel refineries



## Steel facts



Made in specialised blast furnaces mostly out of **iron and carbon**



1,000 kg of steel requires 1,400 kg of iron and 800kg of coal to make



Pure steel is **1,000 times stronger** than iron



Steel is the **world's 2nd largest industry**

## World consumption



**52%**  
Construction



**16%**  
Mechanical machinery



**12%**  
Other applications



**12%**  
Automotive



**5%**  
Other Transport



**3%**  
Electrical Equipment

## Australia's steel



**5.3m tonnes**  
produced  
each year

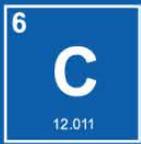


**100,000+**  
employed in  
steelmaking



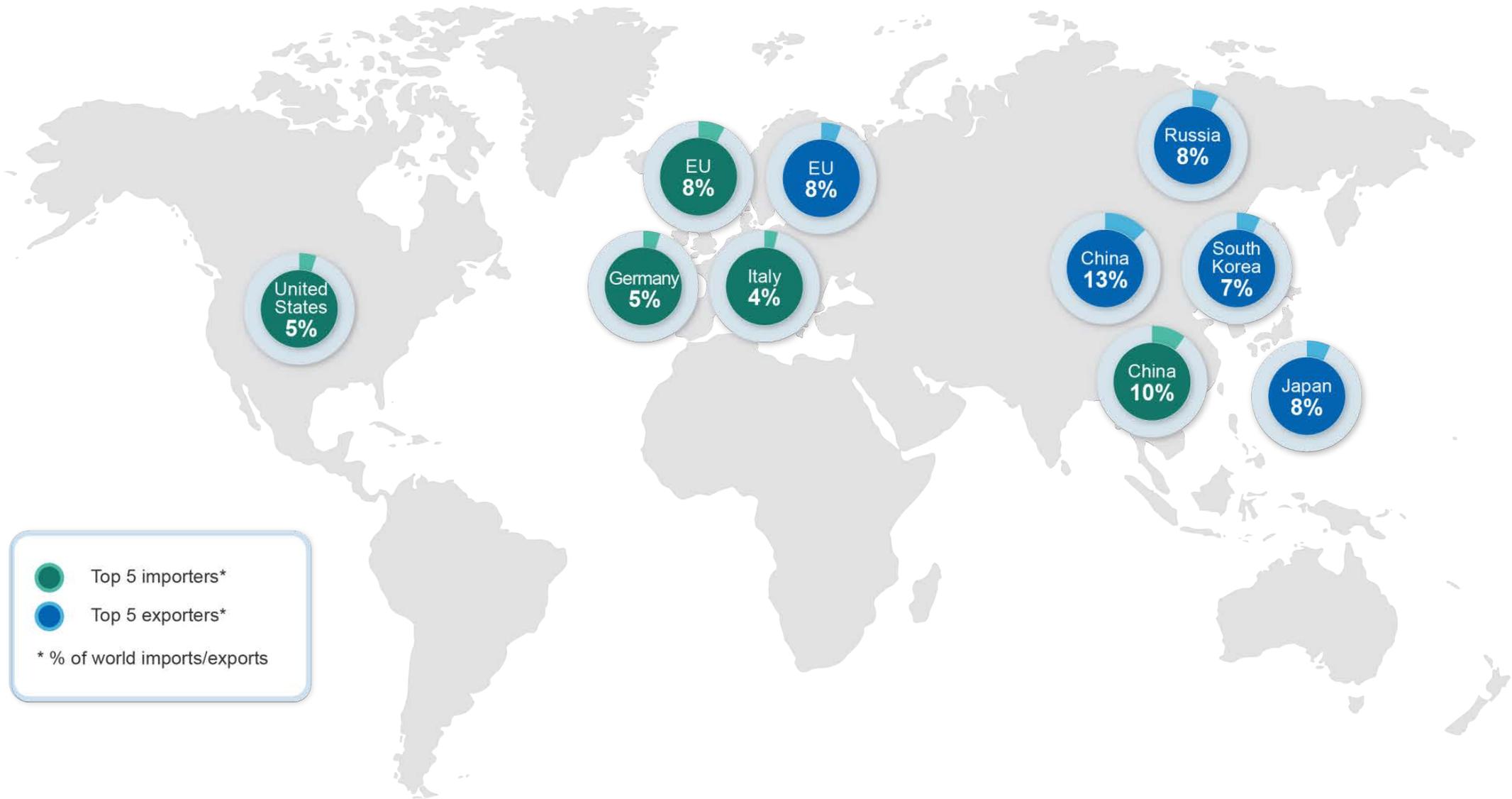
**Significant**  
export  
markets

- China
- Japan
- South Korea
- Singapore
- US



# Steel

Trade map | December 2021



 Top 5 importers\*

 Top 5 exporters\*

\* % of world imports/exports

### 3.1 Summary

- World demand for steel is estimated to grow by 4.5% in 2021, reflecting the continued recovery in economic activity and industrial output underway in most major economies.
- Lower global steel production in recent months reflects a moderation of economic (and industrial output) growth rates to lower, longer-run trend levels, as well as production cuts and weakened steel demand in China.
- A slower pace for the global recovery from the second half of 2021 is likely to see more moderate growth in steel demand from 2022. New outbreaks of the pandemic and ongoing supply chain issues are downside risks to global growth and steel consumption over the outlook.

### 3.2 World consumption and production

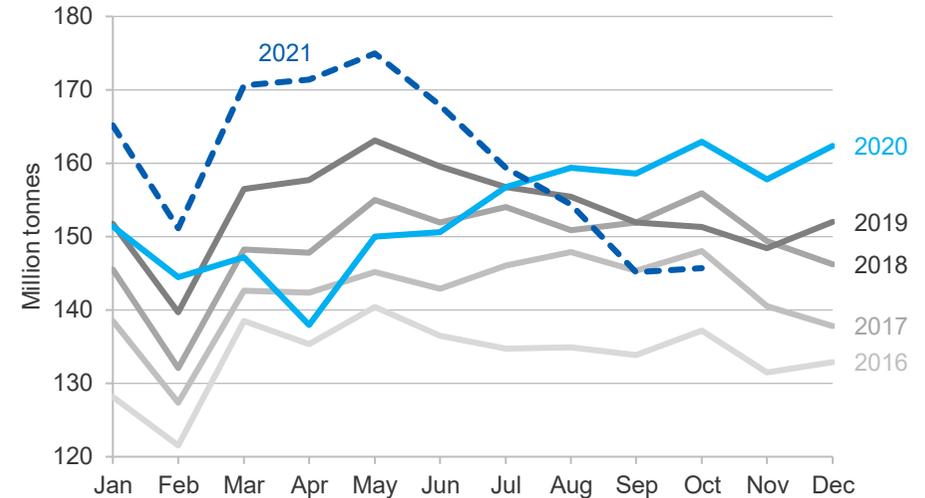
#### Growth in world steel production slows in the second half of 2021

World steel output in the ten months to October 2021 reached around 1.6 billion tonnes. This was 5.7% higher compared with the same period in 2020, and 4.0% higher than 2019 levels (Figure 3.1).

The strength in world steel production in 2021 reflects the ongoing recovery, as the global economy emerges from the COVID-19 pandemic. Global GDP growth is forecast at 5.9% in 2021. The world's two biggest economies — the US and China — are at the forefront of this resurgence, with forecast growth in 2021 of 6.0% and 8.0%, respectively. The pace of the global recovery is expected to ease to 4.9% in 2022, as pent up demand recedes, and as pandemic-related fiscal and monetary support is withdrawn.

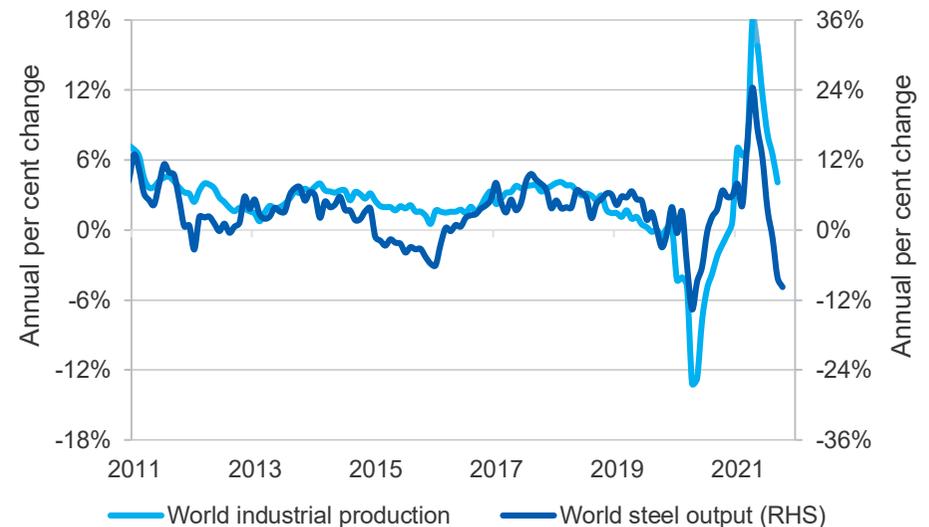
However, the rate of growth in global steel output has slowed considerably in recent months, from a peak of 24% growth year-on-year in May 2021, to a contraction of 10% year-on-year in October. Weaker steel output corresponds with a similar slowdown in global industrial production, which has fallen from a peak of 18% growth year-on-year in April 2021 to 4.1% year-on-year in September (Figure 3.2). This follows an expected return to lower, longer-run growth rates as the global recovery progresses. It also reflects near-term disruptions that have persisted across many global

Figure 3.1: Global monthly steel production



Source: Bloomberg (2021); World Steel Association (2021)

Figure 3.2: World industrial production and steel output



Source: World Steel Association (2021); Bloomberg (2021); CDB (2021); Department of Industry, Science, Energy and Resources (2021)

regions in 2021, due to the pandemic and supply chain issues (see *Macroeconomic Outlook* chapter).

Global steel consumption continues to be propelled by the substantial levels of fiscal stimulus across major economies. This spending has a strong focus on infrastructure and lending support for the global transition to low emissions. This includes the US\$1.2 trillion Bipartisan Infrastructure Framework recently signed into law by President Biden (discussed further below), the €750 billion Next Generation EU economic recovery package, as well as the 100 trillion rupee (US\$1.3 trillion) infrastructure plan recently announced by India.

World steel production is estimated to reach 1.95 billion tonnes in 2021, representing an expansion of 4.0% compared with 2020. This includes double-digit (or near double-digit) growth for major producers such as the US, EU, India and Japan. However, China — the world's largest steel producer, making up around 55% of global production — is now forecast to see no growth in steel output in 2021.

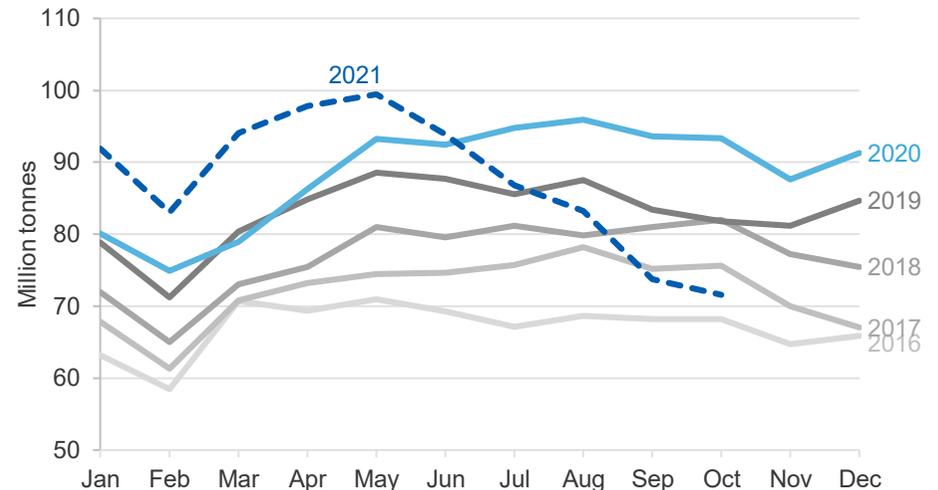
An ongoing risk for global steel markets remains the persistence of global supply chain disruptions and, in particular, the current shortage of global semiconductor chips. Estimates suggest the shortage will lead to as much as 7.7 million fewer vehicles produced in 2021, and cost the automotive industry in excess of \$200 billion in lost revenue. With the chip shortages now expected to persist well into 2022, this has significant implications for global steel markets.

#### China's steel output lower in September quarter on forced production cuts

Following record levels of Chinese steel output in the first half of 2021, October marked five consecutive months of lower output. Total monthly output of about 72 million tonnes in October was 23% lower year-on-year and 12% lower than the same period in 2019 (Figure 3.3).

The fall in output from June this year reflects a significant broadening of emissions-related production curbs by the Chinese Government in the second half of 2021. The curbs — part of country's efforts to reach net

**Figure 3.3: China monthly steel production**



Source: Bloomberg (2021); World Steel Association (2021)

zero emissions by 2060 and peak steel by 2025 — were initially placed on China's biggest steel-producing city Tangshan in February 2021, with an order for many mills to achieve a 30-50% reduction in output by end 2021.

However, following record steel output nationally through the first half of this year, broader enforcement measures announced in early May required all other provinces (outside of Hebei and its city of Tangshan) to start scaling back production from June. The cuts have seen other major steel-producing provinces — such as Jiangsu, Zhejiang and Anhui — all meet (and in some cases exceed) required cuts by the end of September.

Winter steel curbs are also anticipated from now until the March quarter in 2022. These curbs — which the Chinese Government has said is intended to manage pollution levels, particularly in the northern provinces — will require mills to maintain output below 2020 levels though to December, with some increase then permitted through to March 2022. The curbs have also been widened (from 44 cities in 2020) to 64 cities. The Chinese Government has signalled it is keen to ensure reduced air pollution (and blue skies) for the Beijing Winter Olympics in February 2022.

The recent power supply crunch in China also has had a significant impact on steel production. From the second half of September, a shortage of thermal coal has seen more than half of China's 31 provinces implement power rationing and forced blackouts, severely hampering steel production over the period (see *Thermal coal* chapter). Direct production cuts primarily impacted long steel producers. However, the substantial fall in flat steel prices (for example, hot-rolled coil) demonstrates that indirect impacts — due to reduced industrial production and manufacturing — have been significant.

While there has been some relent in power shortages as of late October, the power crunch will continue to add uncertainty to the outlook for steel production in the near-term, and counter any potential easing of emission-related curbs through to 2022.

#### China also facing risk of weaker demand for steel over the outlook

The considerable surge in economic activity in China in the first half of 2021 now appears to be easing, creating weaker conditions for major steel users into year end. China's GDP growth, of 4.9% year-on-year in the September quarter 2021, was the slowest in over 12 months.

The major drivers of China's intense demand for steel in the first half of this year — elevated levels of infrastructure and residential property construction, and strong manufacturing activity — have all weakened in recent months, creating headwinds for steel demand in the short term. New investment in infrastructure — used extensively by the government to stimulate the economy out of the pandemic through to mid-2021 — was 5.3% lower (3-month-moving-average) in October compared with the same period in 2020. This follows the central government's continued removal of fiscal stimulus through 2021, as the Chinese economy has emerged from the pandemic (Figure 3.4).

China's policy initiatives to cool its property market also appear to be taking hold. The central government's so-called 'Three Red Lines' policy — introduced in September 2020 — mandates tighter borrowing criteria and reduced debt levels for the country's major property developers.

**Figure 3.4: China's total infrastructure investment**



Notes: Series is three month moving average

Source: Bloomberg (2021)

This has been bolstered by a cap on new bank lending implemented earlier in the year, leading to weakened investment in real estate in the second half of 2021. New residential property starts in the year to October 2021 were down 6.8% compared with the same period in 2020, and government land sales were 11% lower year-on-year in September. This has also created downward pressure on new home prices, which fell 0.2% month-on-month in October, the first fall since March 2015.

Slowing growth and China's recent power crunch have also severely impacted its manufacturing sector. Growth in industrial production was 3.5% year-on-year in October, down from a high of 14% in March this year. China's steel manufacturing production index (produced by S&P Global Platts) — measuring production data for 17 steel-related manufactured goods — also remained well below levels seen earlier in 2021. This included year-on-year falls for manufactured goods in the construction and consumption sectors, including products such as vehicles, home appliances and excavators.

China's efforts to manage de-leveraging of its residential property sector may face growing challenges as we move into 2022. With weaker economic activity in the September quarter, and renewed outbreaks of the COVID-19 pandemic in October and November, there is a growing market expectation that China's central government may be forced to step in once more to support economic recovery.

The Chinese Government has already announced an intention to lift issuance of local government special bonds, the primary means for government to fund infrastructure. As of September 2021, the issuance of these bonds was running considerably behind the quota (RMB 3.65 trillion or US\$570 billion) set for 2021. New projects have already been proposed for provinces such as Shaanxi and Hubei, and more are expected to be announced as the year turns. The flow through of this increased funding is expected to boost new infrastructure and construction activity from early 2022.

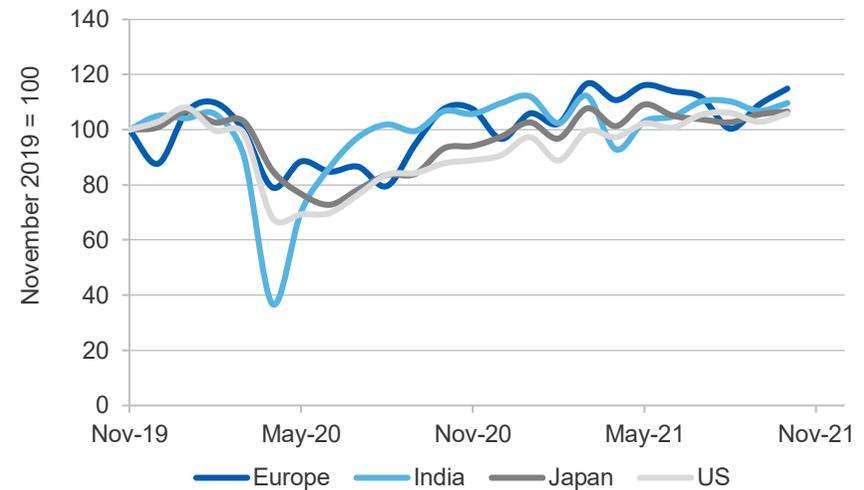
China's central government and People's Bank of China (PBOC) also appear to be taking further steps to manage its residential property sector. This is in light of recent events involving China Evergrande and other private property developers, which have faced funding pressures in recent months. From September, the PBOC has provided a number of rounds of liquidity injections into China's financial system, and regulators have vowed for policies to maintain healthy development of the property market.

For the outlook period, a slowdown of China's residential property market remains a key risk to growth prospects and steel demand. Other risks include new outbreaks of the pandemic, and the resumption of power (and coal) shortages. Steel production is estimated to be fall 1.0% in 2021 to be around 1.05 billion tonnes, before growing 1.3% to reach 1.07 billion tonnes in 2022.

### Strong growth in 2021 steel production for other major producers

In spite of ongoing outbreaks of the pandemic and supply chain disruptions, production has remained resilient across other major steel-producing economies in 2021. In the ten months to October, world steel

**Figure 3.5: Indexed monthly steel production**



Notes: Production has been indexed to November 2019 levels (Nov 2019 = 100)

Source: Bloomberg (2021); World Steel Association (2021)

output (excluding China) grew by 15% year-on-year (and 2.0% compared to 2019 levels) to reach 730 million tonnes.

While steel output (and economic activity) was slower to rebound outside of China, the recovery in many advanced economies remains well underway as 2021 ends. Ex-China steel demand is expected to grow by 9.2% this year, though renewed outbreaks of the pandemic and supply chain disruptions raise significant risks against this outlook.

Steel production in the EU — the second largest steel-producing economy — grew by 24% year-on-year in the ten months to October 2021. This was also 2.0% higher than the same period in 2019.

After a rapid expansion in economic activity across the Europe in the June quarter 2021, the rate of the recovery appears to have slowed in recent months, a consequence of global supply chain disruptions and the shortages this is creating. This is likely to check steel production and demand as the year turns.

Industrial production in the Euro area in September 2021 fell by 0.2% on the previous month, but remained 5.2% higher year-on-year. The Eurozone Manufacturing PMI also marked an eight-month low in October. Business activity in the Eurozone grew at its slowest pace for seven months, with worsening global supply chain disruptions creating long backlogs of orders in factories and widespread shortages of inputs.

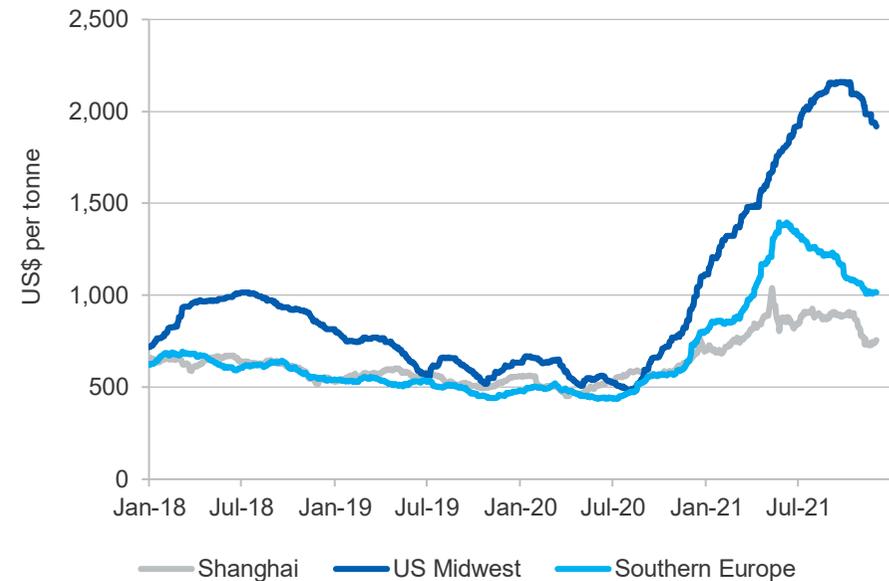
The Euro area continues to be heavily affected by the global semiconductor shortage. Major automakers such as BMW, Renault and Volkswagen have all been forced to idle production in recent months, on top of output cuts made earlier in 2021. This saw September car sales fall to their lowest levels since the 1990s. Adding to concerns, the industry now expects chip shortages to persist well into 2022.

The EU has announced a number of new initiatives in July as part of its European Green Deal — which aims to reduce net emissions by at least 55% by 2030. This includes the introduction of a carbon border adjustment measure on emissions-intensive goods imported into the EU, such as steel, iron and aluminium. The policy is set to be introduced gradually from 2023, and fully implemented by 2030. The EU is one of the world's largest importers of steel, with around 33 million tonnes in 2020 from regions including Asia and Eastern Europe.

US steel production grew by 20% year-on-year in the ten months to October 2021. However, this remained around 2.3% below the same period in 2019. After a rapid pace of recovery in the first half of 2021, growth in the September quarter 2021 has slowed to an annualised rate of 2.0%. This follows a new wave of the COVID-19 pandemic from the late summer, and a marked weakening in the level of household consumption.

Strong demand for goods through the first half of 2021 has led to delays and supply bottlenecks for many products, including steel and other construction materials. Idle capacity in US mills, existing tariffs on steel imports, and the ongoing scarcity of scrap steel, have all also contributed to tight supply. While prices for US HRC remain historically high, seasonally weaker demand from late November has seen prices ease off

**Figure 3.6: Hot-Rolled Coil steel prices**



Source: Platts (2021)

their record highs (Figure 3.6). Prices should be helped by the US and EU agreement in October to end its dispute over the US' 25% tariffs on steel imports from the EU. While the Section 232 tariffs are to remain in place for the time being, limited volumes of EU-produced steel will be permitted into the US duty-free.

The US\$1.2 trillion Bipartisan Infrastructure Framework (BIF) was signed into law by President Biden on November 15. This package includes US\$550 billion in new federal investment for roads and bridges, rail, and water and electrical infrastructure. The package marks the biggest investment in US infrastructure since the 1950s. Recent estimates from the American Iron and Steel Association suggest that as much as five million tonnes of new demand for steel is created for every \$100 billion in new investment, indicating a significant boost to US steel consumption from the new package over the outlook period and beyond.

The global semiconductor shortage that has impacted US automakers throughout 2021 looks set to continue into 2022. As a consequence, many major US auto manufacturers are beginning to investigate internal opportunities to develop chips. The impact of current chip shortages on steel demand and scrap supply remain a risk over the outlook period.

Indian steel output grew by 21% year-on-year in the ten months to October 2021, in spite of widespread COVID-19 outbreaks and related containment measures over the period. While this partly reflects the impacts of a (2020) low base effect — with steel output falling 23% year-on-year in the first half of 2020 — the rebound in the nation’s manufacturing and construction industries is ongoing, contributing to rising steel demand.

Following rapid expansion in industrial activity in the first half of 2021, growth in industrial production in October has slowed to 3.1% year-on-year, with weaker production in industries such as mining and quarrying, manufacturing and utilities. This is due to a number of rising supply side issues, including a severe power crunch owing to the shortages of coal, as well as semi-conductor shortages and higher input costs.

In October, the Indian Government announced a 100 trillion rupee (US\$1.3 trillion) integrated infrastructure plan. This plan will aim to boost industrial production and economic growth coming years, and includes a focus on expanding transport infrastructure and the use of cleaner fuels.

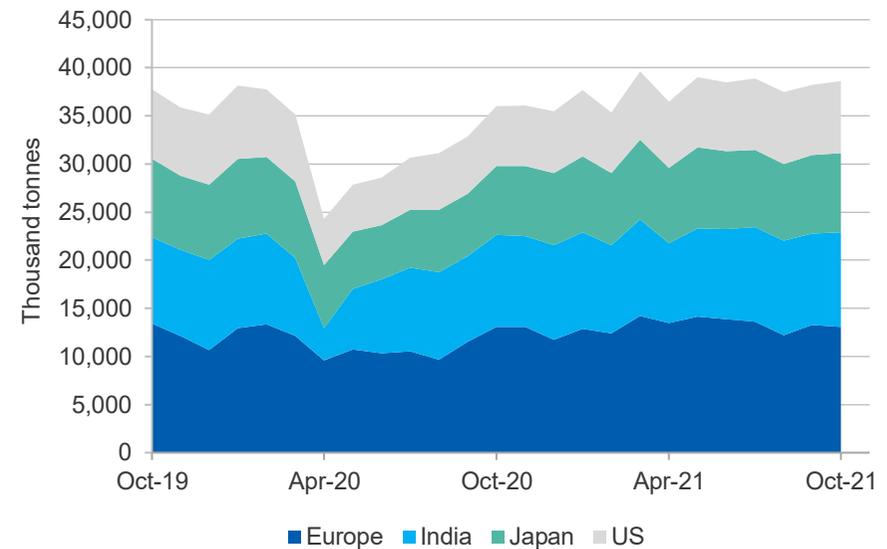
Japan’s steel production grew by 17% year-on-year in the ten months to October 2021 (Figure 3.5). However, output in the year to October remained around 4.1% below output for the same period in 2019. This follows a fall in total output to its lowest levels in over 50 years during the 2020–21 Japanese fiscal year (April 2020 to March 2021).

Following a severe wave of the COVID-19 pandemic though the summer, Japan's economy contracted by 3.0% year-on-year in the September quarter 2021. Industrial production also fell 2.3% year-on-year in September. This follows slowing growth in machinery orders and exports in recent months. Despite the recent weakness, the business outlook for

Japan is positive heading into 2022, as case numbers for the pandemic drop, and mobility restrictions are removed.

New ship export orders in the 10 months to October 2021 were up 138% as global trade continues to make a strong recovery in 2021.

**Figure 3.7: Monthly steel production – other major producers**



Source: World Steel Association (2021); Department of Industry, Science, Energy and Resources (2021)

**Table 3.1: World steel consumption and production**

Crude steel consumption	Million tonnes				Annual percentage change		
	2020	2021 <sup>e</sup>	2022 <sup>f</sup>	2023 <sup>f</sup>	2021 <sup>e</sup>	2022 <sup>f</sup>	2023 <sup>f</sup>
China	974	967	982	988	-0.6	1.5	0.7
European Union	155	162	163	165	4.5	0.8	1.3
United States	108	115	122	128	6.3	6.2	5.0
India	106	111	117	128	5.4	5.4	9.3
Japan	64	64	65	67	1.4	1.1	2.5
South Korea	52	53	54	55	0.7	2.7	2.5
Russia	45	46	47	48	3.4	1.6	1.4
Brazil	22	23	26	29	4.5	11.3	10.2
World steel consumption	1,883	1,968	2,021	2,072	4.5	2.7	2.5
Crude steel production	2020	2021 <sup>f</sup>	2022 <sup>f</sup>	2023 <sup>f</sup>	2021 <sup>f</sup>	2022 <sup>f</sup>	2023 <sup>f</sup>
China	1,065	1,054	1,068	1,074	-1.0	1.3	0.5
European Union	131	143	145	145	9.3	0.7	0.5
India	100	114	125	134	14.0	8.9	7.4
Japan	83	97	99	102	16.0	2.8	2.6
United States	73	86	92	96	17.7	7.5	4.8
Russia	72	76	79	81	6.8	2.8	3.2
South Korea	67	71	75	76	5.5	5.6	1.3
Brazil	31	36	40	44	16.9	11.1	10.1
World steel production	1,878	1,953	2,007	2,059	4.0	2.8	2.6

Notes: <sup>e</sup> Estimate; <sup>f</sup> Forecast.

Source: World Steel Association (2021); Department of Industry, Science, Energy and Resources (2021)