
INDEPENDENT MARKET RESEARCH SLEWING RING MARKET AND CONSTRUCTION AND INDUSTRIAL MACHINERIES AND OTHER PARTS MARKET STUDY

Prepared for

Frost & Sullivan

June 2023



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4 Competitive Landscape of China's Slewing Ring Market

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Scope

- The project scope is defined as follows:

Research period

- Historical year: 2017-2021
- Base year: 2022
- Forecast year: 2023E-2027E

Geographic scope

- Global
- The PRC
- the Southeast Asia

Industry scope

- Slewing Ring
- Construction and Industrial Machineries and Other Parts

Limitations

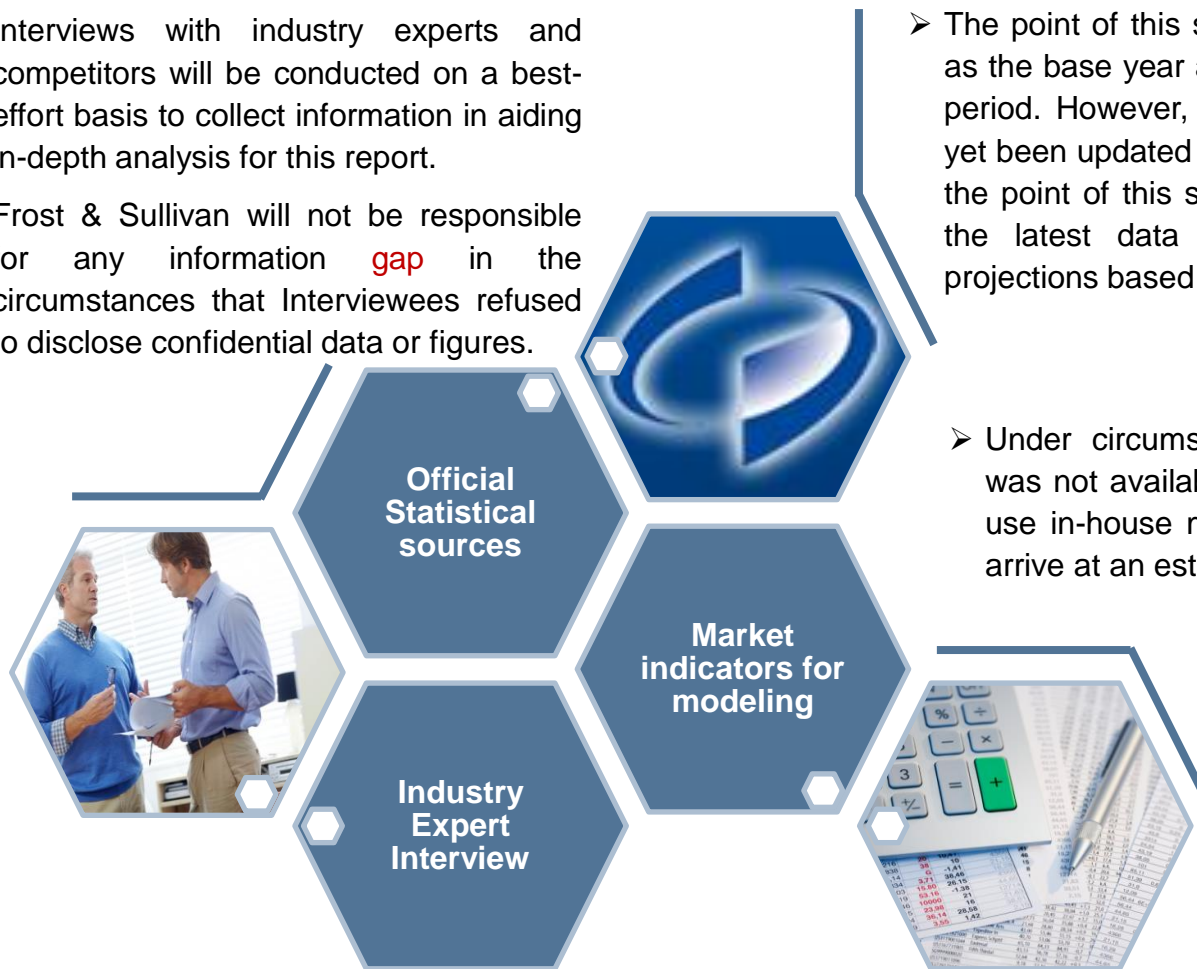
■ Source of Information

- Interviews with industry experts and competitors will be conducted on a best-effort basis to collect information in aiding in-depth analysis for this report.
- Frost & Sullivan will not be responsible for any information **gap** in the circumstances that Interviewees refused to disclose confidential data or figures.

- The point of this study is set in 2023. It took 2022 as the base year and 2023 to 2027 as the forecast period. However, in the case where data has not yet been updated or published on public sources at the point of this study, Frost & Sullivan would use the latest data available or make preliminary projections based on historical trends.

- Under circumstances where information was not available, Frost & Sullivan would use in-house modeling and simulation to arrive at an estimate.

- Sources of information are stated at the bottom on each page for reference.



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2 **Macro Economy Overview**

3 Global Slewing Ring Market Overview

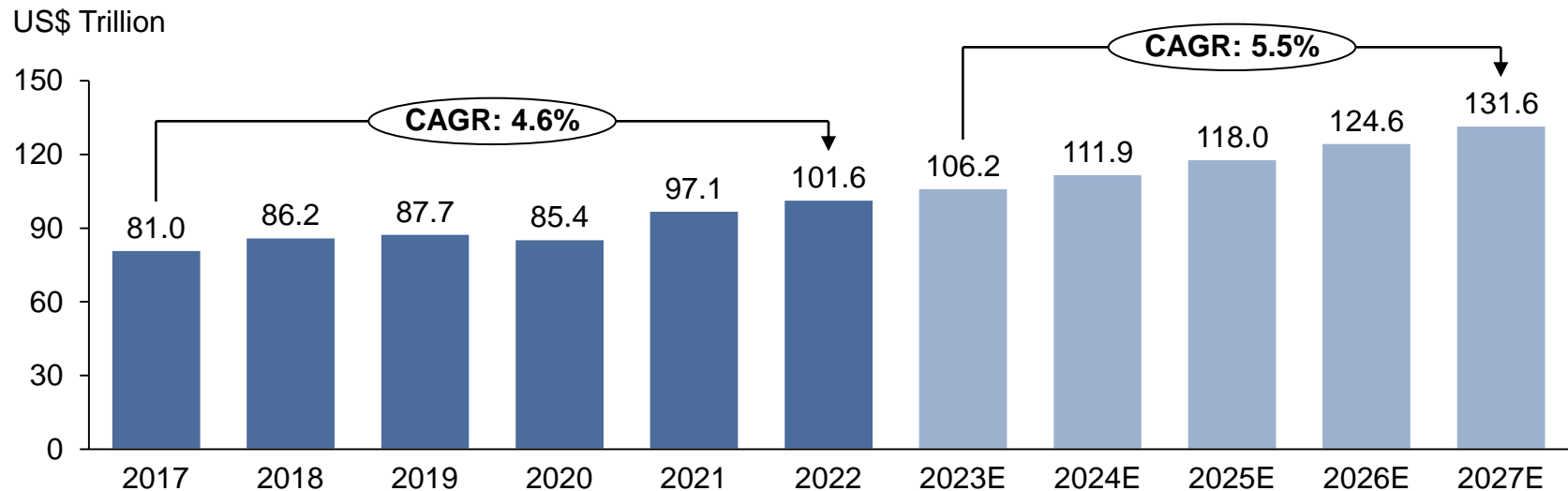
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Global Nominal GDP Growth

Nominal GDP (Global), 2017 – 2027E

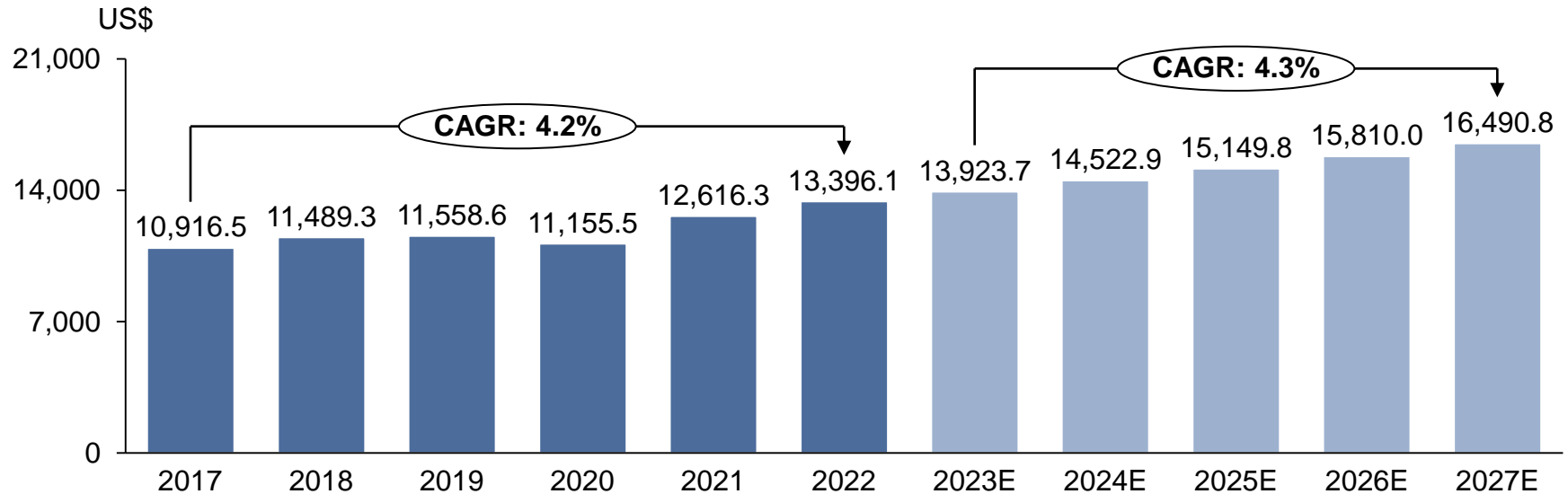


- Gross domestic product, also known as GDP, is an important indicator of the economy and developmental status of the world. From 2017 to 2022, a steady increase in global GDP was observed with a CAGR of 4.6%. There was a slight drop in the global GDP in 2020 due to the outbreak of COVID-19, which had affected normal economic activities around the world, yet rapid recovery of the pandemic led to a rise in global GDP in 2021, which marked a 13.7% increase in Global GDP from 2020 to 2021.
- In the next five years, continuous rise in global GDP is expected due to more active post-pandemic economic activities. The world GDP is expected to increase from USD106.2 trillion in 2023 to USD131.6 trillion in 2027, representing a CAGR of 5.5% during the forecasted period.

Source: IMF

Global Per Capita Nominal GDP Growth

Per Capita Nominal GDP (Global), 2017 – 2027E

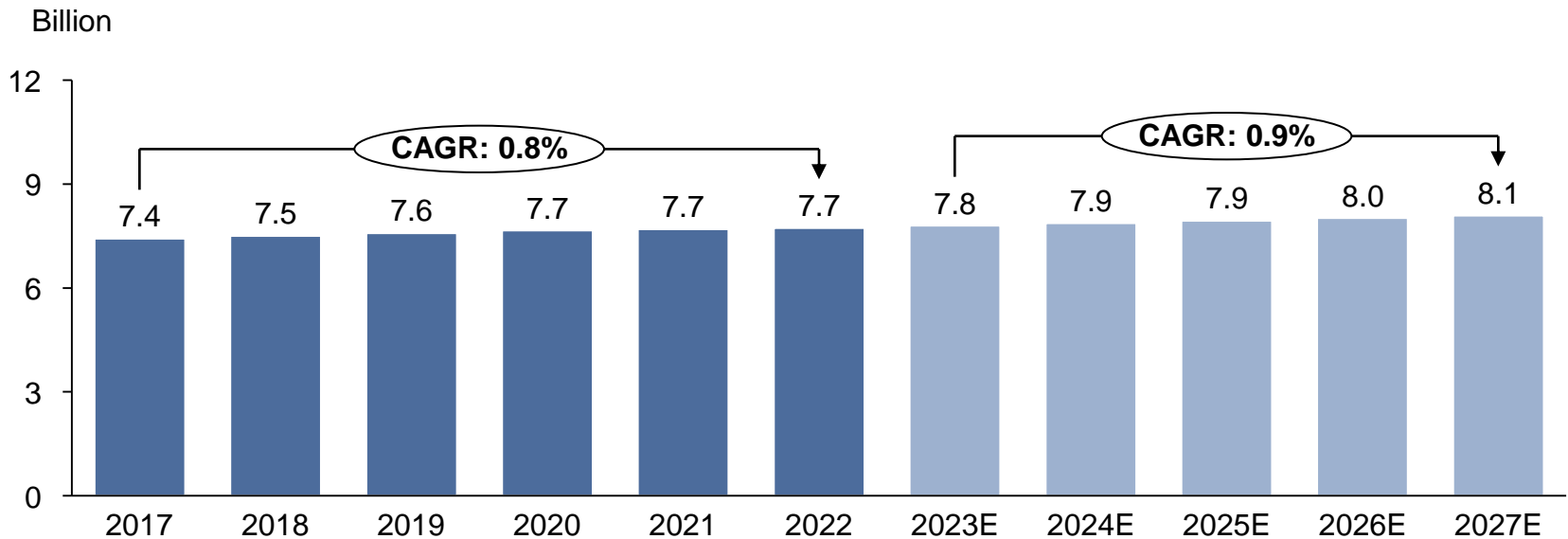


- As total population globally has remained and is expected to remain stable in the future, the growth of global per capita nominal GDP is in line with the growing global economy. The global per capita nominal GDP has grown moderately over the past and is expected to maintain the solid growth. For 2022, the global per capita nominal GDP reached US\$13,396.1.
- In the future, with the sound growth of the macro economy and the recovery from the outbreak of the COVID-19, the global per capita nominal GDP is also likely to maintain a steady growth. According to the International Monetary Fund (IMF), the global per capita nominal GDP is predicted to reach US\$16,490.8 in 2027, growing at a CAGR of 4.3% from 2023.

Source: IMF

Global Population Growth

Population (Global), 2017 – 2027E

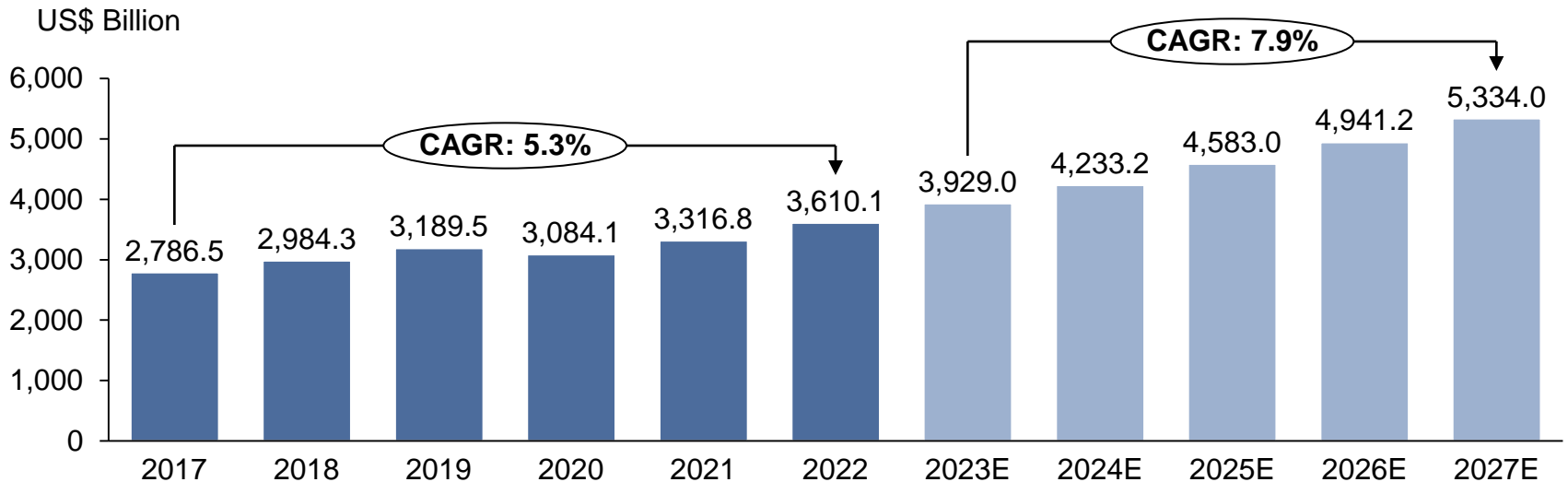


- The total population of the world has been increasing due to medical advancement as well as rising birth rate in certain regions around the world. The global population increased from 7.4 billion in 2017 to 7.7 billion in 2022, representing a CAGR of 0.8%.
- Going forward, the population growth is expected to continue at a CAGR of 0.9% during the forecasted period, and the global population size is anticipated to reach 8.1 billion by 2027.

Source: IMF

the Southeast Asia's Nominal GDP Growth

Nominal GDP (the Southeast Asia), 2017 – 2027E

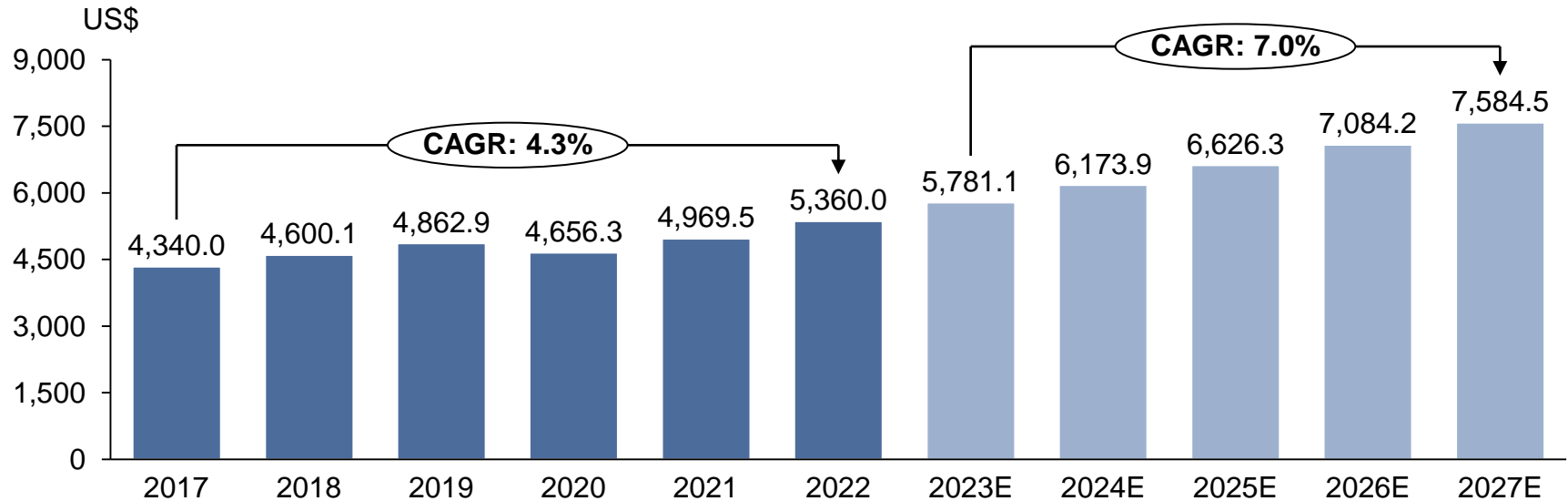


- According to IMF, the nominal GDP in the Southeast Asia has increased from approximately US\$2,786.5 billion to US\$3,610.1 billion from 2017 to 2022, representing a CAGR of 5.3%. The nominal GDP in the Southeast Asia has faced pressure in 2020 due to the outbreak of COVID-19 pandemic that has walloped economic performances. Travel restrictions, logistic and transportation delays and social distancing practices are the major factors that dampened the nominal GDP in the Southeast Asia.
- The expected nominal GDP in the Southeast Asia between 2023 and 2027 is to increase at a CAGR of 7.9%, reaching to approximately US\$5,334.0 billion by 2027. It is expected that the economy will recover in the next years with the alleviation of the COVID-19 pandemic.

Source: IMF

The Southeast Asia's Per Capita Nominal GDP Growth

Per Capita Nominal GDP (the Southeast Asia), 2017 – 2027E

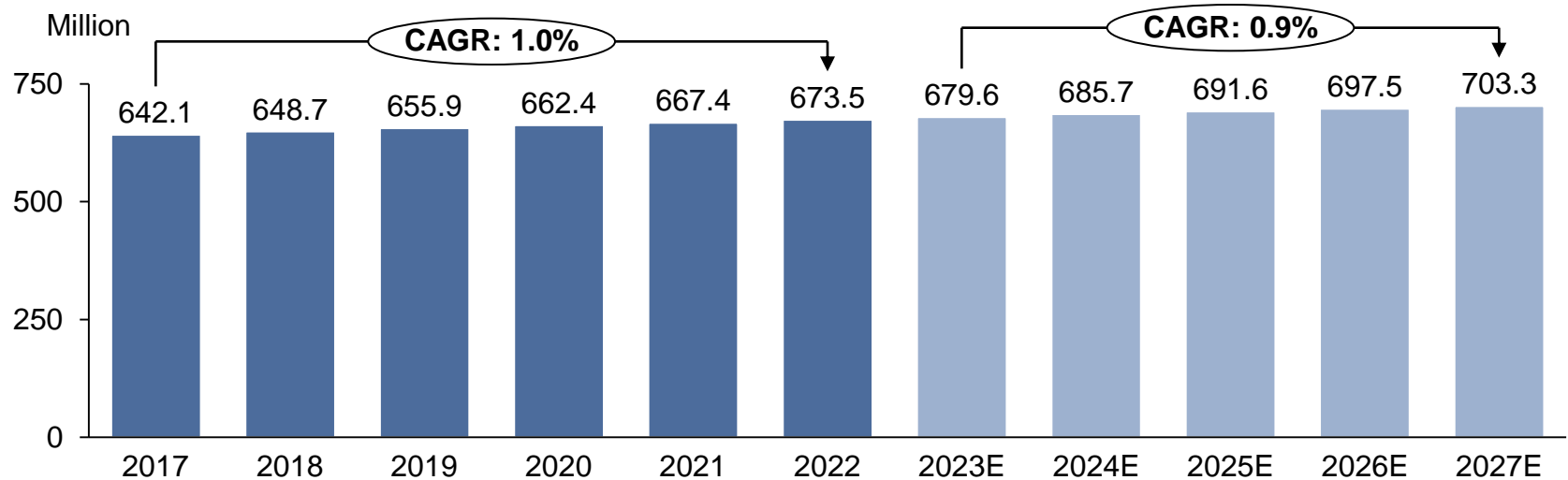


- According to IMF, the nominal GDP per capita in the Southeast Asia has increased from approximately US\$4,340.0 to US\$5,360.0 from 2017 to 2022, representing a CAGR of 4.3%. The nominal GDP per capita in the Southeast Asia has decreased by 5.7% in 2020 because of the disruption to economic activities due to the COVID-19 pandemic.
- It is expected the nominal GDP per capita will recover at a CAGR of 7.0% from 2023 to 2027 onwards and reach US\$7,584.5 by 2027 given the alleviation of the outbreak of COVID-19 and commencement of the COVID-19 vaccination program since 2021.

Source: IMF

The Southeast Asia's Per Capita Nominal GDP Growth

Population (the Southeast Asia), 2017 – 2027E



- According to IMF, the population growth in the Southeast Asia remained slow from approximately 642.1 million in 2017 to approximately 673.5 million in 2022, representing a CAGR of approximately 1.0%. The population growth is expected to reach approximately 703.3 million by the end of 2027, representing a CAGR of 0.9% from 2023 to 2027.

Source: IMF

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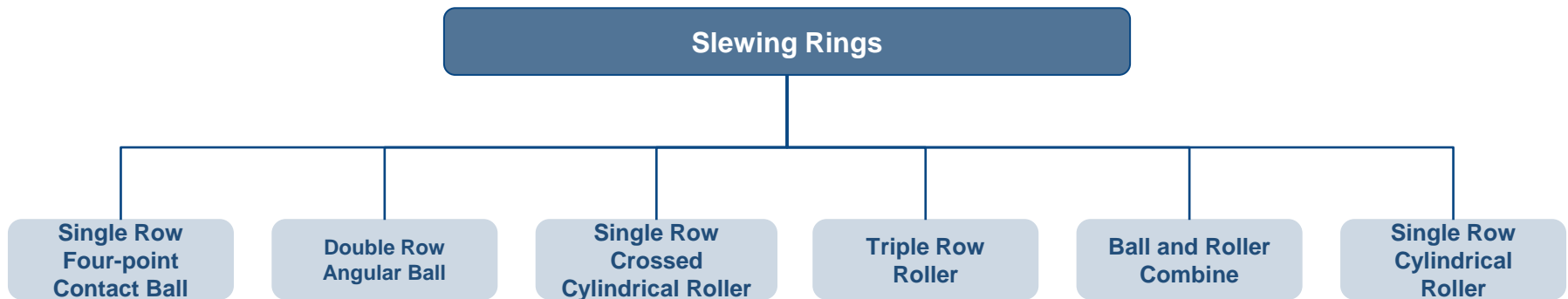
Overview of Slewing Ring Market

Definition of Slewing Ring Market



- A slewing ring is a necessary transmission part for some large-size machineries and equipment, which can ensure the relative rotational motion between objects, as well as bearing the axial force, radial force and tilting moment simultaneously. Generally, it is a rotational rolling-element bearing that typically supports a heavy but slow-turning or slow-oscillating load.
- A slewing ring is usually made with gear teeth integrated with the inner or outer race. Compared to other rolling-element bearings, slewing rings are generally made in length of diameters of a meter or more.
- The rotational motion of equipment is supported by several components such as a worm, a slewing ring, a housing amusement park rides or equipment, a motor, etc. Slewing rings are mainly applied in construction machinery equipment, wind turbines, military industry, robotics, etc.

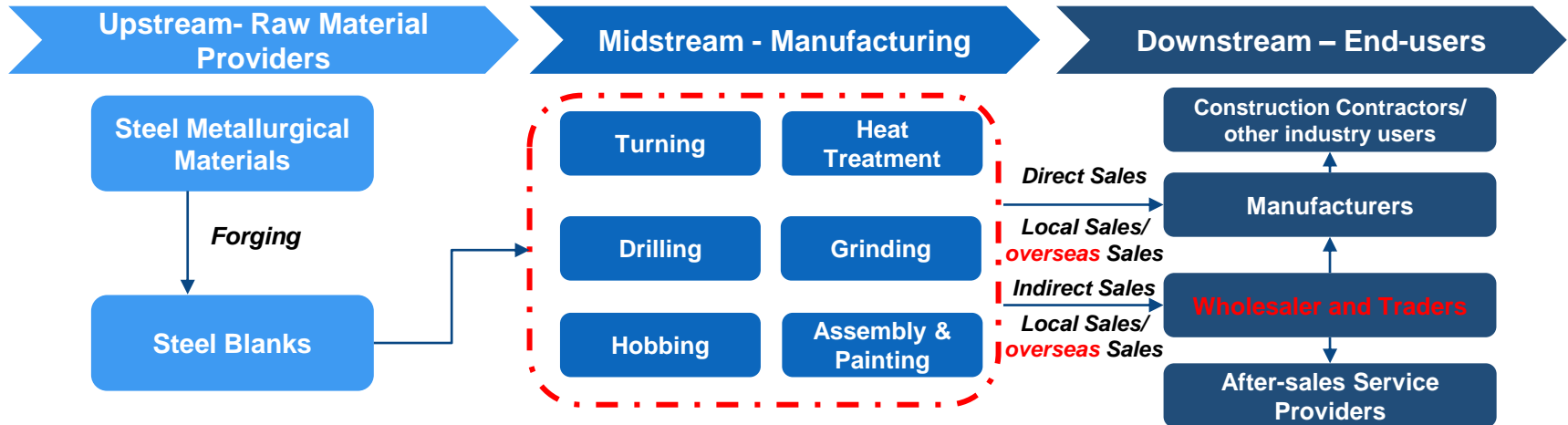
Classification of Slewing Ring



Source: Frost & Sullivan

Industry Value Chain of Slewing Ring Market

Industry Value Chain of Slewing Ring Market

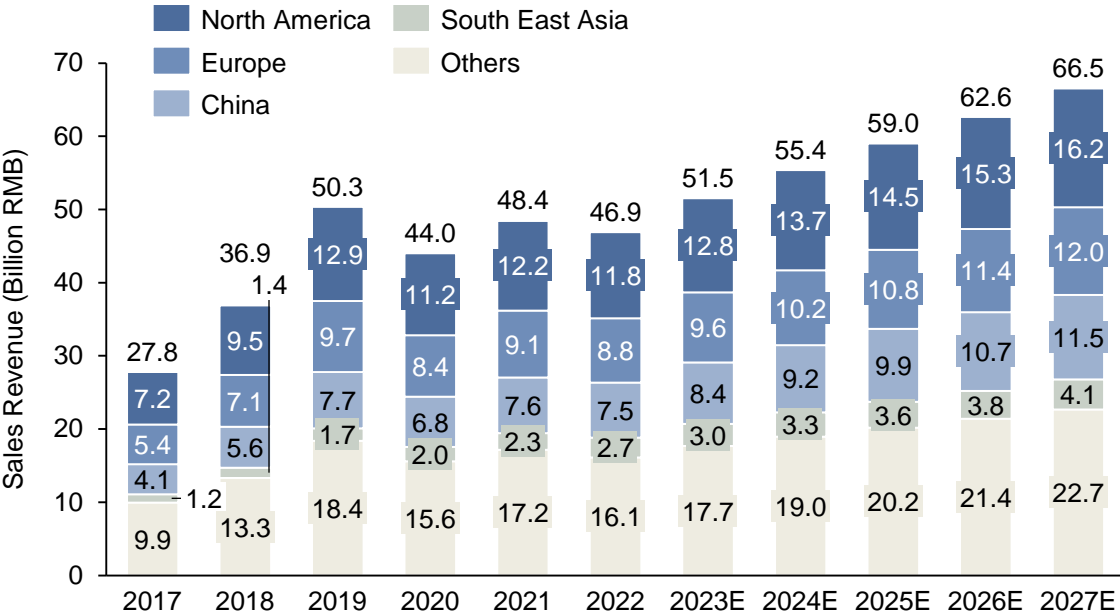


- As the direct manufacturing material of slewing rings, steel is usually forged from steel metallurgical materials such as iron ore and manganese ore.
- The manufacturing process of slewing rings generally contains turning, heat treatment, drilling, grinding, hobbing, assembly and painting. Detailed processing technologies are also involved in different procedures. For instance, turning includes rough turning and finish turning whilst quenching and tempering composes the heat treatment process. Different tests have to be conducted when all parts are assembled to ensure the product quality.
- After manufacturing slewing rings, manufacturers can either sell products to end-users directly, or sell products to distributors engaged in wholesale trading, retailing and distribution, which will resell the products to end-users with or without after-sales services. It is common for end users, especially overseas users to purchase through wholesalers and traders.
- Manufacturers are the major end-users of slewing rings. Other end-users are mainly those companies providing after-sales services such as equipment repairing for construction machineries and equipment. Slewing ring manufacturers usually manufacture slewing rings on ODM basis to distributors and OEM basis to manufacturers. Slewing rings are not only the key components for excavators and cranes, but widely applied in other construction equipment, machineries equipment, wind turbines, military industry, robots, etc. The ultimate end users of machinery that adopts slewing rings and other components are construction contractors and other industry users such as wind turbine service providers.
- Our company is a midstream slewing ring manufacturer that manufactures slewing rings for sale to wholesalers, traders, construction contractors and manufacturers in both domestic and overseas markets.

Source: Frost & Sullivan

Global Sales Value of Slewing Rings Consumption Breakdown by Region

Sales Value of Slewing Rings Consumption Breakdown by Region (World), 2017-2027E



Region	CAGR 2017-2022	CAGR 2023E-2027E
Global	11.0%	6.6%
North America	10.3%	6.0%
Europe	10.2%	5.8%
China	12.9%	8.1%
South East Asia	18.3%	8.2%
Others	10.2%	6.4%

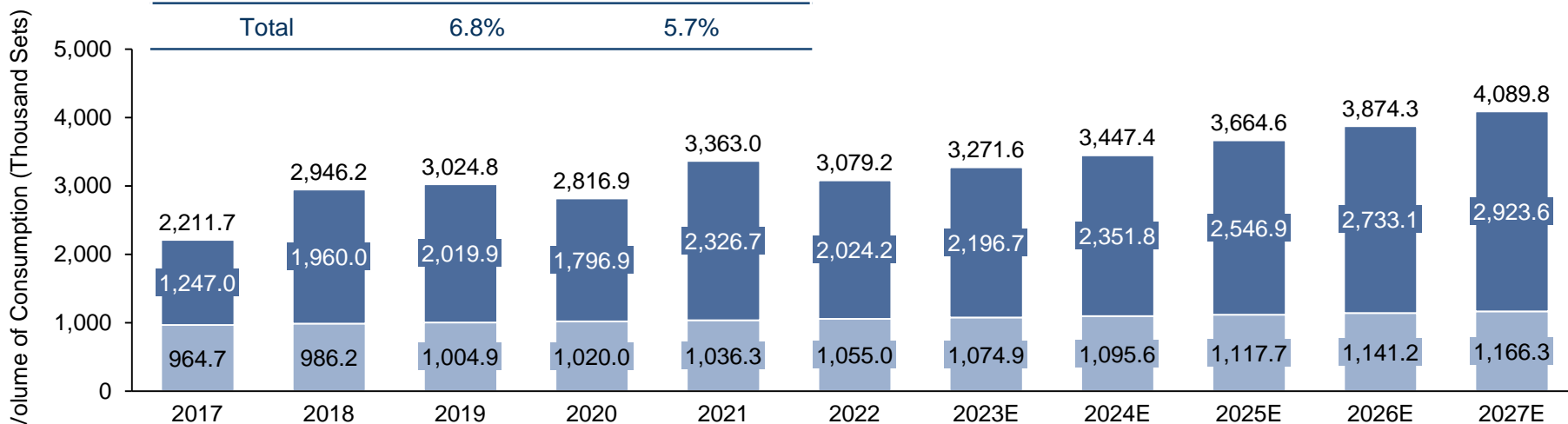
- In 2022, North America is world's largest slewing ring market with a total market size of RMB11.8 billion, mainly due to the highly developed downstream industries including automotive, industrial machinery, robots, mining equipment, military, etc. Europe followed North America and ranked at the second place in 2022.
- China shows a great potential in the market. The developing real estate and industrial markets in China is likely to further drive the slewing ring industry in China. In 2022, the market in China consumed slewing rings of a total value RMB7.5 billion, accounting for approximately 16.1% of the global market.
- The manufacturing industry and the supply chain is developing and growing in terms of scalability in South East Asia and some previous production sites in countries such as the PRC and Japan have relocated to South East Asia countries considering the lower cost of operating expense and advancement in infrastructure, technology and government support. Overall, the sales value of slewing rings consumption has grown from RMB1.0 billion to RMB2.3 billion during 2017 to 2022, representing a CAGR of approximately 18.6%.
- As slewing rings are necessary transmission parts for large-size machineries and equipment in construction equipment industry, the slewing ring market is highly correlated with the construction equipment industry. Generally, the construction equipment industry is likely to experience a recession period roughly every eight years, and displays periodic characteristics. Going forward, the sales value of slewing rings consumption is expected to attain RMB66.5 billion globally in 2027, representing a CAGR of approximately 6.6% during 2023 to 2027.

Source: Frost & Sullivan

Volume of Slewing Rings Consumption Breakdown by New Machinery and Replacement

Volume of Slewing Rings Consumption Breakdown by New Machinery and Replacement (World), 2017-2027E

	CAGR 2017-2022	CAGR 2023E-2027E
New Machinery	10.2%	7.4%
Replacement	1.8%	2.1%
Total	6.8%	5.7%

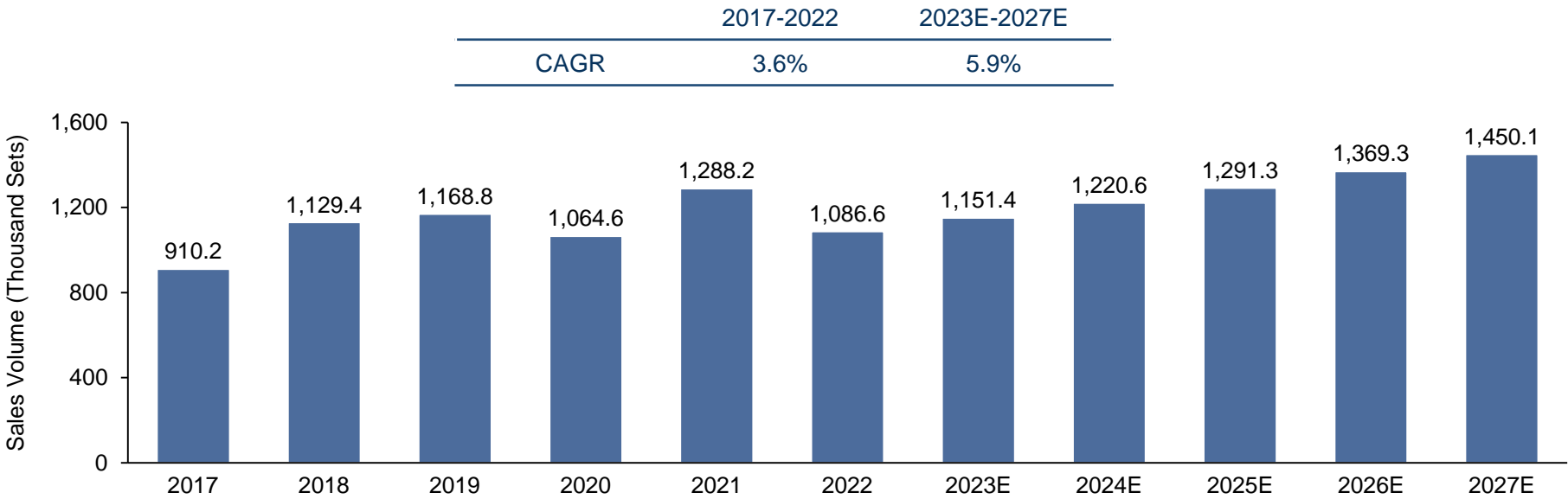


- Slewing rings sold under ODM basis are either for installation in new machineries, or for replacement in old equipment. The volume of slewing rings consumption for the installation in new machineries has reached 3,079.2 thousand sets in 2022, growing at a CAGR of 10.2% during 2017 to 2022, which was mainly driven by the strong demand from construction equipment industry since 2017.
- Similar to the value of slewing rings consumption, the volume of slewing rings consumption is also expected to be affected by the periodic characteristics of construction equipment industry. Going forward, the volume of slewing rings consumption is expected to attain 4,089.8 thousand sets in 2027, representing a CAGR of approximately 5.7% during 2023 to 2027.

Source: Frost & Sullivan

Global Sales Volume of Construction Equipment

Global Sales Volume of Construction Equipment (World), 2017-2027E

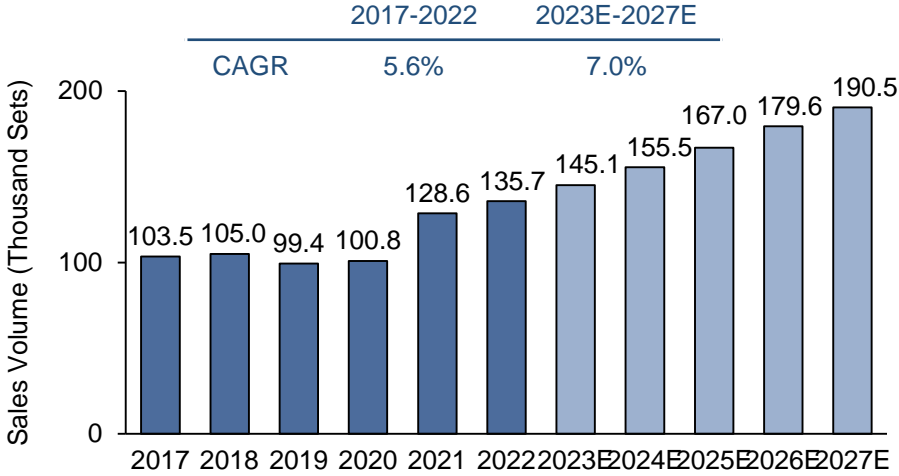


• The global sales volume of construction equipment registered an growth from 910.2 thousand units in 2017 to 1,086.6 thousand unit in 2022, at a CAGR of 3.6%. The drop in 2020 was due to the COVID-19 outbreak and the slowdown of construction activities. The global sales volume of construction equipment is expected to expand at a CAGR of 5.9% from 2023 to 2027. The worldwide rise in construction activity is anticipated to drive the demand for these equipment. Favorable government initiatives such as stimulus packages and lower housing rates that inclined consumers for new house purchases are key factors expected to drive market growth over the forecast period.

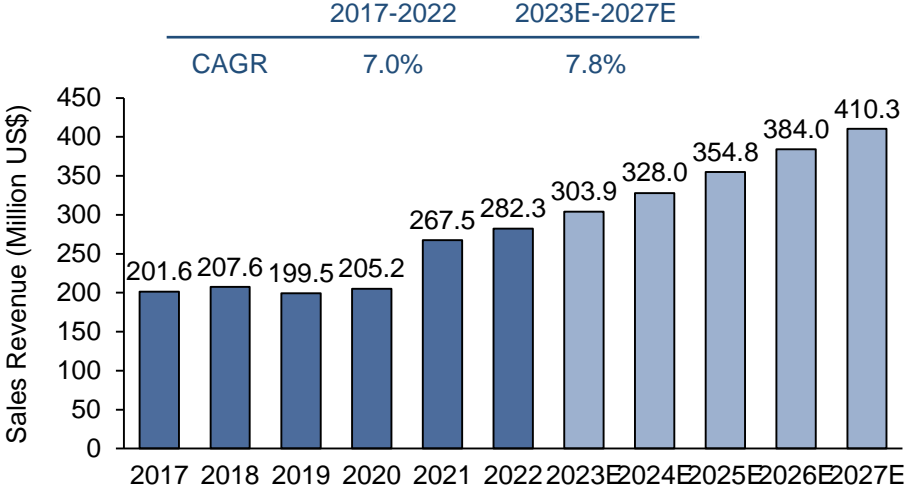
Source: Frost & Sullivan

Market Size of Slewing Ring Market in the Southeast Asia

Total Sales Volume of Slewing Rings (the Southeast Asia), 2017-2027E



Total Sales Revenue of Slewing Rings (the Southeast Asia), 2017-2027E



*Note: Total sales volume = domestic sales volume + sales volume of selling slewing rings to overseas market
 Total sales revenue = domestic sales revenue + sales value of selling slewing rings to overseas market*

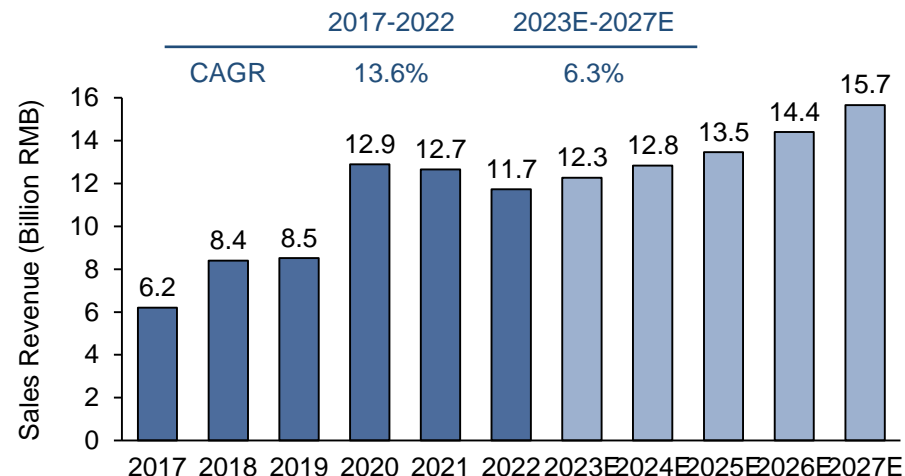
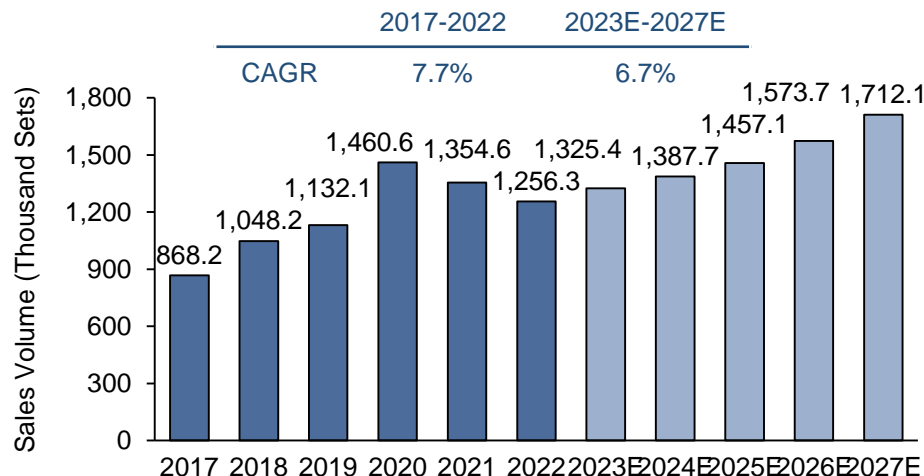
- In recent years, multinational slewing rings manufacturing companies have started to set up production site in the Southeast Asia owing to the continuously improving infrastructure, affordable labour cost, encouraging government policies as well as industry agglomeration in the area where value chain across the upstream raw material providers, midstream manufacturer and downstream customers are setting up branches in the area. Investment from sizeable slewing ring companies is dedicated to improve its local manufacturing capabilities, boost the supply chain network and accelerate regionalisation to accommodate to the local supply chain. Accordingly, the sales volume of slewing rings in the Southeast Asia has increased from 103.5 thousand sets to 135.7 thousand sets, representing a CAGR of approximately 5.6% during 2017 to 2022, and is expected to attain a CAGR of approximately 7.0% during 2023 to 2027. The sales revenue of slewing rings in the Southeast Asia on the other hand has increased from US\$201.6 million to US\$282.3 million during 2017 to 2022, representing a CAGR of approximately 7.0%.

Source: Frost & Sullivan

Market Size of China's Slewing Ring Market (1/3)

Total Sales Volume of Slewing Rings (China), 2017-2027E

Total Sales Revenue of Slewing Rings (China), 2017-2027E



*Note: Total sales volume = domestic sales volume + sales volume of selling slewing rings to overseas market
Total sales revenue = domestic sales revenue + sales value of selling slewing rings to overseas market*

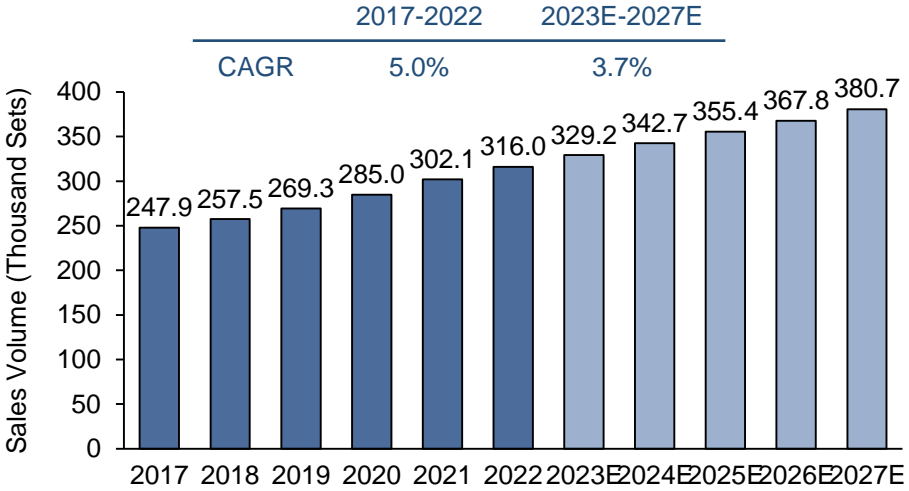
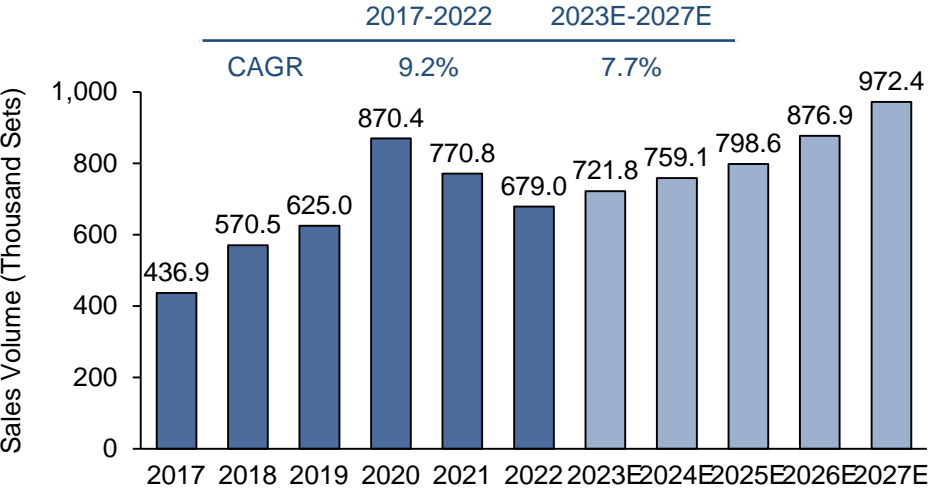
- The total sales volume of slewing rings is highly related to the development of downstream industries, especially the construction equipment industry, machinery equipment industry, wind turbines industry, etc. In particular, slewing ring is applied on heavy **duty** construction machinery such as excavator, road grader, tower crane, road roller and concrete pump truck. Since 2017, owing to the rapidly growing urbanisation rate, infrastructural construction is accelerated while the concept of advanced machinery is expected to propel the development of the excavator market in China. Further, export demand is continuously rising, attributable to the consistent quality of construction machinery manufactured in China. Overall, the robust demand for construction equipment has contributed to the rise of sales volume of slewing rings in China, increasing from 868.2 thousand sets to 1,256.3 thousand sets during 2017 to 2022, representing a CAGR of approximately 7.7%, while it is expected to attain 1,712.1 thousand sets in 2027, representing a CAGR of approximately 6.7% during 2023 to 2027.
- Similarly, sales revenue, which is primarily impacted by the sales volume and composite steel index, is mainly driven by several factors including sustained demand from downstream industries and government policy support such as The Belt and Road Initiative and Made in China 2025. The Belt and Road Initiative is expected to drive the infrastructure construction in relevant countries, which will raise the demand for construction equipment. The sales revenue of slewing rings in China has increased from RMB6.2 billion to RMB11.7 billion during 2017 to 2022, representing a CAGR of approximately 13.6%. The sales revenue of slewing rings in China is expected to grow at a CAGR of approximately 6.3% during 2023 to 2027.

Source: Frost & Sullivan

Market Size of China's Slewing Ring Market (2/3)

Domestic Sales Volume of Slewing Rings for New Machinery (China), 2017-2027E

Domestic Sales Volume of Slewing Rings for Replacement (China), 2017-2027E

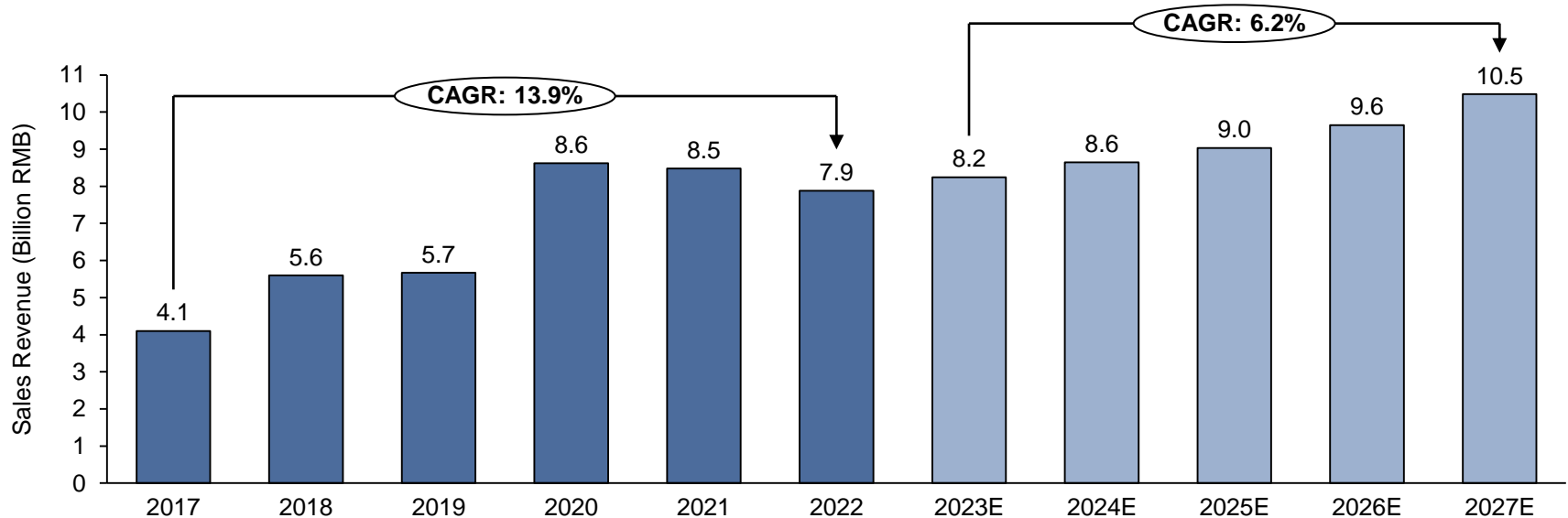


- Along with the booming production volume and sales volume of various construction equipment national wide in China, the domestic sales volume of slewing rings for new machinery in China has increased from 436.9 thousand sets in 2017 to 679.0 thousand sets in 2022, representing a CAGR of approximately 9.2% during 2017 to 2022. Going forward, driven by the increasing sales of excavators and wheel loaders led by the increasing urbanization and the increasing demand from infrastructure projects in tier 2 and tier 3 cities in China, the sales volume of slewing rings for new machinery is expected to attain 972.4 thousand sets in 2027, representing a CAGR of approximately 7.7%.
- The domestic sales volume slewing rings for replacement in China is associated with number of total existing machineries which is subject to the demand for new machinery, as well as the repairment cycle of construction machinery and other machinery. The domestic sales volume of slewing rings for replacement stably grew from approximately 247.9 thousand sets in 2017 to 316.0 thousand sets in 2022, representing a CAGR of approximately 5.0% during the period. The market is forecast to keep the stably growing trend at a CAGR of approximately 3.7%, reaching 380.7 thousand sets in 2027.

Source: Frost & Sullivan

Market Size of China's Slewing Ring Market (3/3)

Domestic Sales Revenue of Slewing Rings (China), 2017-2027E

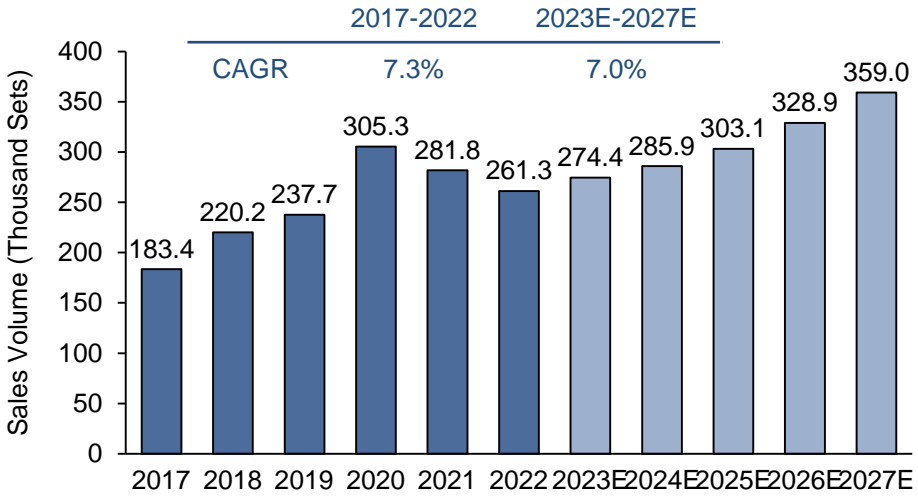


- In PRC, domestic investment in infrastructure and industrial construction, construction machinery, precise machinery and other tools have grown continuously, the slewing rings industry has been propelled accordingly. The National Bearing Industry 14th Five Year Development Plan (“全国轴承行业“十四五”发展规划”) outlined various policy direction in promoting the application of slewing rings in various aspects of rail transportation, aviation, infrastructure, etc., and encouraged the transformation and upgrading of the bearing industry.
- In turn, the domestic sales revenue of slewing rings has increased from RMB4.1 billion to RMB7.9 billion during 2017 to 2022, representing a CAGR of approximately 13.9%, along with the robust demand for construction machinery as well as stable steel price over the period. It is expected to grow further to attain RMB10.5 billion in 2027, representing a CAGR of approximately 6.2% during 2023 to 2027.

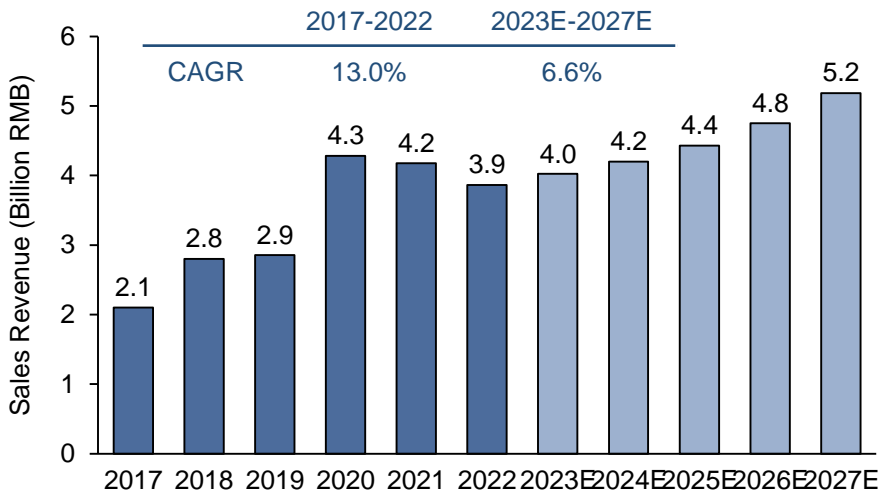
Source: Frost & Sullivan

China's Market of Selling Slewing Rings Overseas

Sales Volume of Selling Slewing Rings to Overseas Market (China), 2017-2027E



Sales Value of Selling Slewing Rings to Overseas Market (China), 2017-2027E



- For global downstream market of slewing rings, the rise in adoption of renewable energy and expansion in the infrastructure sector are driving the market expansion for slewing ring globally, the sales volume of selling slewing rings to overseas market has increased from 183.4 thousand sets to 261.3 thousand sets, representing a CAGR of approximately 7.3%. It is expected to attain 359.0 thousand sets in 2027, representing a CAGR of approximately 7.0%. The sales value of selling slewing rings to overseas market on the other hand, has increased from RMB2.1 billion in 2017 to RMB3.9 billion in 2022, representing a CAGR of approximately 13.0% and is expected to record CAGR of approximately 6.6% during 2023 to 2027.
- There is still a gap between domestic and foreign brands of slewing rings. The lifespan of foreign slewing rings is generally longer than domestic products. Compared with domestic products, slewing rings manufactured in Europe generally have a lower dispersion and a higher quality, while Japanese slewing rings create less noise.

Source: Frost & Sullivan

Market Drivers Analysis

Favourable Government Policies

Catering to the rapid urbanisation process and adoption of new energy in China and the subsequent demand for construction equipment and wind turbine generators, the Chinese Government has promulgated various policies directions in underpinning the slewing ring industry development. In 2021, the China Bearing Industry Association published the National Bearing Industry 14th Five Year Development Plan (“全国轴承行业“十四五”发展规划”) outlined that continuous research and development shall be devoted on applying advanced slewing rings into high-end industries such as aerospace equipment, marine engineering equipment and energy saving and new energy vehicles. The 14th Five-Year Plan for Economic and Social Development and Long-Range Objectives through to the Year 2035 (“十四五规划和2035年远景目标纲要”) remarked the promotion of advanced industrial base, modernisation of the industrial chain and deepen the implementation of intelligent manufacturing and green manufacturing project in the slewing ring industry. Further, the Tariff Adjustment Plan for 2021 (“2021关税调整方案”) in China has rolled out a series of tariffs relieving policies on various types of slewing ring products. In light of the Chinese favourable policy environment, the bearing market including the slewing ring market in China is therefore expected to grow in the future.

Thriving Demand for Construction Equipment

In regards to the construction industry in China, the total sales volume of various machineries such as excavator, bulldozers, graders, tractor scraper have all recorded robust increment during past few years. These machineries are essential during the incidence of infrastructure, traffic and road construction, real estate, and mining industry, while the country is continuously rolling out large-scale infrastructural project to meet the burgeoning population in recent years. In particular, the production volume of excavator in China has increased considerably at a CAGR of approximately 9.5% during 2017 to 2022. Going forward, as outlined in the National Comprehensive Three-Dimensional Transportation Network Planning Outline (“国家综合立体交通网规划纲要”), a modern high-quality comprehensive three-dimensional transportation network shall be built to ensure the citizens are able to reach any urban cluster in two hours any cities in the nation within three hours. In the connection of the thriving construction industry, slewing rings serving as an integral part of construction machinery shall grow along.

Source: Frost & Sullivan Analysis

Market Drivers Analysis

Demand Originated from New Energy Industry

Slewing rings are extensively applied in the wind energy industry, while the number of wind turbines in China has increased steadily at a CAGR of approximately 10.8% during 2016 to 2021. According to the 14th Five-Year Development Plan for Renewable Energy (“十四五” 可再生能源发展规划), the National Energy Administration maps out the concrete adoption plan of wind energy in major areas in China. Wind energy has accounted for approximately 6.6% of the national wide electricity consumption. The installed capacity of wind power in China has increased at a CAGR of approximately 15.5% during 2016 to 2021 and is expected to increase at a CAGR of approximately 17.2% during 2022 to 2026. Under the carbon neutrality target set out by the Chinese government, coupled with the core functionality of slewing rings in connecting the steering of the drive, yaw and pitch systems in wind turbine units, the demand for slewing rings shall be propelled accordingly along with the expedite development of the wind energy industry.

Wider Application Domain

Though slewing rings are mainly applied in the manufacturing of construction equipment, the application of the stuff has been broadening in recent years. Slewing rings have been applied in medical machines, packaging facilities, transporters, water treatment processes, mining equipment and other fields. In particular, industrial automation and application of robotics is thriving in recent years in order to reduce operational cost and enhance production efficiency, while alleviating the impact of costly labour and ageing population. The industrial automation market in China has increased at a CAGR of 3.8% during 2016 to 2021. Slewing rings serve as pivotal parts within industrial robots and machine tools and therefore the demand would be stimulated accordingly. Also, the slewing ring has also filled the unique needs of several government applications including missile systems, antenna and radar positioning, catapults, etc. The increasing range of application of slewing rings is forecast to further drive the market.

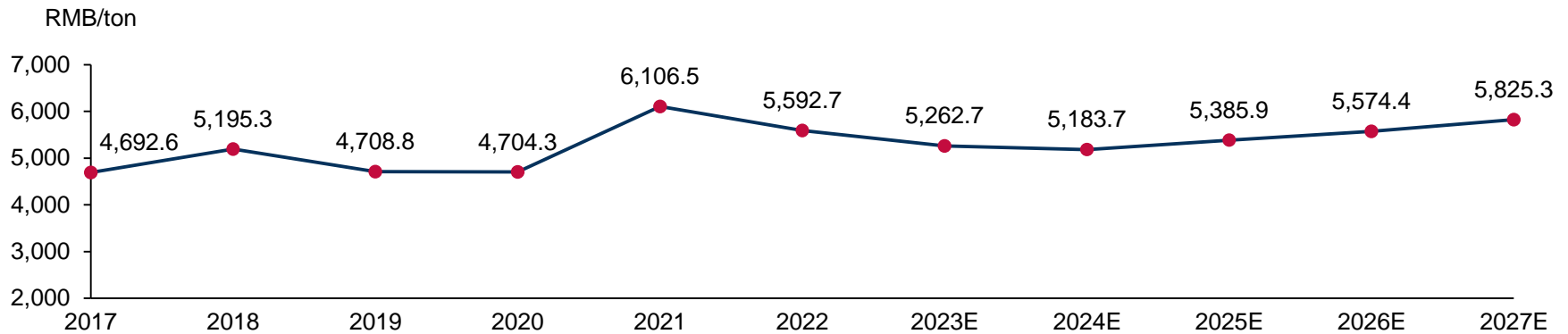
Technology Development

The requirement on the performance of slewing rings has increased due to the wider application especially in high precision fields. As the demand grows, the industry of slewing rings is likely to face an upgrade and development. High end products are likely to be needed in the future.

Source: Frost & Sullivan Analysis

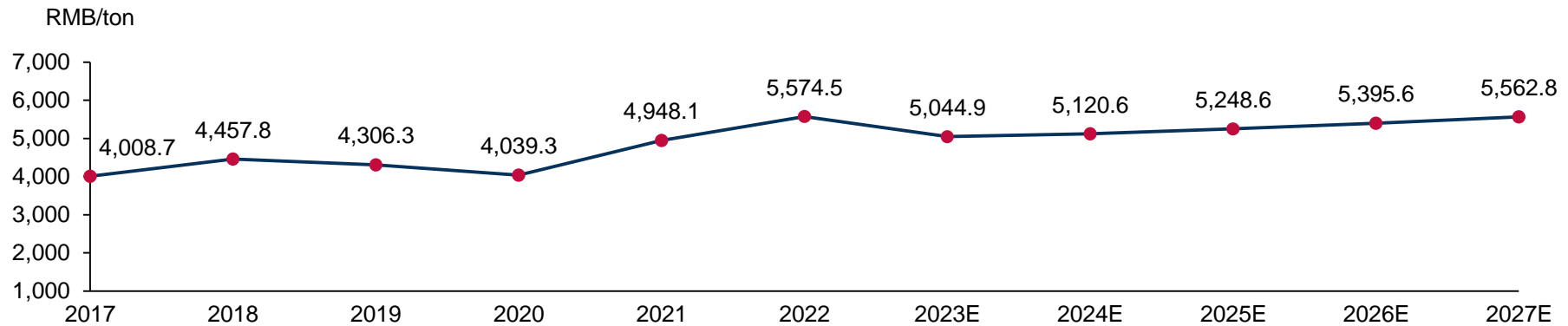
Raw Material Price Analysis

Price Trend of Gear Steel (China), 2017-2027E



Note: The price above is the national average price of all types of gear steel (35/42CrMoΦ50)

Price Trend of Carbon Round Steel (China), 2017-2027E

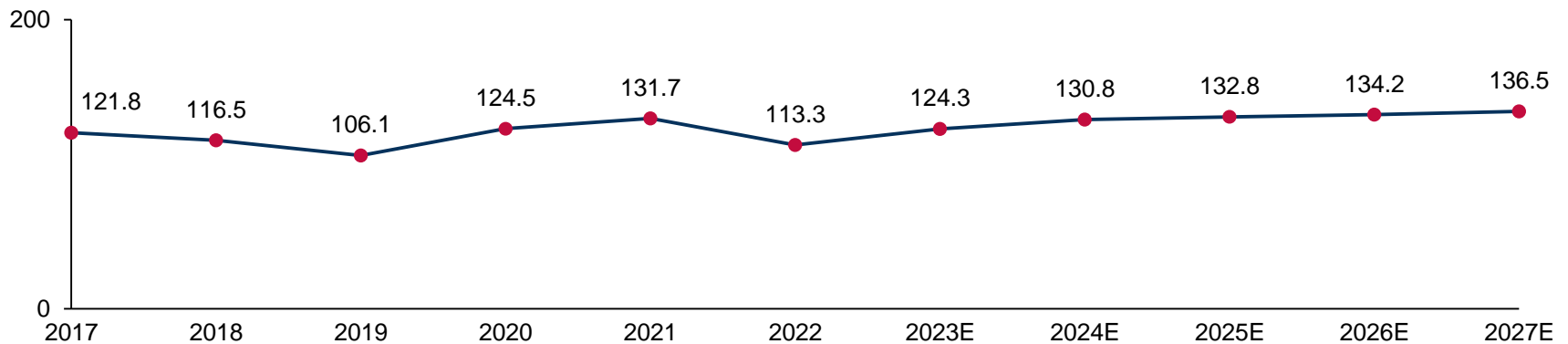


Note: The price above is the national average price of all types of carbon round steel (45# steel in GB, S45C and S48C in JIS)

Source: WIND, China Iron and Steel Industry Association; Frost & Sullivan

Raw Material Price Analysis

Steel Comprehensive Price Index (China), 2017-2027E

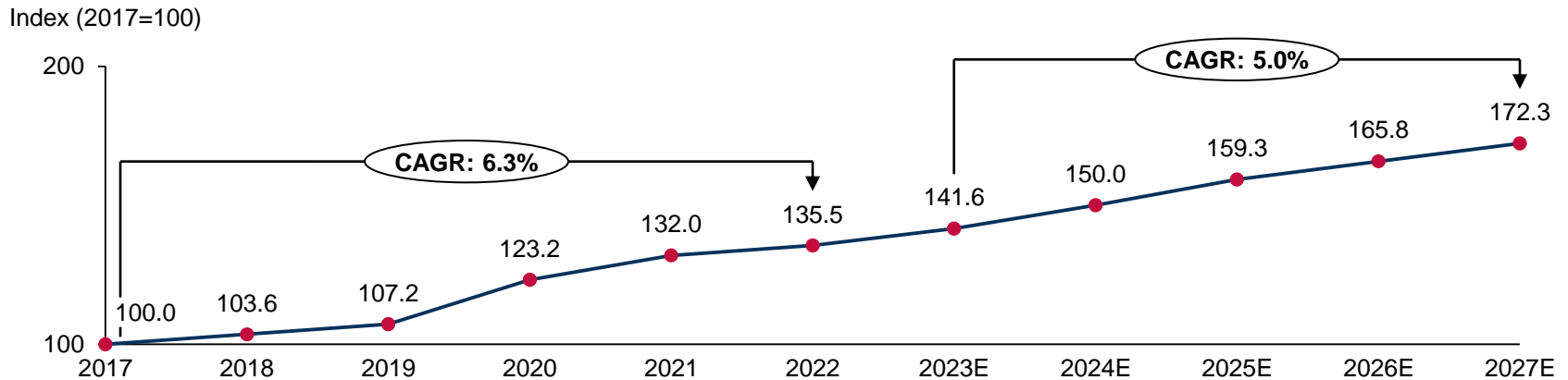


- The steel price is affected by many factors such as macro economy, supply and demand situation, raw material price, international trade, etc. The price trend of gear steel and carbon round steel has risen during 2017 to 2022 and is expected to remain upward trend in short term owing to rising demand. The steel comprehensive price index is expected to attain 136.5 in 2027, showcasing a steady increase over the forecast period.
- Steel made of 50Mn, 42CrMo and S48C are the major raw materials for manufacturing slewing rings. The price trends of major raw materials generally followed the price trend of steel comprehensive price index, which reflects the overall performance of steel price in China. 42CrMo is the material with the highest quality. Most of the steel companies in China are able to provide this kind of steel, hence the supplier option is rather flexible. Leading steel companies including a major supplier of our company during the Track Record Period generally are more reliable in terms of quality. The prices of the three major raw materials are highly correlated with the overall steel price. They are also expected to fluctuate in the future, but remain an upward trend in short term.

Source: WIND, China Iron and Steel Industry Association; Frost & Sullivan

Price Trend of Slewing Rings

Price Trend Index of Slewing Rings (China), 2017-2027E



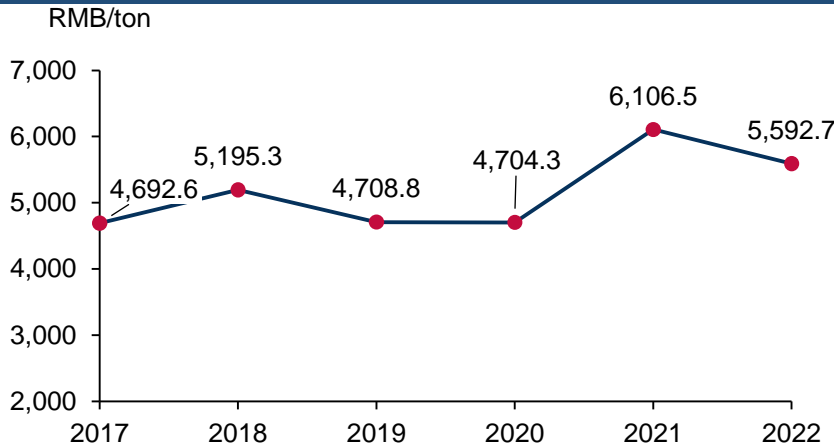
- The price trend of slewing rings is highly associated with the price of raw material including gear steel, carbon round steel and other types of steel. Attributable to the growing demand originated from construction machinery, other equipment and wind turbine, coupled with the continuously rising complexity of slewing ring that elevates the cost in relation to research and development, manufacturing and quality assurance, as well as the rising raw material price of slewing ring including gear steel, carbon round steel and other types of steel, the price trend index of slewing rings has increased from 100.0 to 135.5 during 2017 to 2022, representing a CAGR of approximately 6.3% during the period. Going forward, alongside with the rise in the price of raw material, and constantly growing demand from downstream, the price trend index of slewing rings is expected to attain 172.3 in 2027, growing at CAGR of 5.0% during 2023 to 2027.

Note: The price index is made reference to export unit values of ball or roller bearings (HS code: 8482) originated from the PRC.

Source: Trade Map, Frost & Sullivan

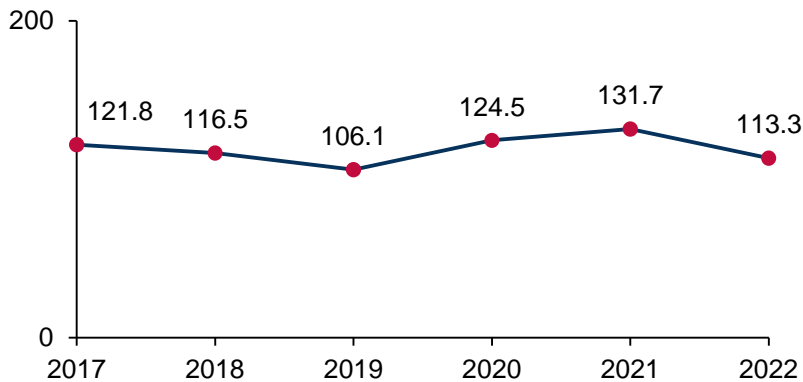
Raw Material Price Analysis

Price Trend of Gear Steel (China), 2017-2022

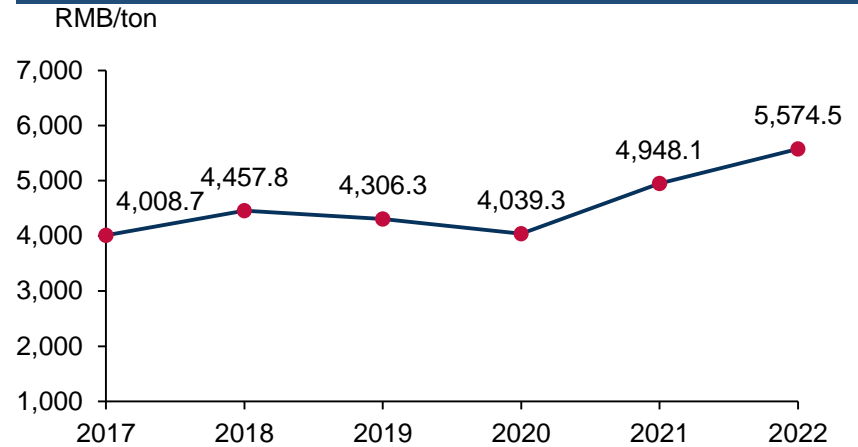


Note: The price above is the national average price of all types of gear steel (35/42CrMoΦ50)

Steel Comprehensive Price Index (China), 2017-2022



Price Trend of Carbon Round Steel (China), 2017-2022



Note: The price above is the national average price of all types of carbon round steel (45# steel in GB, S45C and S48C in JIS).

- The steel price is affected by many factors such as macro economy, supply and demand situation, raw material price, international trade, etc. The price trend of gear steel and carbon round steel has risen during 2017 to 2022 and is expected to remain upward trend in short term owing to rising demand.
- Steel made of 50Mn, 42CrMo and S48C are the major raw materials for manufacturing slewing rings. The price trends of major raw materials generally followed the price trend of steel comprehensive price index, which reflects the overall performance of steel price in China. 42CrMo is the material with the highest quality. Most of the steel companies in China are able to provide this kind of steel, hence the supplier option is rather flexible. Leading steel companies including a major supplier of our company during the Track Record Period generally are more reliable in terms of quality. The prices of the three major raw materials are highly correlated with the overall steel price. They are also expected to fluctuate in the future, but remain an upward trend in short term.

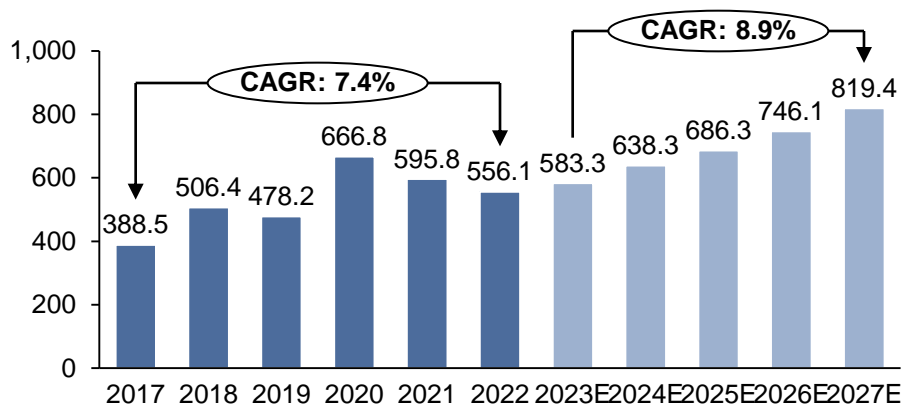
Source: WIND, China Iron and Steel Industry Association; Frost & Sullivan

Major Country Analysis of Selling Slewing Rings Overseas Market (China) (1/4)

Sales Value of Selling Slewing Rings to the U.S., Hong Kong and Singapore from China, 2017-2027E

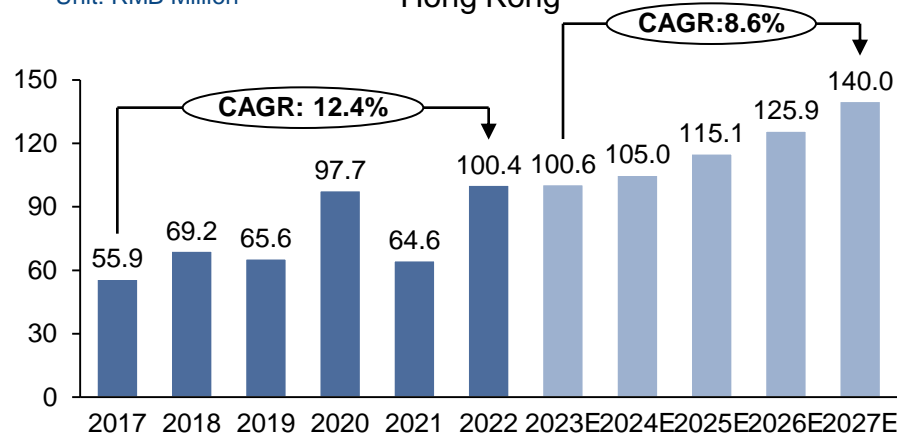
Unit: RMB Million

The U.S.



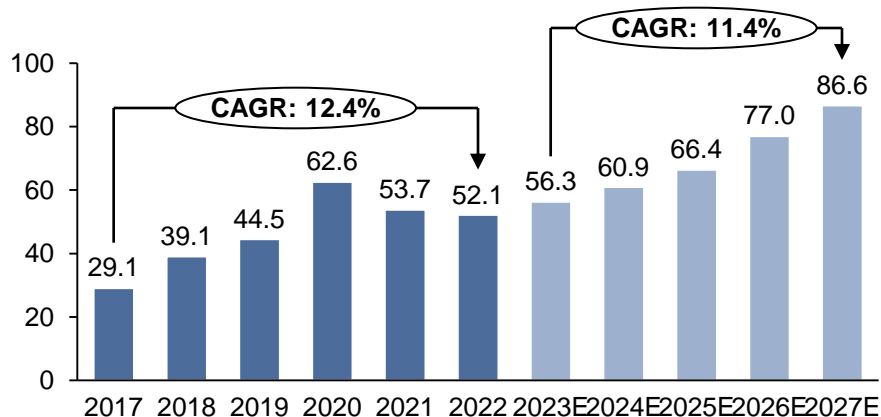
Unit: RMB Million

Hong Kong



Unit: RMB Million

Singapore



- The U.S. has been the largest country of China's overseas sales of slewing rings from 2017 to 2022. The sales value of slewing rings to the U.S. increased from RMB388.5 million to RMB556.1 million, and is expected to reach RMB819.4 million by 2027.
- The sales value of slewing rings to Hong Kong has increased from RMB55.9 million in 2017 to RMB100.4 million in 2022. Hong Kong is acting as an intermediate transfer station for the sales of slewing rings to overseas markets of China.
- Singapore's as an international trading center with well-established networking is experiencing rapid urbanisation and growing demand for smart machinery. The business-friendly tax system in Singapore offers a sustainable and stable environment for international trading and has long been considered as a trading centre and entrepot for the slewing ring industry. Over 90% of imported slewing rings are re-exported to other regions etc. From 2017 to 2022, the sales value of slewing rings to Singapore has increased from RMB29.1 million to RMB52.1 million. Going forward, the sales value of selling slewing rings to Singapore is likely to maintain a moderate growth pace from 2023 to 2027, reaching RMB86.6 million by 2027.

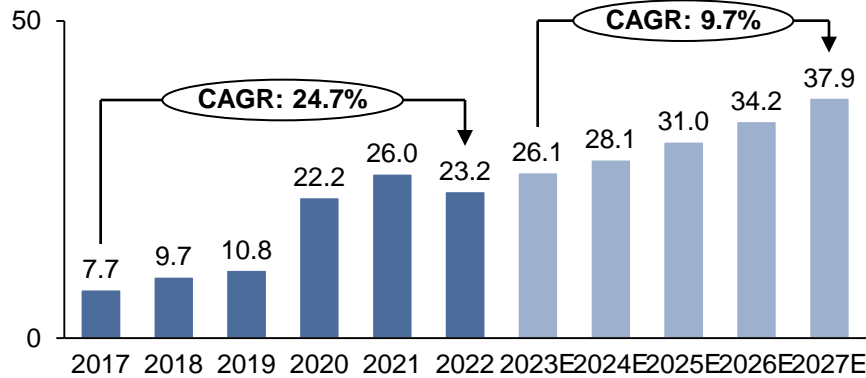
Source: Frost & Sullivan

Major Country Analysis of Selling Slewing Rings Overseas Market (China) (2/4)

Sales Value of Selling Slewing Rings to the Philippines, Malaysia, Europe from China, 2017-2027E

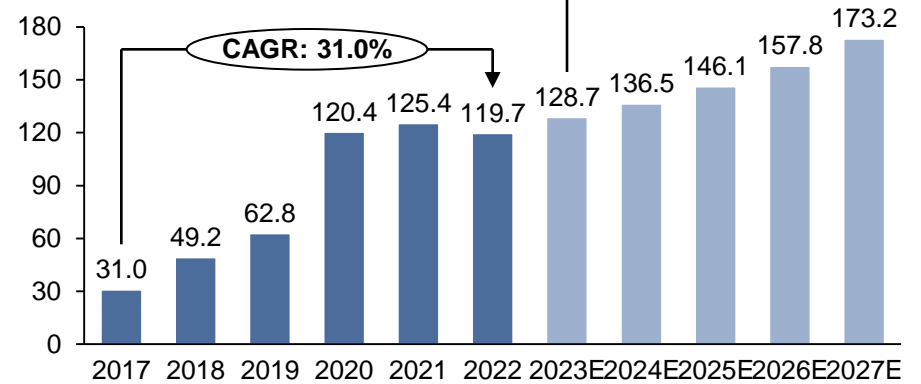
Unit: RMB Million

The Philippines



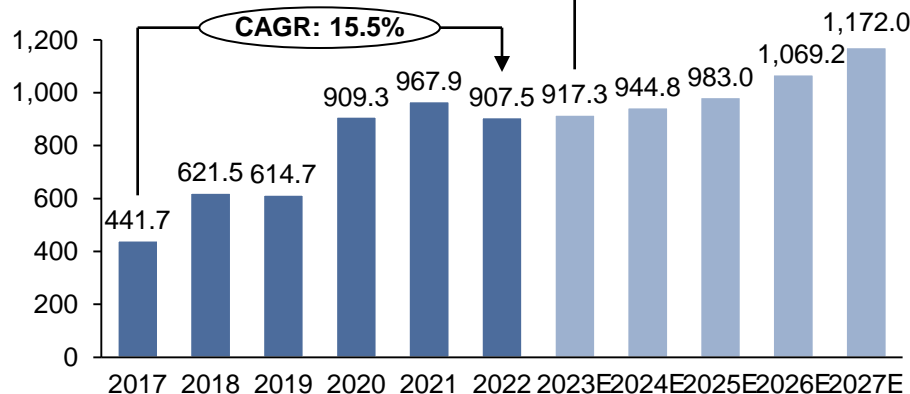
Unit: RMB Million

Malaysia



Unit: RMB Million

Europe



- Similar to Singapore, Malaysia and the Philippines situated in the South-East Asia have their local demand for slewing rings in manufacturing machinery as well as the demand from re-export to other countries such as the U.S. and Europe. The sales value of selling slewing rings to the Philippines from China has increased from RMB7.7 million to RMB23.2 million from 2017 to 2022, representing a CAGR of 24.7% during the period and is expected to attain RMB37.9 million in 2027, representing a CAGR of approximately 9.7% during 2023 to 2027. Malaysia as another growing sales destination in the South-East Asia recorded a robust growth during 2017 to 2022, attaining a CAGR of 31.0%, and is expected to attain RMB173.2 million in 2027, representing a CAGR of 7.7% during 2023 to 2027.
- Europe has been one of the largest exporting regions for Chinese slewing ring manufacturers. From 2017 to 2022, the sales value of selling slewing rings to Europe has increased significantly from RMB441.7 million to RMB907.5 million, representing a CAGR of 15.5%.

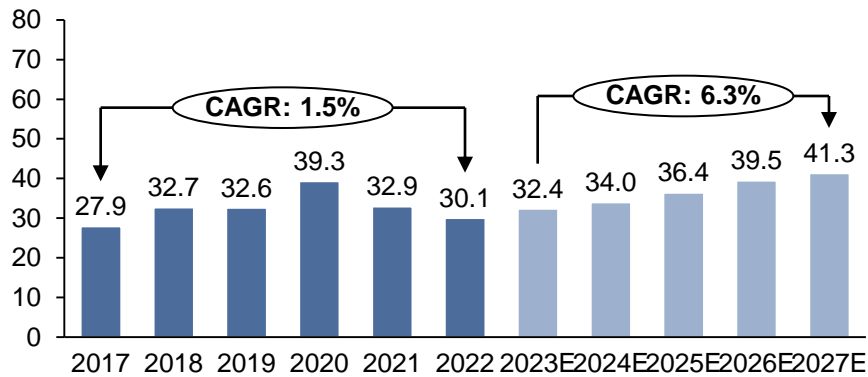
Source: Frost & Sullivan

Major Country Analysis of Selling Slewing Rings Overseas Market (China) (3/4)

Sales Volume of Selling Slewing Rings to the U.S., Hong Kong and Singapore from China, 2017-2027E

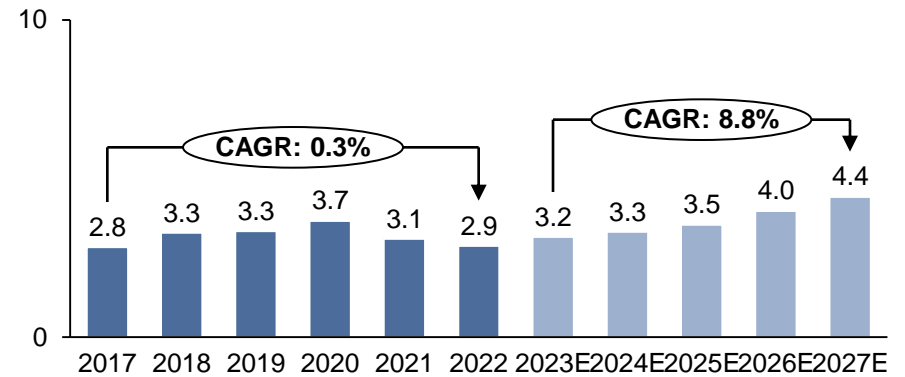
Unit: Thousand Sets

The U.S.



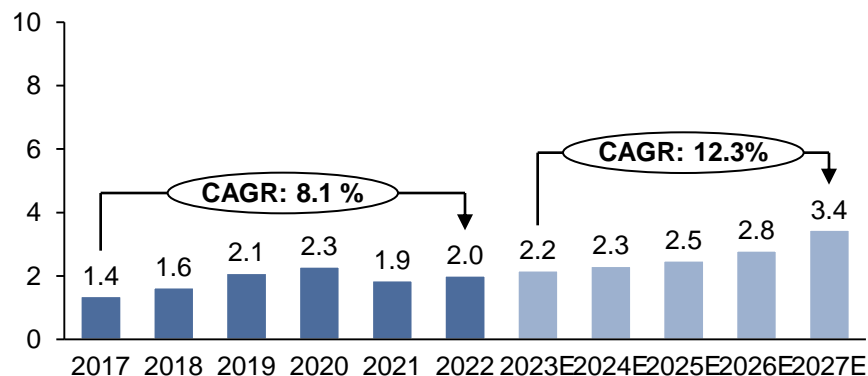
Unit: Thousand Sets

Hong Kong



Unit: Thousand Sets

Singapore

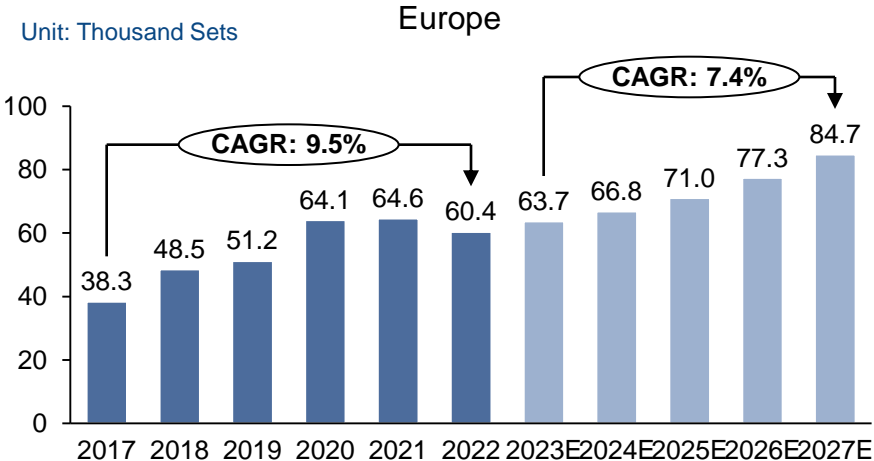
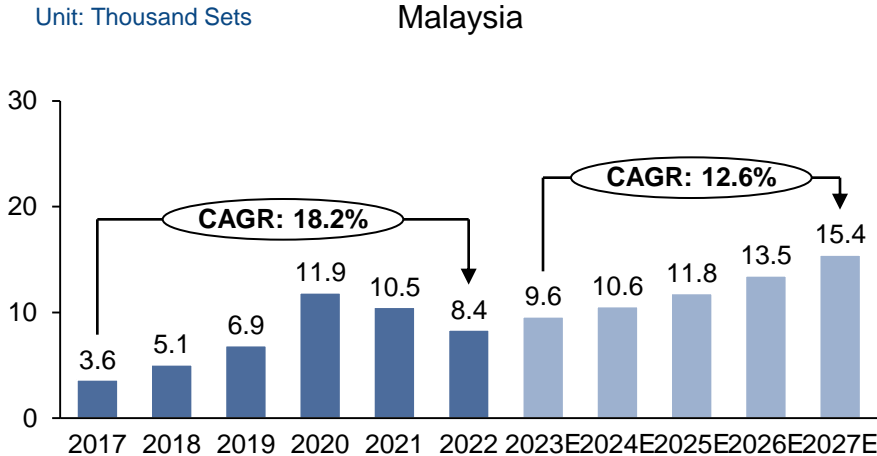
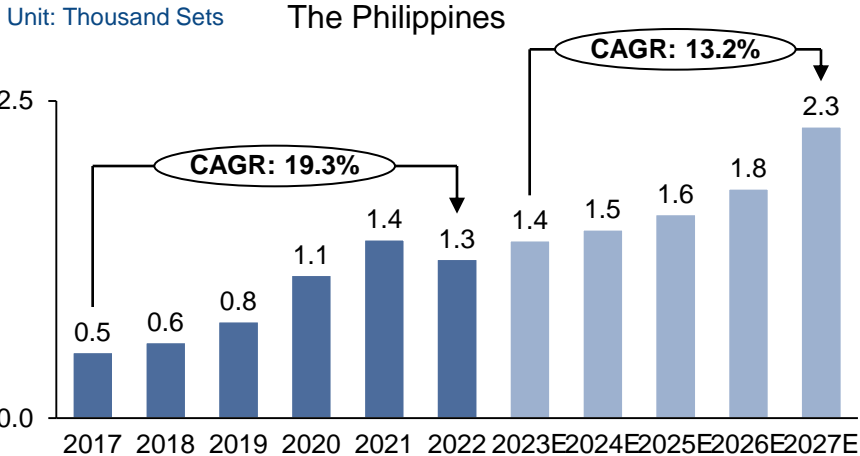


- In terms of sales volume of selling slewing rings, U.S. has contributed to approximately 11.5% of the total sales volume to foreign countries in 2022, attaining 30.1 thousand sets in 2022, representing a CAGR of approximately 1.5% during 2017 to 2022. Sales volume of selling slewing rings to Hong Kong and Singapore has increased moderately at CAGRs of 0.3% and 8.1% respectively during 2017 to 2022. Going forward, the U.S., Hong Kong and Singapore shall attain CAGRs at 6.3%, 8.8% and 12.3% respectively during 2023 to 2027.

Source: Frost & Sullivan

Major Country Analysis of Selling Slewing Rings Overseas Market (China) (4/4)

Sales Volume of Selling Slewing Rings to the Philippines, Malaysia, Europe from China, 2017-2027E



- Construction machinery production in the Philippines and Malaysia are growing in recent years, along with these countries serving as entrepots in re-exporting the slewing rings to other economies the sales volume of selling slewing rings to the Philippines and Malaysia have grown at CAGRs of approximately 19.3% and 18.2% respectively. The sales volume of selling slewing rings to Europe has grown at CAGR of approximately 9.5% during 2017 to 2022.
- Going forward, the Philippines, Malaysia and Europe shall attain CAGRs at 13.2%, 12.6% and 7.4% respectively during 2023 to 2027.

Source: Frost & Sullivan

Landscape of JB, JB/T and JIS standard

- Japanese Industrial Standards (“JIS”) are the standards used for industrial activities in Japan, coordinated by the Japanese Industrial Standards Committee and published by the Japanese Standards Association. In particular, the JIS sets out standards on gear with regards to product specification including but not limited to accuracy, shapes, profile, dimensions, backlash and measuring method. For instance, the JIS 1702 standard specifies accuracy for the involute spur gears and helical gears in certain diameter.
- The JB standard, originated from the Chinese pronunciation Ji Biao (“機標”) refers to a series of national standards in regards to the machinery industry, involving the standardization of electrical mechanics, instrumentation and operational machinery. JB/T is a subset of JB standard in which the T refers to a recommended but not mandatory standard. According to the Standardisation Law of the PRC (2017 Revision) (“中華人民共和國標準化 (2017年修訂)”) promulgated by the Standing Committee of the National People's Congress outlined that JB standards must be mandatorily implemented while JB/T is encouraged to be carried out. In 2018, the Ministry of Industry and Information Technology published the JB/T 2300-2018, to be regarded as the universal industry standard in replacement of the JB/T 2300-2011 published in 2011. This standard specifies the symbols, classification and marking, requirements, test methods, inspection rules, marking, packaging, transportation and storage of slewing rings. As of 2022, there are approximately 150 industry players in the slewing ring market in the PRC, among which a majority of them capable of producing JB products. There are approximately 20 industry players capable of producing JIS standard products, a majority of them are Japanese-based companies setting up manufacturing sites in the PRC and a few Chinese companies attaining such capability.

Source: Frost & Sullivan

Landscape of JB, JB/T and JIS standard

- Compared with other industry standard such as JB and JB/T which are recommended industry standards issued by the Ministry of Industry and Information Technology of China, JIS is stricter in terms of quality control requirements on specifications and level of precision. There are only few slewing ring manufacturers in China that sells slewing rings overseas that are qualifiable to the JIS standard. The company is one of the very few manufacturers in China that adopt the JIS standard in manufacturing certain product line that are sold to domestic and overseas market. The ability of a company to produce JIS-compliant goods is strongly favoured by downstream industry players, including domestic and overseas market and particularly the Japanese market. In general, the Japanese downstream manufacturers in most cases require the slewing ring parts raw material to meet the requirements of JIS.
- Further, Japanese construction equipment manufacturers may set up their production plants beyond Japan in order to save production costs and establish foothold in overseas market, while the raw material requirement is as well JIS-compliant. . As such, JIS is not only just relevant to customers situated within Japan, it is also applicable for other overseas customers which use the excavators produced in Japan or excavators produced by Japanese manufacturers in countries outside Japan. Competent industry players are thereby able to garner significant competitive advantage and market foothold.

Source: Frost & Sullivan

Landscape of GB, GB/T and YB/T standard

- There are four Class of China standards system, They are
 - China National Standards
 - China Industry Standards
 - China Local Standards
 - China Enterprise Standards
- These Class are hierarchical, Low class Standards must be compliance with upper class standards, GB standards are the highest class standards, so that all other class standards need to obey GB standards.
- GB standards are the China national standards, also called as Guobiao Standards, China GB standards are classified as two stages, Mandatory or Recommended. Mandatory standards have the force of law as do other technical regulations in China. They are enforced by laws and administrative regulations and concern the protection of human health, personal property and safety. All standards that fall outside of these characteristics are considered Recommended standards.
- China GB standards can be identified as Mandatory or Recommended by their prefix code, **Prefix code GB are Mandatory standards, GB/T are Recommended standards (Quasi-Mandatory standards) and YB/T are are Recommended standards (Industry standards).**

Source: Frost & Sullivan

Importance of JIS standard

- JIS-standard slewing rings have a significant position in the global market, and are particularly and widely used in Japan for manufacturing excavators and other heavy equipment. Japan relies primarily on the JIS-standard slewing rings from either domestic or certified Chinese manufacturers for their excavator production. China produces a wide range of slewing rings for the domestic market, of which 3-5% of its slewing ring production is of JIS-standard which are mostly exported to Japan branded excavators operators.
- The JIS certification signifies high quality and durability, which are crucial for components like slewing rings that enable rotational and oscillating movements of heavy structures and also ensures interoperability and dimension compatibility between slewing rings and the excavator assemblies. Given Japan's advanced technological expertise in hydraulics and heavy machinery, their excavators have a reputation for high precision and performance. This also places stringent quality demands on all components including the slewing rings. China has invested to upgrade its manufacturing capabilities to meet the sophisticated technical specifications required for JIS-standard slewing rings. Less than 10 of the PRC manufacturers are capable of exported JIS certified slewing rings which have gone through rigorous testing and quality control.

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Appendix

Competitive Landscape Analysis

Ranking of Slewing Ring Manufacturers

- The slewing ring market in China is fairly fragmented, the top three manufacturers together attained a revenue of RMB5,386.9 million in 2022, accounting for approximately 46.0% of the slewing ring market in 2022. There are approximately 200 slewing ring manufacturers in the PRC and a majority of them are small and medium enterprises.
- According to the Measures for Statistical Definitions of Large, Medium and Small Enterprises (“统计上大中小微型企业划分办法”), the classification of large, medium and small enterprises in the manufacturing industry is as follows: (i) Large enterprise: annual revenue greater than RMB 400 million; (ii) Medium enterprise: annual revenue between RMB 20 million and RMB 400 million; (iii) Small enterprise: annual revenue between RMB 3 million and RMB 20 million.
- In the slewing ring market in the PRC, Large sized players generally own several integrated production lines which involves the vertical integration from production to quality assurance, as well as horizontally integrated with multiple product lines that produce different types of slewing ring and other types of bearing products.
- Our Company is a medium sized player with an integrated production line in the market. In 2022, our Company recorded a revenue of approximately RMB 66.5 million, accounting for approximately 0.6% of the total market in terms of sales revenue. In 2022, the increasing pressure on environmental protection, as well as the outbreak of the COVID-19 which resulted in lockdown and quarantine measures that led to temporary stagnation in business pipeline of certain companies, have collectively led to the closure of several small-sized manufacturers, which in turn decreases the total number of slewing ring manufacturers in China and the industry is witnessing market consolidation.

Source: Frost & Sullivan

Competitive Landscape Analysis

Ranking of Slewing Ring Manufacturers

Top 3 China-Based Manufacturers of Slewing Ring Market in China by Revenue, 2022

Ranking	Company Name (Chinese)	Company Name (English)	Revenue (RMB Million)	Market Share (%)
1	洛阳新强联回转支承股份有限公司	Luoyang Xinqianglian Slewing Bearing Co.,Ltd.	2,139.0	18.3%
2	徐州罗特艾德回转支承有限公司	Xuzhou Rothe Erde Slewing Bearing Co.,Ltd.	2,112.4	18.1%
3	洛阳 L Y C 轴承有限公司	Luoyang LYC Automobile Bearing Technology Co., Ltd.	1,135.5	9.7%
Top 3			5,386.9	46.0%
Others			6,313.1	54.0%
Total			11,700.0	100.0%

Note:

- Figures only include revenue generated by the production of slewing ring by respective manufacturers in full year 2022.
- Luoyang Xinqianlian was founded in 2005 in Henan and is a listed company trading under 300850.SZ in Shenzhen stock exchange. Luoyang Xinqianlian serves the slewing ring market with downstream industry including wind turbine and port equipment sector extensively. Luoyang Xinqianlian led the market with a market share of approximately 18.3%.
- Xuzhou Rothe Erde is a joint venture headquartered in Jiangsu and was founded in 2002. The major products of Xuzhou Rothe Erde are slewing rings and industrial steel balls. Xuzhou Rothe Erde ranked second in market with a market share of approximately 18.1%.
- Luoyang LYC was established in 1954, and its capacity, production and sales scale and supporting service have expanded around the globe. Main products include slewing ring, railway bearings, automotive bearings, and rotary table bearing. Luoyang LYC attained a market share of approximately 9.7% in the production of slewing ring in 2022.

Source: Frost & Sullivan

Competitive Landscape Analysis

Ranking of Selling Slewing Ring Overseas

Top 5 Manufacturers of Overseas Slewing Ring Sales in China by Revenue, 2022

Ranking	Company Name (Chinese)	Company Name (English)	Revenue (RMB Million)	Market Share (%)
1	洛阳 L Y C 轴承有限公司	Luoyang LYC Automobile Bearing Technology Co., Ltd.	470.1	12.1%
2	徐州罗特艾德回转支承有限公司	Xuzhou Rothe Erde Slewing Bearing Co., Ltd.	397.8	10.2%
3	马鞍山经纬回转支承有限公司	Maanshan Jingwei Slewing Bearing Co., Ltd	128.5	3.3%
4	公司	The Group	65.6	1.7%
5	马鞍山方圆精密机械有限公司	Maanshan Fangyuan Precision Machinery Co., Ltd.	62.4	1.6%
Top Five			1,124.4	28.8%
Others			2,775.6	71.2%
Total			3,900.0	100.0%

- The market of overseas sales of slewing rings is also fragmented. The Group ranked at the fourth place, accounting for approximately 1.7% of the overseas slewing ring market originated from China in 2022 in terms of sales revenue to overseas markets. The Group is positioned as a premium slewing ring manufacturer targeting the local PRC and overseas markets.
- The Group faces potential competition from non-PRC players in overseas markets, especially in developed regions such as Japan and Europe, where local manufacturers have relatively strong experience to the local markets. However, comparing with these manufacturers, the Group has a price advantage, as well as high quality, capacity and variety production, which may help to attract and retain customers. The Group is the largest manufacturer of slewing rings to overseas markets in South China in terms of sales revenue to overseas markets. [South China is a geographical and cultural region that covers the southernmost part of China, covering Guangdong Province, Guangxi Zhuang Autonomous Region, Hainan Province, Hong Kong and Macau.]
- Maanshan Jingwei is a company located in Anhui. Jingwei focuses on the manufacturing and sales of slewing rings and slewing drives. Maanshan Jingwei was established in 2007. Maanshan Fangyuan is a leading domestic manufacturer headquartered in Anhui. Fangyuan is the subsidiary of Neoglory Prosperity Inc., a listed company with a code of 002147.SZ. Fangyuan initiated its business in slewing ring industry in 1984. Fangyuan focuses on the manufacturing of slewing rings.

Source: Frost & Sullivan

Competitive Strengths of the Group

- **Competitive edge of one-stop solution provider over pure slewing ring manufacturer** – With the rising complexity of downstream machinery and equipment products and requirement on slewing ring, the Group is constantly expanding their service coverage to meet the increasing expectation from customers. The Group principally engage clients as original design manufacturers (“ODM”), providing one-stop solution in accordance with clients’ requested specific specifications, such as which involves product design, product development and engineering solution and manufacturing scale up, as well as other service scope including reliability testing and quality assurance, logistics management, product repair and refurbishment, supply chain management and product approval services. Besides, the Group also source other slewing rings and other mechanical parts and components of machineries for customers who have purchased slewing rings from the Group, in which the customer can enjoy a more comprehensive one-stop service. The comprehensive services offered by integrated slewing ring manufacturing allow the companies to ensure the consistency and quality of work which offers convenience to the clients by saving the need to engage different parties for procurement, thereby leveraging the synergies. In particular, sizeable downstream customers are favouring reputable industry players with proven track record and one-stop offerings over pure slewing ring manufacturer. Besides, in relation to after-sales service, the Group is able to offer a warranty period of 3,000 hours of operation or two years (whichever occurs first), which is significantly higher than the usual warranty period of 2,000 hours of operation or one year (whichever occurs first) available in the market. Accordingly, the Group is able to secure sustainable source of business prospect and maintain steady growth over the years.
- **Stringent product requirement**– The Group is capable of producing JIS-compliant product, which is a stricter standard in terms of quality control requirements on specifications and level of precision than other international standards. The consistent quality assurance standard boost customer confidence and hence customer stickiness and sustainable profitability. The Group is also capable of producing slewing rings adopting national JB or JB/T standards per customers' request.

Source: Frost & Sullivan

Competitive Strengths of the Group

- **Advanced facilities in strategic locations**– The Group has established advanced manufacturing facilities in Dongguan with comprehensive local supply base and abundant long-term partners who are aligned to service similar industries and leaves the Group well-positioned to benefit from the favourable local supply chain network and developed logistics infrastructure.
- **Long-standing relationship with customers**– The Group has a long-standing relationship with downstream customers around the globe, which are traders, distributors and manufacturers of end-products. These globally renowned companies have strict criteria in choosing their suppliers and they tend not to switch supplier. The Group has a huge competitive advantages over other players as it has established a stable and long-term relationship.
- **Cost structure advantage in China** - the Group enjoys a cost structure advantage by locating in the PRC, competing with international companies which serve customers in the United States, Europe and Australia. For example, the average labour cost is cheaper in the PRC comparing with that in Western developed countries. Moreover, the PRC is the largest exported country of EMS raw materials such as printed circuit, liquid crystal display, lithium battery and integrated circuit. The group can then enjoy a lower shipping cost of raw material compared with the companies located in Western countries.
- **Experienced and visionary management team** – Led by a group of high-caliber management team with more than 10 years of market practice. Leveraging diverse background of the management team encompassing technical know-how, market dynamics and knowledge on industry standards, the Group is able to secure sustainable source of business and garner competitive edge through differentiated products and policies.

Source: Frost & Sullivan

Competition with other non-PRC slewing ring manufactures and Competitive landscape of slewing ring market in Singapore, the Philippines

Competition with other non-PRC slewing ring manufactures

- Non-PRC international slewing ring manufacturers such as the top ranked companies in terms of revenue including SKF, Schaeffler AG, NTN, Timken and NSK are well developed in terms of scalability, capacity and capability. There is a trend for these international players to probe their operation into the PRC. For instance, the SKF Group has formed alliance with Goldwind in 2022, a China-based wind turbine manufacturer, as part of a broad sustainability-focused engagement to construct the first smart energy and carbon management system. Schaeffler has also expanded its production capacity in 2021 in the PRC. The market is consolidating with medium and large players around the globe and within the PRC to leverage its regional and international networking and supply chain capabilities to acquire more business opportunities. PRC-based slewing ring manufacturers on the other hand, have the competitive advantages of long standing industry relationship with stakeholders along the PRC value chain such as the government, suppliers and customers. For instance, some established industry players are national accredited laboratories and research and development facilities and are recognized by the PRC government. Competitive PRC players also outperforms by offering comprehensive one-stop service, as well as products up to national recognized standard products such as JIS, JB/T and DIN, against medium and small sized non-PRC players.

Competitive landscape of slewing ring market in Singapore, and the Philippines

- Singapore and the Philippines rely heavily on import, in lieu of local production, in regards to slewing ring consumption. Accredited industrial authorized distributors and wholesalers are set up throughout the two nations, managing import orders. Singapore import slewing rings from mainly Japan and the PRC, with these two origins accounting for approximately 42.3% of the total import value of slewing rings in Singapore. The downstream demand are primarily repair of construction machinery and equipment locally in Singapore as well as comparatively smaller of the repair of wind turbines, while some imports of slewing rings are re-export to other part of countries in the world. For the Philippines, slewing rings are originated from Japan, Thailand, Singapore and China, with these countries accounting for approximately 71.8% of the total import value of slewing rings in the Philippines. The manufacturing of construction machinery, as well as the repairment involves the consumption of slewing rings.

Source: Frost & Sullivan

Entry Barriers

Stringent quality requirement

As downstream products of slewing rings such as construction machinery are considered durable and precise devices, clients, i.e. manufacturer of these machineries, are therefore generally maintaining stringent requirements towards their contract manufacturers and demonstrate stickiness to qualified slewing ring manufacturer. Slewing rings manufacturers shall continuously monitor the products are of high quality and are highly consistent and stable. Slewing rings that are able to undergo stringent and comprehensive verification such as JIS standard, validation, testing, site audit processes are highly preferred by customers. Further, steady flow of product is one of the key considerations when downstream customers select a slewing ring manufacturer. As a result, suppliers who have their own production facilities can maintain competitive advantages within the industry. Overall, establishment and existing players excel their competitive advantages in this area while it poses certain barrier to new entrant.

Industry know-how

With the continuous improvement of China's equipment industry, the downstream manufacturers are demanding a higher standard on the precision, life and reliability of slewing rings. In order to produce qualified products, slewing ring manufacturers should have the corresponding technical ability in material selection, processing, heat treatment and product testing. Slewing bearings usually need more advanced and professional equipment and technology to meet its performance. It is difficult for new entrants to construct perfect technical system and recruit enough technical personnel in a short period.

Source: Frost & Sullivan

Entry Barriers

Business relationship

Downstream customers of slewing rings are more likely to keep long cooperation relationships with leading and well-known manufacturers with high quality slewing rings. Given the long-standing relationship of existing slewing ring manufacturers with various levels of stakeholders, relationship and networking within the industry act as an entry barrier due to the fact that the fabrication of slewing ring require materials and equipment supply, as well as sales network and reputation comprising traders and various downstream customers. Business relationship also enable slewing ring manufacturers to expand their product offerings and achieve provision of one-stop shop solution in order to stand out from other competitors.

Capital investment

Manufacture of slewing ringis considered a capital-intensive business with substantial initial investment in purchase of steel as raw material, module and tooling, establishment of production facilities with automated and precise production chain as well as recruitment of technical staff. The initial set up cost together with the operational cost will pose a barrier for new entrants without sufficient financial resources.

Source: Frost & Sullivan

Opportunities and Threats

Opportunities

- **Automation and Streamlined Slewing Ring Production:** Slewing ring manufacturers are increasingly devoted to accelerate automation and assimilate computer numerical controlled machineries into the production and inspection line. In view of the outbreak of the COVID-19, leading players in the industry leverage the incorporation of such technology to implement automation to elevate overall production yield and efficiency under the operational pressure of shortage of labour and growing labour cost. Further, The promotion of Industry 4.0 is likely to help increase the demand for slewing rings and the slewing ring manufacturers are expected to shift towards automation and adoption of industry 4.0.
- **Growing emphasis on product design capabilities:** Slewing ring manufacturers are dedicated to enhance their capabilities in developing highly customised slewing ring products. Customers are increasingly favouring manufacturers with design and development one-stop capabilities.
- **Growing Adoption of Lean Management:** Slewing ring manufacturers in recent years adopted lean management directions. It involves the revamp of operation plan to save cost of inefficiencies, reduce the inventory of material and tools and minimise waste generation with conservation of valuable materials. The incorporation of data-based resources management system has also been conducive in decision making, identifying root causes and propelling continuous improvement in implementing lean management.

Future Trends

Threats and Challenges

- **Fluctuation of Raw Material Price:** The production of slewing ring is highly associated with the raw material price of gear steel, carbon round steel and other types of steel. The price of steel has greatly fluctuated over the past five years, which directly affect the production cost and selling price slewing bearing. The potential risk of steel price fluctuation is expected to remain as a threat to the stable development of slewing bearing market.
- **Global Economy:** Economic volatility and cyclical demand cause fluctuations and uncertainty to the demand for downstream products of slewing ring and slewing ring. In the event of an economic downturn, the investment on new product development and production volume of machineries may be affected. Also, the international trade of slewing bearing market may also be affected by the global economy development trend.
- **Competition from emerging countries:** In recent years, the manufacturing industry has seen a change in supply chain. Attributable to the growing availability of skilled labour and lower labour cost, the Southeast Asia has become an additional options of electronics outsourcing locations and taking up a share of electronics manufacturing from the PRC. There is a shift of production facilities from the PRC to other countries due to the trade dispute between the PRC and the U.S. As a result, the emergence of these alternative locations shall pose a threat to manufacturing industry in the PRC.

Source: Frost & Sullivan

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1 Introduction of the Research

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3 Global Slewing Ring Market Overview

4 Competitive Landscape of China's Slewing Ring Market

5 **Construction and Industrial Machineries and Other Parts Market Overview**

6 Appendix

Construction and Industrial Machineries and Other Parts Market Overview

Definition of Construction and Industrial Machineries and other parts

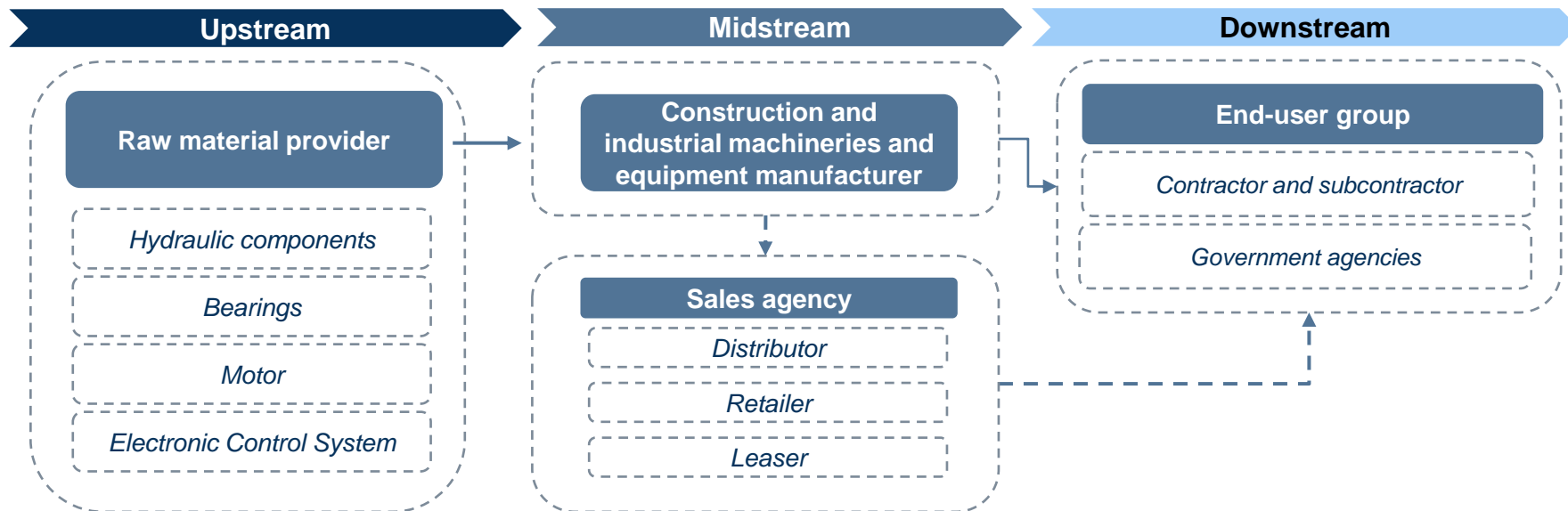
- Machineries and equipment for construction and industrial works are the tools and machineries used in projects including civil, building, electrical and mechanical (E&M) and repair, maintenance, alteration and addition (RMAA) works and other industrial activities.
- The examples of construction and industrial machinery and equipment include generator welding set, air -compressor, compactor, roller, lighting tower water pump, forklift, wheel loader, bulldozer, tele-handler, boom lift, forklift, scissor lift. The machines and devices used in a construction and industrial projects are illustrated below.

	Category	Definition	Example
Construction and Industrial Equipment/ Services	Power and Energy Equipment	Devices provide energy/power for operation or illumination of the construction sites	Silent Diesel Generator, Diesel or Electric Air Compressor
	High Reach Equipment	Mechanical devices used to provide temporary access for people or equipment in high inaccessible areas	Electric Scissor Lift, Articulated Boom Lift
	Material Handling Equipment	Machinery used to raise heavy objects and move around	Diesel/ Electric Forklift, Telehandler, Skid Loader
	Earth Moving Equipment	Machinery primary used to move earth in construction projects	Hydraulic Excavator, Crawler Loader
	Lifting Equipment	Machinery used in construction sites to move heavy objects and used in various stages of construction projects	Crawler Crane, Mini Crawler
	Foundation Equipment	Machinery primarily used in early stages of construction projects such as site formation	Casing Rotator, Telescopic Clamshell
	Others	Other equipment used in construction works	Tunneling Equipment, Demolition Equipment

Source: Frost & Sullivan

Construction and Industrial Machineries and Other Parts Market Overview

Industry Value Chain of Construction and Industrial Machineries and Other Parts

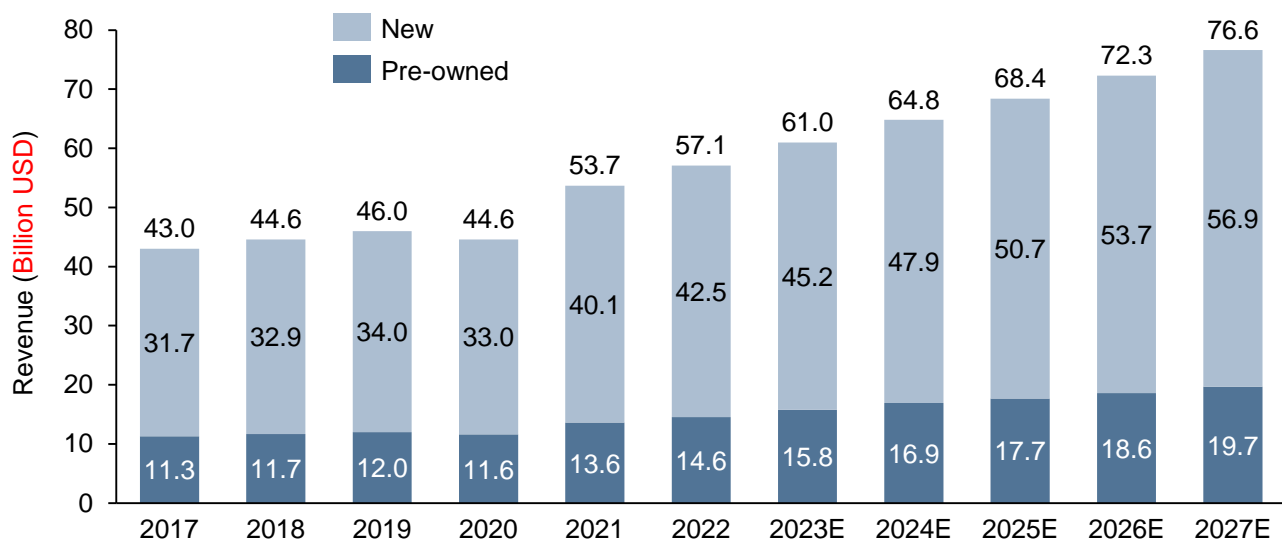


- The construction and industrial machineries and equipment market is divided into upstream raw material provider, midstream manufacturer and sales agency and downstream end-user group. Upstream raw material provider provides mechanical and electronic components for midstream manufacturer, where subsequently construction and industrial equipment such as heavy equipment, cranes, roadwork machineries, mobility machineries, power units and portable equipment are fabricated by midstream machineries and equipment manufacturer. Manufacturer may establish its own sales channel, or engage sales agency in distributing, leasing and retailing respective machineries to downstream end-user groups including contractor, subcontractor and government agencies.

Source: Frost & Sullivan

Construction and Industrial Machineries and Other Parts Market Overview

Global Market Size of Construction and Industrial Machineries and Other Parts, 2017-2027E



	CAGR 2017-2022	CAGR 2023E-2027E
New	6.0%	5.9%
Pre-owned	5.2%	5.7%
Total	5.8%	5.9%

Note :

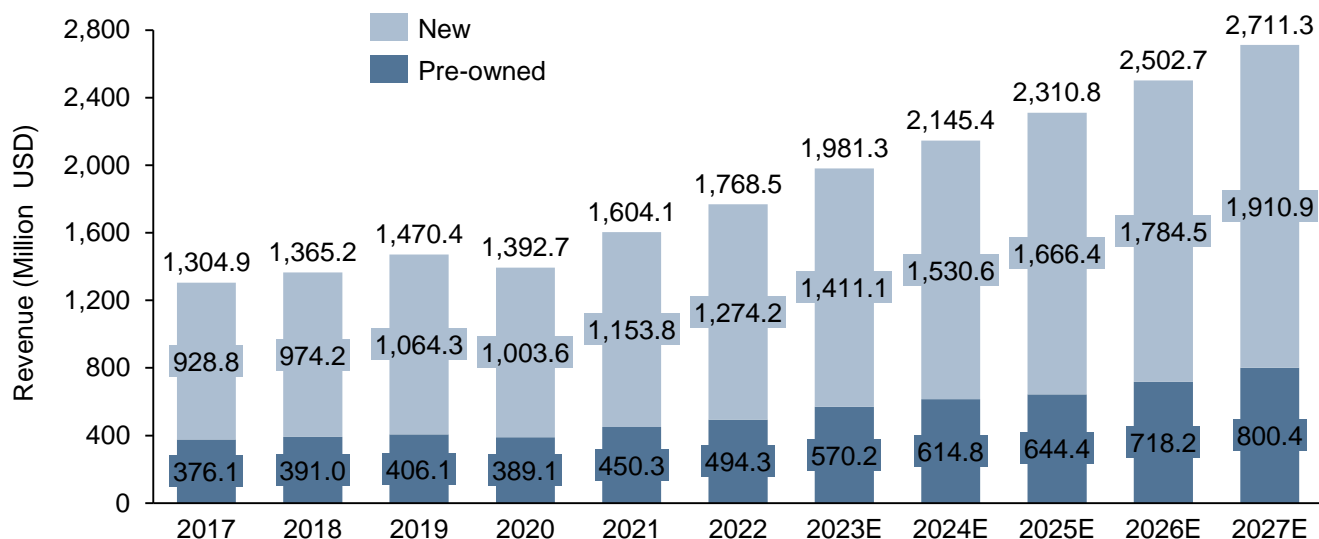
1. Construction and industrial machineries and other parts mainly refers to excavators and undercarriage parts such as track chains, rollers and track shoes
2. The market size refers to the business receipt of the companies engaged in the manufacturing and sales of construction and industrial machineries and other parts, taking the change in price and quantity into consideration.

- The global market size of construction and industrial machines and other parts registered an overall growth from approximately US\$43.0 billion in 2017 to US\$76.6 billion in 2027, representing a CAGR of 5.8%. The growth of excavators and undercarriage parts is attributable to continued increase in population, urbanization and the corresponding needs for infrastructure and buildings, which increase the demand for residential construction, business building, sewage and disposal applications. The continued manufacturing activities also contribute to the growth of mining, both surface and underground.
- As the complexity of construction projects is on the increase, construction equipment is required to handle larger and heavier loads, faster and with greater accuracy. This growing demand has seen manufacturers in the global construction and industrial machineries and other parts market of invest in new facilities and hire more employees, and the increase in the price of these machineries. In addition, there is also a growing demand for construction and industrial equipment overseas as countries are increasing investment in infrastructure in order to stimulate economic growth. The global market size of construction and industrial machines and other parts is expected to reach US\$76.6 billion in 2027, at a CAGR of 5.9% from 2023 to 2027.

Source: Frost & Sullivan

Construction and Industrial Machineries and Other Parts Market Overview

Market Size of Construction and Industrial Machineries and Other Parts in the Southeast Asia, 2017-2027E



	CAGR 2017-2022	CAGR 2023E-2027E
New	6.5%	7.9%
Pre-owned	5.6%	8.8%
Total	6.3%	8.2%

Note :

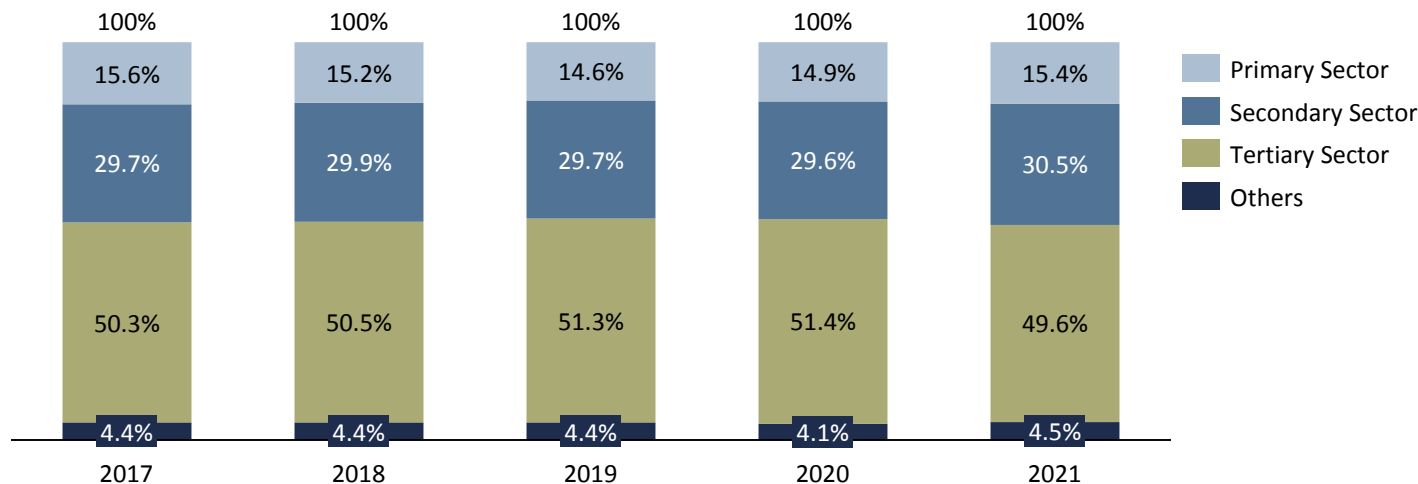
1. Construction and industrial machineries and other parts mainly refers to excavators and undercarriage parts such as track chains, rollers and track shoes.
2. The market size refers to the business receipt of the companies engaged in the manufacturing and sales of construction and industrial machineries and other parts, taking the change in price and quantity into consideration.

- Market size of construction and industrial machineries and other parts in the Southeast Asia has seen an increase from US\$1,304.9 million in 2017 to US\$1,768.5 million in 2022, representing a CAGR of 6.3%. The increase is predominantly due to the increasing infrastructure investment and development of affordable housing, which creates the increasing need for excavators and undercarriage parts.
- The overall construction demand is forecasted to rise, with an increase in demand for healthcare facilities, civil engineering works and government projects. The private sector's construction demand is expected to improve due to a brighter economic outlook and upturn in the property market sentiment, thereby translating into growth for construction works, namely digging, trenching, earthmoving, loading and foundations. Market size of construction and industrial machineries and other parts in the Southeast Asia is expected to maintain the growth at a CAGR of 8.2% for the next five years, and reach US\$2,711.3 million in 2027.

Source: Frost & Sullivan

Construction and Industrial Machineries and Other Parts Market Overview

Shares of Main Economic Sectors to Total ASEAN's GDP (%), 2017-2021



- Primary sector activities are directly dependent on the environment as these refer to utilisation of earth's resources such as land, water, vegetation, building materials and minerals. It, thus includes hunting and gathering, pastoral activities, fishing, forestry, agriculture, and mining and quarrying. Secondary sector activities add value to natural resources by transforming raw materials into valuable products. Secondary sector activities, therefore, are concerned with manufacturing, processing and construction (infrastructure) industries. Tertiary sector activities include both production and exchange. The production involves the 'provision' of services that are 'consumed'. Exchange involves trade, transport and communication facilities that are used to overcome distance.
- From 2017 to 2021, tertiary sector has been consistently the leading sector in ASEAN's economy. The share of tertiary sector to the region's GDP is 49.6% in 2021. The shares of primary and secondary sectors recorded an growth from 45.3% in 2017 to 45.9% in 2021. The growth in primary and secondary activities contributed to the increase in demand for construction and industrial machines during the same period.

Source: ASEAN Secretariat, ASEANstats database

Construction and Industrial Machineries and Other Parts Market Overview

Market Drivers

- 1 Increased Infrastructure Investments
- 2 Supportive Government Initiatives



MARKET DRIVERS

Major Driver	Description
Increased Infrastructure Investments	There will be more construction projects in both private and public sector in the near future, driven by the increased infrastructure investments in the aftermath of the COVID-19 outbreak. The resumption of projects in the commercial and leisure sectors are helping improve the construction industry's overall growth and increases regional investment in large-scale public infrastructure, particularly in railways, expressways, and airports. This is most notable in the Southeast Asia, which is being earmarked as countries to have positive construction sector growth. Infrastructure investments, residential, commercial, and industrial construction, mine and well construction and institutional spending are all expected to increase, following the economic activities resumption, which would drive the global sales of construction and industrial machineries and equipment.
Supportive Government Initiatives	Supportive government initiatives are expected to drive the growth of the market. For instance, in August 2021, the federal government of the U.S. announced stimulus packages including US\$ 550 billion in new federal investment for modernising infrastructure are expected to drive construction spending in the country. Similarly, in 2019, the Government of India announced to invest US\$ 1.4 trillion for infrastructure projects from 2019 to 2023. To boost the economy, the Chinese Government announced the US\$1 trillion infrastructure plan in 2022, targeting investments in new energy projects, high-speed rail and water tunnels. Accordingly, the supportive government initiatives would translate into the upcoming demand for construction machinery over the forecast period.

Source: Frost & Sullivan Analysis

Construction and Industrial Machineries and Other Parts Market Overview

Market Drivers

- 3 Technological Advancements
- 4 Increasing Investment in Smart City Projects



MARKET DRIVERS

Major Driver	Description
Technological Advancements	The construction and industrial machineries and other parts market are witnessing a lot of technological advancements in efficiency optimization and product reliability. This is seen in automated solutions as it helps increase productivity with minimum effort and reduced errors. Autonomous operating technology is widely adopted in the off-highway operating vehicle segment and other construction tasks that are repetitive, physical, precise, and time-sensitive. This is driving the demand for the development of autonomous construction equipment. For example, manufacturers are developing autonomous construction equipment which works on wireless communication technologies by interfering with radio signals from other equipment, receiving commands, and reporting status. The trend for autonomous construction equipment would translate into growth opportunities for the construction and industrial machineries and other parts market.
Increasing Investment in Smart City Projects	The demand for excavators is expected to be driven by the construction sector in the near future. In particular, smart cities in the Southeast Asia takes a more focused look at how cities across the region can make better use of data, digital tools, and smart solutions to solve specific public problems and make the urban environment more livable, sustainable, and productive. On the back of the substantial government funding, there is increasing number of smart infrastructure projects initiated in the developing countries. The strong investment in the real estate sector will foster the need for superior hydraulic excavators in construction and undercarriage parts.

Source: Frost & Sullivan Analysis

Construction and Industrial Machineries and Other Parts Market Overview

Market Trends

- 1 Utilizing Green Industrial Equipment
- 2 Stricter Regulations on Processing and Refining

Major Driver	Description
Utilizing Green Industrial Equipment	Environmental protection is being emphasized across all industries, and the construction industry is no exception. It is seen that many contractors are utilizing environmentally-friendlier equipment and tactics to lower various kinds of pollutants. With the continued awareness of environmental protection, it is believed that such trend will continue in the near futures. Some measures include using Quality Powered Mechanical Equipment in foundation work sites; Silent piling by press-in method to minimize noises and vibration impacts; Replacing handheld percussive breakers with bursting system and etc. In particular, electric excavators present environmental and sustainability benefits. In addition to offering zero emissions, the electric excavators are designed to reduce the noise for the construction works taking place in urban areas, as well as works taking place around hospitals and schools. These excavators are also equipped with a retractable undercarriage which allows them to enter confined spaces.
Stricter Regulations on Processing and Refining	Some governments have posed a series of policies and regulations of the minimum level of processing that certain minerals must be subject to before they can be exported. The legislation aims to increase the added value of minerals through processing and refining by developing the economy's domestic mineral processing industry and deriving more revenue from the mineral sector. This poses higher requirements on the extraction and production process and drives the demand for machineries and equipment in the mining industry.

Source: Frost & Sullivan Analysis

Construction and Industrial Machineries and Other Parts Market Overview

Market Trends

3 Various Applications of Mini Excavator

Major Driver	Description
Various Applications of Mini Excavator	Mini excavator, also called as a compact excavator, has either a steel wheel or rubber wheel or undercarriage and usually has an operating range of 0.6–10 tons and is used to perform tasks traditionally performed by labor. Mini excavators are designed to deliver strong performance in a compact machine to put operators and owners in charge of laborsaving strength and productivity. As it automates the work which can be done with the help of a tractor, pickups and mini trucks making the task efficient, versatile, cost-effective, compact and easy, mini excavators are increasingly used with limited space in the building sites and are generally used in small to medium-sized projects, including small-scale landscaping, demolition, small-scale construction, forestry, electrical trench construction and plumbing. The various applications serve as the driving for the growth of excavator.

Source: Frost & Sullivan Analysis

Construction and Industrial Machineries and Other Parts Market Overview

Analysis of The Size of Slewing Rings Used in Excavators

- Slewing ring bearings are used across industries and machines and developed for diverse purposes, resulting in a wide range of sizes and designs. In heavy construction equipment, a slewing ring will range in size based on the machine and its purpose.
- In excavators used in heavy construction applications, the size of the slewing ring will be proportional to the size of the machine. An excavator slewing ring can range from a few feet wide on a mini excavator to behemoth slewing rings measuring over 20 feet on excavators used in mining operations and even bigger.
- The outer dimension of the slewing rings used in excavators generally ranges from 200mm to 6,000mm.
- As company is able to produce slewing ring with diameters from 234 mm to 4,000 mm, it is estimated that the Company cover 80% of the slewing rings that applied in excavators.

Source: Frost & Sullivan

Market Opportunities

Opportunities

- **Replacement cycle** : According to the characteristics of the machinery industry product replacement cycle, the renewal and replacement cycle of construction machinery such as excavator, bulldozer and grader are generally 8-10 years. Owing to the robust demand for **this** equipment in past years, the demand for renewal and replacement is expected to continuously propel the construction machinery market globally.
- **Tightening government policies**: Attributable to growing environmental awareness, environmental protection policies in regard to stricter standards on machinery emission has been set out upon various construction machinery. For instance, the PRC Ministry of Environmental Protection issued the "Notice on the Implementation of the National Phase III Emission Standards for Diesel Exhaust Pollutants for Non-Road Mobile Machinery", proposing that all construction machinery are requirement to meet certain national standards. Such policy direction shall drive the demand for the renewal of construction machinery.
- **Automated machinery**: The construction machinery market is developing towards incorporation of technology such as artificial intelligence and cloud computing. For instance, excavator manufacturers apply advanced computer technology, microelectronics and hydraulic technology, to the drive and control system of excavation machinery, realising a more automated and advanced maneuvering and thereby stimulating the demand for replacement of machinery.
- **Demand for one-stop solutions** : Parts like sprocket, idler, track roller, track chain and track shoes go through many steps from raw material to finished components ready for assembly and the process, such as casting, precision machining, heat treatment and surface finishing takes time to perform. A one-stop solution provider, **such as the Company**, takes complexity out of the procurement process, which reduces lead time and improves quality too. The one-stop solution also enables the customers to simplify and accelerate new product development and prototyping activities. Engaged in the provision of construction and industrial machineries and other parts, the services providers are able to provide one-stop solutions and tap into market growth.

Source: Frost & Sullivan

Market Challenges

Challenges

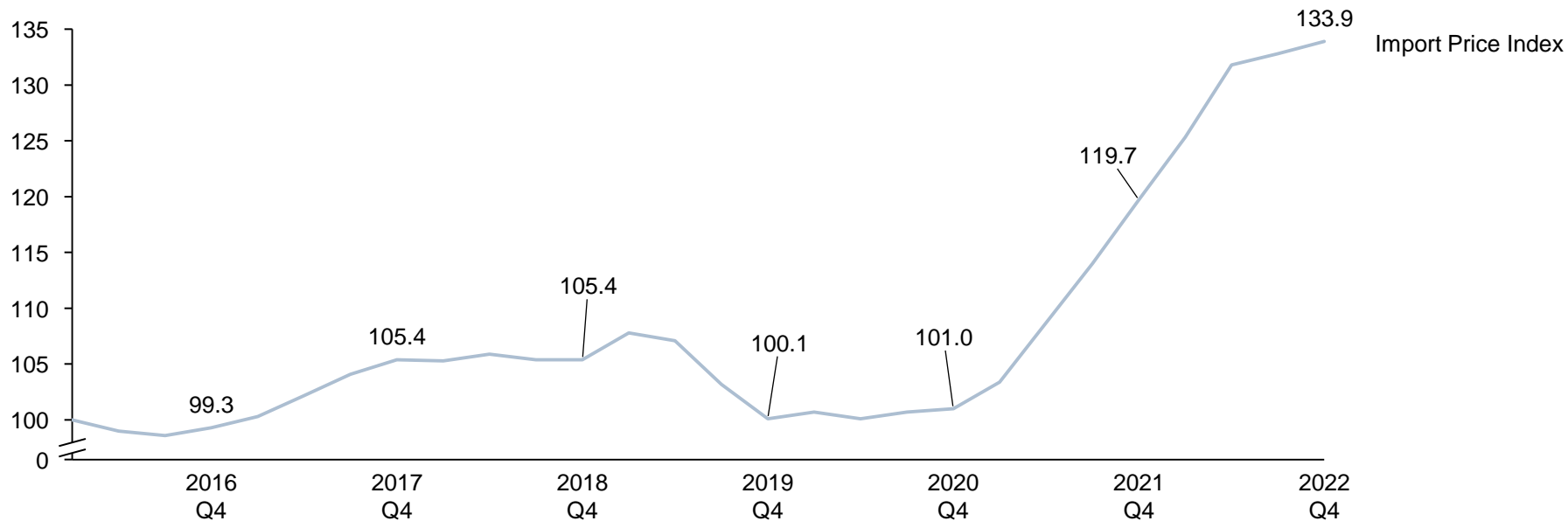
- **Shortage of Expertise and Talented Labour:** A shortage of expertise and talented labour, coupled with an absence of systematic cultivation and recruitment for human capital, may pose a significant challenge for the development of the industry. Construction machinery is considered technology-intensive industries and require extensive research and development effort by personal and technical workers. The specialised knowledge in designing, developing and manufacturing construction machinery requires at least 3-5 years of training. which further exacerbates the lack of professional and technical personnel in the industry.
- **Disruption in Supply Chain:** Global event such as the COVID-19 outbreak since early 2020 and the US China Trade War has temporarily affected the supply of raw material due to the disruption on material supply chain and availability of labour associated with the containment measures undertaken around the globe. Constraints in material sourcing and price fluctuation in raw material poses significant challenge to industry players.

Source: Frost & Sullivan

Construction and Industrial Machineries and Other Parts Market Overview

Import Price Index of Oil Drilling, Mining and Construction Equipment, 2016-2022

Index (2016 Q1 =100)

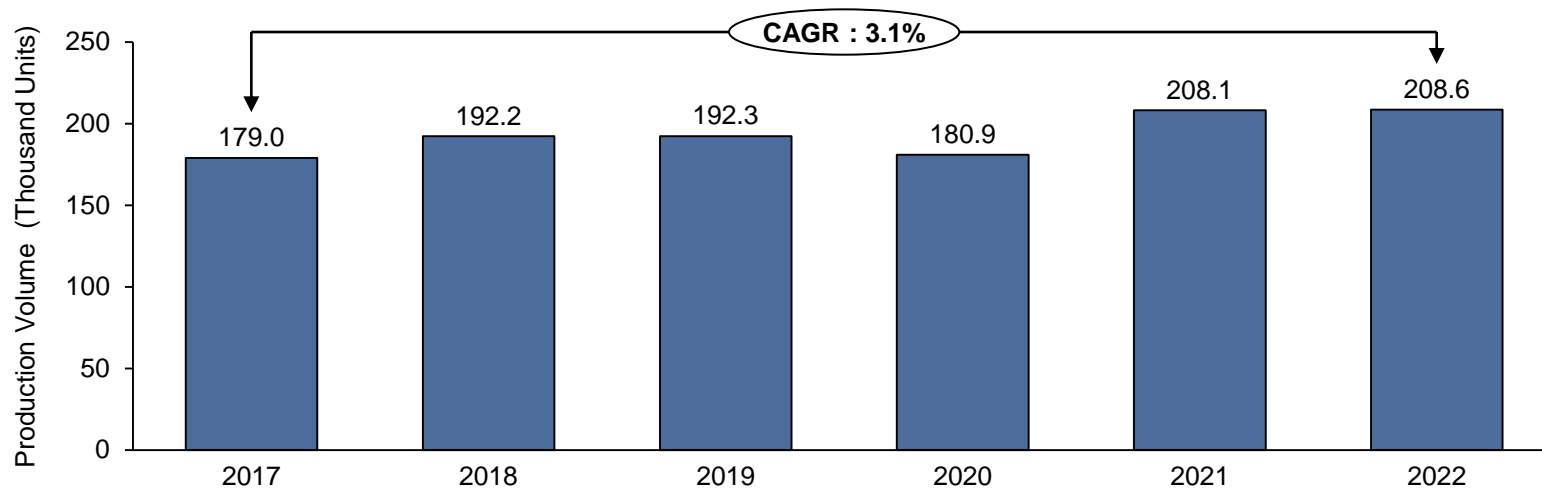


- The import price index of oil drilling, mining and construction equipment increased from 101.0 in fourth quarter of 2020 to 133.9 in fourth quarter of 2022, primarily due to the increase in infrastructure investment and the increasing number of construction projects after the COVID-19 outbreak.

Source: Frost & Sullivan Analysis

Construction and Industrial Machineries and Other Parts Market Overview

Production volume of excavators (Japan), 2017-2022



- In 2022, the volume of excavators produced in Japan amounted to approximately 208.6 thousand units, increasing from about 179.0 thousand in 2017. Among construction equipment, excavators had the highest production volume in Japan.

Source: Frost & Sullivan

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Appendix – Statements

- The average credit period for the payment of machineries, such as excavators, generally ranging from 30 days to 120 days, with the average of around 80 days.
- Sumitomo is not the top 20 excavator manufacturers by revenue in the world.
- Sumitomo is the top ten largest excavator manufacturer in Japan.
- Since there are many suppliers (wholesalers , distributors and even construction contractors), it is common that suppliers of mechanical parts and components (including slewing rings) will overlap and transact business with each other so that suppliers could also be customers of the Company due to the business nature. Also, for machineries, since the pre-owned machineries are traded from one user to another (e.g. wholesalers, distributors and contractors), customers who bought mechanical parts and/or machineries could also be seller of their machineries after they completed the projects. Overlapping customer and supplier, related party transaction is not uncommon in the industry. It is not unusual for suppliers of mechanical parts and components (including slewing rings) to also source products from their customer due to (i) the value-added services provided by their customers, such as market information and technical advice; and (ii) authorised distribution fights of their customers.
- Instead of sourcing each product from different suppliers, it is of high operational efficiency for them to consolidate the products required and order from a single supplier which is capable to source such a wide range of different products.
- It requires technical knowledge in sourcing of slewing rings, mechanical parts and components and machineries as each product has its own specifications in order to fit the purpose of the ultimate use.

Source: Frost & Sullivan

Appendix – Disintermediation

- There may be disintermediation in the machinery and components distribution industry in the future. Given the trend of digitalization, vast amount of product or service information is readily available on the internet and as a result of information transparency, manufacturers and retailers are working on reducing the number of intermediaries in the supply chain by shipping directly to end customers, thereby reducing costs in the process. The machinery and components distributors continue to play an important role in supply chain and would not be replaced by other players throughout the value chain in the near future.
- The reason for such a limited amount of companies engaging in machinery and components distribution is attributable to related entry barrier including (i) industry expertise, where existing machinery and components distributors have long-established experience and understanding in product sourcing, clients requirements gathering and market seasonality, and offer comprehensive service offering; (ii) networking, where notable distributors are required to establish systematic cooperation with various manufacturers with regional or globally footprint, and different product portfolio; (iii) capital investment, engagement in distribution services requires a sufficient amount of working capital for the procurement of machinery and components.
- Distributors have the competitive edges over manufacturers including (i) higher flexibility in provision of services, particularly in product selection, and (ii) value add-services, where distributors keep up with market trends and advise on product design and (iii) local expertise in engaging suppliers / manufacturers and formulating sales and marketing strategy for customers.

Source: Frost & Sullivan

Appendix – Supplementary Data

- Malaysia has announced the 12th Malaysia Plan (RMK 12), which includes Industry 4.0 as one of the new drivers of economic growth. The 12th Malaysia Plan is a five-year development plan that outlines the government's strategies and policies to achieve Malaysia's aspirations for sustainable and inclusive development from 2021 to 2025. It focuses on five main thrusts, which are enhancing economic growth, driving productivity and innovation, promoting social inclusivity, strengthening environmental sustainability, and improving governance and public service delivery. The plan aims to transform Malaysia into a high-income nation by 2030 while ensuring equitable distribution of wealth and opportunities for all Malaysians.
- The Expo Osaka 2025 has led to an infrastructure development project. It includes the extension of the Osaka Metro Central Line, refurbishment of Kansai International Airport, and the construction of new bridge and expo's pavilions etc. Expo Osaka 2025, also known as the World Expo 2025, is a large-scale international exhibition that will be held in Osaka, Japan from April 13 to October 13, 2025. The theme of the Expo is "Designing Future Society for Our Lives," and the event aims to showcase innovative solutions to global issues such as climate change, aging populations, and urbanization. The Expo will feature pavilions from participating countries, as well as exhibitions, events, and cultural performances. It is expected to attract millions of visitors from around the world and promote international cooperation and understanding. Osaka was chosen as the host city for the Expo after a competitive bidding process.
- According to the 2023-24 Budget, sufficient land has been obtained for 360,000 public housing units in Hong Kong. For Private housing, completion of private residential units to average over 19,000 units annually in the 5 years from 2023 onwards. The expected first-hand private residential unit supply for the next 3 to 4 years is about 105,000 units.
- Although Mahathir Mohamad, the prime minister, terminated the railway project of One Belt One Road in Malaysia, the East Coast Rail has restarted in 2019 and is estimated to be finished in 2026. The East Coast Rail Link (ECRL) is a major railway project in Malaysia that will connect the east coast of the country to the west coast. The rail line will run from Port Klang on the west coast to Kuantan, Kuala Terengganu, Kota Bharu, and Tumpat on the east coast, covering a distance of approximately 640 kilometers. The project is designed to improve connectivity and transportation in the eastern region of Malaysia, and is expected to boost economic development and tourism in the area. The ECRL project was initially suspended in 2018 due to concerns over its high cost and financial viability. However, it was later resumed in 2019 with a revised plan that included a shorter route and lower costs. The project is expected to be completed in 2026, and will include the construction of new railway stations, bridges, tunnels, and other related infrastructure. The ECRL is seen as a key component of Malaysia's transportation infrastructure and a major contributor to the country's economic growth.

Source: Frost & Sullivan

Appendix – Supplementary Data (Cont'd)

- In 2016, the Duterte administration announced to establish The Build! Build! Build! (BBB) Program, which increase the spending of public infrastructure in order to improve the economy, and strengthen the public infrastructure. The Build! Build! Build! (BBB) Program is a flagship infrastructure program of the Philippine government that aims to accelerate the country's economic growth through the development of various infrastructure projects. Launched in 2017, the program focuses on building new infrastructure, such as airports, seaports, highways, railways, and urban mass transport systems, as well as rehabilitating and upgrading existing infrastructure. The BBB Program is part of the government's long-term development plan, called "Ambisyon Natin 2040," which aims to transform the Philippines into a prosperous and middle-class society within the next two decades. The program is also seen as a way to address the country's infrastructure gap and improve the quality of life of Filipinos by providing better access to basic services and more efficient transportation systems. To date, the BBB Program has identified and prioritized more than 100 infrastructure projects with a total cost of approximately Php 8.4 trillion (USD 174 billion). Many of these projects are already underway, while others are still in the planning and design stages. The implementation of the BBB Program is expected to generate employment opportunities, attract more investments, and spur economic growth in the Philippines.
- The Netherland government is earmarking a total of €20 billion for investments in different infrastructure since 2021.
- To develop the related technology and apply it into the construction industry, the Hong Kong government has served \$75 million for conducting studies on establishing the Building Testing and Research Institute, constructing an advanced construction industry building, and strengthening the supply chain of Modular Integrated Construction (MiC) modules.
- The 12th Malaysia Plan (RMK 12) was promulgated in September 2021. The economic empowerment section outlines new drivers of economic growth such as the digital economy, the aerospace industry, and integrated regional development as well as growth enablers such as sustainable energy sources and infrastructure connectivity. The environmental sustainability section emphasises green development, and covers the blue economy, green technology, renewable energy as well as adaptation to and mitigation of climate change.

Source: Frost & Sullivan

Appendix – Supplementary Data (HKEx 2nd comment)

In the slewing ring manufacturing and mechanical parts and machineries sourcing and distribution market, justify the reason for the discrepancy in (i) manufacturing price and wholesale price ; (ii) wholesale price and retail price; and (iii) manufacturing price and retail price

The difference between manufacturing price and wholesale price is justified when wholesalers and distributors provide value-added service to respective customers i.e. retailers, including but not limited to, extensive geographical presence and ability to reach retailers, expertise in technical knowledge to resolving technical issues, supply chain management, warehousing and logistics capabilities, bulk breaking, repackaging, sales, and , risk assessment and management services. While manufacturers focus on high-volume standard products at competitive prices, distributors sell a wholesale solution tailored to customer needs and difference in positioning and the perceived value allows distributors to command a markup.

The difference between wholesale price and retail price is justified by the value-added offered by retailers, including but not limited to, extensive geographical presence and ability to reach end-customers, marketing, pre-sales advice, financing options, delivery, installation, after-sales support, warranty, returns handling etc. End consumer of retailers' demand and a willingness to pay a premium for value, convenience, and service justify a higher retail price.

In turn and in the slewing ring manufacturing and mechanical parts and machineries sourcing and distribution market, as products move through the supply chain from manufacturer to distributor to end customer, value is added at each stage along the value chain, with value-added service offered by intermediaries including distributors, wholesaler and retailers. Each participant in the supply chain adds a markup to cover their costs and generate a profit, which in turn accumulates and results in a considerable spread between manufacturing price and retail price. Accordingly, it is concluded that it is common in the slewing ring manufacturing and mechanical parts and machineries sourcing and distribution market that discrepancy is commonly seen between (i) manufacturing price and wholesale price ; (ii) wholesale price and retail price; and (iii) manufacturing price and retail price.

Source: Frost & Sullivan

Appendix – Supplementary Data (HKEx 2nd comment)

Justify the Company's high gross profit margin for its sourcing business (i.e. as high as that for the Company's manufacturing business)

- The Group is able to provide additional services that allow them to charge a premium for the slewing rings they source, such as product customization, systems integration, or exceptional customer support. These value-added services make their offering unique and difficult for customers to find elsewhere. Customers regard the Company's expertise in technical knowledge, supply chain dynamics, warehousing and logistics capabilities, digitalised operation, risk assessment and management skills as part of value-added capabilities, and these capabilities translate into greater bargaining power which constitute a better gross profit margin.
- Besides, some products could be specialized or niche products that limited number of competitors do not offer. As one of the few providers, the Group face little downward pressure on pricing and margins. Customers rely on the Group as a key supplier for these niche products.
- Further, the Group is effective at sourcing high-quality slewing rings from suppliers at a low cost due to strategic partnerships, bulk purchasing power or deep experience in the market. Strong sourcing capabilities allow them to buy at a discount, while still selling at competitive prices that generate substantial margins.
- Additionally, the high credibility, market reputation and customer stickiness exert influence to the greater price charged and hence a greater gross profit margin

Source: Frost & Sullivan

Appendix – Supplementary Data (HKEx 2nd comment)

Further elaborate on the Company's value in sourcing mechanical parts and machineries for its customers

- Compared to sourcing competitors who are largely limited to distributing parts without manufacturing base, the Group principally serve as strategic sourcing partner of mechanical parts and machineries for its customers. The value proposition include (i) one-stop service provider, providing customers with a single source for a wider range of mechanical components, spare parts and equipment, along with slewing rings which is the core product manufactured by the Group, which saves customers the time and hassle of dealing with multiple suppliers and streamlines their procurement processes. The self-manufactured products and sourced products serve as a cross-selling service which cater to various needs of customers; (ii) inventory management, involves handling the burden of inventory costs and managing optimum stock levels; (iii) technical expertise, the Group's knowledgeable staff with engineering or technical backgrounds who understand customer needs and specifications, ensures customers receive compatible, high-quality parts and solutions tailored to their operations. With extensive knowledge in the whole vertical supply chain from manufacturing to sourcing, the Group has competitive edges over mere distributors of mechanical parts and machineries with downstream application compatibility, performance and safety; (iv) custom sourcing, able to source uncommon or obscure parts by tapping into an extensive network of suppliers, catering to niche and tailored needs; (v) strategic solution partner, working closely with customers to understand their mechanical equipment needs and recommend comprehensive solutions.

Source: Frost & Sullivan

Appendix – Frost & Sullivan’s Methodology

- Frost & Sullivan is an independent global consulting firm founded in 1961, and offers industry research, market strategies and provides growth consulting and corporate training on a variety of industries. The Frost & Sullivan Report includes information on the Workforce Operational Solution Platforms market in the PRC. The information contained in the Frost & Sullivan Report is derived by means of data and intelligence gathering which include: (i) desktop research; and (ii) primary research, including interviews with key stakeholders including but not limited to major market participants and experts in the industry.
- Information gathered by Frost & Sullivan has been analysed, assessed and validated using Frost & Sullivan in-house analysis models and techniques. According to Frost & Sullivan, this methodology ensures a full circle and multilevel information sourcing process, where information gathered can be cross-referenced to ensure accuracy. All statistics are based on information available as at the date of Frost & Sullivan Report. Other sources of information, including government, trade association or market place participants, may have provided some of the information on which the analysis or data is based.
- This study has been undertaken through extensive primary and secondary research including interviews with industry experts and market participants, and analysis of official public sources of data, figures, information and reports as well as Frost & Sullivan’s independent database and research reports.
- Projected market sizes in this report are estimated through in-depth analysis of the historical macro-economic factors such as the country’s economic growth, market drivers, future trends and market concentration.
- Bottom-up and top-down methods are applied to cross check and fine tune the obtained figures to arrive at the closest estimate.

Source: Frost & Sullivan

Appendix – Abbreviations and Terms

- **CAGR:** Compound annual growth rate, the annual growth rate of an investment over a specified period of time longer than one year.
- **GDP:** Gross Domestic Product
- **The PRC:** The People's Republic of China

Source: Frost & Sullivan

Thank You!

