Steel production in 2050:International Energy Agency vs. WSD

The International Energy Agency (IEA) and World Steel Dynamics (WSD) steel production estimates for 2050 are not very different:

- The IEA figure for 2050 is 2.050 billion metric tons versus 1.872 billion metric tons in 2019 — a 0.3% per annum compounded gain over the 31-year time frame.
- The WSD figure calls for 2050 production of 1.984 billion metric tons — a 0.2% per annum gain, compounded, over the same period.

Steel Production by Country and Region

However, there are several differences in the forecasts when considering several countries and/or regions, especially in the case of China and India:

- China. Versus output of 996 million metric tons in 2019, the IEA figure is 710 million metric tons, a decline of 1.1% per annum, compounded, versus the WSD's estimate of 800 million metric tons (a drop of 0.7% per annum, compounded). Chinese steel production will recede in the next several decades, it's believed, as: (a) the country's fixed asset investment declines from the roughly 44% share of GDP at present; (b) household spending rises as a share of GDP; and (c) the country's net exports rise in line with GDP.

  Currently, China is consuming about 1 billion metric tons of crude steel. Given its 1.3 billion inhabitants, consumption per capita is about 770 metric tons. For the U.S., steel consumption is about 110 million metric tons/year at present and it has 330 million inhabitants; hence, steel consumption is about 333 metric tons per capita. GDP per capita in China is about US$11,000 per annum, with the U.S. at about US$64,000 per annum.

  The most amazing steel demand discrepancy between China and the U.S. occurs in

Table 1

Crude Steel Production by Major Steel-Producing Regions, 2019 vs. 2050
Sources: World Steel Association, International Energy Agency and WSD estimates.

	IEA		WSD		IEA	WSD
	2019	2050	2019	2050	Change vs. 2019	
China	996	710	996	800	(286)	(196)
U.S.	88	80	88	80	(8)	(8)
Middle East	54	100	54	74	46	20
Europe	157	148	157	148	(9)	(9)
India	107	350	111	300	243	189
Central and South America	29	50	29	40	21	11
Africa	6	20	6	11	14	5
Rest of World	435	592	425	531	157	106
Total	1,872	2,050	1,866	1,984	178	118

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WSD's steel experience, steel database and availability of steel statistics are the principles for performing steel forecasts, studies and analysis for international clients. WSD seeks to understand how the "pricing power" of steel companies the world over will be impacted by changes in the steel industry's structure. The views and opinions expressed in this article are solely those of World Steel Dynamics and not necessarily those of AIST.

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rebar. For the U.S., the current figure is about 8 million metric metric tons per annum. For China, the current figure may be 270 million metric tons when including some unreported output. The Chinese figure in part reflects the country's excessive infrastructure spending and booming residential construction activity.

- India. The IEA forecast for 2050 is 350 million metric tons, or a 3.9% per annum compounded gain from 106 million metric tons in 2019. The WSD figure is 300 million metric tons, for a rise of 0.34% per annum compounded. WSD views the Indian economy as being fairly fragile on a longer term basis, although its financial system is "Western" in many respects. The expansion of Indian steelmaking capacity as expected will require both enormous new funds and a massive rise in steel demand. However, the funds for projects that boost steelmaking capacity may be more difficult to obtain than in the past because of the massive funds required to curb CO_2 emissions.
- The IEA forecast for steel production rises by 2050 from 54 to 100 million metric tons in the Middle East; from 29 to 50 million metric tons in Central and South America; and from 6 to 20 million metric tons in Africa.

Looking ahead to 2050, the industry's estimated capital spending requirement may amount to US$782 billion, or an average of US$26 billion per year. This figure presumably does not include "normal" capital expenditures at steel plants that, in 2020, might have been about US$135 billion (US$75 billion in China and US$60 billion elsewhere).

By 2050, all steel plants — even the traditional BF/BOF and scrap-based/EAF ones — will have been the recipient of sizable investments to reduce the generation of CO_2 during the production process and/or by capturing and processing it.

This report includes forward-looking statements that are based on current expectations about future events and are subject to uncertainties and factors relating to operations and the business environment, all of which are difficult to predict. Although WSD believes that the expectations reflected in its forward-looking statements are reasonable, they can be affected by inaccurate assumptions made or by known or unknown risks and uncertainties, including, among other things, changes in prices, shifts in demand, variations in supply, movements in international currency, developments in technology, actions by governments and/or other factors. ✦