

The Asian Stainless Steel Market: Trends, Issues and Prospects

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Asia's stainless steel market growing faster than the carbon steel market

We find ourselves surrounded by stainless steel from the moment we start our day, from the smart watch that wakes us in the bedroom, the razor and basin valve in the bathroom, the toaster, stove, frying pan, and sink in the kitchen, the solar panels on the rooftop, to the purring cars on the road. Stainless steel has an extraordinarily wide range of application, leading to continuously rising demand. According to the International Stainless Steel Forum (ISSF) of worldsteel, demand for stainless steel increased at a CAGR of 5.4% from 1980 to 2016 to become a 46 Mt annual market. On the other hand, demand for aluminum and carbon steel increased at rates of 3.8% and 2.3% over the same period. Production of plastic has tripled since 1990, but that of stainless steel has quadrupled.

By product type, 83% of stainless steel is used for flat products, while the remaining 17%

goes to long products. More than 80% of the flat products are cold-rolled steel plates. By use, 38% of stainless steel is for catering and metal products, 28% for mechanical engineering, 12% for construction, 10% for motor vehicles and related parts, and 8% for electrical machinery.

By region, the stainless steel industry clearly demonstrates the economic emergence of Asia. The continent's growth engines are the export-led economy and intra-regional investment in infrastructure, and the role of steel, including stainless steel, is central in both. Looking at some indicators to estimate the changes from 2000 to 2017 in Table 1, Asia's share of global GDP increased by 7%p from 25% to 32%. However, this increase is unimpressive compared to the expansion of the steel industry. During the same period, stainless steel slab production in Asia surged by 35%p from 42% to 77% (from 6.2 Mt to 30.5 Mt). Asia's share of total crude steel production increased by 30%p from 39% to 69%. China's rise is even more dramatic in stainless steel than in carbon steel. China's share of Asian stainless steel slab produc-

Table 1. Share of Asia's GDP and Steel Production

		2000	2005	2010	2015	2017
Asia/World	Nominal GDP	25%	22%	27%	31%	32%
	Crude steel	39%	52%	64%	69%	69%
	Stainless steel slab	42%	52%	67%	74%	77%
China/Asia	Nominal GDP	14%	22%	34%	48%	48%
	Crude steel	39%	59%	70%	72%	73%
	Stainless steel slab	4%	26%	57%	70%	71%
(India + ASEAN)/ Asia (excl. China)	Nominal GDP	15%	22%	32%	39%	40%
	Crude steel	18%	25%	32%	35%	36%
	Stainless steel slab	10%	17%	23%	33%	39%

Source: IHS, CRU

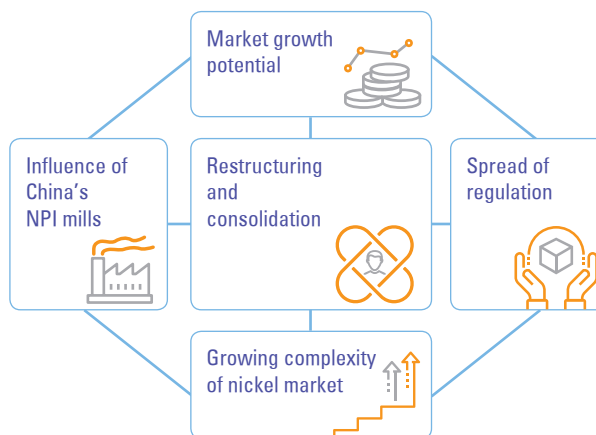
tion, which stood at a mere 4% (250,000 tonnes) in 2000, skyrocketed to 71% (22 Mt) by 2017.

China's growth is not the totality of development in Asia, however. The spreading influence India and the ASEAN nations should be taken into account as well. Their share of stainless steel slab production in Asia excluding China surged from 10% in 2000 to 39% in 2017, of crude steel production from 18% to 36%, and of GDP from 15% to 40%. The rapid growth in the stainless steel industry is clearly demonstrated in India and the ASEAN countries.

Five characteristics of Asian stainless steel market

Based on supply and demand factors, Asia's stainless steel industry shows five distinctive characteristics.

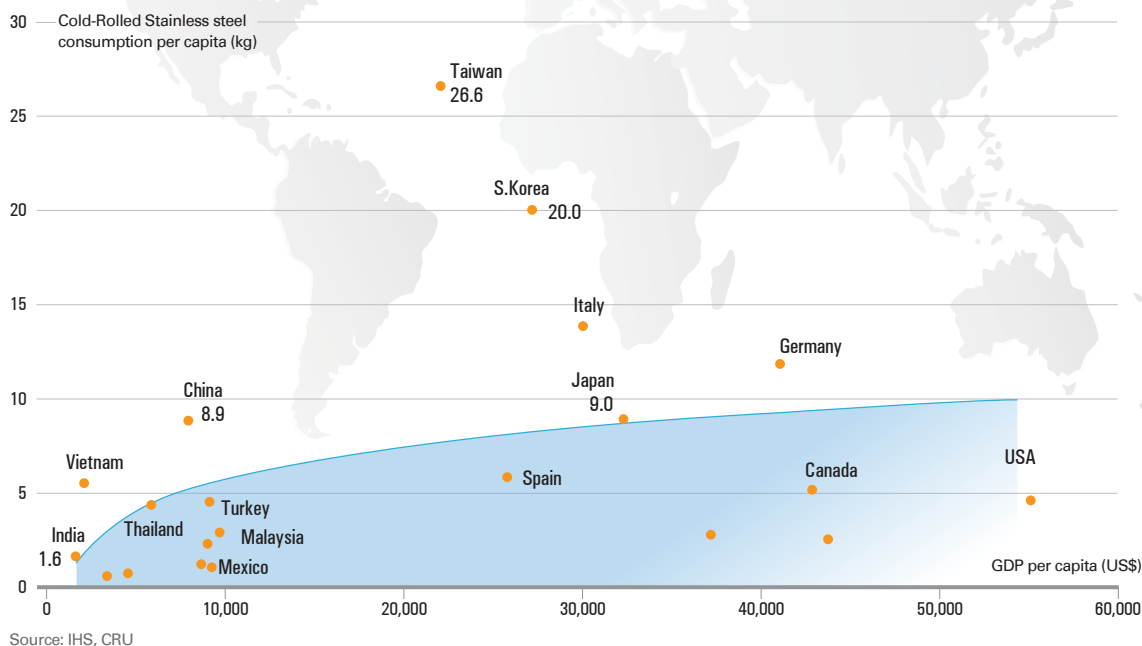
First, the stainless steel market has high growth potential. When estimating the growth trajectory and potential of the steel market by country, crude steel consumption per capita and

Figure 1. Structure of Asia's Stainless Steel Market

GDP per capita are often compared, as shown in Figure 2. China's cold-rolled stainless steel consumption per capita has reached the level of Japan at 8.9 kg. The exceptionally high steel-consumption by the economies of Korea and Taiwan become clear in such a comparison.

Figure 2 boils down to two questions. Has China's steel consumption per capita peaked? Although it will lose growth elasticity, growth momentum should continue for a while. The oth-

Figure 2. Asia's Cold-Rolled Stainless Steel Consumption Potential



er question relates to the future position of India and ASEAN countries, who are in the early stages of taking off.

Will India be able to outpace China despite its currently low 1.6 kg of per capita steel consumption? If that is to be the case, India's CR stainless steel market must grow from the current level of 2 Mt to reach 12 Mt. What about the ASEAN market, where leadership passed from Thailand to Vietnam after 2011? Currently, per capita steel consumption stands at 5.5 kg for Vietnam, 4.4 kg for Thailand, and 0.6 kg for Indonesia. Despite these differences among countries, ASEAN shows a high potential to grow.

Second, it should be noted that Chinese mills have significantly reduced costs by integrating slab production with a nickel pig iron (NPI) process that produces Fe-Ni with a 10% nickel metal content. An illuminating example is Tsingshan Holding Group. The company has already achieved a stainless steel capacity of 7 Mt in China, and since the second half of 2017 it has been operating with a crude stainless steel capacity of 3 Mtpy and hot-rolled coil capacity of 3 Mtpy in Sulawesi, Indonesia. Tsingshan's investment also spreads into India. In late January, it had a ground-breaking ceremony for a cold-rolled facility with a 600,000-tonne annual capacity. It plans

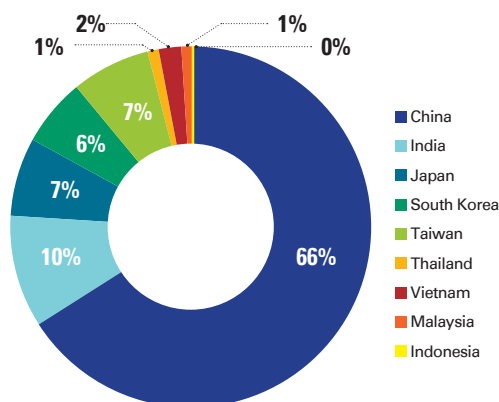
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to build an integrated 2 Mtpy stainless steel plant within five years. This signals that Chinese mills' overseas strategy is shifting from export to local production.

The third characteristic is the complexity of the nickel market. An increasing number of variables should be considered: the widespread NPI process, opening of the Shanghai Futures Exchange in 2015 and intervention by speculative funds, Indonesia's export ban on raw nickel ore and the subsequent partial resumption, Philippine environmental regulations for nickel mines, and the bolstering of nickel markets for batteries for electric vehicles (EV) by the Chinese government's policy measures.

Electric car sales are expected to reach 35 million units by 2030, and EV batteries will be primarily nickel, cobalt, and manganese (NCM) types with an 80% nickel content. Assuming that 18 kg of nickel is used per electric vehicle, the nickel market for EVs alone will reach 630,000 tonnes. According to the Nickel Market Outlook to 2027 released by Roskill, a UK metals and minerals research institution, EVs will account for about 30% of new car sales in 2027 and nickel demand for EVs is forecast to rise to 500,000 tonnes. While 65% of the current nickel market of 2 Mt is used in stainless steel, it should become

Figure 3. Asia Cold-Rolled Stainless Steel Production by Country



Source: CRU

difficult in the future to simply equate nickel with stainless steel.

The fourth is regulation, which entails two contradictory issues. One is protectionism, through which Asia's stainless steel products can be exposed to trade interventions such as anti-dumping tariffs.

China's exports of 1 Mt cold-rolled steel per year is facing import restrictions in the USA, EU, Brazil, India, Malaysia, Vietnam, and Thailand. The other issue is environmental regulation: some obsolete NPI facilities are not free from pollutant emissions.

The final characteristic is restructuring

Table 2. Supply and Demand of Cold-rolled Stainless Steel Sheet

(1,000 tonnes)

		2000	2009	2010	2017
Capacity	World	12,118	22,122	23,592	33,504
	Asia	5,289	13,599	14,838	24,962
	China	645	6,616	7,517	15,795
Consumption (A)	World	9,562	13,684	16,982	25,848
	Asia	4,000	9,091	11,158	18,465
	China	1,214	5,461	6,622	12,248
Overcapacity (B)	World	2,556	8,438	6,610	7,656
	Asia	1,289	4,507	3,680	6,496
	China	- 569	1,155	895	3,547
Overcapacity Ratio (B/A)	World	27%	62%	39%	30%
	Asia	32%	50%	33%	35%
	China	-	21%	14%	29%

Source: CRU

through consolidation. In Japan, after Nisshin Steel merged with Nippon Metal Industry in 2012 and acquired Nippon Steel & Sumitomo Metal Corporation (NSSC) in March 2017, the stainless steel industry had restructured into a single large company (NSSC), one medium company (JFE), and one small company (Nippon Yakin).

In China, Baosteel closed its stainless steel plant in Shanghai this year and plans to increase its production of 300 series stainless steel by its subsidiary Baosteel Desheng Stainless Steel and 400 series by Meishan Iron & Steel Company. However, unlike the advanced integration in the carbon steel industry, the integration of stainless steel mills will be accelerated only when demand increases stop.

The stainless steel industry trapped in a dilemma: what is to be done?

Price competition is being intensified by overcapacity pressure. Furthermore, the technology gap among companies is narrowing, providing customers with increased choice. This is the reality of the stainless steel industry. Under such circumstances, customer switching costs are falling and major companies are increasingly finding it difficult to attract customers. In a contradictory situation in which high growth and low profitability coexist, the stainless steel industry is trapped in a dilemma of choice. It can neither seek growth as ROI and cost advantages are uncertain, nor give up the market due to increasing demand. What will determine the per-

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Figure 4. Stainless Steel Used in Solar Panels

formance of stainless steel producers? Above all, one key factor is how they can maintain cost advantage in the face of price competition triggered by overcapacity pressure. Cost competitiveness is becoming increasingly important as the price spread between nickel, which accounts for nearly 70% of raw material prices, and stainless steel products is narrowing and the conversion margin is subsequently declining. Considering production efficiency, companies in Europe and Japan have intensified their facilities to reduce overhead and inventory costs. Baosteel in China is following suit. Tsingshan Group has reduced production costs in the NPI process and pursued global expansion, but Jiangsu Delong Nickel has adopted a strategy of quantitative growth, including new facility expansion in China. In addition, the stainless steel

industry requires a strategy for differentiating business models. For example, it can create new demand by developing innovative types of products and providing solutions to increase customer switching costs. Differentiated products and smart servitization programs are effective in higher-end markets. In the era of the Fourth Industrial Revolution, market development opportunities are more diverse than had been expected, including for 3D printing, infrared temperature sensors, smart watches, IoT-based home appliances with black stainless steel finishes, and cover strips, absorbers, and collector housings for solar panels. The efforts to stake an early claim in the market and create unique business models that cannot be easily imitated are providing a source for sustainable results. 🌱