



**MARKET TREND &
ANALYSIS**

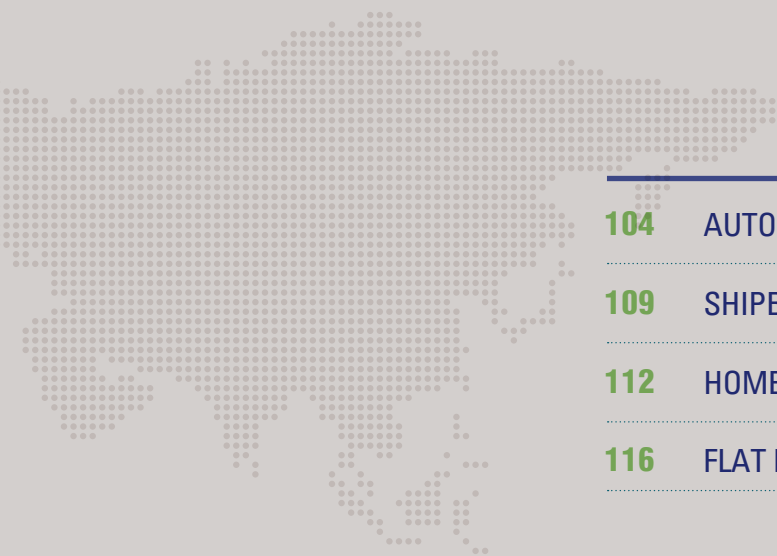
ASIAN STEEL MARKET OUTLOOK

FLAT PRODUCT DEMAND FOR THE NEXT TEN YEARS

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AUTOMOBILE

- Korea, China, and Japan are among the world's ten largest producers of automobiles. The high growth potential in China, India, and the ASEAN region is drawing attention from the global automakers.
- China has been the world's largest automobile producer for eight consecutive years. India overtook Korea to become the world's fifth largest car producer in 2016.
- China, India, and the ASEAN-5's car production grew rapidly from 2011 to 2016, while Japan and Korea had a slightly negative rate of growth for car production during the same period.
- Japan, Korea, and Malaysia possess advanced au-

tomotive markets, with the number of automobiles owned per 1,000 people surpassing 400 units, but China and India markets are anticipated to grow significantly in the future.

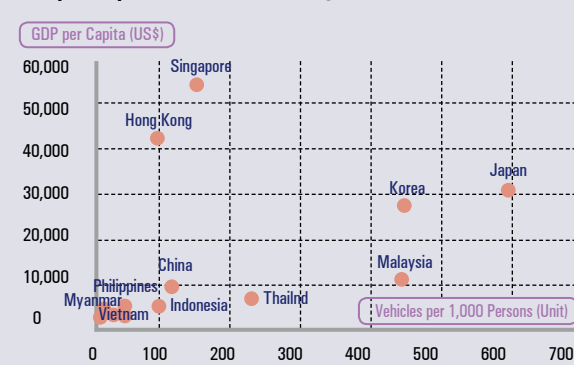
- China and India are entering an early stage of motorization based on robust domestic demand.
- Number of automobiles owned per 1,000 people: China 58 units('10) → 115('15), India 12 → 32
- Automobile production in China, the ASEAN-5, and India is expected to grow continuously by 2027 thanks to government policy support and facility investment by global automakers, despite low growth trends around the world.

World's Top 10 Automobile Producers

Rank ('16)	Country	Production (mil. units)		CAGR ('11~'16)
		'10	'16	
1	China	18.3	28.1	7.5%
2	USA	7.7	12.3	7.9%
3	Japan	9.6	9.2	-0.7%
4	Germany	5.9	6.1	0.4%
5	India	3.6	4.5	4.0%
6	Korea	4.3	4.2	-0.2%
7	ASEAN-5	3.1	4.0	4.4%
8	Mexico	2.3	3.6	7.4%
9	Spain	2.4	2.9	3.2%
10	Canada	2.1	2.4	2.3%

Source: OICA

GDP per Capita vs. Vehicle Density ('15)



Source: OICA, KAMA

Automobile Production Outlook

(1,000 units)							
	'16	'18(f)	'20(f)	'25(f)	'27(f)	CAGR	
						('16~'20)	('21~'27)
China	28,119	30,400	32,400	38,550	37,700	5.7%	2.2%
Korea	4,229	4,396	4,500	4,500	4,540	− 0.2%	0.1%
Japan	9,205	9,605	9,600	9,490	9,480	0.7%	− 0.2%
ASEAN-5	4,020	4,300	4,805	5,622	5,828	4.3%	2.8%
Indonesia	1,177	1,280	1,400	1,650	1,740	5.0%	3.2%
Malaysia	545	570	625	711	742	0.3%	2.5%
Thailand	1,944	1,980	2,250	2,605	2,655	3.3%	2.4%
Philippines	117	140	160	183	191	10.1%	2.6%
Vietnam	236	330	370	473	500	16.6%	4.4%
India	4,539	5,100	5,700	7,150	7,750	6.2%	4.5%

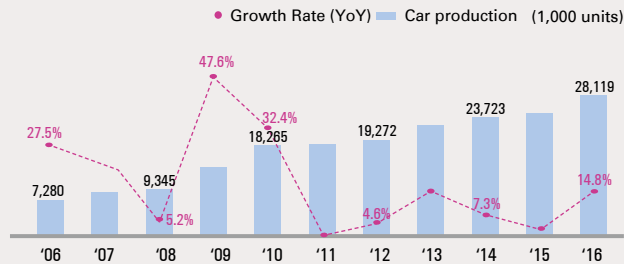
Source: KAMA, POSRI

01 CHINA

For automobiles, China is both the world's largest producer and market. Thanks to government support in 2016-17, the Chinese car market showed an unprecedented upturn.

- Automobile production increased by 14.8% in 2016, and

China's Automobile Production Trend



Source: China Association of Automobile Manufacturers

by 4.3% for Jan.-Oct. 2017, backed by rising pre-orders due to a temporary reduction in vehicle purchase taxes, the release of new models, and the popularity of new energy vehicles.

- Accounting for nearly 30% of global demand, China is leading the global automotive market.

Purchase Tax Reduction

Purchase tax rate for cars with 1.6-litre engines or below	
Normal rate	10%
Oct.'15 – Dec.'16	5%
Jan. '17 – Dec.'17	7.5%
Since Jan. 1, '18	10%

Source: Compiled from media reports

Production capacity is expected to reach 556.8 million units, mainly led by local automakers and backed by government policy support.

- Despite a high consumer preference for foreign cars, domestic production capacity by Chinese carmakers is expected to increase by 7.57 million units by 2025.
- The top five companies—SAIC, Dongfeng, FAW, Chang'an, and BAIC—have established production capacities over 2 million units and will expand further.

Automobile production is expected to grow at a compound average growth rate (CAGR) of 5-6% through 2020,

but after this growth will inevitably slow due to sluggish economic growth and easing of pent-up demand.

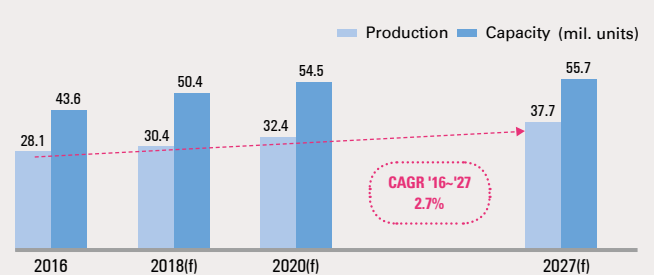
- China's automobile production is anticipated to surpass 30 million units per year in the near future.
- The number of automobiles owned per 1,000 people in China was 115 units in 2015, far lower than the 808 units in the USA and 415 units in Korea.
- However, mid- to long-term production is projected to dwindle due to the country's slowing economic growth, stricter environmental restrictions, and constraints on vehicle sales in eight regions.

China's Capacity Expansion by Carmaker

	Production capacity (1,000 units)			
	'16	'20	'25	'16 ~ '25
Local	26,790	33,180	34,360	+7,570
European	7,240	9,420	9,430	+2,190
Japanese	3,750	4,790	4,790	+1,040
American	3,810	4,420	4,420	+610
Korean	1,980	2,680	2,680	+700
Total	43,570	54,490	55,680	+12,110

Source: National Bureau of Statistics of China (NBS), Fourin

China's Automobile Production and Capacity Outlook



Source: POSRI, Fourin

02 KOREA

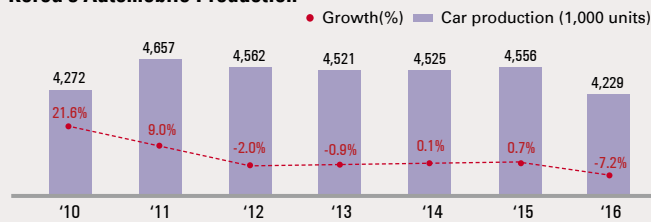
Korea's automotive production has been stagnant at around 4.5 million units for the last five years. In 2016, it plunged sharply due to sluggish domestic demand and low exports, but is expected to recover to 4.5 million units by 2020.

- Car production fell by 7.2% to 4.2 million units in 2016, owing to several issues: contracting domestic demand follow-

ing the expiration of a consumption tax cut on cars; sluggish exports caused by US protectionism and production disruptions from labor strikes.

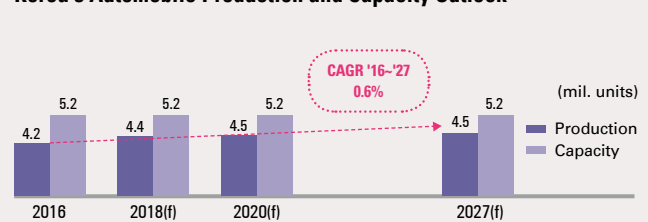
- Korea's automotive market is saturated, with the number of vehicles owned per 1,000 people reaching 415 units in 2015. Over the next decade, the country's automobile production is expected to grow by around 1%.

Korea's Automobile Production



Source: KAMA

Korea's Automobile Production and Capacity Outlook



Source: POSRI, KAMA

03 JAPAN

Japan's automotive industry showed negative growth for 2015-16, but it is expected to recover to 9.6 million units by 2020 thanks to a restoration of domestic demand under stimulus programs by the Abe administration.

- Amid changes in the external environment and fierce internal competition, the Japanese auto industry is undergoing restructuring, mainly with two leaders—Toyota and Nissan.

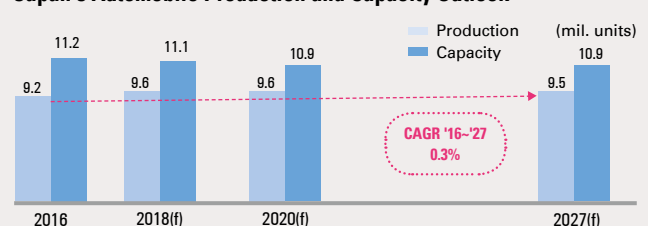
- Toyota has Daihatsu and Hino as subsidiaries, and has agreed to enter a capital alliance with Mazda. In October 2016, Mitsubishi joined the Renault-Nissan alliance.
- Merger and acquisition will continue among companies of middle standing that are unable to survive independently in terms of technology, finance, or innovation.
- Japan will lead the global auto market with respect to next-generation technological advancement, such as in electric vehicles and new energy vehicles, as well as competition for fuel economy under stricter emission regulations.

Japan's Automobile Production and Capacity by Carmaker

	Production	Production capacity (1,000 units)			
		'16	'20	'25	'16 ~ '25
Nissan	950	1,160	1,160	1,160	-
Toyota Gr.	4,035	4,782	4,382	4,382	- 400
Honda	820	1,270	1,270	1,270	-
Suzuki	794	1,260	1,260	1,260	-
Mazda	977	996	996	996	-
Mitsubishi	555	650	650	650	-
Subaru	728	642	696	696	+ 54
Others	345	455	455	455	-
Total	9,205	11,215	10,869	10,869	- 346

Source: POSRI, JAMA, Fourin Note : Toyota Group includes Daihatsu and Hino

Japan's Automobile Production and Capacity Outlook



Source: POSRI, JAMA, Fourin

04 ASEAN-5

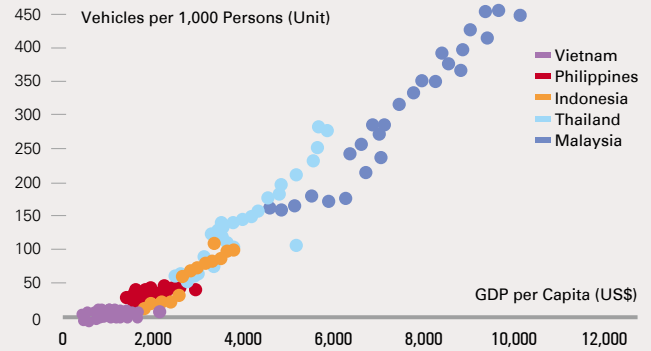
The ASEAN-5 have become a major investment destination for global automakers thanks to their attraction of foreign investment and policies for nurturing their automotive industries.

- Car production among the ASEAN-5 peaked in 2013 but afterward began to slow due to sluggish demand in Malaysia and Thailand, the largest car markets in the region.
- Thailand: The ASEAN-5's largest production hub and export base with a robust ecosystem spanning from parts to end products; however, both domestic demand and production have been sluggish since 2013 due to political unrest.
- Indonesia: With a population of 250 million, domestic demand grew at a CAGR of 7.2% over the last decade.
- Malaysia: The only country in the ASEAN to have its own brands (Perodua & Proton). Malaysia's car market is fairly saturated, with the number of vehicles per 1,000 people reaching 416 units in 2015.
- The auto industry in the ASEAN-5 is based on foreign investment. Without technologies and self-sufficient production systems, they are on a CKD (complete knock-down) basis and highly dependent on Japanese carmakers.
- Proportion of CKD: Vietnam 100%, Philippines 94%, Malaysia 65%, Indonesia 14%, Thailand 2%.
- Proportion of Japanese carmakers ('15): Indonesia 98%, Thailand 95%, Philippines 89%, Vietnam 60%, Malaysia 40%

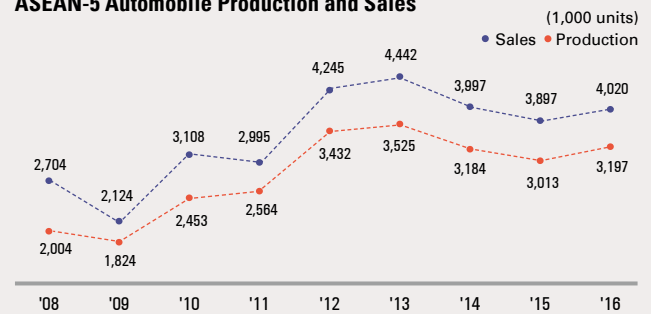
Production capacity will increase to around 8 million units by 2027, thanks to steady FDI inflows.

- Japanese and Chinese carmakers will continue to expand their production capacities in Indonesia and Thailand.
- Indonesia and Thailand are anticipated to attract investment from high-end foreign brands, but Vietnam and Malaysia will be able to draw foreign investment, mainly in CKD facilities.

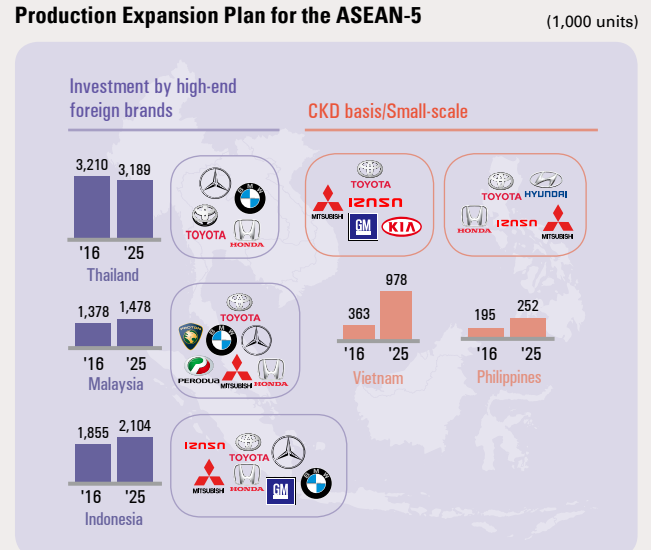
ASEAN-5 Market Saturation



ASEAN-5 Automobile Production and Sales



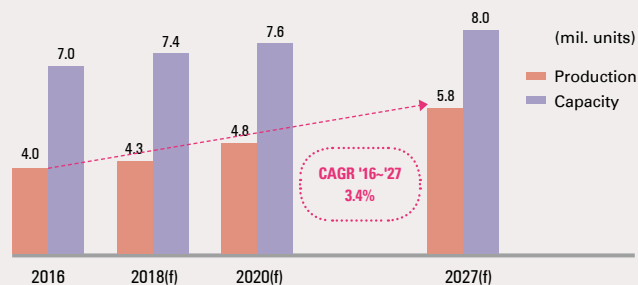
Production Expansion Plan for the ASEAN-5



Car production is expected to grow at a CAGR of 3.4% to reach 5.8 million units by 2027, backed by a recovery in the Thailand and rising demand in Indonesia and Vietnam.

- As the Thai and Indonesian markets are rapidly recovering from the political uncertainties of the past three years, they are anticipated to lead the ASEAN market.
- Vietnam is actively attracting FDI to become a production hub for multinational carmakers, so its car production seems highly likely to increase in the future.

Automobile Production and Capacity Outlook



Source: POSRI, Fourin

05 INDIA

India has dislodged Korea to become the world's fifth largest automobile producer thanks to massive FDI inflows and the rise of a middle class with high purchasing power.

- Automobile production grew by 7.8% to a record high of 4.54 million units in 2016, thanks to robust domestic demand, the Automotive Mission Plan for 2016-2026, operation of plants expanded before 2015, and rising corporate investment.

Production capacity is expected to surpass 9.25 million units by 2027 as an alternative to the Chinese market.

- Japanese automakers, including Suzuki, Nissan, and Honda, and Korean automakers as well will expand production facilities in India due to its significant growth potential and high export tariffs (125%).
- Chinese carmakers are attempting to enter the Indian market through alliances with foreign joint venture partners, such as GM.

Automobile production is expected to grow at a CAGR of 5.0% by 2027 thanks to the reforms, nurturing of manufacturing, and active attraction of FDI under the Modi administration.

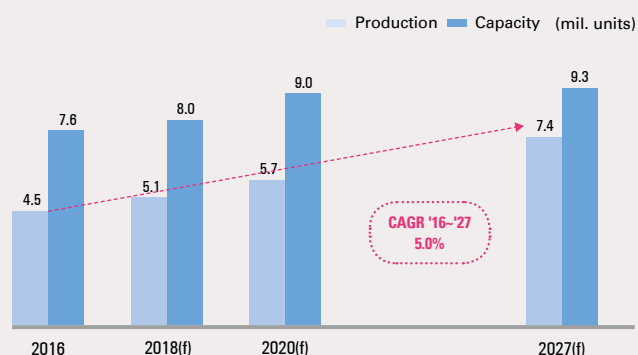
- With the number of vehicles owned per 1,000 people hovering at just around 32 units in 2015, India is in the early stage of motorization.

India's Automobile Production and Capacity by Carmaker

	Production '16	'16	Capacity (1,000 units)		
			'20	'25	'16~'25
Suzuki	1,513	1,500	2,000	2,250	+750
TATA	532	1,682	1,682	1,682	-
Mahindra	448	810	1,290	1,290	+480
Hyundai/Kia	665	680	980	980	+300
Nissan	309	480	480	480	-
Ford	243	440	440	440	-
VW/Skoda	160	313	313	313	-
Toyota	146	310	310	310	-
FCA	7	160	245	245	+85
Honda	159	240	240	240	-
GM	69	287	160	160	-127
Other	288	566	710	710	+144
Total	4,539	7,602	9,013	9,263	+750

Source: POSRI, Fourin

India's Automobile Production and Capacity Outlook



Source: POSRI, Fourin

SHIPBUILDING

- Global new orders bottomed out at 21.4 mil. GT in 2016. It will recover to 68 mil. GT by 2027, but be difficult to recover to the level of more prosperous times.
- The global shipbuilding market has been stagnant since 2010 for various reasons, including the falling Baltic Dry Index (BDI), declining global shipping volumes, and an oversupply of vessels.
- The BDI exceeded 10,000 before the global financial crisis of 2008, but has remained below 2,000 since just after 2011.
- Global orders peaked at 116.5 mil. GT in 2011, but declined by 82% to around 21.4 mil. GT in 2016.
- The proportion held by Korea, China, and Japan in global orders declined from 92% in 2013 to 82.2% in 2016.
- New orders increased year on year by 92% to 31.8 mil. GT for Jan.–Sep. 2017. Despite this increase, the “order cliff” will continue through 2018.
- Global shipbuilding deliveries will decline to 50.4 mil. GT by 2020 due to the “order cliff” of the last 2-3 years, but will gradually recover by 2025.
- Global shipbuilding deliveries declined to 70 mil. GT in 2013-2016 due to the sluggish shipbuilding industry and the order plunge.
- Korea, China, and Japan accounted for nearly 90.8% of global shipbuilding deliveries in 2016; therefore, they have been profoundly impacted by the lethargic global shipbuilding market.
- Shipbuilding deliveries were 54 mil. GT in Jan.–Sep. 2017, a 3% year-on-year increase, but will remain slow until 2020.

Global Baltic Dry Index



Source: Clarkson

01 CHINA

China's shipbuilding industry has remained stagnant since 2011 due to the global financial crisis and deteriorating shipping market.

- New orders took a temporary upturn to 52 mil. GT in 2013, but declined until reaching 10.4 mil. GT in 2016. New orders increased year-on-year by 32% for Jan.–Sep. 2017.
- China's new order performance has been relatively better than those of Korea and Japan, as nearly 40% of China's new orders came from Chinese shipowners in 2016.

- Deliveries declined to 22.3 mil. GT in 2016, influenced by the decline in new orders stemming from the sluggish shipping market.

The share of bulk carriers are declining, while those of container ships and tankers are increasing thanks to improved cost and technological competitiveness.

- The share of orders for bulk carriers, China's most common type of vessels built, decreased from 71.3% in 2010 to 42.8% in 2016, but that of orders for container ships

steeply increased from 4.4% to 35.9% for the same period.

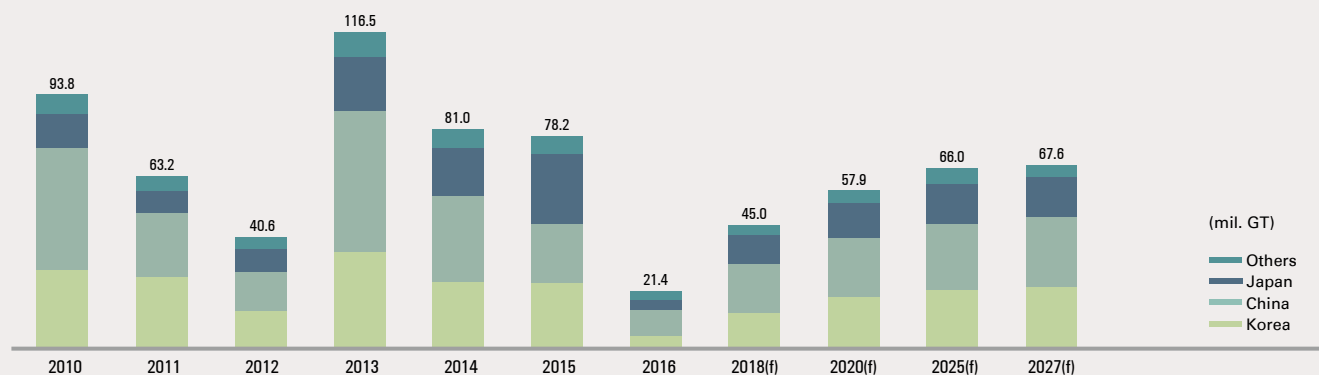
- The share of deliveries for bulk carriers fell from 61.4% in 2010 to 56.8% in 2016, and that of container ships increased by 4.3%p for the same period—a rate similar to that of new orders.

China's deliveries are expected to bottom in 2019 due to

stagnation in the global shipping market, but to recover gradually by 2027, bolstered by a potential order.

- Despite an order increase in 2017-2018, deliveries are falling but will increase to surpass 20 mil. GT after 2019.
- The share of bulk carriers will continue to fall, but those of container ships, tankers, and gas carriers will grow gradually as their competitiveness increases.

Korea, China, and Japan's Shipbuilding Order Trend and Outlook



Source: POSRI, Clarkson

02 KOREA

Korea's shipbuilding industry is undergoing tumult—poor performance of the three major shipbuilding companies and restructuring amid prolonged stagnation in the shipbuilding market.

- Korea is still suffering from the “order cliff,” with new orders of a mere 4.4 mil. GT in 2016 due to stagnation in the global shipbuilding market.
- New orders reached 12.9 mil. GT from Jan.–Sep. 2017, a 296% year-on-year increase; however, this is still lower than deliveries.
- Deliveries were 25.4 mil. GT in 2016, 29.1% below the peak of 2011, influenced by sluggish orders for almost all types of vessels, including energy vessels.

Korea's shipbuilding companies are still taking most of the new orders for very large container ships, gas carriers, and large offshore plants.

- In 2016, Korea accounted for nearly 70% of orders for container ships, tankers, gas carriers, and offshore plants, all of which require advanced technology, while it received only 6.7% of orders for bulk carriers.

Shipbuilding deliveries are expected to decline to 14.5 mil. GT by 2019, impacted by the “order cliff,” but will gradually recover thanks to rising orders for eco-friendly and energy-industry vessels.

- The order cliff will continue through 2018, but new orders will exceed 20 mil. GT after 2019 thanks to investment in

eco-friendly vessels.

- In response to the requirement for installing ballast water management systems on vessels and strengthened SOx restrictions starting in 2020, new orders will begin to rise next year.
- The likelihood of a rise in vessel prices will work favor-

ably on new orders.

- Although China is rapidly catching up, Korean shipbuilding companies will continue to lead the market in the near future, especially in terms of very large container vessels, gas carriers, and offshore plants.

03 JAPAN

Japan's shipbuilding industry has been experiencing a harsh period due to a prolonged stagnation in the shipping market and limited domestic orders.

- With limited new orders from local companies, Japan's new shipbuilding orders plunged by 88% to 3 mil. GT in 2016.
- Orders in Jan.-Sep. 2017 were only 3.4 mil. GT, merely a 35% recovery year-on-year.
- Japan was less impacted by the order cliff than Korea or China since there is still an order backlog of 2.5 years thanks to massive domestic orders placed in the past.

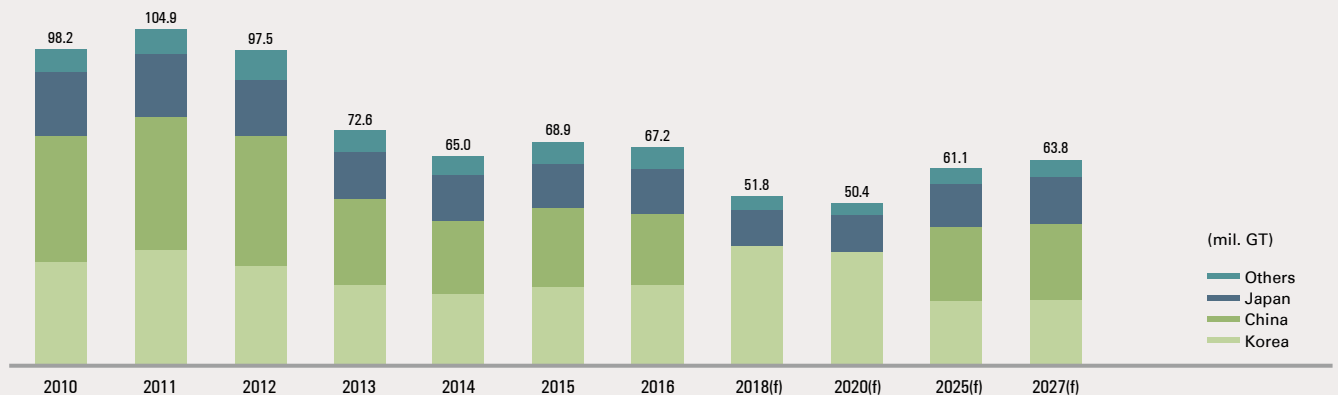
To overcome the sluggish bulk carrier market, Japan is increasing its share of orders for tankers and gas carriers.

- The share of bulk carriers among new orders plunged from 81.6% in 2010 to 41.8% in 2016, but those of tankers and gas carriers increased slightly in 2016.
- The share of tankers among deliveries decreased from 25.5% in 2010 to 19.4% in 2016, but that of bulk carriers increased by 7.2%p over the same period.

With a 2.5-year order backlog, Japan is expected to maintain orders of 10-14 mil. GT through 2027.

- Due to a slow recovery in the shipping market and a limited capacity for local shipping companies to place new orders, Japan will become far more severe than in Korea and China by 2017, but will gradually recover afterwards.

Korea, China, and Japan's Delivery Status and Outlook



Source: POSRI, Clarkson

HOME APPLIANCE

• The global home appliance market grew in 2016-17, mainly led by demand for white goods, including refrigerators, air conditioners, and air purifiers, driven by global warming and environmental pollutions.

• Asia accounts for about 40% of global production. Korea is the world's largest producer of TVs and China is the world's largest producer of white goods.

• As Chinese home appliance makers go global through M&As with US and Japanese enterprises, they are threatening the traditional strongholds of Japan and Korea.

• In response to saturated domestic markets and

fierce competition, Chinese home appliance producers are transforming themselves into “platform companies” in an effort to assume leadership in the market.

Home Appliance Production Outlook by Country (mil. units)

	'16	'18	'20(f)	'25(f)	'27(f)	CAGR ('16-'27)
China	417.0	432.1	438.6	452.5	456.0	0.8%
Korea	16.9	16.2	15.9	15.7	15.8	-0.6%
Japan	7.6	7.6	7.6	7.6	7.6	0.0%
ASEAN-5	64.6	71.2	78.4	93.1	96.6	3.7%
India	25.0	27.3	29.6	32.9	34.2	2.9%

Note: Home appliance includes TV, air conditioner, washing machine, refrigerator
Source: Respective country's bureau of statistics, major home appliance makers, Fuji Chimera Research Institute, POSRI

01 CHINA

The Chinese home appliance industry has been stagnant due to market saturation and the termination of government support, but is anticipated to grow by looking overseas and increased competitiveness.

• Production of white goods and TVs fell after 2014 due to the end of government subsidies and with sluggish domestic demand. Therefore, Chinese companies are managing

to increase their competitiveness through M&A.

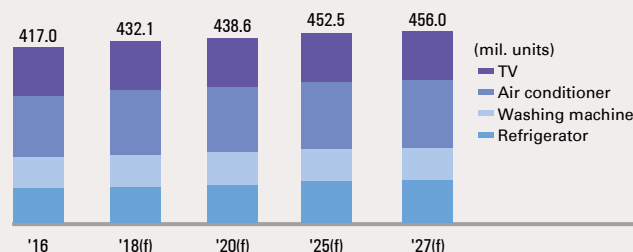
- Termination of three kinds of government subsidies—old-for-new service, the home appliance subsidy program, and a subsidy program for energy-efficient home appliances.
- Chinese home appliance production will continue to grow as massively funded Chinese firms accelerate their overseas expansion by acquiring global companies with core technologies.

M&As by Chinese Home Appliance Companies

Acquiring company	Acquired company	Time	Category
Skyworth	Metz (Germany)	May '15	TV and brand
Hisense	Sharp (Mexico)	Aug '15	TV
Skyworth	Toshiba (Indonesia)	Dec '15	TV, washing machine
Toshiba	GE (USA)	Jan '16	Home appliance, R&D etc
Midea	Toshiba (Japan)	Mar '16	White goods
TCL	Elaraby (Egypt)	May '16	TV
Letv	Vizio (USA)	Jul '16	Smart TV
Midea	KUKA (Germany)	Oct '16	Robotics

Source: Compiled from media reports

China's Home Appliance Production Outlook



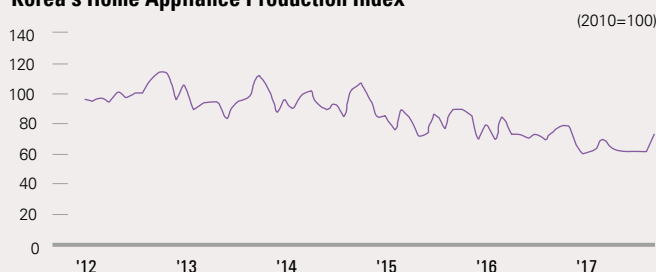
Source: NBS, POSRI

02 KOREA

Korea's home appliance production will fall slightly through 2020, impacted by rising imports and Korean producers' expansion overseas to avoid trade conflicts.

- The Korean home appliance market is expected to improve in 2018 due to increasing demand for eco-friendly and smart appliances and the easing of Chinese retaliatory

Korea's Home Appliance Production Index

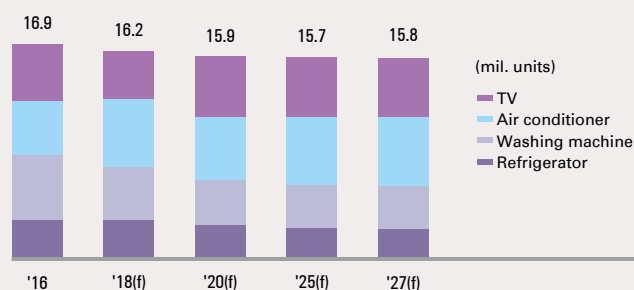


Note: Based on electronic video and audio equipment and domestic appliance
Source: Statistics Korea

measures against THAAD.

- Despite improved domestic demand with rising demand for eco-friendly and smart home appliances, such as air purifiers, personal robots, and home service robots, Korea's home appliance market is not expected to fully recover.

Korea's Home Appliance Production Outlook



Source: Individual companies, POSRI

03 JAPAN

Japan's home appliance production is expected to increase gradually over 2017-20 and then begin to fall once again.

- Home appliance production has been stagnant due to population decline and domestic makers' transfer of production bases overseas.
- With Chinese household appliance producers such as Haier and Midea acquiring the white goods businesses

of Japanese home appliance makers, including Sanyo and Toshiba, Japan's home appliance industry has been greatly impacted.

- Given the life cycle (8 years) of TVs produced during 2003-2011, which saw high replacement demand in response to the cessation of analog TV broadcasting in 2011, consumption is expected to increase gradually, mainly for electronic video and audio equipment.

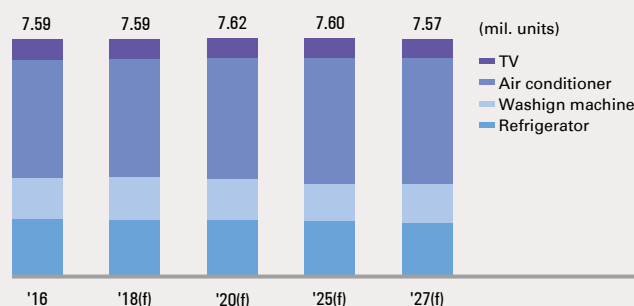
Japan's Home Appliance Production ('16)

(1,000 units)

	TV	Air conditioner	Refrigerator	Washing machine
Panasonic	200	700	700	600
Sharp	300	700	300	-
Hitachi	-	-	480	700
Toshiba	-	250	-	-
Mitsubishi	150	800	80	-
Daikin	-	850	-	-
Others	50	430	300	-
Total	700	3,730	1,860	1,300

Source: Fuji Chimera Reserch Institute, POSRI

Japan's Home Appliance Production Outlook



Source: Fuji Chimera Reserch Institute, POSRI

04 ASEAN-5

The ASEAN-5 is becoming a production hub, accounting for about 10% of global home appliance production thanks to governments' active attraction of foreign investment.

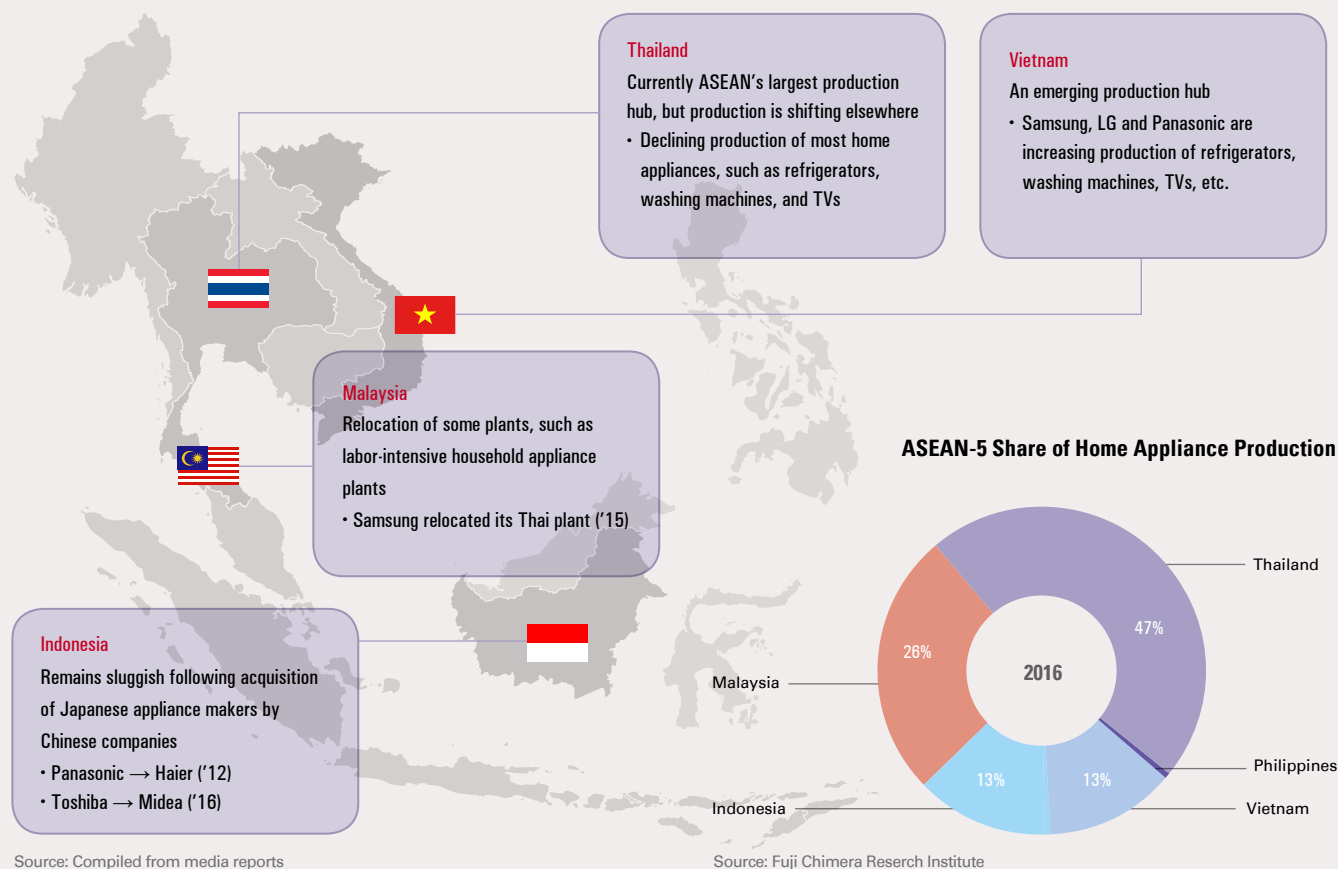
- The center of home appliance production is shifting from Thailand to Vietnam and Indonesia.
- Thailand has become the region's largest producer of white goods, such as air conditioners, washing machines, and refrigerators, thanks to expansion of the industrial base by major Japanese household appliance producers.
- Vietnam is hailed as a new production hotspot thanks to active foreign investment under expanded government benefits.

- Indonesia's home appliance production remains sluggish due to the economic stagnation of the last two to three years triggered by a mineral ore export ban.

Home appliance production is expected to grow rapidly, thanks to the shift in the production-consumption structure under the free trade in the region following the initiation of the ASEAN Economic Community (AEC).

- The ASEAN household appliance market is expected to grow more robust, particularly white goods markets, with Chinese transfer of production facilities to avoid environmental restrictions and take advantage of low labor costs.

Transfer of Production Hotspots in the ASEAN-5



ASEAN-5 Home Appliance Production Outlook

(mil. units)

		'16	'18(f)	'20(f)	'25(f)	'27(f)	CAGR	
							('16~'20)	('21~'27)
TV	LCD-TV	20.9	21.3	21.8	22.9	23.4	-1.5%	1.0%
White goods	Air conditioner	18.3	18.5	18.9	20.3	20.0	1.4%	0.8%
	Refrigerator	15.0	18.7	21.3	27.3	29.0	7.7%	4.5%
	Washing machine	10.4	12.7	16.4	22.6	24.2	7.3%	5.7%
Total		64.6	71.2	78.4	93.1	96.6	3.3%	3.0%

Source: Fuji Chimera Reserch Institute, POSRI

05 INDIA

India's home appliance industry is rapidly increasing based on the rising purchasing power of the middle class and growing urbanization under rapid economic growth.

- India boasts the second-largest market for electronic video and audio equipment after China, but the country retains a low penetration rate.

Home appliance production is expected to grow gradually at around 4% through 2027, due to expanding demand coupled with a low penetration rate.

- India's home appliance industry is anticipated to grow due to increased investment by the government and foreign investors under the 'Make in India' initiative, the abolition of tariffs, and easing of consumption taxes.
- Major household appliance producers in the USA, Korea, and China are expected to increase their investments in India, considering its high growth potential and the likelihood of expanding exports to neighboring countries, including the Middle East.

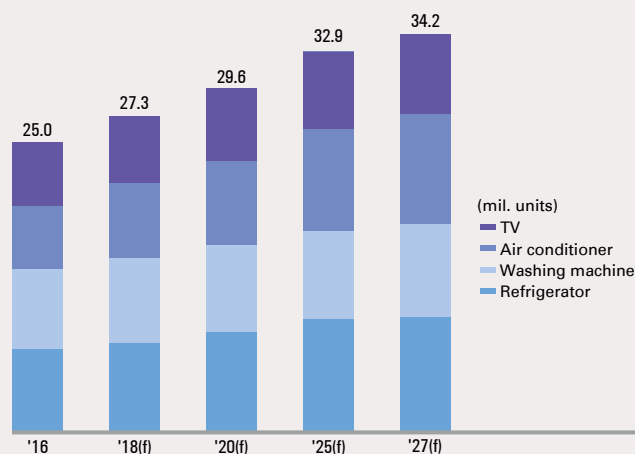
India's Home Appliance Production by Producer ('16)

(1,000 units)

	TV	Air conditioner	Refrigerator	Washing machine
Panasonic	200	500	-	-
Daikin	-	250	-	-
Samsung	2,300	1,000	3,000	1,500
LG	2,500	700	2,200	1,500
Whirlpool	-	-	600	800
Haier	-	1,300	800	-
Electrolux	-	-	-	400
Others	550	1,400	530	3,000
Total	5,550	5,150	7,130	7,200

Source: Fuji Chimera Reserch Institute

India's Home Appliance Production Outlook



Source: Fuji Chimera Reserch Institute, POSRI

FLAT PRODUCT DEMAND

01 CHINA

Despite sluggish demand for flat products in the construction sector, China's overall flat product demand is expected to grow at a compound average growth rate (CAGR) of 0.6% to reach 320 Mt by 2027 thanks to robust demand for automobiles.

- In 2016, the three major steel-consuming industries accounted for 80% of flat product demand: 34% in construction, 29% in machinery, and 17% in automobiles.
- Demand for construction is expected to decline at a CAGR of 0.6% through 2027, influenced by sluggish fixed asset investment, while demand for automobiles is expected to grow at a CAGR of 1.8% thanks to increased automotive production.
- Demand in the shipbuilding sector is expected to grow at a CAGR of about 2% after 2020 since shipbuilding deliveries

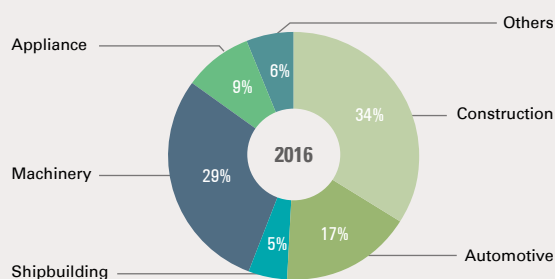
are anticipated to recover slightly after a bottom in 2019.

- Demand for home appliances is expected to fall after 2020 due to a decline in white goods production.

By product, demand for hot-rolled (HR) flat products, which account for the lion's share of total demand, is expected to grow slightly thanks to rising demand for automobiles. However, demand for coated steel will remain stagnant under the influence of sluggish demand for home appliances.

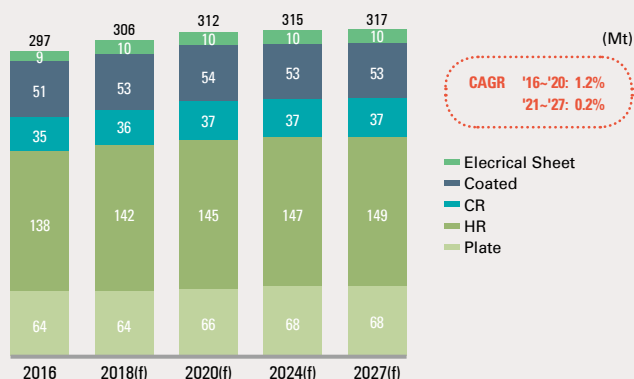
- Despite slowing demand in the construction sector, demand for plates is expected to maintain an upward trend after 2020 following a recovery in the shipbuilding market.
- Demand for cold-rolled (CR) flat products will witness meager growth due to low demand in both construction and home appliances.

Flat Product Demand by End-Use



Source: WSD, POSRI

Flat Product Demand Outlook



Source: POSRI Note : All grades of finished products

02 KOREA

Flat product demand will remain sluggish until 2020 since the country has the largest share of shipbuilding within total flat product demand among all East Asian countries. However, it is expected to grow at a CAGR of 1% after 2020.

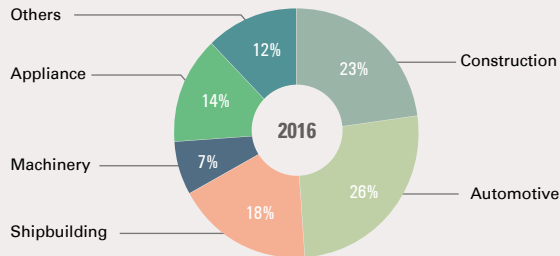
- In 2016, the automobile, construction, and shipbuilding sectors respectively accounted for 26%, 23%, and 18% of flat product demand. Korea's share of shipbuilding within total demand is the highest level in East Asia.
- In Korea's saturated domestic market, demand for automobiles is expected to grow at a minimal CAGR of 0.7%, while that for construction will grow at a CAGR of 2%.
- Demand for shipbuilding is expected to recover at a CAGR

of above 4% after 2020 when shipbuilding deliveries are expected to pick up.

By product, demand for plates and HR flat product is projected to grow moderately due to increasing demand in the construction and shipbuilding sectors. However, demand for CR and coated steel is expected to expand slightly.

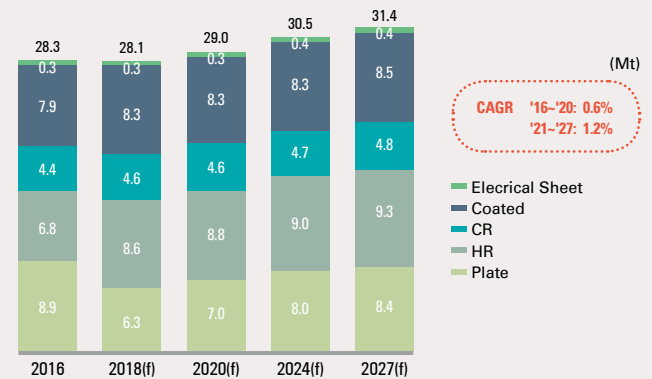
- Demand for plates is anticipated to recover to the level of 8Mt per year after 2024, while that for HR is expected to reach the level of 9 Mt per year.
- Demand for CR and coated steel is projected to weaken due to limited growth in demand for automobiles and a decline in demand for home appliances.

Flat Product Demand by End-Use



Source: KOSA, POSRI

Flat Product Demand Outlook



Source: POSRI Note : All grades of finished products

03 JAPAN

Flat product demand is expected to grow slightly at a CAGR of 0.6% over the next decade due to stagnation in the automotive and home appliance industries and only weak recovery in the shipbuilding industry.

- In 2016, the automobile sector accounted for the majority of flat product demand at 43%, while demand for construction stood at 17% and shipbuilding made up 14%.

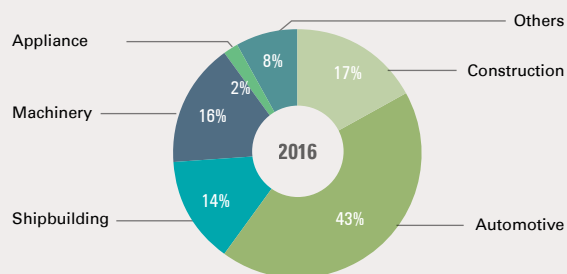
In Japan's saturated domestic market, demand for automotive flat products is expected to stagnate after 2020, while that for home appliances is expected to decline at a CAGR of 2.5%.

By 2027, Japan's demand for shipbuilding, which after Korea makes up the second-largest proportion of domestic demand in East Asia, is expected to recover to the 2016 level.

By product, demand for most types is expected to grow at a meager CAGR of above 0%, but plate is the only type of products expected to recover after 2020.

- Demand for plates is projected to grow at a CAGR of 1.7%

Flat Product Demand by End-Use

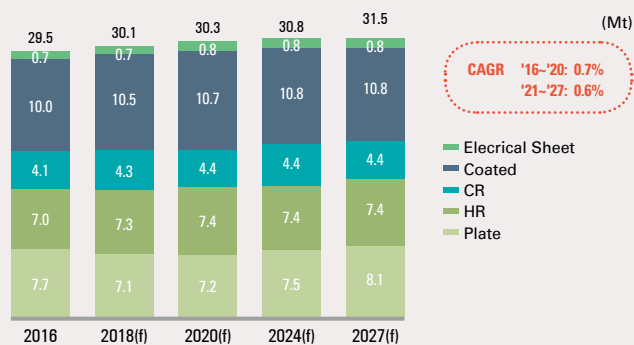


Source: JISF

after 2020 and recover to a level of 8 Mt per year by 2027 thanks to a modest recovery in the shipbuilding market.

- Demand for HR, CR and coated steel are all expected to stagnate after 2020.

Flat Product Demand Outlook



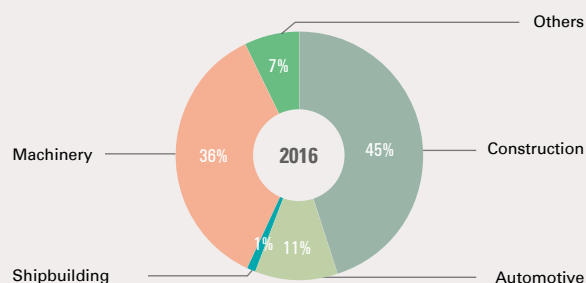
Source: POSRI Note: Ordinary grades of finished products

04 INDIA

Flat product demand will continue to grow robustly at a CAGR of approximately 6% by 2027, thanks to high growth in major steel-consuming industries, including automobiles and construction.

- Construction accounted for the largest share of flat product demand with 45% in 2016, while machinery provided 36%

Flat Product Demand by End-Use

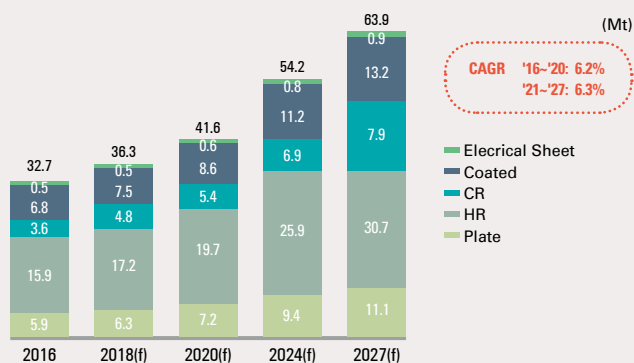


Source: worldsteel, POSRI

and automobiles contributed 11%.

- Flat product demand for automobiles is expected to grow at a CAGR of 6.3% to reach 7 Mt by 2027 thanks to high growth in domestic automotive production based on rising investment by global automakers and accelerating motorization.

Flat Product Demand Outlook



Source: POSRI Note: Carbon grades of finished products

- Demand for construction is projected to increase at a CAGR of 6.4%, bolstered by a continuous increase in infrastructure investment and rapid urbanization.

By product, demand for all types is expected to grow strongly at a CAGR of above 6%; therefore total flat product demand is expected to surpass 60 Mt by 2027.

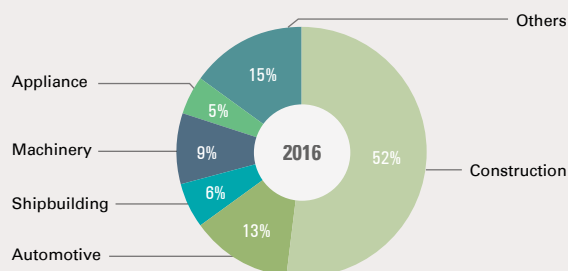
05 ASEAN-5

Flat product demand is expected to increase at a CAGR of 5.2% to reach 67 Mt by 2027 thanks to robust growth in construction investment and rapid expansion of the automotive and home appliance markets.

- In 2016, construction accounted for nearly half of demand, while automobiles contributed a relatively high share of 13%.
- Flat product demand for automobiles is projected to grow at a CAGR of 4.0% to reach 7 Mt by 2024 given the active investments by global automakers.
- Demand for home appliances is projected to exhibit the highest growth rate at 6% and reach 4 Mt by 2027.

By country, Vietnam is anticipated to achieve the highest CAGR of flat product demand by surpassing 6%; Indonesia, Malaysia, Thailand, and the Philippines are expected to enjoy a robust CAGR above 4%.

Flat Product Demand by End-Use



Source: SEAISI, POSRI

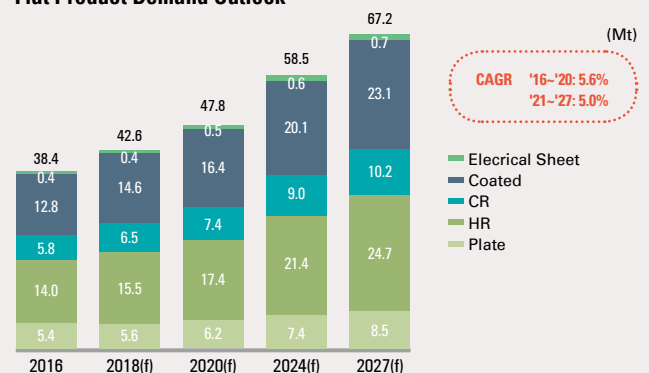
- Demand for HR flat products, which accounts for the largest share of total flat product demand, is projected to reach 30 Mt annually by 2027 based on rising demand in construction and machinery.
- Demand for coated steel is expected to surpass 10 Mt by 2024, backed by high growth in demand for automobiles.

- Vietnam: Drawing on high growth in demand for automobiles and home appliances, flat product demand is expected to reach approximately 27 Mt by 2027.
- Thailand: While demand for construction is expected to grow at a CAGR of 6%, that for automobiles and home appliances is expected to increase at a CAGR of only 2%.
- Indonesia: With sluggish demand for shipbuilding and robust demand in automobiles, construction, and machinery, demand is expected to reach 10 Mt by 2027.

By product, demand for all types is expected to mark a robust CAGR of 4-5%. In particular, demand for coated steel will show the highest growth rate thanks to the expanding automotive and home appliance industries.

- Demand for HR and coated steel is anticipated to surpass 20 Mt by 2024, while that for CR flat products is expected to exceed 10 Mt by 2027.

Flat Product Demand Outlook



Source: POSRI Note: Carbon grades of finished products