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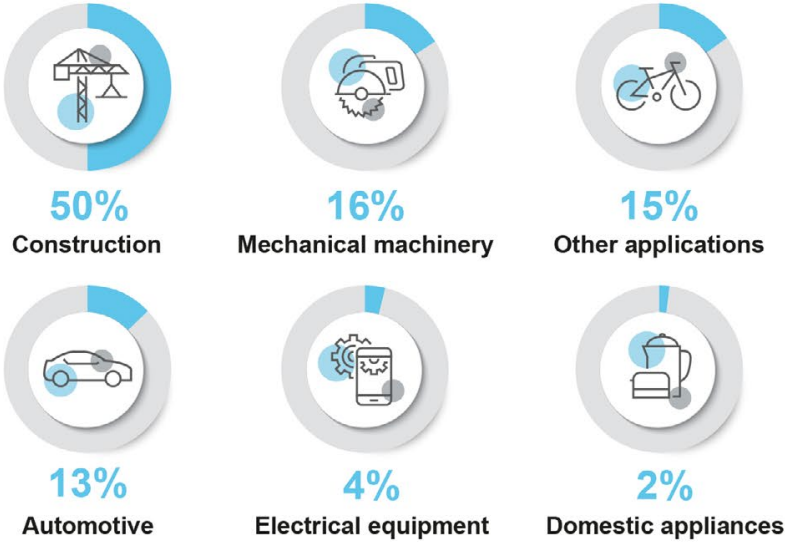
Steel

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



Australia's steel

5.3m tonnes produced each year

100,000+ employed in steelmaking

Significant export markets

- China
- Japan
- South Korea
- Singapore
- US

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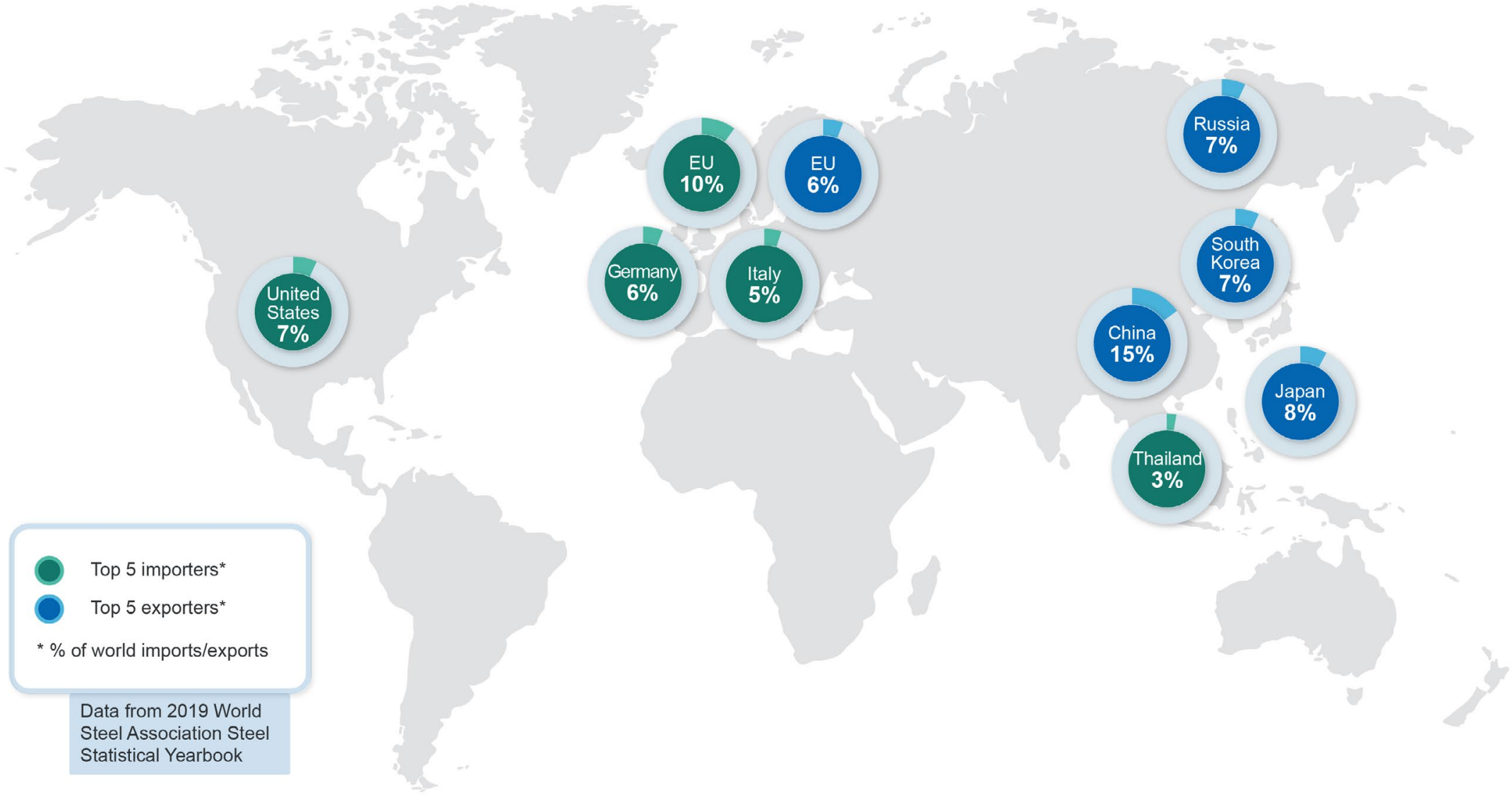
Steel

Trade map | December 2020



3.1 Summary

- World steel consumption is expected to have declined by 2.2 per cent in 2020, due to the COVID-19 pandemic and resulting economic downturn. Stimulus in China has prevented a much worse overall result, though steel demand remains low in many countries.
- World steel consumption is forecast to rebound as the global economy recovers, growing by 3.8 per cent in 2021 and by 3.6 per cent in 2022.
- Steel output is forecast to follow a similar trend, falling by 2.0 per cent in 2020 before rising by 3.0 per cent in 2021 and 3.6 per cent in 2022 as steel smelters move back towards normal production levels.

3.2 World consumption and production

Steel production is likely to be robust in 2020

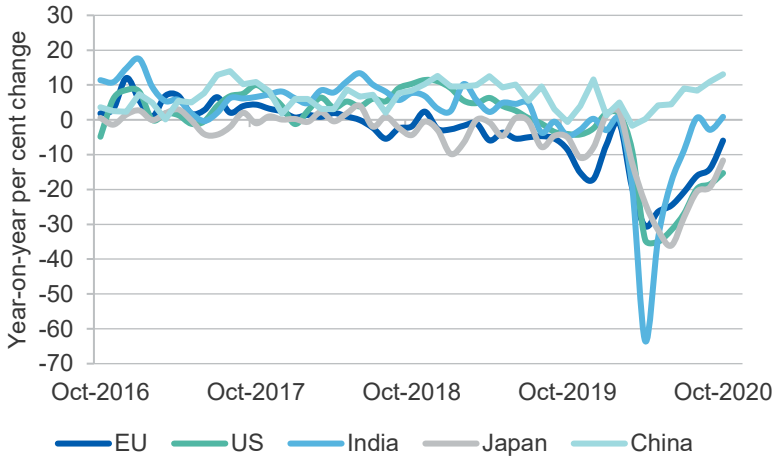
Global steel production has now completely reversed the falls of early 2020, with aggregate monthly production now above the levels of late 2019. However, this trend conceals a drastic shift in market structure, with historically high output in China acting as an offset for countries where steel output remains at recessionary levels. Many steel smelters remain closed or on standby around the world.

Steel demand has been supported by rising automotive sales and by an easing in COVID-19 restrictions in some countries. It is expected that conditions for steel demand will lift further over the next six months, supported by global economic recovery and rising consumer demand.

China's monthly steel production in September is running at almost 40 per cent above the level of September 2019. This has placed the country in a position of unprecedented dominance in steelmaking globally, with numerous other countries continuing to face manufacturing and steelmaking recessions.

Despite growing domestic production, steel inventory in China has come under pressure, with traders' and mill's finished inventory in decline at the end of 2020. This suggests production is being driven by direct consumption, rather than efforts to ramp up in preparation for further

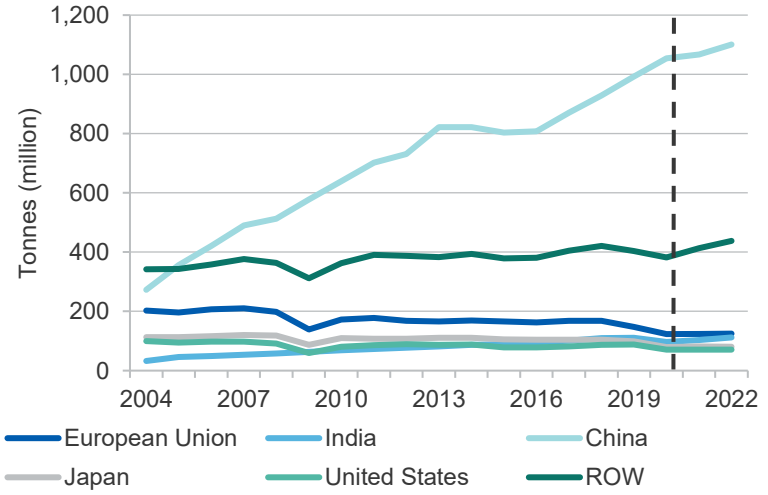
Figure 3.1: Steel production, monthly change



Notes: Monthly average for integrated basic oxygen furnace (BOF) steel mills

Source: Bloomberg (2020) China BOF Steel Profit Index

Figure 3.2: Steel production by region



Source: World Steel Association (2020); Bloomberg (2020)

stimulus measures. Construction activity remains strong in China, with warmer temperatures and more rapid approvals for infrastructure projects supporting building efforts.

In contrast, European steelmaking has been slow to recover. The steel sector in Europe was already facing difficult conditions prior to the COVID-19 pandemic, with issues including growing trade disputes, ineffective EU anti-dumping policies, and lingering uncertainty around Brexit. Over the longer term, European steelmaking has faced decline over decades as a result of persistent price competition from subsidised steelmakers in China. A perfect storm of long-term and short-term issues over the last year led to unprecedented workforce reductions and production cuts in late 2019 and early 2020. A number of smelters remain shut down across Europe.

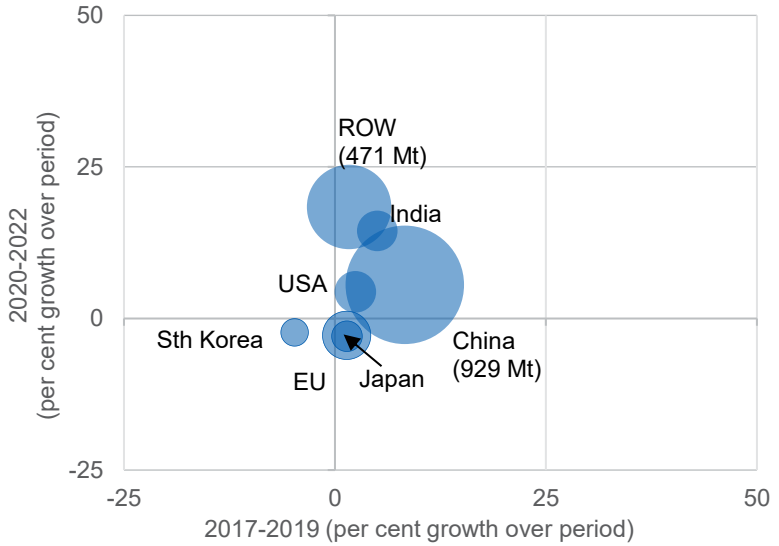
In Brazil, steelmaking continues to face tough conditions, and is expected to fall by around 6 per cent in 2020 relative to 2019. However, this is a less severe fall than had been expected by most analysts in the early part of 2020.

Steelmaking in Japan remains in recession, with monthly output running at 20 per cent below its level of a year ago. Part of this cut may become permanent should some steel plants fail to reopen.

India's steel production has largely recovered to its pre-COVID level, with September output running at around 95 per cent output from September 2019. However, the Indian Government's ambitious targets to expand its domestic steel output were delayed by the COVID–19 pandemic, which forced workers to stay offsite and disrupted transport infrastructure including ports and rail.

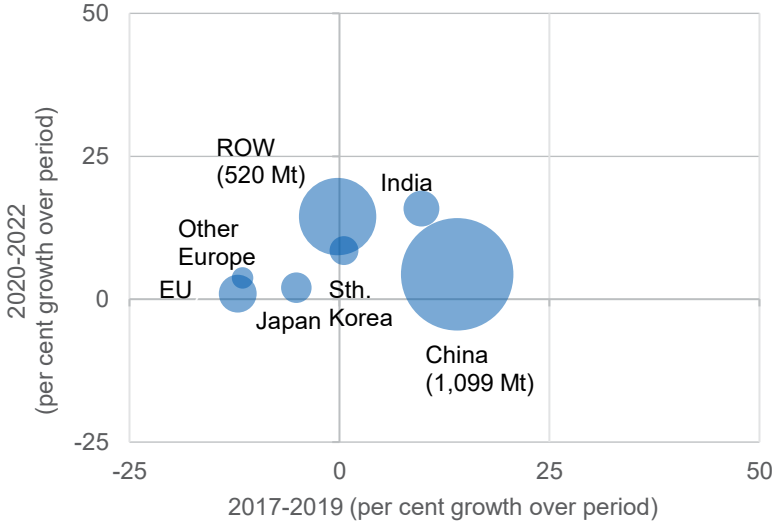
Recovery has also proven uneven among the different forms of steel. A recovery in global manufacturing is driving a shift towards hot-rolled coil, which is expected to dominate growth in steel output in the December quarter. Demand for rebar steel is expected to grow more slowly, with more limited price pressure over the coming months.

Figure 3.3: Steel consumption growth by region



Source: Department of Industry, Science, Energy and Resources (2020)

Figure 3.4: Steel production growth by region



Source: Department of Industry, Science, Energy and Resources (2020)

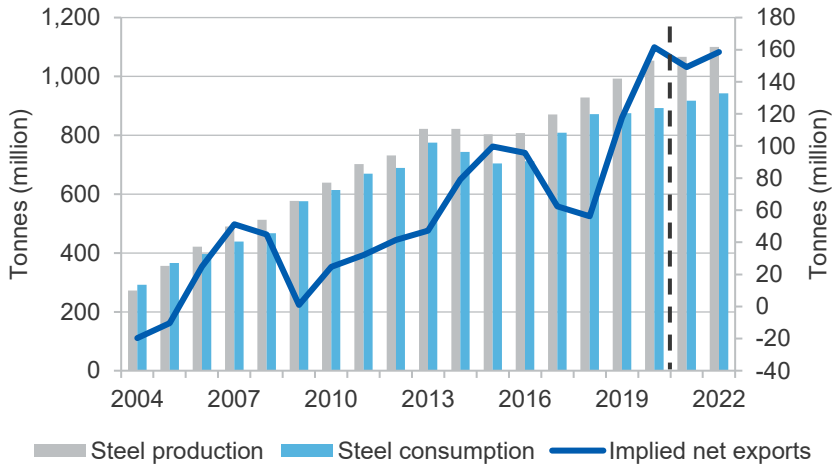
China is likely to retain its dominance over global steel markets

Steel demand is likely to remain strong in China into 2021, supported by infrastructure development and housing construction, which has in turn been supported by relatively low interest rates.

The Chinese government will release its fourteenth Five-Year Plan (covering 2021-2025) in March 2021. The plan has major implications for China's steel industry, and is expected to include a renewed focus on infrastructure rollouts and more rapid urbanisation, particularly in central and western China.

China's government is examining more rapid consolidation of its domestic steel sector. The merger of small and mid-sized companies with larger steel makers will see inefficient mills shut and larger companies gain greater power over pricing and market conditions. The result will likely be a more centrally planned industry, with internal coordination and more pricing heft.

Figure 3.5: China's steel consumption, production and net exports



Source: Bloomberg (2020) World Steel Association; Department of Industry, Science, Energy and Resources (2020)

Growth elsewhere is expected to remain modest, with rebalancing slow

Steelmaking outside China is showing signs of recovery, led by growth in other Asian countries. South Korean production has recovered to around pre-COVID levels, with new facilities and upgrades expected to provide a further modest lift by the end of the outlook period.

India's steel production has shown solid growth in recent months, but it is not yet clear how rapidly its long-held plans to expand domestic steel production can proceed in light of COVID-19 disruptions and the unusually high iron ore price, which affects the viability of proposed steel plants. Elsewhere, growth appears to be picking up in Myanmar and Estonia, where production is expected to keep expanding, albeit from a relatively low base.

However, production in Europe is not expected to fully recover, with some steel mills expected to close permanently. This will result in the acceleration of a long-running shift in steel production towards emerging economies across southern and eastern Asia, with Vietnam in particular expected to increase its output as new steel projects are completed.

There may also be new forms of steelmaking emerging over coming years. Carbon abatement goals have resulted in growing interest in 'green steel', with estimates from the World Steel Association suggesting that the steel sector currently accounts for around 8 per cent of global carbon emissions. A shift towards scrap-based steel production — already underway in China — is likely to gather speed over the next few years. Interest is also growing in zero-carbon steel production, notably through Green Hydrogen Ironmaking. This technique substitutes hydrogen for carbon in blast furnaces, thereby avoiding the release of carbon dioxide emissions. A number of pilot projects for this technology are now underway, with the biggest trial set to occur in Sweden.

Should this or similar technology become commercial, there may be substantial shifts across the steel supply chain over the coming decades. Such a change would provide significant opportunities to any global steelmaker able to draw capital and develop new technology.

Table 3.1: World steel consumption and production

	Million tonnes				Annual percentage change		
Crude steel consumption	**2019**	**2020[e]**	**2021[f]**	**2022[f]**	**2020[e]**	**2021[f]**	**2022[f]**
China	875	892	918	942	2.0	2.8	2.7
European Union [g]	180	162	159	157	-10.3	-1.4	-1.4
United States	112	111	113	116	-1.3	2.2	2.2
India	106	99	106	113	-6.8	7.2	6.6
Japan	71	66	65	64	-7.6	-1.5	-1.5
Russia	56	53	53	52	-4.7	-1.2	-1.2
South Korea	45	43	42	42	-3.5	-1.7	-1.7
Brazil	25	23	24	25	-5.7	2.9	2.8
World steel consumption	1840	1799	1868	1935	-2.2	3.8	3.6
Crude steel production	**2019**	**2020[e]**	**2021[f]**	**2022[f]**	**2020[e]**	**2021[f]**	**2022[f]**
China	993	1 054	1 067	1 101	6.2	1.2	3.2
European Union	148	123	124	125	-16.7	0.4	0.5
India	99	79	82	81	-19.9	3.0	-1.0
Japan	111	96	103	112	-13.4	7.2	8.3
United States	88	70	70	70	-19.8	0.1	0.1
Brazil	72	71	72	72	-1.1	0.9	1.1
Russia	71	67	72	73	-6.4	7.1	1.3
South Korea	32	31	31	31	-5.4	0.1	0.1
World steel production	1843	1806	1860	1927	-2.0	3.0	3.6

Notes: **e** Estimate; **f** Forecast; **g** European Union 27 encompasses the aggregate output and demand for the 27 states which comprise the European Union.

Source: World Steel Association (2020); Department of Industry, Science, Energy and Resources (2020)