Steel
Resources and Energy Quarterly March 2019

To produce 1,000 kg of crude steel in a blast furnace, 1,400 kg of iron ore are needed.

800 kg of metallurgical coal are needed.

Major steel producers, 2018
- China: 52%
- European Union: 8.4%
- Rest of the world: 15%
- Japan: 5.8%
- India: 6%
- United States: 4.8%
- South Korea: 4.1%
- Russia: 4%

Steel consumption per capita (kilograms per person), 2017
- United States: 327 kg
- European Union: 335 kg
- China: 568 kg
- Japan: 592 kg
- India: 72 kg
- Indonesia: 58 kg
- Africa: 30 kg
- Australia: 270 kg

Steel use by sector
- 50% Construction
- 16% Mechanical machinery
- 15% Other applications
- 13% Automotive
- 4% Electrical equipment
- 2% Domestic appliances
3.1 Summary

- In 2018, world steel production was lifted by strong economic growth, a pickup in industrial production, and robust production in China.
- China’s steel production and consumption is projected to gradually decline over the outlook period, reflecting a slow-down in construction activity, stricter environmental policies and supply-side reforms.
- India and other emerging economies are expected to increasingly drive growth in world steel consumption and production.

3.2 World consumption and production

World steel consumption projected to increase, but at a slower pace

World steel production increased strongly in 2018, driven by high steel prices and margins, robust production in China — the world’s largest steel maker, accounting for over half of world steel production — and a rise in the capacity utilisation of steel mills in major producing nations. World steel consumption grew in line with production, driven by strong demand from China and India, while most other major consuming nations achieved modest growth.

World steel production is projected to show positive growth each year over the outlook period. Production growth will be led by India and other emerging Asian nations, including Vietnam and Indonesia, as their steel sectors expand to meet growing domestic consumption. Partially offsetting these gains, waning steel consumption intensity is expected to weigh on China’s steel sector, where steel production is projected to decline over the outlook period (Figures 3.1 and 3.2). Slowing economic growth poses a key risk to the short term outlook, but on balance is expected to temper growth rather than lead to an outright fall in global production.

China’s steel production boosted by high prices and strong demand

Chinese steel production reached a record high in 2018, buoyed by high prices and margins throughout most of the year and strong domestic consumption. Three years of supply side reforms, which resulted in the closure of many inefficient and outdated steel mills, culminated in higher capacity utilization rates and profitability of remaining steel mills in 2018.
Chinese steel output is forecast to fall by 2.3 per cent to 903 million tonnes in 2019, still the second highest level on record. While the majority of supply side reform-related capacity cuts have largely been completed, several more closures are expected over the next few years. The closure of Wenfeng Steel and restructure of Changzhou Dongfang Steel are expected to cut capacity by 6.4 million tonnes in 2019. A further 16 million tonnes is expected to go offline with the closure of Liuzhou Steel and Chansijiang Steel in 2021. These closures will be partly offset by expansion projects, set to bring 14 million tonnes of capacity online by 2022.

China’s steel demand is forecast to hold steady in 2019. Economic stimulus is expected to boost demand for infrastructure projects and likely offset weakness stemming from the automotive and machinery sectors — which are more exposed to cyclical headwinds expected in 2019, while the machinery sector is also exposed to protectionist moves by the US.

China’s steel production projected to gradually decline

Over the medium term, steel production is projected to gradually decline at an annual average rate of 1.2 per cent, to reach 863 million tonnes in 2024 (Figure 3.3). This fall would cut China’s share of global steel production from 52 per cent in 2018 to 47 per cent in 2024. Declining steel production is expected to be driven by a range of factors, including moderating consumption, stricter environmental regulations, further reductions in steel mill capacity, a shift in focus from quantity to quality, and debt reductions, which is expected to weigh on housing and infrastructure investment.

China is expected to increasingly use scrap material in steel production, which will diminish their demand for imported iron ore and metallurgical coal (Figure 3.3). Higher scrap use will be driven by growing scrap availability, stemming from old construction works set to be demolished and replaced, and old machinery and autos having reached the end of their life span. Government tax incentives and high scrap prices are expected to rapidly bring additional domestic shredding capacity online, and increase the availability of scrap to steel mills over the outlook period. Higher domestic scrap supply will be partly offset by restrictions on imported scrap material.
China’s steel consumption is forecast to decline at an annual average rate of 0.6 per cent, to reach 830 million tonnes in 2024, largely driven by an expected slowdown in urban residential construction. Construction will be weighed down by a projected slowdown in urban population growth, as well as by a decline in the working age population. The pipeline of infrastructure projects is expected to thin, as the government shifts its focus away from export and investment-driven growth (Figure 3.4).

Steel exports decreased by 9.5 per cent in 2018 to 56 million tonnes, their lowest level in five years. Declining exports have been driven by slowing global economic growth, and the implementation of trade barriers on steel and steel containing products into the United States. China’s exports are expected to be increasingly directed towards emerging markets in South East Asia, driven by the opening of new trade routes under the One Belt One Road Initiative and growing demand from emerging economies.

The projection for China’s steel consumption implies a levelling in China’s steel intensity — the volume of steel consumed per person (see Figure 3.5). China is expected to shift away from steel intensive export growth towards a more consumer driven economy.

There is substantial uncertainty regarding the projections for China’s steel sector. Government policy will continue to drive the outlook for steel, as authorities continue to adjust policies to manage a smooth transition while restructuring and reforming the economy.

Emerging economies in Asia to increasingly drive steel demand growth
Emerging markets in Asia (excluding China) increased steel production by 6.9 per cent in 2018 to 144 million tonnes. The region is forecast to overtake the EU by 2021, reaching 181 million tonnes as Vietnam and India rapidly expand their domestic steel industries (Figures 3.6 and 3.7).

India overtook Japan to become the world’s second largest steel producer in 2018. India’s steel production grew by 4.9 per cent in 2018 to 106 million tonnes, driven by the ongoing expansion of steel-making capacity.
Despite record production, India imported over US$17 billion worth of steel and iron products in 2018 — increasing by 23 per cent year-on-year — to keep pace with increasing domestic consumption. Rising domestic consumption was driven by strong growth in the construction and manufacturing sectors, with both sectors buoyed by strong economic growth.

India’s steel intensity was an estimated 77 kilograms per capita in 2018, well below China’s 617 kilograms per capita, suggesting substantial potential for growth. Steel consumption is projected to grow at an annual average rate of 7.0 per cent to reach 144 million tonnes in 2024, implying a steel intensity of 97 kilograms per capita. India’s steel consumption will be underpinned by rapid urban population growth, substantial government investment in infrastructure, housing and urban development and the expansion of the manufacturing sector.

In order to meet growing consumption demand, the Indian government has set a steel capacity target of 300 million tonnes by 2030. Steel production is projected to grow at an annual average rate of 6.7 per cent over the outlook period. By 2024, India’s steel production is projected to reach 157 million tonnes, representing 8.5 per cent of world production.

Rising production will be supported by new steel works and several large scale expansion projects set to come online during the outlook period. JSW Steel limited is expected to expand production capacity at their Ispat Dolvi works by 5 million tonnes in 2020, plus an additional 1 million tonnes at their Vijayanagar works in the same year. Tata Steel group — India’s largest steel maker — is expected to expand production capacity by 5 million tonnes at their Kalinganagar operations by 2022.

Vietnam has several notable capacity additions and expansions in the pipeline. Notably, FPG’s Ha Tinh plant is ramping up their 7 million tonne phase one steel mill and is expected to develop a further 12 million tonne expansion in 2023. If the expansion proceeds, Ha Tinh will likely become the third or fourth largest steel mill in the World.

Japan’s steel production to moderate over the outlook period

Japan’s crude steel production declined slightly for the fourth consecutive year, from 110 million tonnes in 2014 down to 104 million tonnes in 2018. Lower production was driven by slowing residential construction, which more than offset infrastructure investment — which benefited from Olympics-related construction projects. Steel output is forecast to decline at an annual average rate of 0.2 per cent over the outlook period, due to a slowdown in the residential construction and automotive sectors.

Steel output in United States expected to rise

Steel production in the United States grew by 6.1 per cent to 87 million tonnes in 2018, driven by strong industrial production which more than offset weaker sales of domestic vehicles and trucks. Production was also supported by tariffs on imported steel products and rising domestic steel prices, which encouraged steel makers to lift capacity utilization rates in 2018. Steel production is projected to reach 92 million tonnes in 2024, driven by stronger domestic consumption, growth of which — while expected to slow in 2019 — will continue to benefit from loose monetary policy and a growing working age population.

Figure 3.7: Projected steel production in Emerging Asia (ex-China)

Notes: BOF is Basic Oxygen Furnace. EAF is Electric Arc Furnace. Source: AME Group (2018) Strategic Steel Fourth Quarter 2018
## Table 3.1: World steel consumption and production

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<th>2020(f)</th>
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### Crude steel production

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Notes: \(r\) Compound annual growth rate for the period from 2018 to 2024; \(s\) Estimate; \(f\) Forecast; \(z\) Projection.

Source: World Steel Association (2019); Department of Industry, Innovation and Science (2019)