Independent Market Research Report
on the
Tyre Industry in Thailand
(with Tyre Industry Outlook for the United States and Selected Asia-Pacific Countries)

October 2021

FROST & SULLIVAN

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Date: 16th October 2021

The Board of Directors
Deestone Corporation Public Company Limited
84 Soi Petchkasem 122, Petchakasem Road
Om Noi, Krathum Baen
Samut Sakhon, Thailand 74130

Dear Sirs/Madams,

Independent Market Research Report on the Tyre Industry in Thailand (with Tyre Industry Outlook for the United States and Selected Asia-Pacific Countries) for Deestone Corporation Public Company Limited (“Deestone” or the “Company”).

We, Frost & Sullivan (Thailand) Co., Ltd. (“**Frost & Sullivan**”), have prepared this Independent Market Research Report on the Tyre Industry in Thailand (with Tyre Industry Outlook for the United States and Selected Asia-Pacific Countries) (“**the Report**”) for inclusion in Deestone’s prospectus (“**Prospectus**”) in relation to the initial public offering and the listing of Deestone on the Stock Exchange of Thailand.

We are aware that this Report will be included in the Prospectus, and we further confirm that we are aware of our responsibilities as the appointed independent market researcher of this listing exercise.

We acknowledge that if we are aware of any significant changes affecting the content of this Report between the date hereof and the issue date of the Prospectus, we have an ongoing obligation to either cause this Report to be updated for the changes and, where applicable, cause Deestone to issue a supplementary prospectus, or withdraw our consent to the inclusion of this Report in the Prospectus.

Frost & Sullivan has prepared this report in an independent and objective manner and has taken adequate care to ensure the accuracy and completeness of this Report. We believe that this Report presents a true and fair view of the industry within the limitations of, among others, secondary statistics and primary research, and does not purport to be exhaustive. Our research has been conducted with an “overall industry” perspective and may not necessarily reflect the performance of individual companies in the industry. Frost & Sullivan shall not be held responsible for the decisions and/or actions of the readers of this Report. This Report should also not be considered as a recommendation to buy or not to buy the shares of any company or companies, as mentioned in this Report or otherwise.

For and on behalf of Frost & Sullivan (Thailand) Co., Ltd.:

Singh

Sanjay Singh
Senior Vice President and Business Head APAC - Business & Financial Services

1 EXECUTIVE SUMMARY

The global tyre market is projected to sustain robust growth at a compound annual growth rate (CAGR) of 8.3% by value from 2020 to 2025. The growth is estimated to be driven by solid macroeconomic indicators that support the demand for personal, commercial, and industrial vehicles, and tyres accordingly.

In the period between 2015 and 2019, the growth of global trade activities, industrialisation, and aggressive investments in infrastructure projects, primarily highways, bridges, and power plants, provided a boost to the global tyre market, led by countries in North America, Asia-Pacific, and Europe.

Despite the supply chain disruptions caused by the COVID-19 pandemic in 2020, the tyre market continued to demonstrate resilience with impacts on the industry expected to be of short term, particularly for the replacement tyres segment. The surge in logistics and e-commerce activities amid pandemic-induced movement restrictions has been a critical factor cushioning the impact on the tyre market through higher demand for tyres in the light commercial vehicles segment. **The tyre market is forecast to resume growth starting from 2021** as global vehicle sales begin to recover in the first half of the year, following the gradual reopening of the economies after prolonged lockdowns.

The number of personal and commercial vehicles in operation (VIOs) is projected to remain relatively stable in mature and developed markets, such as North America, indicating solid demand trends for tyres within the forecast period. In Europe, VIOs are forecast to increase, spurring the demand for tyres. However, the fastest growth is estimated to be registered in the Asia-Pacific region due to rapid economic development stimulating the demand for commercial vehicles, and growing populations and income contributing to the increasing demand for personal vehicles.

The **North American** market remains **one of the most attractive markets globally** for tyre manufacturers due to its large population with a high income per capita. This market is estimated to also benefit from the various fiscal stimulus packages to boost the recovery of commercial and industrial activities to pre-pandemic levels. This fresh flow of investments will support the demand and use of commercial and industrial vehicles, and accordingly, relevant tyres. Within the Asia-Pacific region, Thai tyre manufacturers are expected to maintain their dominance as the leading tyre suppliers in this market due to the **growing acceptance of made-in-Thailand tyres** for their quality and competitive prices.

Thai tyre manufacturers stand to benefit also from a **large domestic market** and proximity to **fast-growing markets in Asia-Pacific**. Asia-Pacific is the most populous region globally and consists of fast-growing economies, driven by vibrant commercial and industrial activities. The robust economic environment aids the emergence of a vast middle-income class and the growing need for personal vehicles. In addition, Southeast Asian countries, mainly Indonesia, Vietnam, Thailand, and Malaysia, play a major role in the global market for two-wheelers. The Asia-Pacific region comprises also of developed countries such as Australia. The country has extensive mining and agricultural activities representing most of its exports; accordingly, the demand for large commercial and industrial vehicles is high. These characteristics make **Asia-Pacific a sizeable, growing, and diversified market** for tyre companies.

The market supply is experiencing structural changes. While previously dominated by a few large global tyre companies (e.g., Michelin, Bridgestone, Continental, Goodyear), **customers are increasingly accepting emerging market based brands,** like Deestone, over global brands such as Michelin, Goodyear and Bridgestone. This has resulted in a decline in the market share of the largest tyre companies. The emerging market based branded tyres typically penetrate the large (high-volume) and fast-growing replacement market, which is highly price-sensitive yet more attractive for tyre manufacturers.

Thai tyre manufacturers have a competitive edge in the global tyre market due to their access to an ample supply of raw materials and knowledgeable and cheaper labour resources. Since 1991, Thailand has been the largest global producer of natural rubber, the primary raw material for tyre production. This allows tyre manufacturers in the country to mitigate volatile commodity pricing periods. The price of natural rubber is expected to stabilise as production returns to levels similar to the 2015 to 2020 period. Thailand is also a leading global automotive production hub, which strengthens its industry knowledge and linkages for tyre production. Its proximity to less developed countries such as Cambodia, Laos, and Myanmar also provides a large pool of economical and skillful labour for tyre production.

Deestone is a reputable and prominent locally-owned tyre manufacturer in Thailand, benefiting from the abovementioned trends. The company has continued to demonstrate resilience even at the height of the COVID-19 pandemic in 2020, outperforming competitors and achieving higher exports in the year compared to 2019.

Deestone is the largest Thai-owned tyre company based on revenue in 2020. As at January to June (H1) 2021, **Deestone Corporation Company Limited is also the largest Thai-owned exporter of tyres from Thailand to the United States and globally**, based on export value. It is overall the fifth largest based on export value from Thailand to the World and the fourth based on export value from Thailand to the United States.

Table 1-1: Ranking of Deestone Corporation Company Limited Among Tyre Exporters from Thailand to the World, 2019, 2020, and H1 2021

Company	2019	2020	H1 2021	Company Headquarters
Siam Michelin	2nd	2nd	1st	France
Sumitomo Rubber (Thailand)	1st	3rd	2nd	Japan
LLIT (Thailand)	3rd	1st	3rd	China
ZhongCe Rubber (Thailand)	4th	4th	4th	China
Deestone Corporation Company Limited	**6th**	**5th**	**5th**	**Thailand**
Bridgestone Tire Manufacturing (Thailand)	5th	6th	6th	Japan

Note:

1. *Data based on the HS code 4011: New pneumatic tyres, of rubber*
2. *H1 2021 indicates the period between January and June 2021*
3. *Ranking based on the value of export*

Source: Ministry of Commerce of Thailand; analysis by Frost & Sullivan

Table 1-2: Ranking of Deestone Corporation Company Limited Among Tyre Exporters from Thailand to the United States, 2019, 2020, and H1 2021

Company	2019	2020	H1 2021	Company Headquarters
LLIT (Thailand)	1st	1st	1st	China
Sumitomo Rubber (Thailand)	2nd	2nd	2nd	Japan
ZhongCe Rubber (Thailand)	3rd	3rd	3rd	China
Deestone Corporation Company Limited	**5th**	**4th**	**4th**	**Thailand**
Sentury Tire (Thailand)	4th	5th	5th	China

Note:

1. *Data based on the HS code 4011: New pneumatic tyres, of rubber*
2. *H1 2021 indicates the period between January and June 2021*
3. *Ranking based on the value of export*

Source: Ministry of Commerce of Thailand; analysis by Frost & Sullivan

Deestone manufactures and sells **a comprehensive range of tyres** for passenger cars, trucks and buses, two-wheelers, and off-the-road vehicles and equipment. Its tyres are popularly sold under two main brands, Deestone and Thunderer. The company's vast product portfolio enables it to tap into the various opportunities across different market segments. In particular, Deestone benefits from its well-established **presence and brand positioning in large and lucrative markets**, such as the off-the-road market, both locally and overseas, including in the United States. Deestone is a major player in the production of bias tyres, accounting for a substantial volume of bias tyres supply to the rest of the world and the United States. It also has a reputation in manufacturing two-wheeler tyres, radial truck tyres, and tyres conducive to retreading.

Leveraging its **well-established name** in the market spanning over 40 years, Deestone's strengths lie in its global reputation for quality and safety standards in producing a broad range of tyres, especially in the Passenger Car Radial (PCR), Truck and Bus Radial (TBR), and bias segments. The company's solid after-sales support also encourages the establishment of strategic partnerships across the sales network, **firmly positioning Deestone** to capture the continued opportunities for aggressive expansion locally, regionally in the Asia-Pacific, and across large global markets, including the United States.

2 GLOBAL AUTOMOTIVE OUTLOOK

The global automotive outlook directly impacts the trends and developments in the tyre industry. Hence, understanding the global automotive sales and vehicle population is necessary to evaluate the trends in the tyre market's original equipment (OE) and replacement segments. While automotive production around the globe heavily influences the OE segment, the replacement segment depends on the number of vehicles on the road, their driving distances, vehicle types, and road conditions in each country, among other factors.

Global macroeconomic factors such as Gross Domestic Product (GDP), population, and disposable income also affect the global automotive and tyre industries. A positive trend in macroeconomic factors has a direct impact on automotive and tyre demand. High GDP growth leading to higher disposable incomes denotes a larger proportion of people with the financial capability to spend on their vehicles and replace related parts and accessories like tyres.

The COVID-19 pandemic in 2020 triggered a temporary economic slowdown across many countries due to national lockdowns and movement restrictions to contain the spread of the virus. The health crisis similarly impacted the global automotive and tyre industries due to reduced passenger vehicle usage, affecting tyre consumption and sales. The trend is also altering transportation behaviours as countries gradually reopen their economies. Today, more people prefer to travel and move around independently or with a few family members and friends instead of taking public transport, where possible. Consumers demonstrate a higher preference for private vehicles over public transportation to minimise the risk of contracting the virus when exposed to large crowds, particularly in metropolitan areas. Commercial vehicles usage has remained stable due to its role in supporting logistics and transportation activities as more people switch to online shopping via e-commerce platforms over visiting physical retail stores, spurring the growth of logistics activities and last-mile deliveries. These developments largely offset the pandemic-induced lower tyre consumption and passenger vehicle sales.

The tyre industry is slated for robust recovery and growth in the post-pandemic period. China, one of the first countries to overcome the pandemic, has seen exponential growth in tyre demand, improving its performance compared with pre-pandemic levels. As of the first two quarters of 2021, the overall tyre industry in North America, Europe, and other regions is recovering rapidly. Hence, the outlook for tyre companies is positive across all tyre segments, with varying growth rates in different countries.

2.1 GLOBAL MACROECONOMIC OUTLOOK

2.1.1 GDP

The GDP for major global regions (i.e., North America, Latin America and the Caribbean, Europe and Central Asia, East Asia and Pacific, and the Middle East and North Africa) is projected to grow in the forecast period between 2020 and 2025. The East Asia and Pacific region had the highest nominal GDP in 2020 and is forecast to grow at a CAGR of 5.5% from 2020 to 2025. In 2020, the COVID-19 pandemic led to disruptions in the domestic demand and supply in many countries due to restrictions in economic activities, lower private investments, and ultimately lower household income per capita. For example, the GDP of Thailand and Malaysia (at constant prices) declined [1] in 2020 compared to 2019. Nevertheless, some countries managed to grow in 2020, albeit at a slower rate than their historical performance from 2015 to 2019. For example, the GDP in China and Vietnam (at constant prices) grew by 2.3% and 2.9%, respectively year-over-year (YoY), notwithstanding the negative impact of the pandemic due to the higher focus on production activities and public investment contributions.

[1] IMF World Economic Outlook Database, April 2021

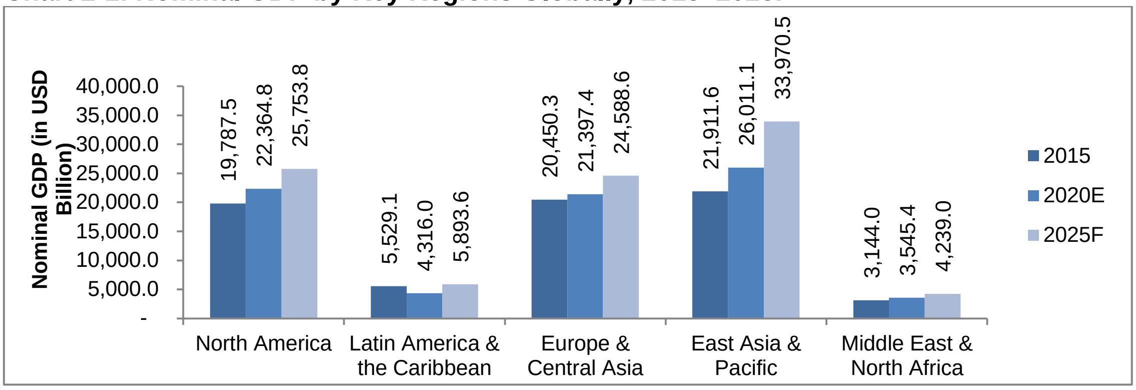
The North American and Europe and Central Asia regions' nominal GDP were almost at par in 2015. However, in 2020, these regions faced severe economic contraction due to the impact of COVID-19.

During the mid-2020 period, many tyre factories in Southeast Asia[2] supplying mainly to the US market suffered severely due to national lockdowns in many countries, causing a domino effect across the tyre supply chain. Finished products like tyres were piled up in factory warehouses waiting to be shipped. Tyre importers were also affected due to the suspension of activities in the port sector in their respective countries caused by the pandemic and disruptions in logistics activities. Despite the challenging situation, industry participants such as Deestone managed to outperform the market and achieved higher exports in 2020 compared to 2019.

Starting Q4 2020, governments in these regions launched vaccination campaigns, easing the containment and lockdown measures to speed up economic recovery. The nominal GDP of North America and Europe and Central Asia are projected to grow at 2.9% and 2.8% CAGR, respectively, from 2020 to 2025.

The post-pandemic growth in the Latin America and the Caribbean region will reflect a V-shape recovery, and therefore be of a higher magnitude, with the GDP forecast to increase at a CAGR of 6.4% from 2020 to 2025. The Middle East and North Africa region had the lowest nominal GDP compared to other global regions, with GDP growth projected at 3.6% CAGR from 2020 to 2025.

Chart 2-1: Nominal GDP by Key Regions Globally, 2015–2025F



Source: World Bank Open Data; IMF World Economic Outlook Database; Frost & Sullivan

China, the United States, Japan, and India rank among the top global light vehicle markets as of 2020,[3] while Indonesia, Thailand, Malaysia, the Philippines, and Vietnam are Southeast Asia's largest markets for new vehicles.[4] This study closely examines the macroeconomic factors in these regions that impact their automotive and tyre industries.

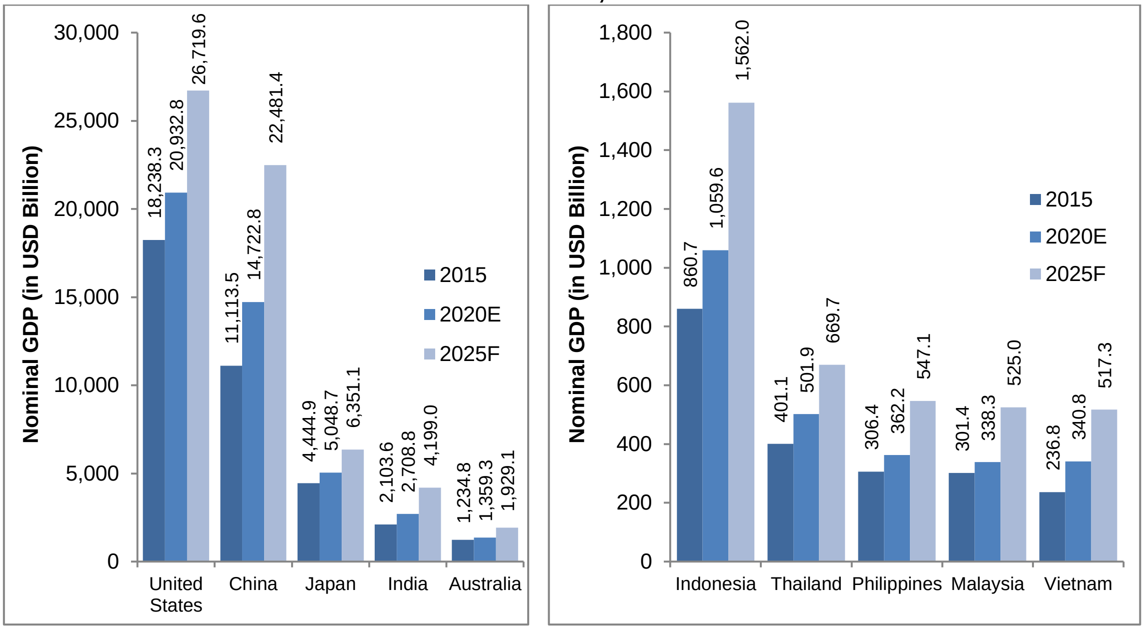
China's post-COVID-19 economy continues to flourish, powered by solid exports and increased domestic consumption following the reopening of its economy from strict containment measures. This is a stark contrast to 2020, when the pandemic disrupted port operations in many countries and led to higher freight costs, adversely impacting Chinese tyre exports. However, during this period, China increased its focus on the buoyancy of its vast domestic market and sold most of its tyre production locally. The Chinese economy is projected to increase YoY by 8.4% and 5.6% in 2021 and 2022, respectively,[5] (at constant prices).

In 2020, Japan's economy contracted by -4.8% (at constant prices). However, with the introduction of recovery measures in early 2021 and an efficient vaccination programme, the Japanese economy is expected to expand starting from the second half of 2021.[6]

[2] Southeast Asia comprises 10 countries: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam.
[3] Frost & Sullivan, Global Automotive Industry Outlook, June 2020
[4] GlobalData, ASEAN vehicle sales down 28% in 2020, February 2021
[5] ADB, People's Republic of China's Economy to Expand 8.1% in 2021, April 2021
[6] OECD, Japan Economic Snapshot, May 2021

The vaccination rollout in the United States, coupled with the USD2.8 trillion from stimulus programmes, will drive US economic recovery in 2021 and 2022. The GDP is forecast to grow by 6.7% in 2021 and 3.7% in 2022.[7] In India, following the 2020 GDP contraction, the country's economy is expected to recover and grow by 9.9% in 2021, supported by increased consumer demand and investment in goods and services. The GDP is estimated to grow gradually as the country battles resurgence in COVID-19 cases as at July 2021. Australia's GDP is projected to grow by 5.1% in 2021 and 3.4% in 2022, mainly driven by increasing domestic demand from consumers. Recovery in key Southeast Asian economies, namely, Indonesia, Thailand, the Philippines, Malaysia, and Vietnam, is forecast to resume in 2021, following the rollout of COVID-19 vaccination programmes and gradual reopening of economic activities.

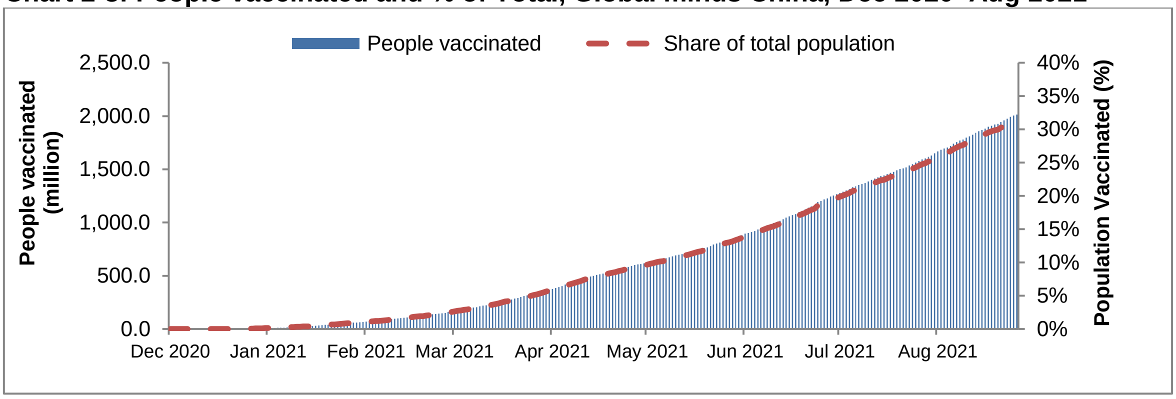
Chart 2-2: Nominal GDP for Selected Countries, 2015–2025F



Note: Data at current prices
Source: IMF World Economic Outlook Database

As vaccination rollout efforts continue, with more than 30% of people globally (excluding China) having been vaccinated as at August 2021, the economic prospects for the opening and recovery of economies are positive, which bodes well for the tyre market globally.

Chart 2-3: People vaccinated and % of Total, Global minus China, Dec 2020–Aug 2021



Note:

(1) Vaccination efforts statistics from 4th December 2020, to 29th August 2021

(2) Population data excludes China due to inconsistency of information

Source: Our World In Data; Compiled by Frost & Sullivan

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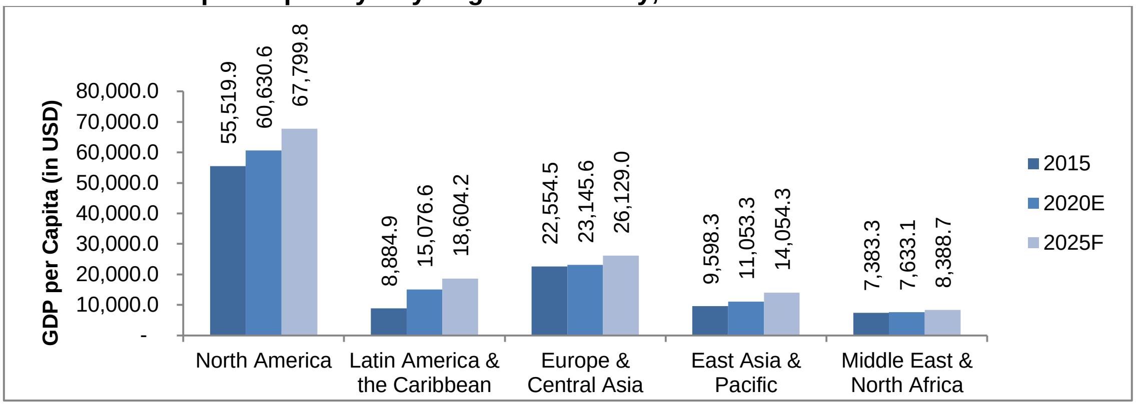
[7] S&P Global, Economic Outlook U.S. Q3 2021, June 2021

2.1.2 GDP per capita

Among the key global regions, North America, which includes the highly developed countries of the US and Canada, has the highest GDP per capita. This region has approximately the same GDP as Europe and Central Asia region, but a lower population of about 368.9 million in 2020, and is projected to reach 379.9 million people by 2025. The population in Europe and Central Asia is projected to reach 745.8 million in 2025. North America is one of the most economically developed regions in the world. Its GDP per capita is the highest compared with other regions, and it is expected to reach (United States Dollar) USD67,799.8 by 2025. The large population size and high income per capita make North America among the most attractive markets globally for various industries, including for tyre manufacturers. The US is among the most important markets for Thai tyre manufacturers.

Chart 2-4: GDP per Capita by Key Regions Globally, 2015–2025F



Source: World Bank Open Data; IMF World Economic Outlook Database; and Frost & Sullivan

Within Asia-Pacific, Japan is a key player in the automotive market. It is one of the wealthiest Asia-Pacific nations, with a high GDP per capita due to its strong manufacturing sector. Australia and New Zealand are also high-income developed countries in the region.[8] Australia is internationally competitive in financial and insurance services, high-value-added manufactured goods, and large mining and agricultural activities, which represent the majority of its exports. These industries drive the high national income in Australia. Due to its vast territory and high vehicle ownership rates, Australia represents an important market for tyre manufacturers.

China, India, Thailand, Malaysia, Indonesia, the Philippines, and Vietnam are fast-growing developing countries in Asia-Pacific. China and India have the largest and second-largest populations in the world, respectively. While their GDP per capita is low compared to other countries in 2020, it is expected to accelerate by 2025 in line with healthy economic growth. Key factors contributing to the rise in income levels in China and India are large-scale capital investments (supported by considerable domestic savings and foreign investments) and productivity growth.

Among Southeast Asian nations, Malaysia, as of 2020 an upper-middle-income country, aims to reach the developed country status driven by strong productivity growth. The World Bank recommends Malaysia advance further in education, health and nutrition, and social protection outcomes to achieve developed nation status.[9] Thailand is another upper-middle-income country in the region, with a GDP per capita of USD7,190.4 in 2020. To drive its economy and national income, the Thai government has outlined several strategies to spur the country's digital economy and boost productivity through technology innovation. Under the Thailand 4.0 initiative, the government encourages public-private collaboration and efforts to enhance the performance of various industries, including but not limited to the automotive, food delivery, and agriculture sectors. These initiatives are expected to benefit the tyre market in Thailand due to the anticipated increase in production and delivery activities.

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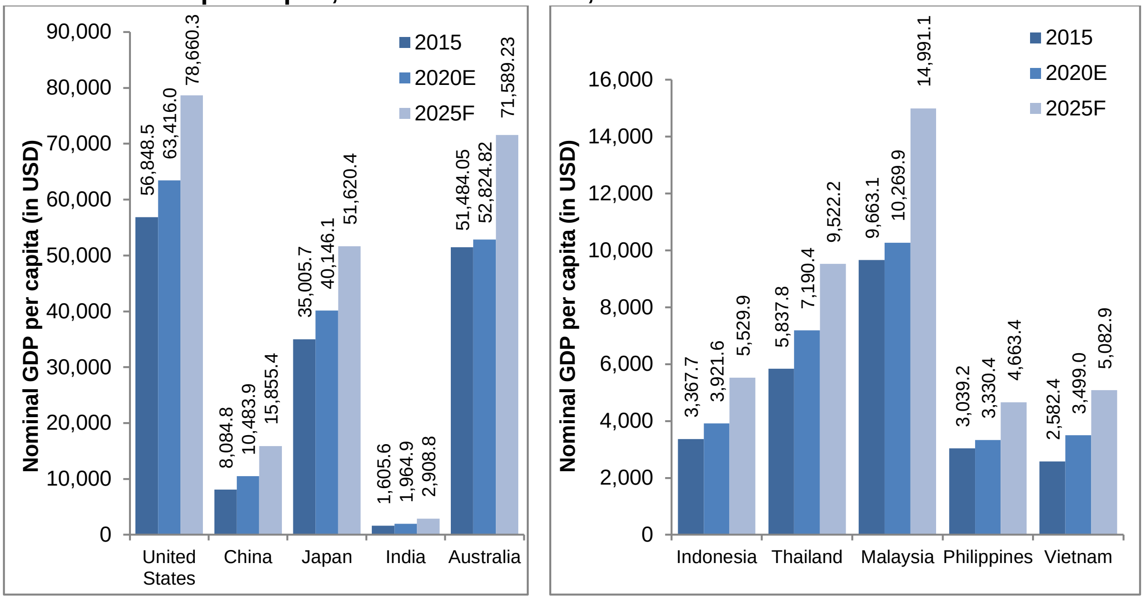
[8] Unite Nations, World Economic Situation Prospects, 2020
[9] World Bank, The World Bank In Malaysia, April 2021

Indonesia is pursuing reforms focused on state-owned enterprises in line with efforts to transform into a more developed economy. Competency building is another area of focus for the government in driving the GDP per capita growth in Indonesia. Vietnam's rapid economic development, reaching lower-middle-income status in 2010, continues unabated. Although many economies contracted in 2020 due to the pandemic, Vietnam is one of the few countries in the world that retained positive growth on the back of solid macroeconomic fundamentals and trade liberalisation. The Philippines is another Southeast Asian nation expected to record fast economic growth within the forecast period, driven by its large, young population and expanding middle-class. Overall, the economic outlook in major Southeast Asian countries is favourable, signalling continued robust demand for passenger cars and vehicles for commercial and industrial activities, and therefore tyre demand.

Chart 2-5: GDP per Capita, Selected Countries, 2015–2025F



Source: IMF World Economic Outlook Database

2.1.3 Population

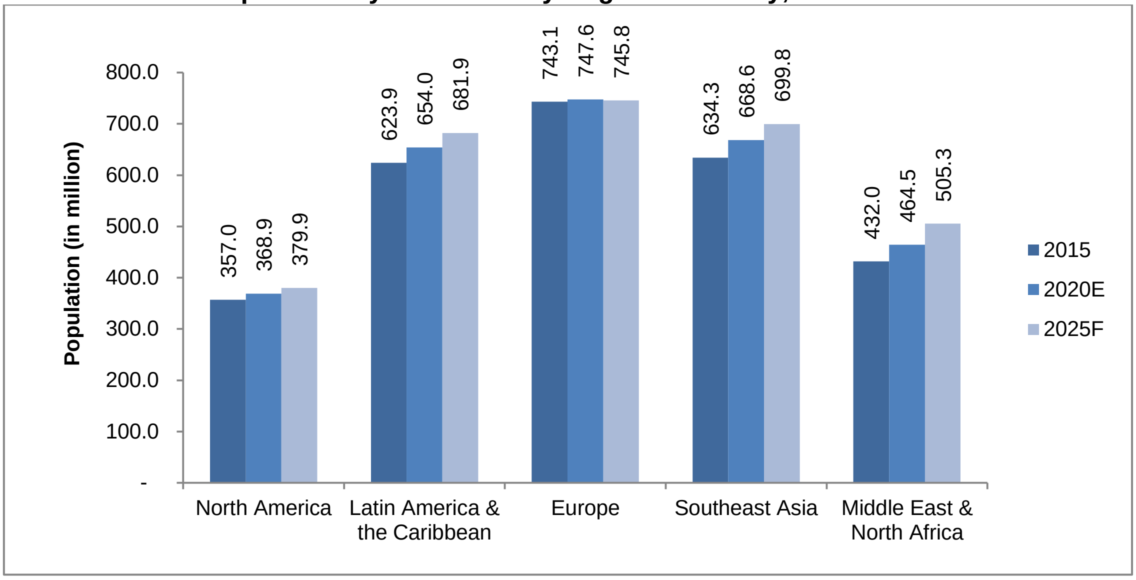
Among the regions depicted in the chart below, Europe has the highest total population of 747.6 million in 2020. It is also the only region experiencing population decline, especially in the Eastern and Southern parts of Europe, due to the intra-EU migration from these areas and low fertility rates.[10] The region's population decline is forecast to continue, reaching 745.8 million people in 2025. As of 2020, there are approximately 668.6 million people in Southeast Asia and 654.0 million people in Latin America and the Caribbean, while North America has the lowest population of only 368.9 million inhabitants.

Higher populations indicate an increased number of potential consumers for the automotive and tyre markets. A Frost & Sullivan study[3] lists the Asia-Pacific, North America, and Europe as the top 3 global automotive markets in 2020. Within North America, the United States has a population of 330.1 million people as at 2020, which is projected to register a CAGR of 0.6% between 2020 and 2025.[11]

Among the Asia-Pacific countries, China and India have the largest (1,404.3 and 1,378.6 million people, respectively in 2020) and growing populations.

[10] European Parliament, How to tackle population decline in Europe's regions? April 2021
[11] United Nations, World Population Prospects 2019

Chart 2-6: Total Population by Selected Key Regions Globally, 2015–2025F

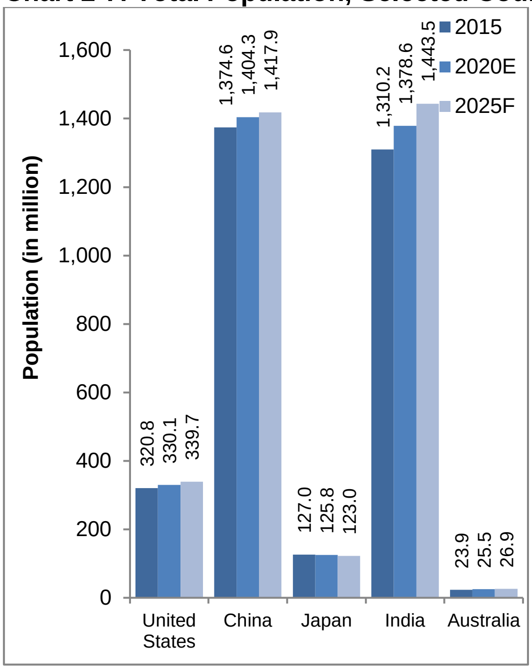


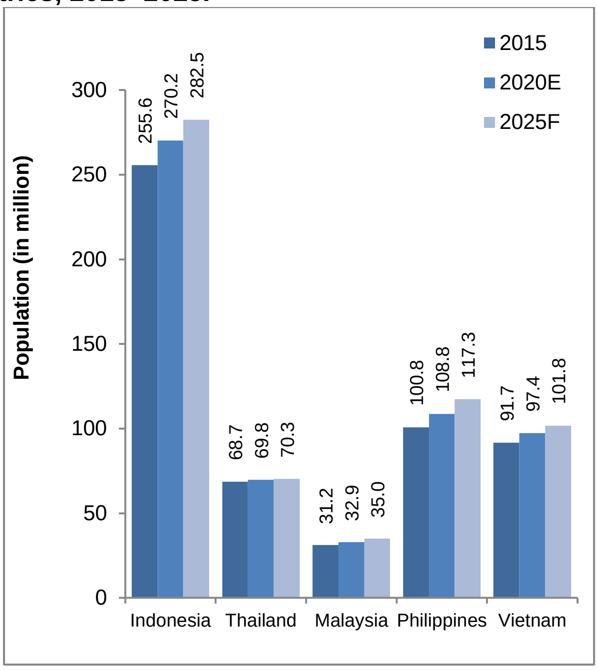
Source: United Nations (World Population Prospects)

Indonesia has the highest population in Southeast Asia at 270.2 million inhabitants in 2020, increasing at 1.1% CAGR between 2015 and 2020. The Philippines follows with the region's second-largest population at 108.8 million people in 2020, at a CAGR of 1.5% over the same period. Thailand, Malaysia, and Vietnam have 69.8 million, 32.9 million, and 97.4 million people, registering CAGRs of 0.3%, 1.1%, and 1.2% from 2015 to 2020, respectively. The vast population and fast-growing income levels make Southeast Asia among the most attractive markets globally for automotive and tyre companies.

With the steady growth in population and income, the number of vehicles (both passenger and commercial vehicles) is forecast to increase. This will lead to higher vehicle ownership and drive the sales of new and replacement tyres in the long term.

Chart 2-7: Total Population, Selected Countries, 2015–2025F

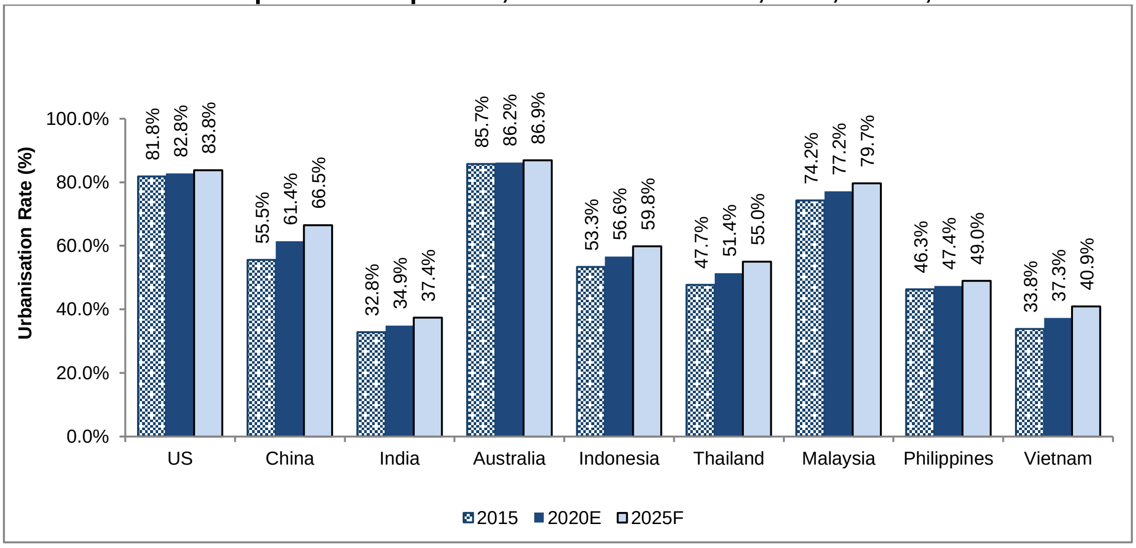




Source: United Nations (World Population Prospects)

The urbanisation rate in key selected markets grew between 2015 and 2020. Overall, China had the highest increase in urbanisation rates, rising by 5.9% over this period. Among selected Southeast Asian countries, Thailand is observed to have the highest growth in urbanised population, increasing by 3.7% from 2015 to 2020. The overall growth in urbanisation rates directly correlates to the increase in infrastructure investments in cities, contributing to the development and improvement of roads and highways to accommodate more city dwellers. This, in turn, stimulates the demand for vehicles and tyres.

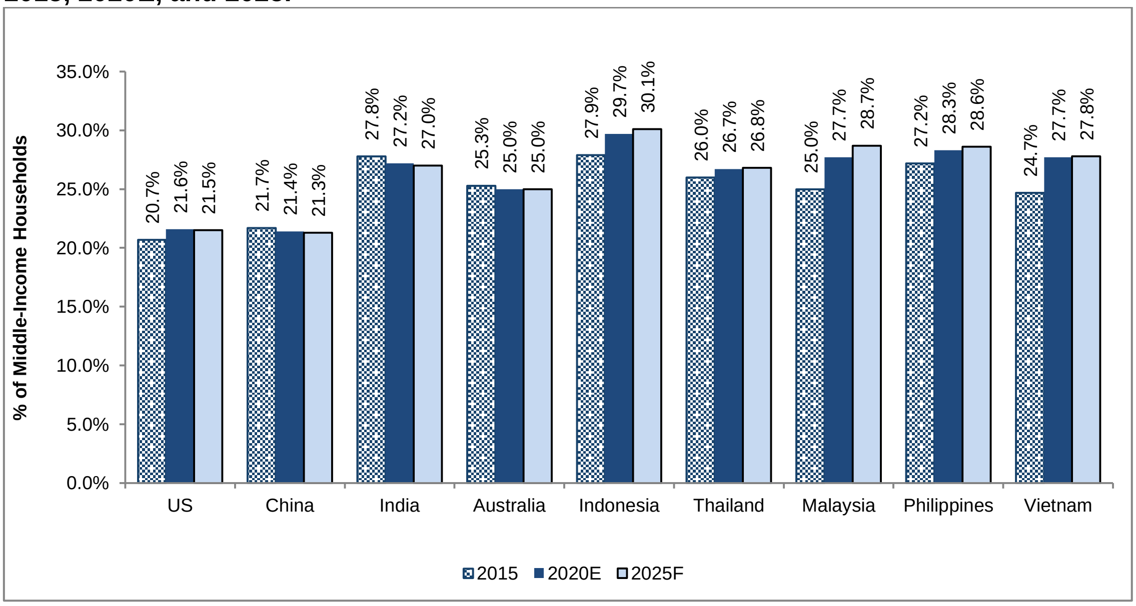
Chart 2-8: Urban Population Proportion, Selected Countries, 2015, 2020E, and 2025F



Source: UNCTAD; Compiled by Frost & Sullivan

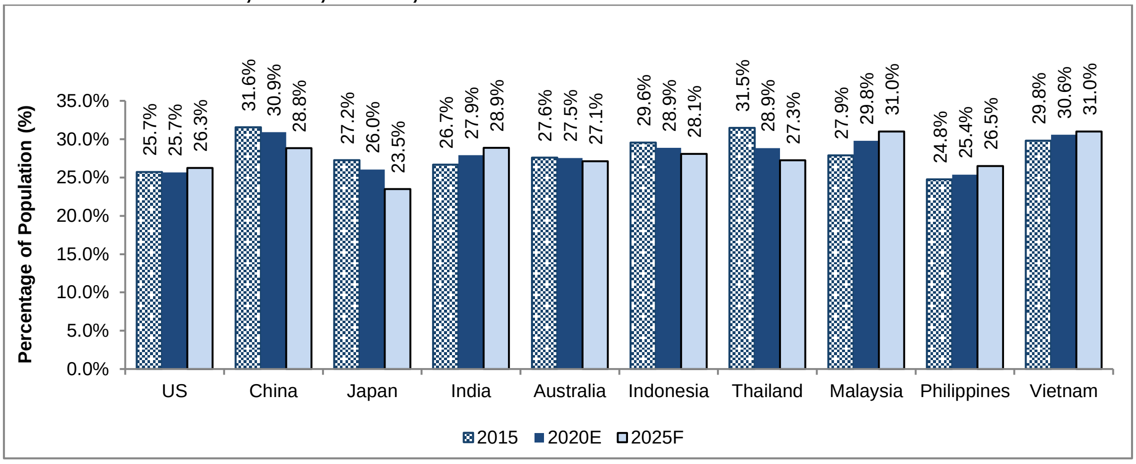
The rising urbanisation rate contributes to income growth, supporting the emergence of the middle-income class in developing countries. This, together with a low-interest rate environment and favourable credit policies, promote infrastructure investments and demand for passenger cars, and therefore tyres.

Chart 2-9: Middle-Income Households as a Percentage of the Total, Selected Countries, 2015, 2020E, and 2025F



Source: IMF (WEO April 2021 database); analysis by Frost & Sullivan

Chart 2-10: Population Aged 30–49 years as a Percentage of the Total Population, Selected Countries, 2015, 2020E, and 2025F



Note: Population ages 30–49 years is chosen as it comprises the working population with high spending capability.
Source: UNCTAD; Compiled by Frost & Sullivan

2.2 GLOBAL AUTOMOTIVE SALES AND VEHICLE POPULATION OUTLOOK

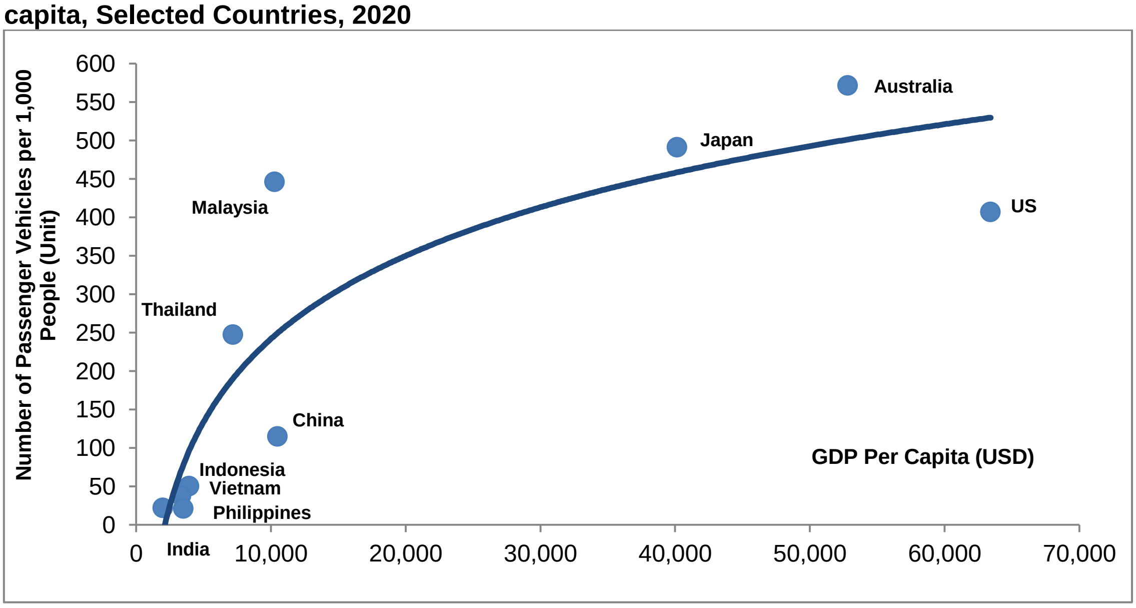
This section discusses the global automotive sales and vehicle population for the passenger vehicle and commercial vehicle segments. As defined by the International Organisation of Motor Vehicle Manufacturers (OICA), passenger vehicles refer to “motor vehicles with at least 4 wheels, used for the transport of passengers and comprising no more than 8 seats in addition to the driver's seat” while commercial vehicles include “light commercial vehicles, heavy trucks, coaches, and buses”.

2.2.1 Global Vehicle Sales (Passenger Vehicles and Commercial Vehicles)

Passenger Vehicles

From 2015 to 2019, the passenger vehicle market in Asia-Pacific, Europe, and Central and South America grew steadily. For the same period, the mature North American market recorded a lower but consistent growth due to its high motorisation rates despite its high population.

Chart 2-11: Number of Passenger Vehicles per 1,000 People Compared with GDP per capita, Selected Countries, 2020



Note: The number of passenger vehicles per 1,000 people data is based on the latest available data as of 2019, except the United States and India (2018) and Indonesia (2017).
Source: OECD; ASEANstats; IMF World Economic Outlook Database; Frost & Sullivan analysis

Table 2-1: Number of Passenger Vehicles per 1,000 People Compared with GDP per capita, Selected Countries, 2020-2025F

Country	Passenger Vehicles per 1,000 People	GDP per capita 2020 (USD)	GDP Per Capita CAGR 2020-2025F
Australia	572	52,825	6.3%
Japan	491	40,146	5.2%
Malaysia	446	10,270	7.9%
US	407	63,416	4.4%
Thailand	248	7,190	5.8%
China	115	10,484	8.6%
Indonesia	50	3,922	7.1%
Philippines	38	3,330	7.0%
India	22	1,965	8.2%
Vietnam	21	3,499	7.8%

Note: The number of passenger vehicles per 1,000 people data is based on the latest available data as of 2019, except the United States and India (2018) and Indonesia (2017). GDP Per Capita at current prices in USD

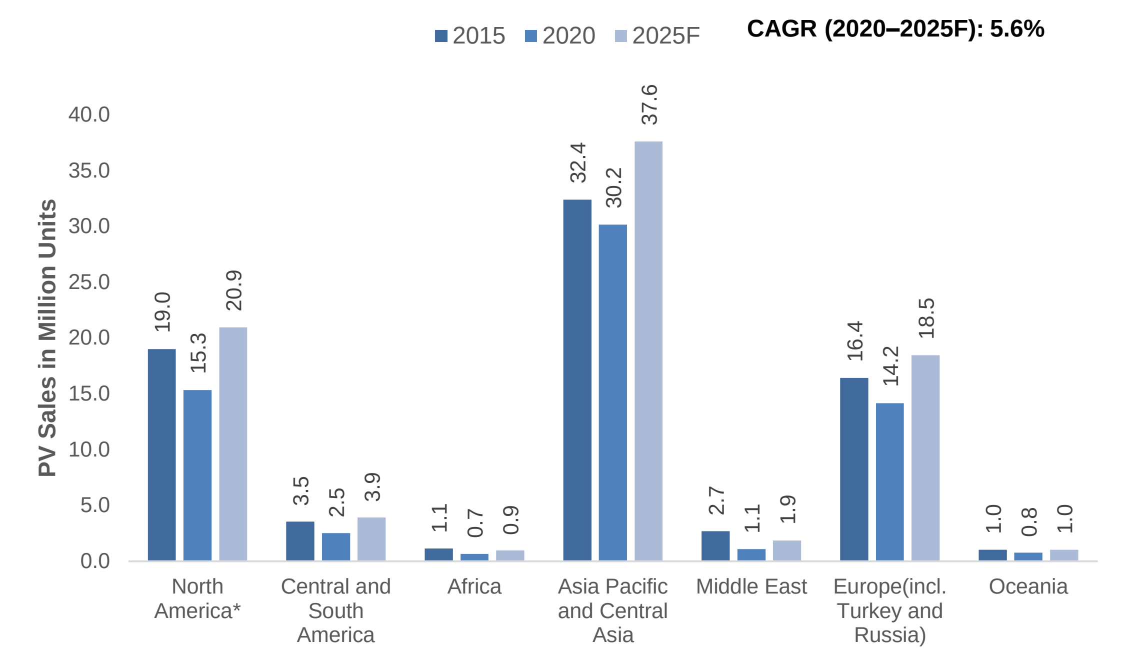
Source: OECD; ASEANstats; IMF World Economic Outlook Database; Frost & Sullivan analysis

In contrast, Asia-Pacific, which includes high-growth economies like China, Thailand, Indonesia, Vietnam, and India with expanding GDP per capita, has low motorisation rates per 1,000 people, presenting a higher scope for passenger vehicle growth. That stated, rising vehicle ownership cost poses a key restraint to potential growth in this region. While purchasing a car is easier with the availability of flexible loans and offers, vehicle buyers remain burdened by additional costs such as insurance premiums, maintenance costs, and parking fees, among others. Another restraint is the increased accessibility to convenient public transportation such as metro systems, particularly in urban areas, which allow faster commutes within the city at cheaper rates. The shared vehicles trend is also gaining momentum, impacting passenger vehicle sales globally. Despite these challenges, the global passenger vehicles in operation, particularly in selected Southeast Asian nations, has grown, increasing motorisation rates per 1,000 people.

The advent of the COVID-19 pandemic in 2020 affected most industrial sectors, including automotive, with global passenger vehicle sales declining considerably during the year. In 2020, passenger vehicle sales in the Middle East and North America were the most affected. The impact on the Asia-Pacific and Central Asia regions have been lower primarily because the economies in China and several Asian countries recovered faster from the pandemic. Despite a fall in sales, the pandemic resulted in a shift in passenger vehicle demand. With the rising need for social distancing norms, people prefer using their personal vehicles rather than public transport, even for long distances. This is expected to positively impact global passenger vehicle demand, especially in regions with lower interest rates (that can access car loans at a low cost) and high or growing GDP per capita.

The global passenger vehicle market is in the recovery phase as of the first half of 2021, following the gradual reopening of economies after strict extended lockdowns. Overall, in 2021, passenger vehicle sales are projected to recover globally, including in the Middle East, North America, and Central and South America. With the vaccination of a larger percentage of the population in 2021, countries such as the United States and the United Kingdom will see a gradual recovery in economic and social activities supporting the demand and use of vehicles. Growing consumer sentiment about personal vehicles being a safer travel option than crowded public transport systems, particularly in metropolitan areas, augurs well for car makers and tyre makers alike. From 2022 to 2025, as the pandemic subsides and more highly digitised cars and electric vehicles become available globally, passenger vehicle sales are forecast to maintain a CAGR of 5.6% from 2020 to 2025.

Chart 2-12: Passenger Vehicle Sales by Key Regions Global, 2015–2025F



**North America Passenger Vehicles Sales include Light trucks*
Source: International Organisation of Motor Vehicle Manufacturers (OICA); Frost & Sullivan

Commercial Vehicles

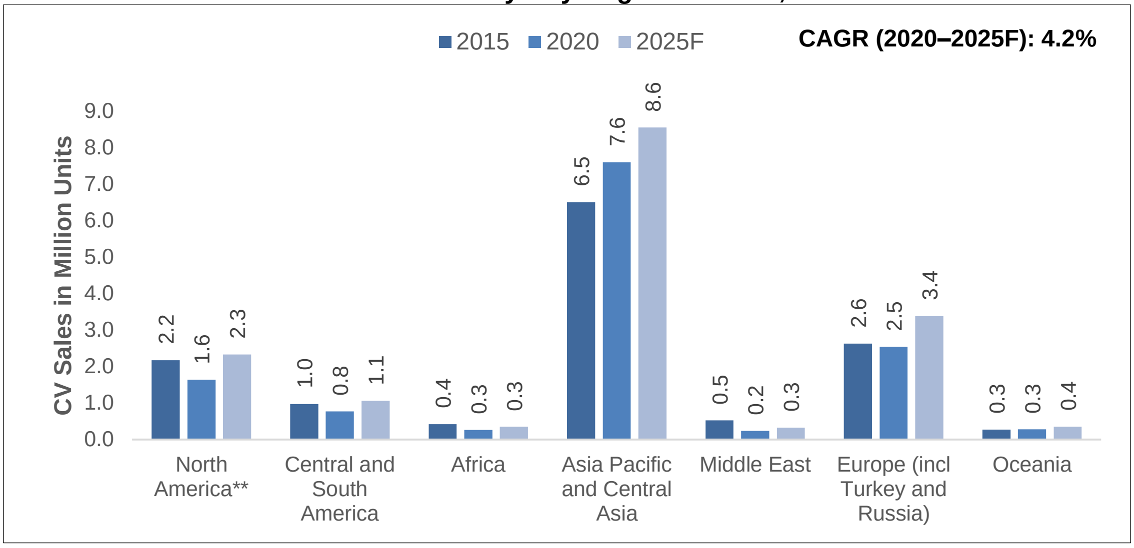
Between 2015 and 2019, increased industrialisation and aggressive investments in infrastructure projects such as highways, bridges, and power plants served as an impetus to global commercial vehicle sales growth led by countries in North America, Asia-Pacific, and Europe. Increased trade and industrial and e-commerce activities also augmented the demand for light commercial vehicles globally.

The onset of COVID-19 in 2020 caused most businesses to temporarily close due to lockdown measures. A majority of the workforce also transitioned to remote working to minimise the risk of contracting the virus. With reduced manufacturing and economic activities, the need for trucks and buses in certain regions declined during this period. However, commercial vehicle sales in North America, Asia-Pacific, and Central Asia quickly recovered to the positive growth levels witnessed between 2015 and 2019. Notwithstanding the pandemic and nationwide lockdowns, the growth in e-commerce and logistics activities in these regions continued to drive the demand for commercial vehicles,[12] mainly as the primary mode to deliver food and daily necessities and freight transport related to essential construction activities. Governments across major economies are stepping up infrastructural investments to stimulate and support economic growth post-pandemic and the demand for commercial vehicles in the forecast period.

The demand for commercial vehicles is projected to grow in 2021 as high vaccination rates encourage economic normalisation, including manufacturing, trading, building, and construction activities. As manufacturing and trading activity resumes to pre-pandemic levels globally, the overall global sales of commercial vehicles, including light trucks, medium and heavy trucks, and buses, are forecast to grow at a CAGR of 4.2% between 2020 and 2025. The Asia-Pacific and Central Asia region, led by China and India, is poised to emerge as the largest and most important growth market for commercial vehicles globally.

[12] Bangkok Post, “Asean the ‘Next Frontier' for e-Commerce Boom,” 2017

Chart 2-13: Commercial Vehicle Sales by Key Regions Global, 2015–2025F



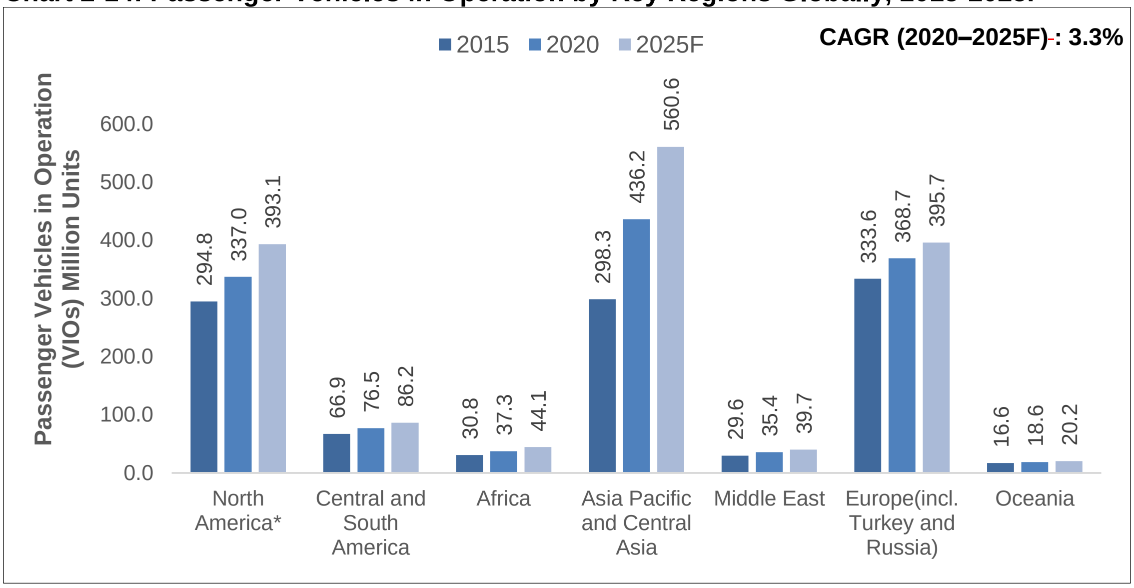
*** North America CV sales include Sales of Medium and Heavy Commercial Vehicles*
Source: International Organisation of Motor Vehicle Manufacturers (OICA); Frost & Sullivan

2.2.2 Vehicles in Operation (Passenger Vehicles and Commercial Vehicles)

Passenger Vehicles

The passenger vehicle population, or VIOs, in Asia-Pacific and Central Asia reached 436.2 million units in 2020, increasing at a CAGR of 7.9% from 2015 to 2020. The market is projected to grow by 2025 as passenger vehicle demand recovers post-pandemic. The number of VIOs is expected to remain relatively stable in mature and developed markets such as North America, indicating a solid demand for tyres within the forecast period. The growth trajectory of VIOs in Europe is forecast to continue, generating demand for tyres. However, the fastest growth is estimated to be registered in Asia-Pacific, driven by robust economic development and growing population and income levels, signalling higher affordability for personal vehicles.[13]

Chart 2-14: Passenger Vehicles in Operation by Key Regions Globally, 2015-2025F



**North America's Passenger Vehicles in Operation include Light Trucks*
Source: International Organisation of Motor Vehicle Manufacturers (OICA); Frost & Sullivan

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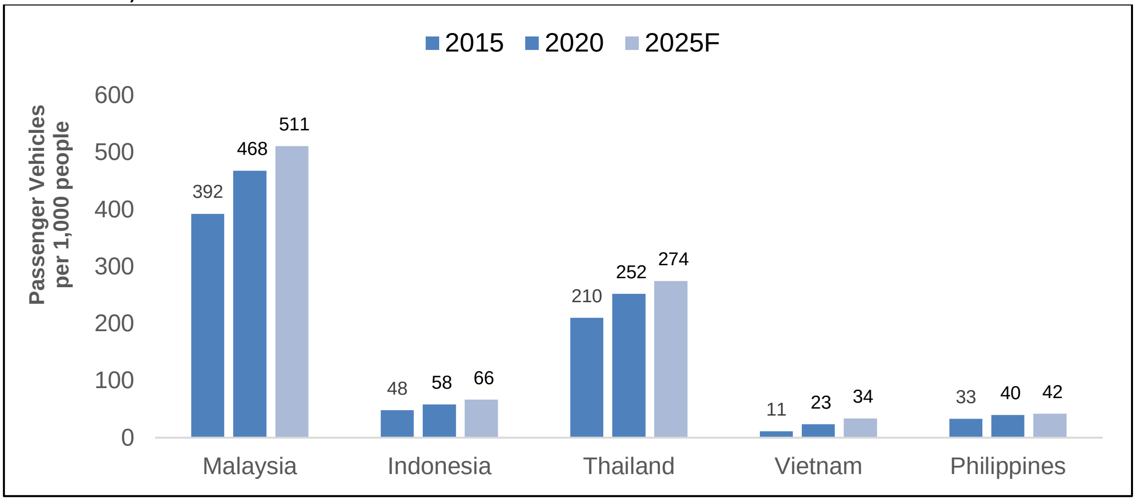
[13] Frost & Sullivan, Global Aftermarket Outlook, 2021

Southeast Asian nations such as Thailand, Malaysia, Indonesia, Vietnam, and the Philippines are high-growth market for passenger vehicles. These countries are characterised by a thriving economy, rising incomes, and limited motorisation rates, presenting considerable growth opportunities for the passenger vehicle segment. Malaysia has the highest motorisation rate among these countries, with 468 passenger cars per 1,000 people in 2020, followed by Thailand at 252 passenger cars per 1,000 people. Indonesia, Vietnam, and the Philippines, which currently have a large concentration of two-wheelers, are expected to witness a shift towards passenger cars due to economic prosperity and rising consumer purchasing power. With considerably low motorisation rates, these countries are vital potential markets for passenger cars in the future.

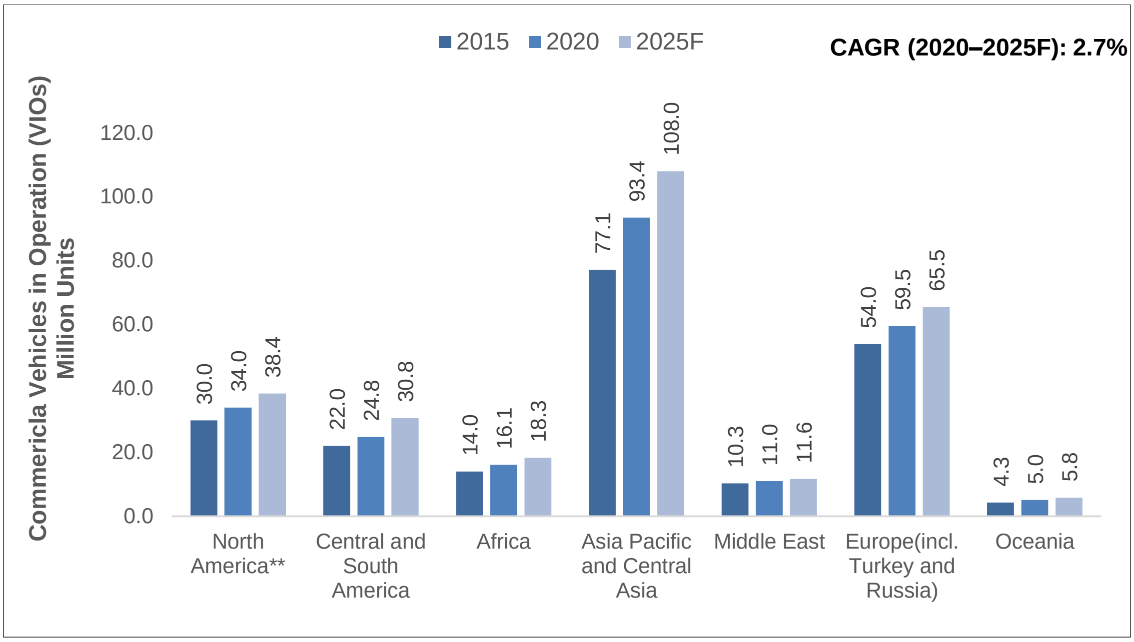
Chart 2-15: Number of Passenger Vehicles per 1,000 People, Selected Southeast Asian Countries, 2015-2025F



Source: ASEAN Secretariat, ASEANstats Database; Frost & Sullivan

Commercial Vehicles

Chart 2-16: Number of Commercial Vehicles in Operation by Key Regions Globally, 2015-2025F



***North America's Commercial Vehicles in Operation include Medium and Heavy Commercial Vehicles*
Source: International Organisation of Motor Vehicle Manufacturers (OICA); Frost & Sullivan

The VIOs in the commercial vehicle segment grew across all regions, especially in Asia-Pacific and Central Asia and Oceania at a CAGR of 3.9% and 3.4% from 2015 to 2020 respectively.

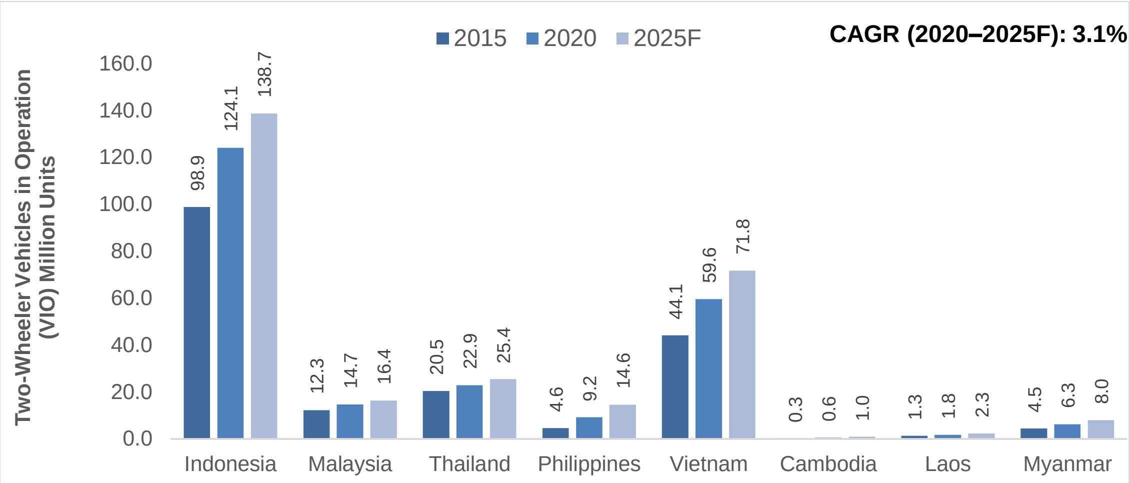
Even during the COVID-19 pandemic, the increase in e-commerce and logistics activities supported the growth of this segment. Logistics service providers required more trucks to carry out these tasks effectively and ensure safe and timely delivery of essentials and other products. Globally, the number of commercial vehicles in operation is projected to sustain a CAGR of 2.7% until 2025, led by continued fleet expansions and increased economic activity in North America and emerging economies in Asia-Pacific and Central Asia, primarily China, India, and fast-growing Southeast Asian countries. The market recovery and further investment in industrial and agricultural activities across the globe will stimulate the growth of the commercial vehicle segment and the demand for tyres.

2.2.3 Overview of the Two-Wheeler Market in Southeast Asia

The Southeast Asian countries of Indonesia, Vietnam, Thailand Malaysia, and the Philippines play an important role in the global two-wheeler vehicle landscape.[14] This region is estimated to account for more than 80% of the total annual global sales of two-wheeler vehicles. The Indonesian market is the largest in 2020, followed by Vietnam, Thailand, Malaysia, Philippines and Myanmar.

Between 2015 and 2020, there has been a significant shift in demand for two-wheelers, positively influencing tyre sales. National lockdowns amid the COVID-19 pandemic underscored the importance of motorcycles in Southeast Asia to alleviate traffic congestion from rapid urbanisation and create new uses for two-wheelers. This includes increased usage in shared bike/motorcycle services, food delivery, and courier express parcel (CEP) services, such as Grab, Deliveroo, Lineman, and Foodpanda. Most tyre factories manufacturing bicycle tyres are on tight delivery lead times due to the soaring demand for bicycles for mobility (work-related) and exercise (as people opt for outdoor activities, such as cycling, over indoor workouts).

Chart 2-17: Two-Wheeler Vehicles in Operation, Selected Southeast Asian Countries, 2015-2025F



Source: Frost & Sullivan

2.3 Global Automotive Trends and Impacts on the Tyre market

Most economies are transitioning towards a digital economy, accelerating the adoption of new and advanced technologies. Many industrial sectors leverage these technologies to digitalise operations to enhance product and service efficiencies, reduce costs, and increase customer satisfaction. Over the past few decades, the rise of new technologies and disruptive trends has dramatically transformed the automotive sector. The future of mobility is expected to accelerate the focus on key technology trends, namely, (1) Autonomous vehicles, (2) Electrification, (3) Vehicle sharing, (4) Connectivity, and (5) Digitalisation.

[14] Krungsri, Industry Outlook 2019-2021: Motorcycle, May 2019

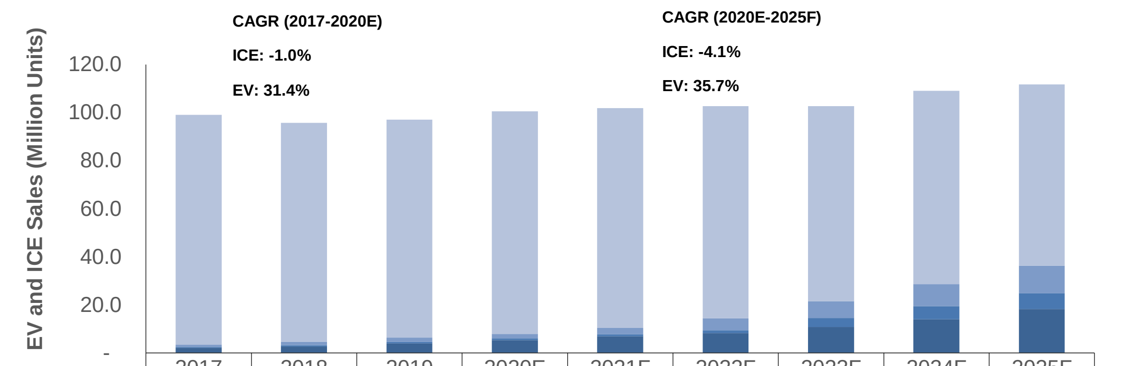
Autonomous Vehicles

The autonomous mobility market will gain precedence globally as cities conduct robo-taxis and autonomous shuttle pilots through public-private partnerships (PPPs). Under PPPs, many automotive manufacturers, mobility service providers, and autonomous technology companies work collaboratively to advance autonomous vehicles and shared transportation growth. The autonomous mobility market is forecast to expand at a low rate in the short term, with cities keen to experiment with pilot programmes to close transit gaps. Developed countries in Asia are also slowly easing regulations on autonomous vehicles testing. Shared autonomous mobility is expected to transform the urban mobility landscape by making transport more efficient, affordable, and environmentally friendly. Smart tyres play a critical role in effectively supporting autonomous or self-driving vehicles. Smart tyres can be equipped with hardware sensors to allow real-time monitoring of tyre status (e.g., temperature and inflation pressure) and enable preventative maintenance to detect and warn vehicle owners of possible damages before they happen. With smart tyres, owners benefit from the real-time information provided by hardware sensors to take preventive maintenance to reduce repair costs, minimise downtime, and improve vehicle safety.

Electrification

A Frost & Sullivan study[15] has estimated that electric vehicle sales did not recover until June 2020 due to the impact of the COVID-19 pandemic. However, the sales growth is expected to be healthy once the market recovers post-pandemic. Although internal combustion engines (ICE) still dominate vehicle markets, their sales are declining, with the number projected to reduce to 75.3 million units in 2025 as electric vehicle sales increase each year.

Chart 2-18: Electric Vehicle (EV) and ICE Sales Globally, 2017–2025F



	2017	2018	2019	2020E	2021F	2022F	2023F	2024F	2025F
ICE	95.5	90.9	90.7	92.6	91.4	89.1	85.9	80.3	75.3
BEV	0.9	1.4	1.7	1.9	2.7	5.0	6.9	9.2	11.5
PHEV	0.4	0.6	0.6	0.6	0.8	1.1	3.8	5.3	6.5
HEV	2.2	2.7	4.1	5.4	7.0	8.4	10.9	14.1	18.3

Note: Internal Combustion Engines (ICE), Battery Electric Vehicles (BEV, battery-powered electric vehicle), Plug-In Hybrid Electric Vehicles (PHEV, have both ICE engine and a battery-powered electric motor), Hybrid Electric Vehicles (HEV, run on both ICE and an electric motor).
Source: Frost & Sullivan

There is a concerted push towards electric shared mobility to drive the electric vehicle market. Charging infrastructure and battery suppliers will become a vital component of the value chain with the evolution of electric vehicles in the shared mobility fleet. Efforts to tackle climate change are also a key driver for electric vehicle sales growth globally. Greater electric vehicle adoption is seen as a way to reduce carbon emissions produced by ICE vehicles; about 14%[16] of global carbon emissions come from the transportation sector. The situation is prompting original equipment manufacturers (OEMs) and consumers to consider lower emission vehicles like Hybrid Electric Vehicles (HEVs) and zero-emission vehicles like electric cars.

[15] Frost & Sullivan, Global Electric Vehicle Market Outlook, 2020
[16] United States Environmental Protection Agency: Global Greenhouse Gas Emissions Data, accessed August 2021

Electrification in mobility does not directly affect tyre requirements like in autonomous vehicles that require smart tyres. The typical radial for ICE vehicles can also be used for electric vehicles. However, certain aspects must be taken into account for electric vehicle tyres to ensure optimal performance. For instance, tyres for electric vehicles need to handle the burden of heavy batteries and high instant torque, impacting tyre durability. A shorter braking distance and low noise are other essential requirements for electric vehicles. Thus, tyre construction components, including tyre specification, tyre compounding, and tread-wear, require consideration to ensure optimal performance for electric vehicles. Tyre compounding needs to combine several elements to achieve the necessary properties for electric vehicle use, while tyre tread is essential to enhance performance in noise reduction, traction and grip on the road, driving stability and handling, among others.

Vehicle Sharing

Mobility as a Service (MaaS) will be the backbone of urban mobility in the future. A MaaS operator facilitates diverse transportation modes, including a combination of public transportation, e-hailing, and ridesharing options (e.g., carpool, private car, and bike). The approach is likely to lead to higher usage and wear-and-tear in tyres. MaaS will increase the demand for tyres and present opportunities for long-term lucrative fleet support contracts for tyre companies. Cities and transport operators now proactively deal with transport challenges through partnerships with technology companies to offer MaaS solutions. By 2030, the MaaS market is expected to witness exponential growth, driven by evolving mobility needs, increased PPPs, and high investment opportunities:[17]

- **Evolving Mobility Needs:** Rapid urbanisation in major cities across the globe continues to increase pressure on transportation infrastructures. Changing mobility patterns influenced by more flexible lifestyles and work schedules, a higher proportion of nuclear families and single-person households, and new mobility forms are other factors necessitating an agile and sustainable mobility network that MaaS provides.
- **Public-Private Partnerships:** Local government and public support are paramount for the success of MaaS. The launch of integrated models in partnership with local transit agencies and the private sector creates strong synergies to drive growth through effective MaaS development and deployment. As such, many city governments offer infrastructure for R&D and monetary grants as a platform to develop innovative, future-oriented MaaS solutions. This promotes greater collaboration between private sector consortia, universities, and city authorities to fuel the growth of the MaaS market.
- **High Investment Opportunities:** The MaaS market is at a nascent stage and offers significant growth potential, indicating high return on investment (ROI) opportunities for financial investment arms, private equity firms, automotive OEMs, and technology investors. Investment opportunity areas in MaaS include but are not limited to business model innovation, fleet hubs, electric vehicle mobility technology and infrastructure, autonomous mobility, infrastructure for connectivity and data, and cybersecurity.

Despite the growth potential of MaaS, the COVID-19 pandemic has created substantial demand for personal vehicles. Social distancing measures and consumer fears of contracting the virus when using public transport modes and sharing vehicles are forecast to contribute to steady global demand for personal vehicles in the short to medium term.

Connectivity

Connectivity is no longer an optional feature in vehicles, but a crucial component. The automotive industry is undergoing massive transformation, where automakers are no longer hardware makers, but evolving into technology companies. Technology trends play a crucial role in transforming the connected car market. These trends include in-car commerce, in-vehicle payment (IVP), 5G, IoT platform, and data monetisation. In connected vehicles, the parts are equipped with hardware sensors like camera, steering wheel, and tyre sensors to provide information to edge or cloud platforms for data storage, data computing, and analytics.

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[17] Frost & Sullivan, FROST RADAR™: Global Mobility-as-a-Service Market, 2020

Digitalisation

Many enterprises are embarking on operational and organisational changes using digitalisation as the cornerstone to adapt to the changing business environment and manage competition from disruptors.

With digitalisation, customers now have multiple ways to engage with companies. Businesses invest in digital touchpoints alongside offline channels to ensure omnichannel customer engagement. The shift toward digital channels is evident in the automotive sector, recording 33.0% growth in online vehicle sales in 2019.[3] Online vehicle sales of both new and used cars are forecast to maintain this growth pace in the medium to long term, boosting demand for tyres.

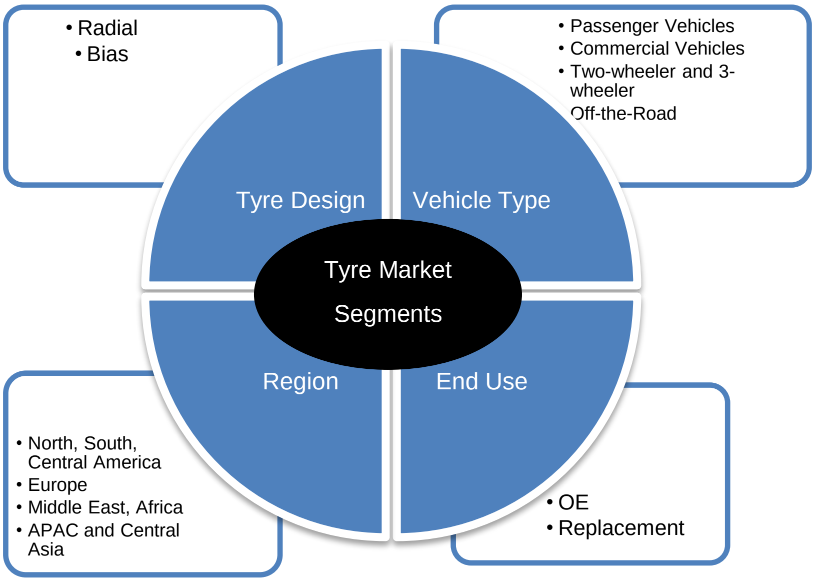
Digital business models will also impact aftermarket retail. More auto parts, including tyres, will be sold via e-commerce, virtual stores, online hypermarkets, automotive marketplaces, and virtual garages (parts + services + delivery + fulfilment) while providing rapid mobile services. This allows consumers to access a broader array of services and purchase from a wide selection of auto parts platforms, anywhere, any time.

3 OVERVIEW OF THE GLOBAL TYRE INDUSTRY

Tyres act as the vital point of contact between the vehicle and the road. Hence, the safety of the car ride and that of the driver and passengers rely heavily on the tyres. Tyre trends and developments thus closely link with those in the automotive industry.

The tyre market encompasses various tyre types to suit different vehicle segments and users. The tyre market can be segmented following these criteria:

Figure 3-1: Market Segmentation of the Tyre Industry



Source: Frost & Sullivan analysis

3.1 INDUSTRY SIZE

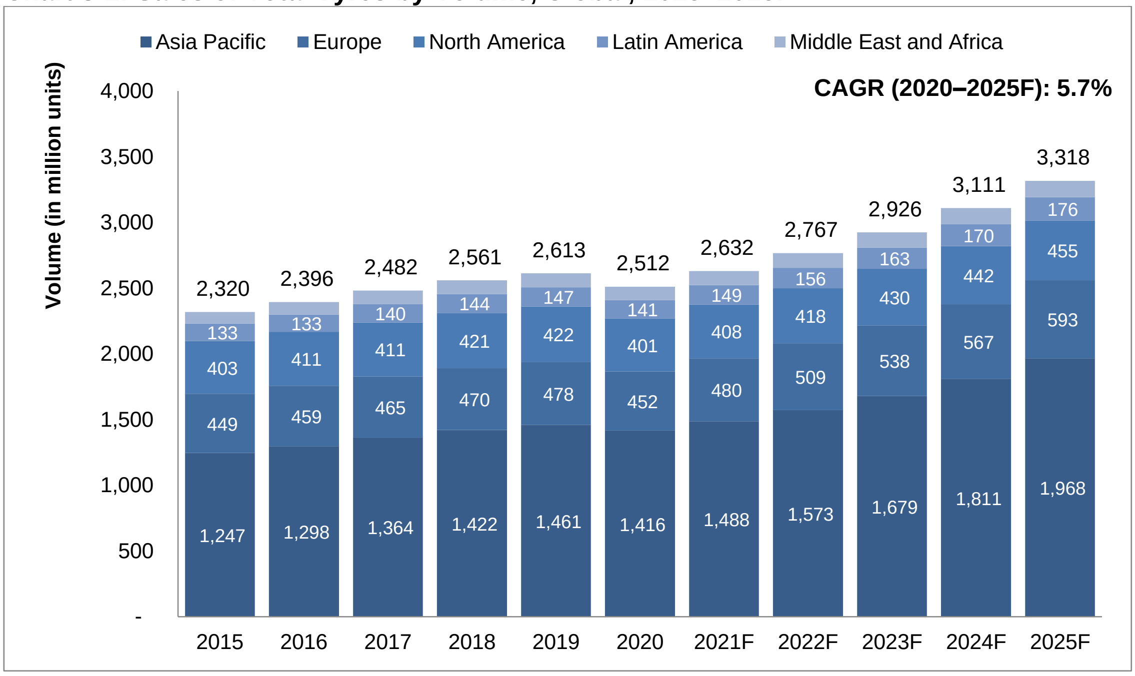
The global tyre industry is a critical component of the automotive sector, which remains a significant contributor to the GDP of most developed and developing economies. The growth of the global tyre market correlates with the burgeoning demand for passenger vehicles, commercial vehicles, and two-wheelers. Increasing urbanisation and income levels and low motorisation rates, particularly in developing countries, contribute to the higher demand for vehicles and tyres.

China is the world's largest automotive market in terms of both demand and supply and is also the largest tyre market. It is followed by the United States and countries in Europe. In the Asia-Pacific region, Japan, South Korea, India, and Thailand are top automotive markets. Thailand is a leading global automotive production hub, with a growing tyre Industry comprising international and domestic companies. Thailand is also the single largest exporter of passenger car tyres to the US market since 2015, ahead of China.

Based on global sales volumes, the demand for passenger vehicles has dipped significantly due to pandemic-induced disruptions in global vehicle production and the shift to remote working. However, commercial vehicle demand has been less affected as agriculture, essential services, and e-commerce resumed operations within a short period. The health crisis has weakened global economies, negatively impacting consumer confidence and increasing unemployment rates. The combined effect of these factors caused global vehicle sales to drop in 2020.[18] The tyre industry faced large volume declines in the OE market in 2020 compared with 2019. In terms of the passenger vehicle replacement market, work from home and nationwide lockdowns have minimised vehicle usage, reducing tyre wear and tear and prolonging replacement. The demand for OE and replacement tyres in commercial vehicles, motorcycles, and bicycles was relatively strong and has only in part offset the lower demand for passenger vehicle tyres.

Following the short-term impact of COVID-19 in 2020 on the tyre market, demand is estimated to recover and stay solid across all regions, particularly as North America, Europe, and Asia resume economic activities supported by large-scale vaccination drives. Since March 2021, the second and third waves of the pandemic have hit several Asian nations, causing disruptions to overall global recovery. The impact is estimated to be mainly short-term as demand builds in the medium to long term across all regions. Complete recovery in the global automotive and tyre industries is forecast to happen gradually and in a phased manner as the pandemic turns the corner.

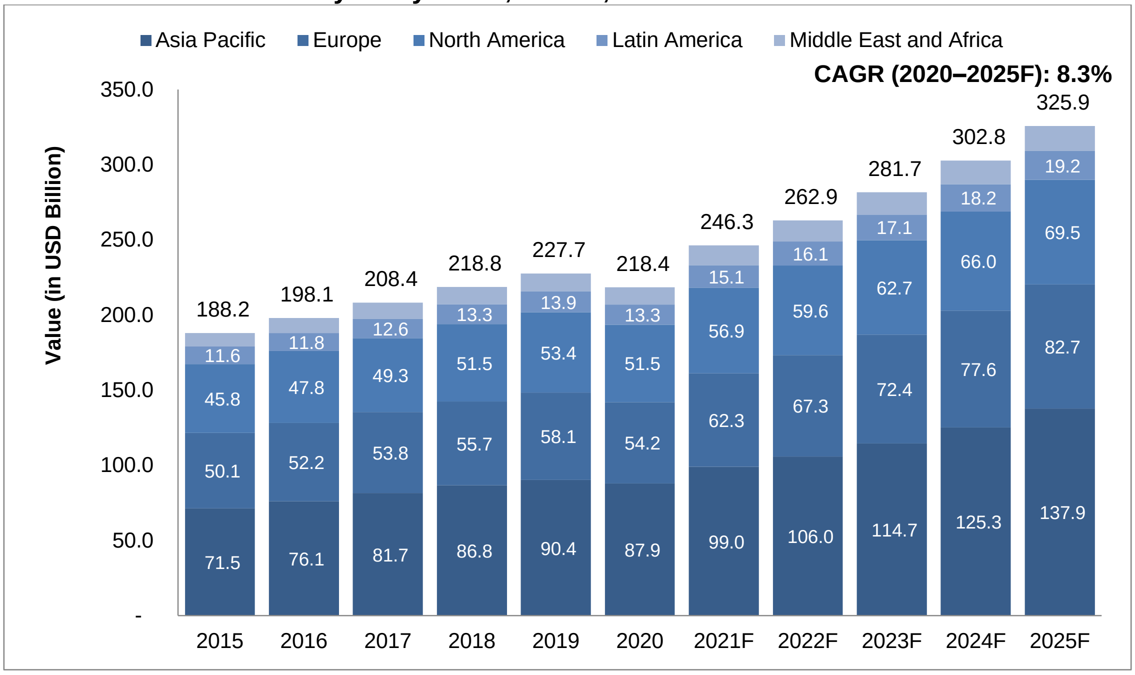
Chart 3-1: Sales of Total Tyres by Volume, Global, 2015–2025F



Source: Frost & Sullivan

[18] OICA Global Vehicle Sales

Chart 3-2: Sales of Total Tyres by Value, Global, 2015–2025F



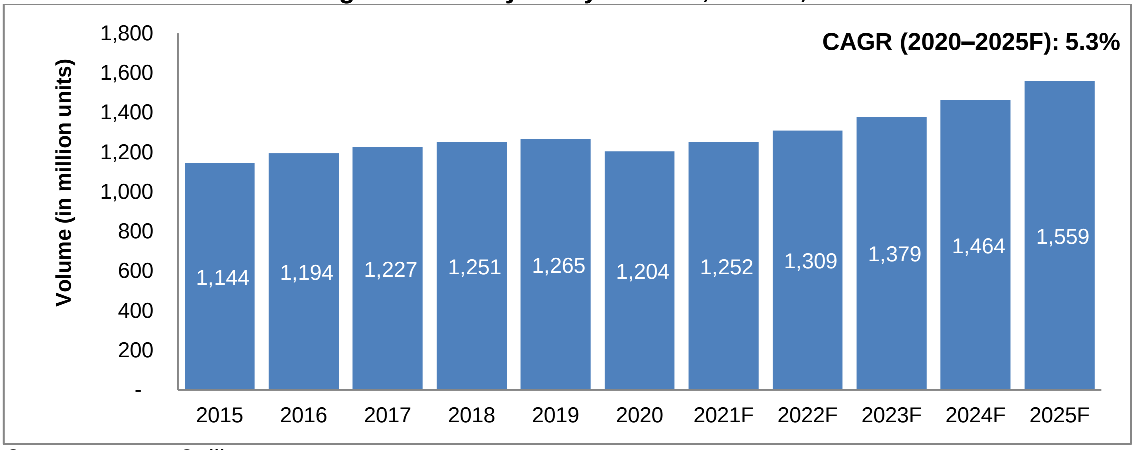
Source: Frost & Sullivan

In the first half of 2021, in line with vaccine rollouts, economies around the globe have embarked on the path of economic recovery as manufacturing and trading activities resume. Vehicle and tyre companies are seeing a positive rebound in sales volumes. Tyre companies are expected to shift to high gear to stem supply shortages from production disruptions as demand rebounds. Most tyre companies are forecast to exhibit better-than-expected performance in the year.

Passenger vehicle tyre demand is projected to grow as the global population resumes travel and daily commutes. With safety a prime concern, a shift favouring personal vehicles over public transit and shared transportation is likely.

The global tyre market for passenger vehicles comprise a larger share of the total tyre market compared to that of light trucks, buses, and other medium and heavy commercial vehicles.

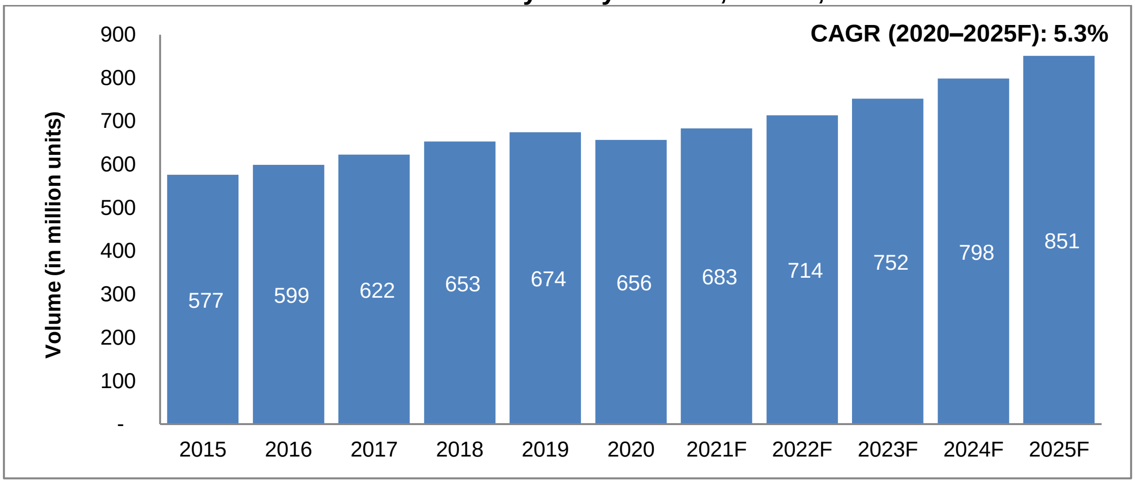
Chart 3-3: Sales of Passenger Vehicle Tyres by Volume, Global, 2015–2025F



Source: Frost & Sullivan

In 2020, the passenger vehicle tyre market recorded a higher decline in global sales; however, the demand for commercial vehicle tyres, two-wheeler tyres, and off-the-road tyres were less affected. Commercial vehicle usage was high as critical manufacturing activities and delivery of essential goods continued. Increased e-commerce activity driven by online shopping accentuated the use of light commercial vehicles, leading to robust demand for commercial vehicle tyres, especially in the replacement market. This trend is expected to continue in the forecast period.

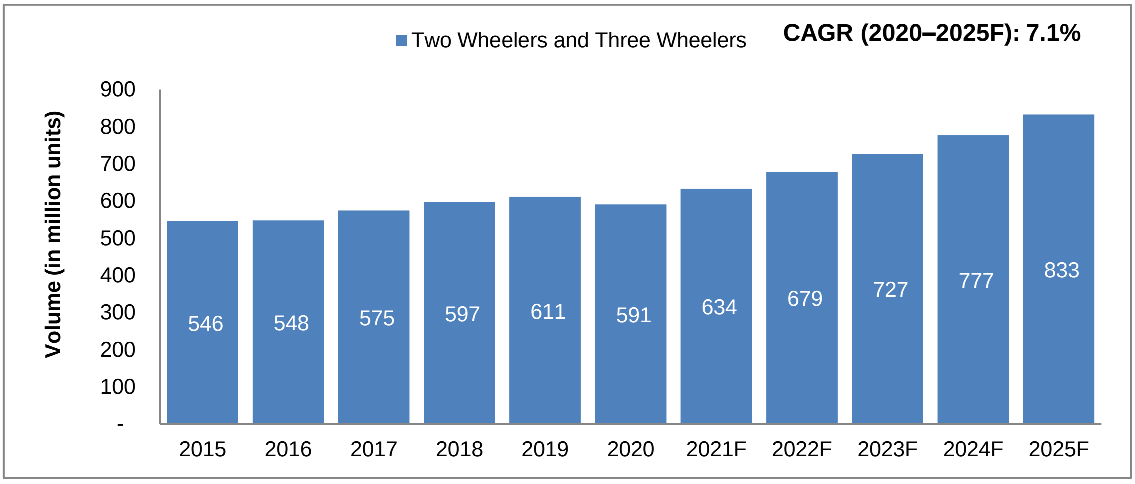
Chart 3-4: Sales of Commercial Vehicle Tyres by Volume, Global, 2015–2025F



Source: Frost & Sullivan

The pandemic partially affected the demand for two-wheeler and three-wheeler tyres as two-wheeler vehicles are extensively used for courier, essential services, and food deliveries, especially in Asia-Pacific. The growth in the two-wheeler tyre market is expected to increase in the forecast period, given the heightening consumer preference for personal transportation rather than public transport or shared mobility solutions. Two-wheelers will emerge as a safe, convenient, and cost-effective transportation mode in Asia and Europe.

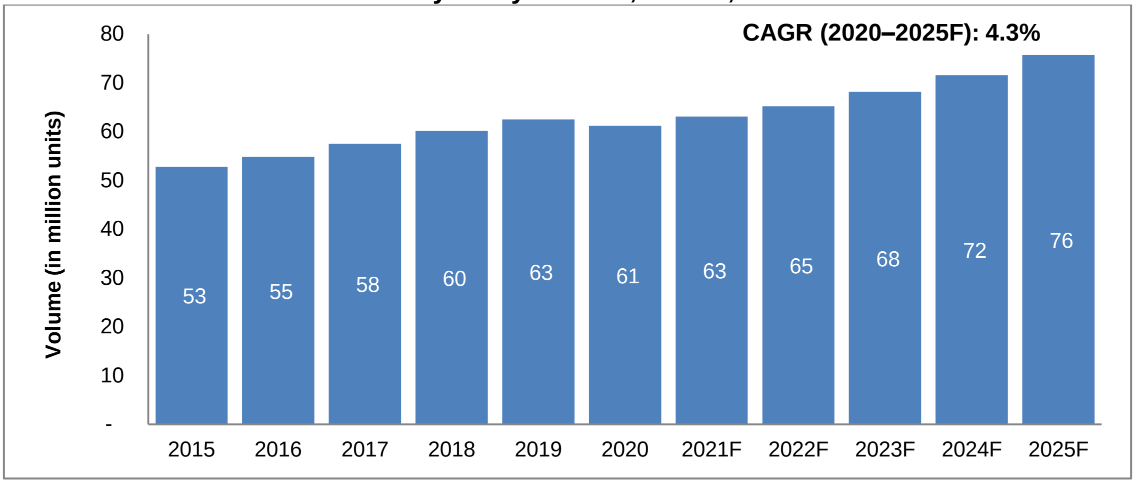
Chart 3-5: Sales of Two-Wheeler and Three-Wheeler Tyres by Volume, Global, 2015–2025F



Source: Frost & Sullivan

The market for off-the-road tyres was only mildly affected in 2020 as the vital agricultural, mining, and construction activities continued. As the global economy recovers from 2021 onwards, increased farm mechanisation, industrial automation, and infrastructure development of highways, bridges, power plants in developing and developed countries will catalyse growth in the off-the-road tyre segment. Innovations such as off-the-road tyres with superior heat and rolling resistance, better durability, and stability, will also boost global demand.

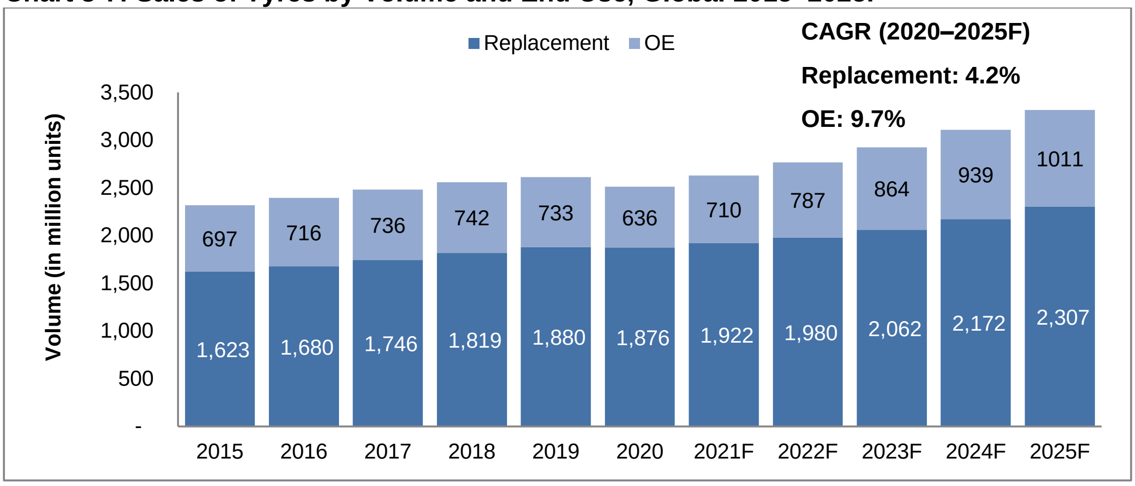
Chart 3-6: Sales of Off-the-Road Tyres by Volume, Global, 2015–2025F



Source: Frost & Sullivan

The demand in the tyre replacement market is generally higher than in the OE market. Dealers and distributors are important stakeholders for tyre companies as they act as the link between tyre seller/manufacturer and buyer and provide essential tyre installation and maintenance services to customers. The demand for replacement tyres is more stable since it is linked to the vehicle population compared to OE demand, which can be volatile as it is impacted by vehicle demand and production fluctuations. While disruptions in production activities resulting from the coronavirus outbreak negatively impacted the OE market for tyres, the replacement market remained stable and made up for the OE market losses. During the forecast period, as the global automotive market sales recover from the pandemic impact, the demand for OE tyres is expected to grow globally.

Chart 3-7: Sales of Tyres by Volume and End Use, Global 2015–2025F



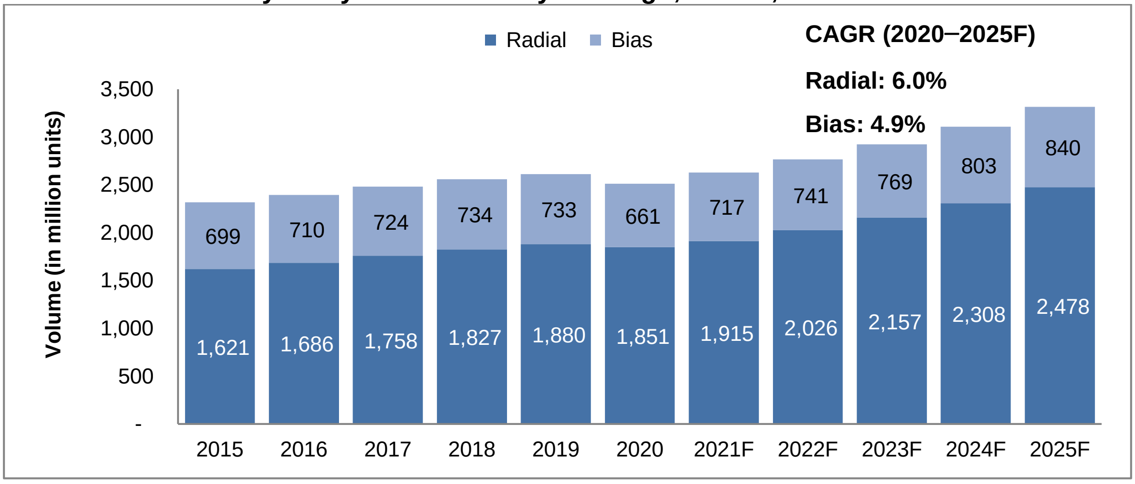
Source: Frost & Sullivan

Tyres come in two varieties—radial tyres and bias tyres—based on tyre construction and design. A radial tyre allows the sidewall and treads to function independently of the tyre, while a bias tyre consists of multiple rubber plies overlapping each other where the crown and sidewalls are interdependent.[19] The overlapped plies form a thick layer that is less flexible and more sensitive to overheating. Radial tyres are increasingly more popular than bias tyres as they have better road grip, are durable, and fuel-efficient. Radial tyres are used in nearly 98% of passenger cars and 65% of commercial vehicles.[20] Bias tyres are primarily used in industrial,

[19] Tyres & Services: 3 Upcoming Trends In The Tyre Industry, September 2020
[20] Tyres & Services: 3 Upcoming Trends In The Tyre Industry, September 2020

agricultural, and off-the-road vehicles. They can bear a heavy load and offer a smoother ride on uneven and rough terrains, such as construction sites, mining quarries, and farms.

Chart 3-8: Sales of Tyres by Volume and Tyre Design, Global, 2015–2025F



Source: Frost & Sullivan

3.2 KEY INDUSTRY TRENDS

Temporary Hike in Raw Material and Freight Costs Expected to Revert to Pre-Pandemic Levels from 2022

The decline in tyre demand in 2020 reduced the consumption of tyre materials, pushing down the price of raw materials such as natural and synthetic rubber. Many tyre companies were forced to cut investments in new technologies and R&D owing to a more uncertain outlook.

As the global tyre demand recovers in the first half of 2021, many tyre companies have announced price hikes as raw material costs grow. Intermittent disruptions such as temporary factory closures in Southeast Asia and China due to a spike in COVID-19 cases have also created a shortage of raw materials and tyre supply. Due to the ongoing capacity crunch on major shipping routes and container shortages, higher international freight costs further pressured raw materials prices. Many containers were stranded in import markets while export markets (like those in Asia-Pacific) face higher than average logistic costs to maintain export volumes. The contract rate between Asia and US route was 25% to 50% higher than in 2020. Several US tyre importers had container loads of tyres awaiting transportation in Thailand and other parts of Southeast Asia. Raw material prices and freight and shipping costs are expected to remain high in the near term, and revert to pre-pandemic levels from 2022.

Expansion Plans of Tyre Companies

The COVID-19 health crisis stymied demand for tyres, leading to stocked warehouses, labour shortages, and unused capacities. However, the gradual opening up of large markets such as the United States and Europe at the beginning of 2021 has increased vehicle mobility and economic activity, generating demand for tyres. Leading tyre companies are resuming stalled expansion activities. The developments signal a positive recovery in business sentiment in the global tyre market post-pandemic.

Focus on Sustainable and Environmentally Friendly Solutions

Tyres play a critical role in driving safety, performance, and comfort. They are also major contributors to environmental pollution because of the friction between the tyres and road surface. The global tyre industry continuously seeks sustainable solutions to mitigate environmental impact across the supply chain (e.g., sourcing, production, and post-sales services). The Tire Industry Project (TIP) is an initiative undertaken by several tyre manufacturers in this direction[21] that aims to develop a Roadmap to achieve the United Nations

[21] PIN 365: Members of WBCSD's Tire Industry Project Launch Sustainability Roadmap, May 18, 2021

Sustainable Development Goals Nations by 2030. The group drives research on the potential human health and environmental impacts of tyres throughout their lifecycle. It aims to develop sustainable solutions for end-of-life tyre management, tyre and road wear particles, and sustainable natural rubber. The group also wants to "implement sustainable procurement practices and establish environmental, social and governance responsibilities throughout the supply chain." Global majors Michelin and Bridgestone are committed to sustainable processes and taking steps towards fulfilling these goals. Michelin plans to make its tyres entirely from renewable, recycled, bio-sourced sustainable materials by 2050.[22] Bridgestone has developed the Techsyn technology that combines synthetic rubber with silica, improving road resistance and reducing the loss of materials from tyres on the roads.

Impact of Electric Vehicle Growth on Tyre Design

The increased electric vehicle adoption is poised to influence tyre design and production. The range, vehicle torque, and noise are critical tyre performance parameters for electric vehicles. Most of the difference is specifically associated with BEVs, as hybrid electric vehicles present similar tyre requirements with ICE vehicles. Since electric vehicles have 40.0% lesser range[23] than ICE vehicles, the tyres need to have low rolling resistance and higher fuel economy. The instantaneous torque of BEVs requires tyres that can sustain vehicle performance with increased traction capabilities on both wet and dry road surfaces. Since BEVs are extremely silent, the tyres need to be as much as 30.0% lower in noise generation. BEV tyres are also built with higher load-bearing capacity compared to regular tyres to accommodate the extra weight of a battery pack. Hence, BEV tyres wear out 30% faster compared to regular ICE vehicle tyres, leading to the need for more frequent replacements.[24] Electric vehicle sales are forecast to grow in Europe and the United States, with more countries in the region setting up charging infrastructure. The Chinese government aggressively supports electric vehicle technology development and resource mobilisation, which is expected to position the country as the leader in this vehicle segment, followed by the European and US markets.

3.3 PRICES OF KEY RAW MATERIALS

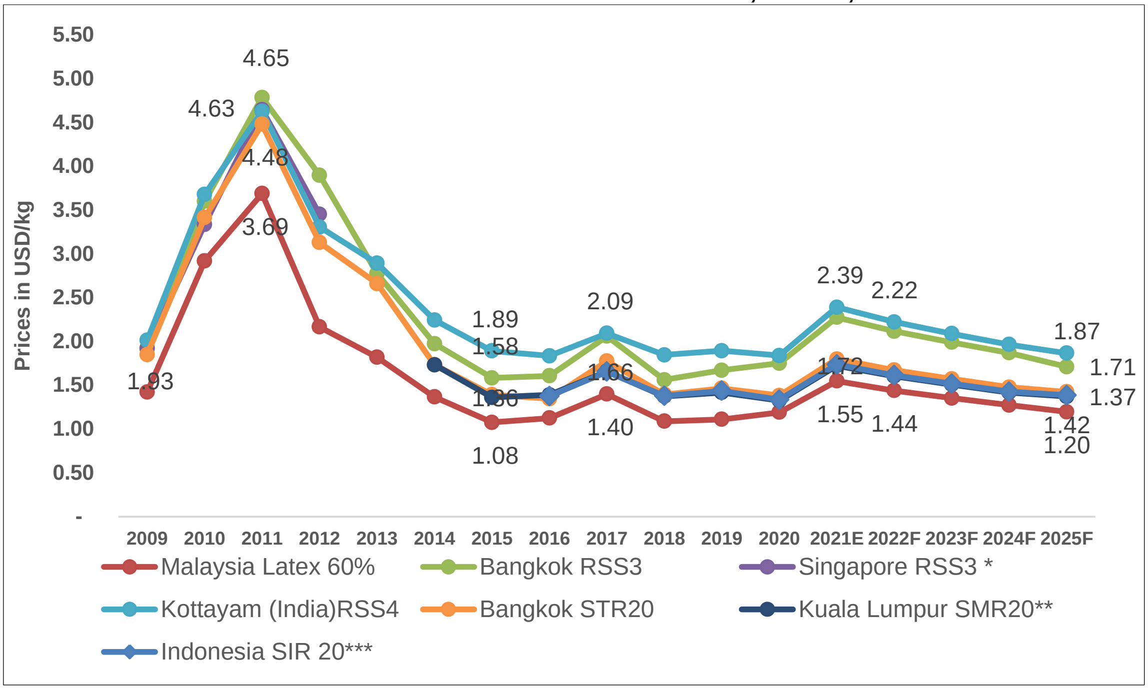
The tyre industry relies heavily on raw materials, including natural rubber and crude oil derivatives such as carbon black, styrene-butadiene rubber or synthetic rubber, and nylon tyre cord. Radial tyres also use steel tyre bead wires. The global prices of these materials directly impact the profitability of the tyre industry.

3.3.1 Global Natural Rubber Prices

Natural rubber is produced from latex obtained from rubber trees. Natural rubber is processed in different forms such as sheets, blocks, crepes or preserved in latex concentrates. The tyre industry uses two forms of natural rubber products—ribbed smoked sheets (RSS) and technically-specified rubber (TSR), commonly known as block rubber. RSS is produced from natural rubber latex by coagulation with acids. TSR rubber can be produced from field latex and latex coagulum and graded according to precise technical parameters, such as dirt content, ash content, nitrogen content, volatile matter, and properties of the rubber.

[22] Greenbiz.com: How Michelin and Bridgestone are accelerating green tire innovations, March 2, 2021
[23] Tire Business: Growth of EVs will Influence Tire Design, Manufacturing, April 19, 2019
[24] Discover EV: Tyre technology is different for EVs and continuing to evolve – here's why, accessed August 4, 2021

Chart 3-9: Historical and Forecast Prices of Natural Rubber, Global, 2009–2025F



*Note: *Singapore RSS3 reported only until 2012; ** Kuala Lumpur SMR20 reported from 2014; ***Indonesia SIR 20 from 2016*
Source: Association of Natural Rubber Producing Countries (ANRPC), International Rubber Consortium; Frost & Sullivan analysis

The pricing trends of natural rubber have a significant impact on tyre production costs. Being an agriculture product, the price of natural rubber and its variants are vulnerable to climatic conditions and other vagaries of nature in addition to supply-demand cycles. Natural rubber is traded worldwide as a commodity as it forms a primary raw material for multiple industries.

Natural rubber prices hit an all-time high in 2011 due to higher demand but lower production in the leading rubber-producing nations. While top producers Thailand, Indonesia, and Malaysia faced heavy rainfall in the year due to the effect of the La Nina phenomenon, China's Yunnan Province, the largest rubber-producing area, faced a severe drought situation.

From 2012 to 2014, natural rubber prices gradually declined due to weak demand from emerging markets amid a global slowdown and surplus production. Prices slid further in 2015, hitting the lowest point due to high natural rubber production and stockpiles from major rubber-producing nations. The economic recession in major natural rubber markets, such as the United States and China, adversely impacted automotive industries putting downward pressure on natural rubber prices.

In 2016, natural rubber prices rose from disruptions to global production due to the unprecedented floods in Southern Thailand, which produces about two-thirds of Thailand's total output of natural rubber. Global demand during this period spiked, led by increased demand from the US automotive sector. The upward trend continued in 2017 as global economic recovery accelerated demand. Supply was once again affected as Typhoon Damrey damaged rubber plantations in Vietnam's central and southern parts. This also affected Southern Thailand's major natural rubber-producing regions, which witnessed flash floods and rainwater runoff.

Natural rubber prices continued the downward trend in 2018 due to higher output from favourable weather conditions in Thailand and Vietnam. However, the weak demand from the Chinese automotive industry led to unusually high stock accumulation.

In 2019, natural rubber supply took a major hit as key rubber tree-growing areas in Thailand were affected by the Pestalotiopsis outbreak, reducing output considerably. The fungal disease spread to Thailand after impacting plantations in neighbouring Indonesia and Malaysia. All 3 countries account for about 70% of the world's natural rubber production. Scarcity in these countries caused prices to rise marginally.

In 2020, natural rubber prices were hit by COVID-19-induced lockdowns and reduced economic activity, impacting demand for the commodity in all end uses except rubber gloves. As the Chinese and the US markets recovered in 2021, natural rubber demand from manufacturing activities is anticipated to increase. Natural rubber production is also forecast to rise, although the 2020 production shortfall will likely cause a temporary hike in prices in 2021.

Future Outlook of Global Natural Rubber Prices

During the 2022 to 2025 period, the global automotive industry is forecast to recover from the pandemic and resume production levels. As manufacturers boost production to make up for the losses during the pandemic, demand for and supply of natural rubber is projected to rise significantly. Natural rubbers prices are forecast to stabilise and return to similar levels seen in 2015 to 2020.

3.3.2 Global Crude Oil Prices

Crude oil derivatives such as carbon black, synthetic rubber, and fabric reinforcements together form nearly 50% of the raw material cost of tyre manufacturers. Hence, crude oil prices have a close bearing on the profitability of the tyre industry.[25]

In 2011, crude oil prices were at an all-time high due to tightened supply positions in the global market in 2010. Key factors affecting this rise included the Arab Spring and political unrest in Libya, which restrained production and supply from the Organization of the Petroleum Exporting Countries (OPEC). This, coupled with increased demand from emerging markets, particularly China and the Middle East, drove up crude oil prices in the year.

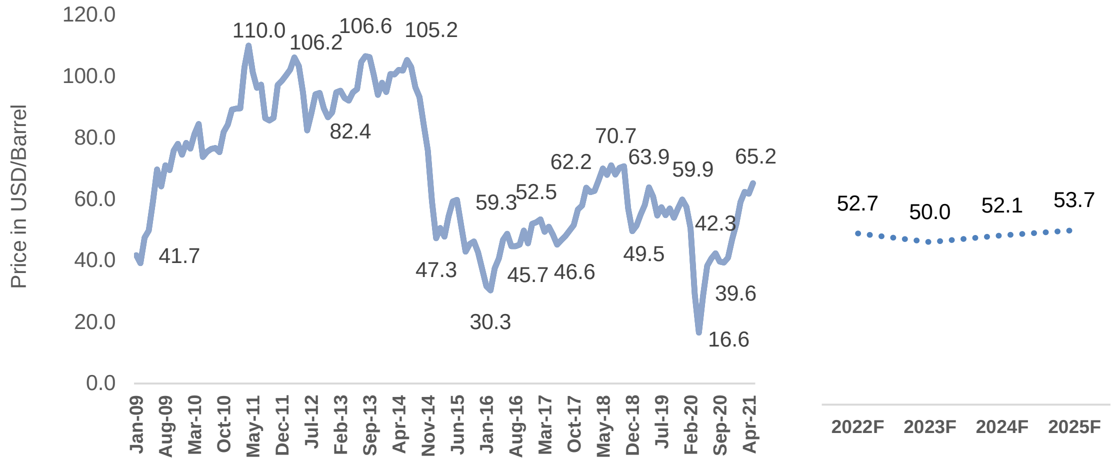
Prices remained more or less at the same high level in 2012 as disruptions in oil production continued in South Sudan, Yemen, Syria, and the North Sea. This reduced global oil production and pushed up oil prices. However, in the second half of 2012, an unprecedented surge in crude oil production in the United States by an estimated 780,000 barrels per day,[26] stabilised crude oil prices.

The increased crude oil production in the United States contributed towards stabilised global crude oil prices post-September 2013. Price levels were stable until July 2014, after which production rose in non-OPEC countries, mainly North America, resulting in the supply exceeding demand, pushing down crude oil prices significantly.

During 2015, crude prices fell by almost 50%, reaching their lowest level since 2009[27] as global crude oil supply outstripped demand. Pricing trends continued until the start of 2016 despite rising crude oil demand. Surplus production and inventory stockpiles continued to put downward pressure on prices. However, in November 2016, OPEC and non-OPEC countries agreed to cut crude oil production to control falling prices. Growing global crude oil demand increased prices until October 2018. However, higher crude oil production from Saudi Arabia and Russia during the year moderated the price increase in the latter part of 2018.

[25] Live Mint: Crude oil price rise to hit tyre firms even as profits are under pressure, April 2019
[26] US Energy Information Administration: 2012 Brief: Average 2012 crude oil prices remain near 2011 levels, Jan 2013
[27] US Energy Information Administration: Crude oil prices started 2015 relatively low, ended the year lower, Jan 2016

Chart 3-10: Historical and Forecast West Texan Intermediate (WTI) Crude Oil Prices, Global, 2009–2025F



Source: US Energy Information Administration; Bloomberg; Energy Intelligence Group (EIG); OPEC; World Bank; IMF: World Economic Outlook (WEO) Database, April 2021; Frost & Sullivan analysis

Throughout 2019, crude oil prices were lower than in 2018 due to higher production in the United States. Prices increased in the latter half of the year following production cut announcements by the OPEC and US sanctions on Iran and Venezuela. While 2020 started on a solid footing, the reduced global economic growth due to the pandemic depressed the demand for crude oil, resulting in oversupply and lower prices. The price war between Saudi Arabia and Russia added further pressure to crude oil prices, bottoming out in April 2020. Prices began to recover in May 2020 as nations resumed economic activities and OPEC cut production. By the end of 2020, crude prices rose again on the positive sentiment of vaccine rollouts. Prices have continued to climb in 2021 as economies recover and crude oil demand grows to pre-pandemic levels.

Future Outlook of Global Crude Oil Prices

Global WTI crude oil prices are forecast to increase in 2021 in line with the reopening of economic sectors post-pandemic. Post-2021, WTI crude prices are expected to remain relatively stable until 2025 as supply from OPEC and non-OPEC countries resumes to pre-pandemic levels.

3.3.3 Raw Materials Outlook in Thailand

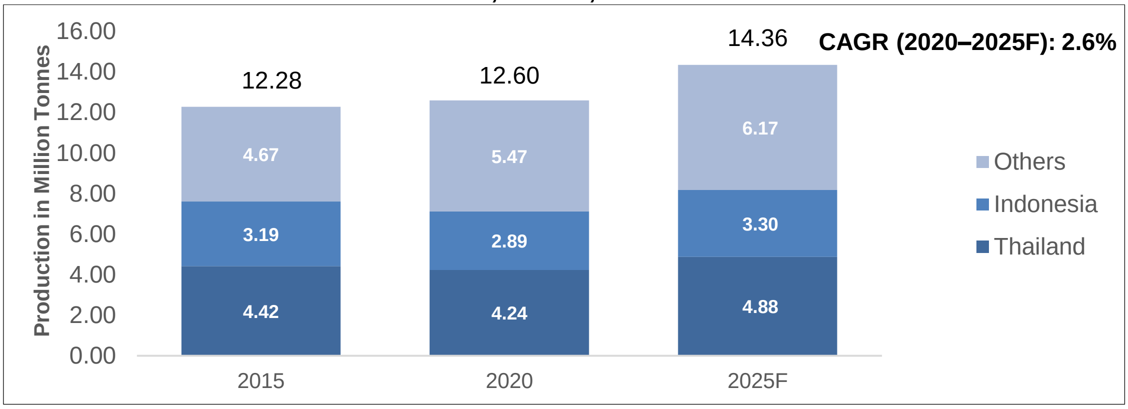
Natural Rubber

Thailand has become the world's largest natural rubber producer since 1991. In 2020, the country produced 4.24 million tonnes of natural rubber, followed by Indonesia at 2.89 million metric tonnes. Both these countries accounted for more than 56.0% of the global production in 2020. Other natural rubber producing nations are Vietnam, China, India, Malaysia, Myanmar, Cambodia, Sri Lanka, Bangladesh, and Laos.

The Association of Natural Rubber Producing Countries (ANRPC), representing 90.0% of natural rubber-producing countries, expects the world production of natural rubber in 2021 to grow at 5.8% YoY to 13.81 million tonnes.[28] From 2020 to 2025, natural rubber production is projected to reach 14.36 million tonnes from 12.60 million tonnes in 2020, at a CAGR of 2.6%. Thailand is expected to continue leading the world in natural rubber production, followed by Indonesia, together producing nearly 60% of the global natural rubber production.

[28] ARNPC New: ANRPC Releases Natural Rubber Trends May 2021

Chart 3-11: Natural Rubber Production, Global, 2015–2025F



Note: Others include Vietnam, China, India, Myanmar, Sri Lanka, Bangladesh, Cambodia, Laos, Papua New Guinea, Brazil, Nigeria, Mexico, Liberia, Ghana.
Source: Association of Natural Rubber Producing Countries (ANRPC); Frost & Sullivan analysis

Thailand exports 84.0% of its rubber production, while 16.0% is for domestic use. Its main export markets are China, the United States, Japan, Malaysia, and South Korea.[29] Nearly two-thirds of rubber plantations in Thailand are located in the southern part of the country. The productivity and yield of rubber plantations largely depend on climatic conditions. In recent years, Thailand's erratic weather patterns due to droughts and unpredictable rainfall patterns have directly impacted natural rubber prices in the country.

In 2011, natural rubber prices in Thailand hit a record high from production disruptions caused by heavy rainfall and flooding due to the La Nina phenomenon. High domestic and export demand placed further upward pressure on prices. However, the natural rubber supply stabilised as weather conditions improved from 2012 to 2014, causing prices to slide. In October 2012, the Thai Government announced plans to invest USD966.0 million to buy natural rubber from farmers at higher market rates to arrest impending pricing decline.[30] Thailand's natural rubber prices continued to fall before bottoming out in 2015 with reduced export demand due to recessionary trends in China and the United States. Severe weather events, including the heavy rainfall in 2016, and severe flooding from Typhoon Damrey later in November 2017, caused further damage to rubber plantations in Southern Thailand, restricting supply and placing upward pressure on prices until the end of 2017.[31] Following the higher prices in 2017, the prices of natural rubber declined at the beginning of 2018. Therefore, Thailand, Indonesia, and Malaysia withheld exports for three months to help natural rubber prices from sliding further.[32] In the latter half of 2019, a leaf disease in Thailand's plantations caused rubber trees to shed their leaves. Farmers were advised by the Rubber Authority of Thailand not to tap or harvest rubber from affected trees or plantations as this would weaken the tree.[33] The disease outbreak affected natural rubber supply, pushing up prices. The upward natural rubber price trend continued in 2020, exacerbated by the onset of the pandemic. However, increasing export and domestic demand, especially from rubber glove manufacturers, catalysed the pricing momentum further. In 2021, the resumption of manufacturing and industrial activities caused an upsurge in rubber demand from the United States and China, increasing natural rubber prices in Thailand. Prices are forecast to drop slightly and remain stable in 2022 as pending supply orders are fulfilled and the demand-supply balance is restored. Natural rubber prices are expected to return near to pre-pandemic equilibrium levels between 2023 and 2025.

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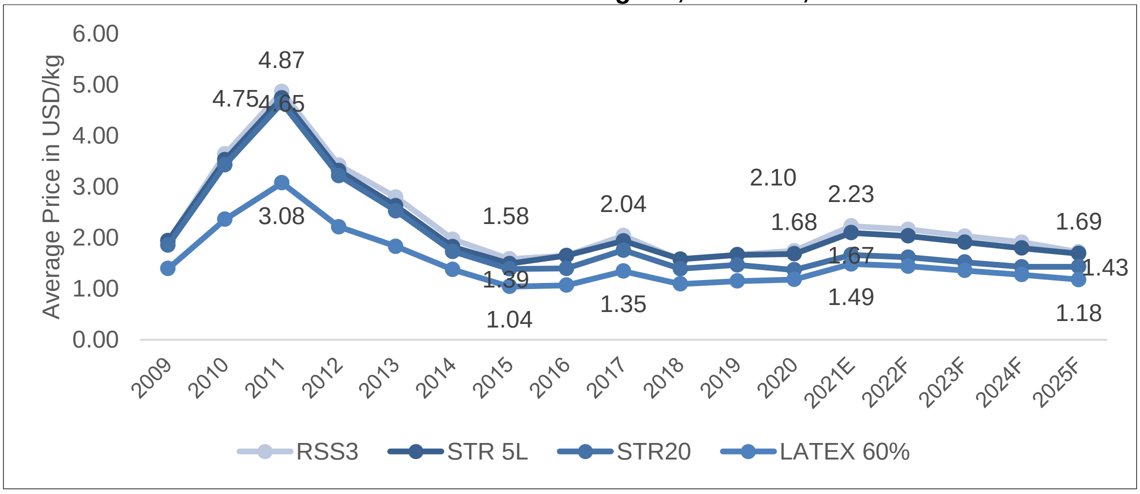
[29] The Thai Rubber Association, President's View
[30] The Economic Times: Thailand may buy 300,000 tonne rubber to lift prices, September 2020
[31] https://reliefweb.int/report/thailand/heavy-rain-floods-batter-south
[32] Bangkok Post: Thailand battles for rubber price rebound, January 2018
[33] https://irjournal.com/singleblog/1623/severe-and-critical-situation-in-thai-rubber-plantations-due-to-leaf-fall-disease

Chart 3-12: FOB Prices of Natural Rubber in Bangkok, Thailand, 2009–2025F

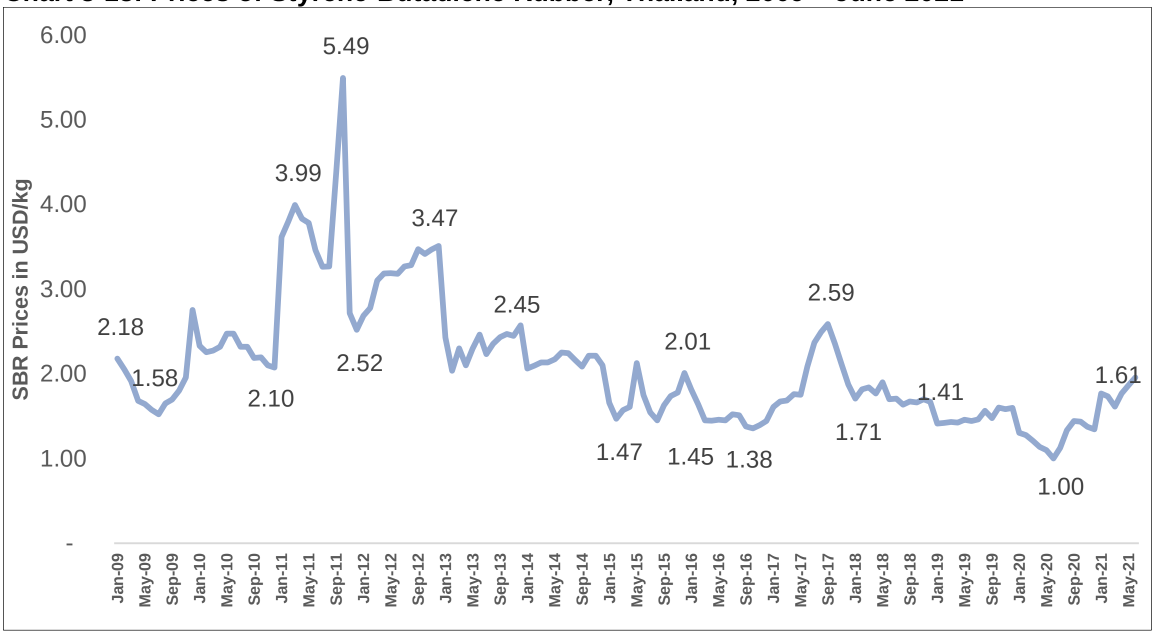


Source: The Thai Rubber Association; Frost & Sullivan analysis

Styrene-Butadiene Rubber Outlook in Thailand

The tyre industry uses styrene-butadiene rubber (SBR) or synthetic rubber in combination with natural rubber. SBR is an essential raw material for the manufacture of both passenger vehicle and commercial vehicle tyres. SBR is made from various petroleum monomers. Thai tyre companies source it from domestic manufacturers and imports from Japan, South Korea, the United States, and China.[34] SBR prices in Thailand, therefore, move in tandem with global crude oil prices. SBR prices in Thailand peaked in October 2011, in line with the surge in global crude oil prices in April 2011. As global crude prices fell in September 2011, Thai SBR prices declined in December 2011. In 2015 as well, SBR prices declined with crude oil prices. In 2020, the pandemic pushed down crude oil prices in April 2020, and Thai SBR prices followed suit with the biggest price decline in July 2020.

Chart 3-13: Prices of Styrene-Butadiene Rubber, Thailand, 2009 – June 2021



Source: Rubber Authority of Thailand; Frost & Sullivan analysis

[34] https://trendeconomy.com/data/h2/Thailand/4002

3.4 COMPETITION IN THE GLOBAL TYRE INDUSTRY

The global tyre market is highly fragmented, comprising more than 100 companies across various locations. Several global manufacturers have dominated the market since 2000, including Bridgestone, Michelin, Goodyear, and Continental. Bridgestone is headquartered in Japan, Goodyear in the United States, while Michelin and Continental are brands from France and Germany, respectively. Other key brands include Sumitomo and Yokohama from Japan and Pirelli from Italy. Several tyre brands from emerging markets are also rapidly rising as leading global tyre makers.

3.4.1 Traditional Global Players Dominate the Market

As of 2020, large multi-location companies, including Michelin, Bridgestone, Goodyear, and Continental, account for 42.6% of the market share. [35] The remaining share of the market comprises both mid-sized and smaller companies based in emerging markets.

Deestone, a leading homegrown tyre manufacturer in Thailand, produces a broad range of tyres for various vehicle categories. Deestone is a prominent player in the Thai tyre industry, mainly in the two-wheeler, passenger car, and commercial truck radial tyre segments. It is also a leading exporter of tyres from Thailand to overseas markets.

Major global tyre companies have plants located in multiple countries, including the Americas, Europe, and Asia-Pacific. Their vast geographical footprint enables these companies to expand operations and reach across regions, enhancing global market share and brand presence. It also allows them to monitor and analyse location-specific consumer behaviour and preferences to modify product design and specifications to cater to customers in a particular region. These market leaders are also well-positioned to supply OE customers in various locations where they have global contracts for tyre supply. Overall, the 4 largest tyre companies represent the majority of the OE market due to their global deals with major automotive manufacturers.

These prominent tyre companies leverage R&D to develop innovative and technologically advanced products and processes, giving them a considerable competitive advantage over mid-size and smaller companies. However, their large operations and high R&D costs translate into end products that are often more expensive than that of mid-sized and smaller companies based in emerging markets. This impacts the product competitiveness from global tyre brands, especially in price-sensitive developing markets and mature developed markets where lower economic growth may prompt more consumers to opt for affordable tyre options over premium brands.

By establishing manufacturing capabilities in locations like Thailand and Indonesia, global companies can access cheaper, high-quality natural rubber. The availability of skilled and experienced manpower, particularly in Thailand, also strengthens its position as the go-to location for tyre manufacturing in Southeast Asia. Large tyre companies offer a comprehensive product range that caters to all tyre segments (e.g., passenger cars, light trucks, motorcycles). They also effectively utilise their expertise in managing the supply chain upstream and downstream (e.g., marketing and distribution processes).

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[35] Company Annual Reports; Frost & Sullivan analysis

Table 3-1: Manufacturing Capacities of the Four Largest Tyre Companies Globally, 2020

Company (Headquarters)	No. Tyre Plants (New Plants)	No. Countries	Type of Tyres Manufactured (Radial and Bias tyres)		New Tyre Capacity per Annum[36]	2020 Sales Revenue in Million USD[37]
Michelin Group (Clermont-Ferrand, France)	117 (50)	26	• Passenger cars • Light trucks • Trucks/Buses • Motorcycles	• Agricultural • Industrial • Off-the-road/ Earthmover • Aircraft	• The Americas 134,839 units per day and 728,100 MT/year • Europe 199,340 units per day and 647,700 MT/year • Asia 96,111 units per day and 335,300 MT/year	20,095.6
Bridgestone Group (Tokyo, Japan)	79 (52)	20	• Passenger cars • Light trucks • Trucks/Buses • Race cars	• Agricultural • Off-the-road/ Earthmover	• The Americas: 247,171 units per day and 306 MT/day • Europe: 123,571 units per day • Asia (including Japan): 319,465 units per day and 632 MT/per day • Middle East and Africa: 47,247 units per day	19.649.3
Continental (Hanover, Germany)	22 (13[38])	17	• Passenger cars • Light trucks • Trucks/Buses • Motorcycles • Race cars	• agricultural • industrial • Off-the-road/ Earthmover	• The Americas: 56.6 million units per year • Europe: 105.4 million units per year • Asia: 27.7 million units per year • Africa: 2 million units per year	10,158.6
Goodyear (Ohio, United States)	37[39] (33)	20	• Passenger cars • Light trucks • Trucks/Buses • Race cars	• Agricultural • Industrial • Off-the-road/Earthmover • Aircraft	• The Americas: 233,000 units per day • Europe: 172,089 units per day • Asia: 80,832 units per day • Middle East and Africa: 30,000 units per day	10.040.7

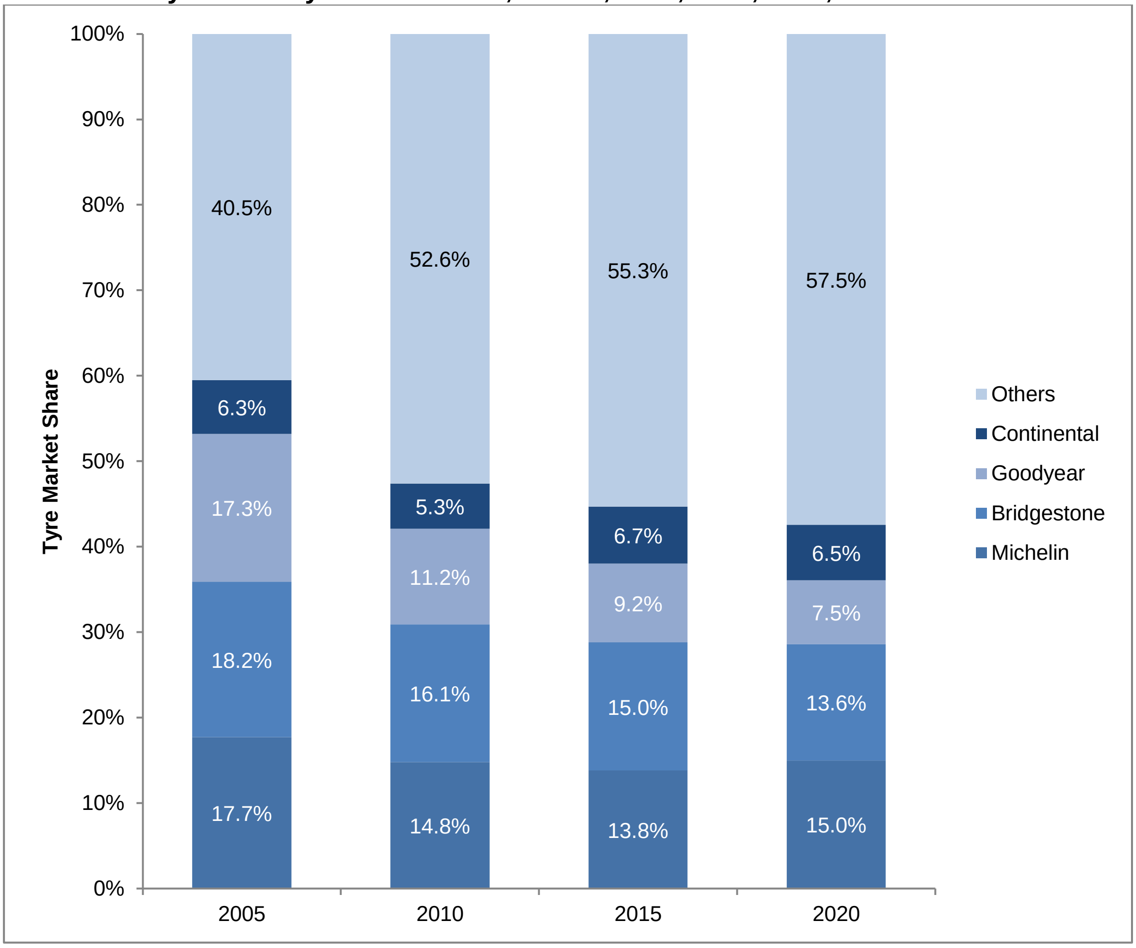
Source: Company Annual Reports; Investor Presentations; Frost & Sullivan analysis

[36] Company Annual Reports; Investor Presentations; Frost & Sullivan analysis
[37] Tyrepress:The world's leading tyre manufacturers, June 2021
[38] Continental: Corporate Website, Headquarters & Plants, accessed August 2021
[39] Goodyear: Corporate Website, Our Company, Global Presence accessed August 2021

3.4.2 Emerging Market Participants

The global tyre market is fragmented. The market share of the 4 largest industry participants is shrinking gradually, from 59.5% of the total market in 2005 to 47.4% in 2010, continuing its downward trend to 42.6% in 2020. The main reason driving this change is the emergence of new players from China, Thailand, South Korea, and India, providing tyres technologically on par with leading incumbents at lower price points. These emerging companies are gaining prominence mainly in the replacement tyre market, which is more price sensitive. They are highly flexible in customising products to meet automotive companies' size and material specification preferences and increasingly cover a broader share of the OE market.

Chart 3-14: Tyre Industry Market Share*, Global, 2005, 2010, 2015, and 2020



*Note: *Market Share by Revenue in USD; Total may not add up due to rounding. "Others" include Sumitomo, Pirelli, Hankook, Yokohama, Cheng Shin, Zhongce Rubber, Giti, Toyo, Deestone, Shandong Linglong, Sailun, Kumho, Nokian, Nexen, Apollo, MRF, Double Coin, Titan, JK, Vee Rubber.*
Source: Company Annual Reports; Frost & Sullivan analysis

Emerging market companies include Zhongce Rubber, Linglong Group, and Triangle Group (China); Deestone, Otani, and Vee Rubber (Thailand); and MRF, Apollo Tyres, Balkrishna Tyres, and TVS Srichakra (India).

3.5 THAILAND AS A KEY GLOBAL PRODUCTION HUB FOR TYRE COMPANIES

Many foreign-owned tyre factories consider Thailand as their production hub in Southeast Asia outside their home country. In the past, Bridgestone had its factory outside Japan in Singapore, but soon set up factories in other countries, including Indonesia and Thailand. Goodyear shut its factory in the Philippines over 10 years ago but has production activities in Thailand, Malaysia and Indonesia. Key factors prompting international tyre factories to relocate production facilities are the growing raw materials and labour costs. More tyre manufacturers, especially from China, chose Thailand as their strategic production hub in the region.

3.5.1 Competitive Advantages of Thai-based Players in the Global Market

Leading Automotive Production hub

Thailand is a leading global automotive producer in Southeast Asia and the region's automotive hub. Thailand is the 11th largest car manufacturer globally, producing more than 2.0 million cars in 2019.[40] Leading global automakers such as Toyota, Mitsubishi, Honda, Isuzu, Ford, and Nissan, have manufacturing plants in Thailand, catering to domestic and global automobile demand.

Thailand leads the Southeast Asian market in upsizing tyres to larger rim sizes of 24 inches to 28 inches. Tyres with larger rim sizes are widely sold, fitted, and changed from the vehicles' OE sizes in Thailand's replacement market. With a large vehicle population and growing vehicle sales, there is vast domestic tyre demand in the country. All the major global tyre companies such as Bridgestone, Michelin and Goodyear, Yokohoma, Sumitomo, Pirelli and Continental have manufacturing facilities in Thailand. Thailand also has several domestic companies like Deestone, Vee Rubber, Otani, SR Tyres, and Superstone, which cater to the domestic OE and replacement market and a considerably large export market. Thailand was the single largest exporter of tyres to the US market in 2019 and 2020.

Thai-made versus Southeast Asian-made Tyres

Thailand has earned a reputation as a major manufacturing hub for various products in Southeast Asia. As a fast-growing, rapidly developing nation compared to its neighbours, Thai-made products are well-designed, innovative, and widely used in many parts of the world, including Southeast Asia. Thailand has superior, well-established, and mature tyre manufacturing capabilities compared to regional competitors like Vietnam, Myanmar, Cambodia, Malaysia, Indonesia, and the Philippines. The influx of low-priced, inferior quality products by some Chinese manufacturers across global markets also damaged the image and reputation of more reputable Chinese tyre brands, hindering their growth.

Thai-made tyres are known for their quality and attractive price points, gaining merit, prestige, and market acceptance globally. The market acceptance of Thai-made tyres is higher in the United States, China, and Europe than ones made in other Southeast Asian countries. For example, many motorists in Southeast Asia choose Thai-made cars over the ones made in Indonesia and Vietnam. In comparing tyres made in Indonesia, Vietnam, and Myanmar, end users prefer to buy tyres based on the country of origin if the tyres are from the same brand. For instance, Goodyear tyres made in Thailand are generally preferred by Vietnamese end users over Indonesia-made Goodyear tyres. The Middle Eastern market tends to choose Thai-made Deestone compared to Chinese tyre brands, signifying the prominence of Thai brands globally. Thailand's reputation as a quality tyre manufacturer over other markets, including China, creates a positive perception among consumers. For example, Pirelli tyres made in China do not sell as well as its tyres made in Europe.

World's Largest Producer of High-Quality Natural Rubber

Thailand is the world's largest producer and exporter of natural rubber, the primary raw material to manufacture tyres. Majority of its production is for the export markets.[41] Key markets include the United States, China, Japan, Southeast Asia, and Australia. With a captive supply of locally sourced high-quality natural rubber at a reasonable price, the Thai tyre industry has a considerable competitive advantage vis a vis other tyre exporting countries. This is particularly significant in light of the recent rise in prices and scarce natural rubber supply in global markets. Chinese tyre manufacturers are the leading importers of rubber from Thailand. As such, many Chinese tyre manufacturers invest in setting up new tyre factories in Thailand to reduce the cost of importing vital raw materials like rubber.

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[40] Climate Scorecard: Thailand Government has yet to respond to requests to help the automobile industry hurt by COVID-19, July 2020

[41] Bangkok Post: Rubber rising on glove and tyre demand, Oct 2,2020

Government Support for the Rubber Industry

The Thai government supports the tyre industry through high-level investments and market policies, encouraging several global tyre companies to move production facilities to Thailand. Recognising the importance of the industry to the country's economy, Thailand's Board of Investment (BOI) offers a wide range of tax and non-tax incentives for industry projects that meet national development objectives. This includes corporate tax exemption,[42] import duty exemption on raw or essential materials and machinery used to manufacture export products, and non-tax incentives such as permits to bring in expatriate talent, allow land ownership, and take out or remit foreign currency abroad. These incentives increase the industry's attractiveness and encourage new investments.

Mix of Skilled Automotive Workforce and Low-cost Unskilled Labour

The BOI estimates that by 2021, 61.0% of Thailand's automotive workforce will be highly skilled and have a high vocational diploma or above, 27.0% will have a Bachelor's degree in Engineering, while 6.0% will have a Masters or higher. A skilled workforce presents a huge advantage as it results in tangible benefits such as higher productivity and smooth adoption of advanced technologies. The tyre industry is labor-intensive and leverages on low-cost unskilled labour resources along with the skilled workforce. Locally-owned tyre factories are predominantly situated in the southwestern part of Thailand and typically tap into affordable unskilled foreign labour from Myanmar. Instead, most foreign-owned factories are in the eastern part of Thailand and generally hire migrant workers from Cambodia and Laos.

Non-Chinese Tyre Option

China-made tyres generally incur high import duties due to the prolonged US-China trade war and anti-dumping duties by the United States and Europe. This makes selling China-made tyres to the United States and the European Union unfavourable and challenging. It is also why many Chinese tyre manufacturers are relocating to Thailand to capture demand from many tyre importers. For example, Middle Eastern importers and consumers prefer non-China-made tyres, primarily Thai-manufactured, due to their negative perception and low confidence in cheap, poor quality tyres from China that have flooded the market in recent years.

Thai Exports Benefit from Low Anti-Dumping and Countervailing Duty in the United States

Thai companies have a distinct advantage over Chinese tyre suppliers when exporting to the United States with the imposition of anti-dumping and countervailing duties on Chinese imports. This has prompted some Chinese companies to shift their production bases to Thailand. However, in February 2021, the United States announced anti-dumping duty against tyres from Thailand, South Korea, Taiwan, and Vietnam, affecting the prices of Thai tyre exports. In June 2021, the US Department of Commerce terminated the anti-dumping case against Vietnam, and in July 2021 issued a countervailing duty (CVD) order on imports of these tyres from Vietnam which ranges from 6.23% to 7.89%.

Table 3-2: Anti-Dumping Duty and CVD on Tyres, United States, 2021

Country	Anti-Dumping and Countervailing Duty in the United States (%)
China (CVD)	20.73 to 116.73[43]
China (ADD)	14.35 to 87.99
Taiwan (ADD)	20.04 to 101.84
South Korea (ADD)	14.72 to 27.05
Thailand (ADD)	14.59 to 21.09
Vietnam (CVD)	6.23% to 7.89%[44]

Source: US Department of Commerce (DOC)

[42] Board of Investment, Thailand, Rubber Industry Brochure
[43] Modern Tire Dealer: Updated, All tariffs on Chinese PLT tires will remain, November 2020
[44] Federal Register: Passenger Vehicle and Light Truck Tires From the Socialist Republic of Vietnam: Countervailing Duty Order , July 2021

The US anti-dumping duties (ADD) have a differential rate for each country; for example, duties on Thai tyres are much lower than other tyre exporting countries from Asia, such as South Korea and Taiwan. This enables the Thai tyre industry to maintain its comparative competitive advantage in terms of pricing.

Imported Technologies in Tyre Manufacturing

Dubbed the world's largest tyre manufacturing country, China has the highest number of tyre factories globally. Thailand is the largest producer in Southeast Asia. Strategically located in the Indo-China region, Thailand hosts a mature, vibrant, and highly sophisticated auto industry, including top tyre brands like Michelin, Bridgestone, and Goodyear, creating a well-trained pool of tyres elites in the country. These brands make excellent quality tyres with imported technology.

Chinese tyre manufacturers, which also extensively adopt advanced technologies in producing high-quality tyres, are setting up state-of-art factories with robotic facilities in the Thai provinces of Chonburi and Rayong. These factories, requiring significant investments, usually have support from the Government of China or through funding in their home country. The impact of ongoing technology transfers in the Thai tyre manufacturing industry will propel the industry growth to greater heights.

3.5.2 Presence of Key Global Players in Thailand

Leading global tyre companies are present in Thailand due to its cost competitiveness and availability of a skilled labour force. Thailand is more developed and politically viable compared to neighbouring countries like Myanmar, Cambodia, and Laos. Despite years of political upheavals and coups, Thailand's business environment remains unscathed. The country provides a strategic tyre production location for customers in the United States and the rest of the world. For these companies, Thailand represents a vital manufacturing and trading hub with a market-friendly environment, abundant raw material availability, and a highly skilled and experienced workforce. **Deestone** is a reputable and prominent locally-owned tyre manufacturer in Thailand; it is the largest Thai-owned tyre company based on revenue in 2020.

Table 3-3: Financial Indicators of Selected Key Tyre Manufacturers, Thailand, July 2021

Company (Headquarters)	Thai Entity	Corporate Registration Number	Revenue 2020 (THB million)	Revenue CAGR (2018–2020)	Gross Profit Margin (2020)	Net Profit Margin (2020)
Michelin (France)	Michelin Siam Company Limited	0105548015451	35,923	-7.6%	27%	5%
Bridgestone (Japan)	*Multiple entities*	*N/A*	35,597	-8.7%	13%	7%
Sumitomo (Japan)	Sumitomo Rubber (Thailand) Company Limited	0105548059393	27,567	-11.4%	13%	7%
Deestone (Thailand)	Deestone Corporation Limited	0745559008153	19,163	2.3%	24%	16%
Maxxis (Taiwan)	Maxxis International (Thailand) Company Limited	0105545117180	11,584	-11.2%	14%	1%
Yokohama (Japan)	Yokohama Tire Manufacturing (Thailand) Company Limited	0215547000238	6,453	-11.5%	12%	5%
Otani (Thailand)	*Multiple entities*	*N/A*	6,201	2.2%	19%	11%
Vee Rubber (Thailand)	*Multiple entities*	*N/A*	4,854	-1.1%	12%	0%
Goodyear (USA)	Goodyear (Thailand) Public Company Limited	0107537001188	3,448	-5.6%	11%	-5%

*Note: The list of selected key tyre manufacturers in Thailand **may not be exhaustive**. The data for "Bridgestone" refer to Thai Bridgestone Co., Ltd. (0105510002629), Bridgestone Tire Manufacturing (Thailand) Company Limited (0105543030249), and Bridgestone Specialty Tire Manufacturing (Thailand)Co., Ltd. (0205555016768). The data for "Otani" refer to Otani Tire Co., Ltd. (0735529000511) and Otani Radial Co.,Ltd. (0735550001555). The data for "Vee Rubber" refer to Vee Rubber Corporation Ltd. (0105552000071), Vee Tyre And Rubber Co., Ltd. (0105534075553) and Vee Rubber (Phetchaburi) Co., Ltd. (0105536068783).*

Source: Department of Business Development; Deestone; Frost & Sullivan

4 Thailand Tyre Industry Outlook

The tyre manufacturing industry is vital to Thailand's economic growth. Thailand is a leading natural rubber producer globally, facilitating a well-established local supply chain for the tyre manufacturing industry. Various world-leading tyre manufacturers have set up production bases in Thailand. The tyre industry in Thailand benefits from these solid linkages to the local vehicle manufacturing industry (including passenger vehicles, pick-up trucks, and motorcycles). Thailand is a key automotive manufacturing hub in Southeast Asia and provides considerable export opportunities for local tyre factories. Deestone, the country's largest locally-owned tyre manufacturer, invests heavily in advertising and promoting its tyres compared to its local counterparts. These efforts have translated into positive sales results for Deestone's passenger car and commercial truck radial tyres in the domestic market.

Although neighbouring countries have lower-cost workforce resources (e.g., Myanmar, Laos, Cambodia), many global tyre manufacturers, including from China, find it more feasible and cost-effective to conduct tyre production activities in Thailand.

Other Southeast Asian nations like Vietnam and Cambodia strive to attract Chinese entrepreneurs to establish tyre factories in their countries with lucrative investment incentives. The Thai government needs to boost its competitiveness to retain the tyre factories based in the country, to prevent these players from scaling down operations and relocating to neighbouring countries.

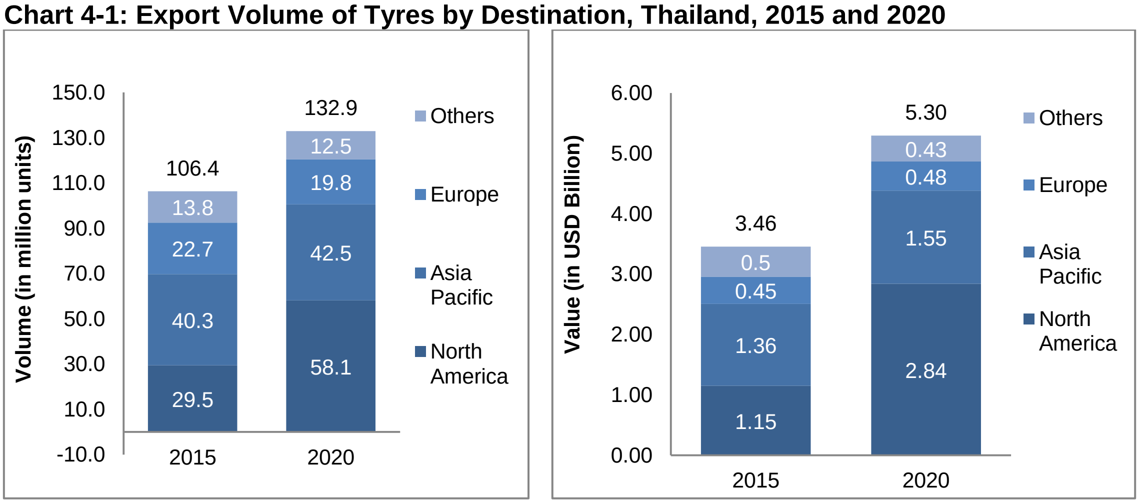
4.1 Local Production and Exports Overseas

There are more than 20 tyre factories in Thailand, with each producing different kinds of tyres for domestic demand and export. Since 2015, there has been an influx of Chinese-owned tyre factories investing and setting up operations in Thailand to circumvent the US trade restrictions and barriers on imported goods from China. These new entrants in Thailand's tyre industry are intensifying market competition for other global tyre manufacturers based in the country and for Thai-owned factories.

The US-China trade war during the Trump administration in 2018–19 created a significant impact on the tyre industry. Anti-dumping taxes were imposed on China-made tyres in the United States and Europe. As a result, many Chinese tyre companies relocated their factories overseas, especially to Thailand. The shift led to mega investments in Thailand, dwarfing earlier spending by tyre factories moving to the country. The majority of the tyre production capacity in Thailand serves the US market.

The volume of tyre exports from Thailand to the United States has grown significantly, eclipsing the export volume from China to the United States following the relocation of Chinese factories.

Chart 4-1: Export Volume of Tyres by Destination, Thailand, 2015 and 2020



Note: Others include, Middle East, Africa, Central and South America
Source: uncomtrade; Frost & Sullivan

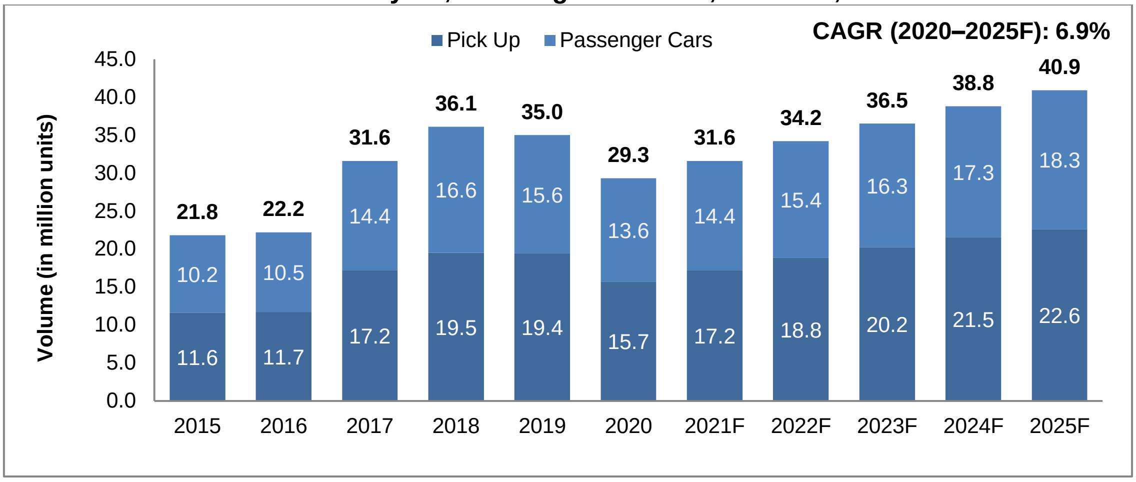
4.2 DOMESTIC SALES

Motorcycles and passenger vehicles make up the two dominant vehicle segments in the Thai tyre market. Two-wheeler and off-the-road tyres are the fastest-growing segments, while demand for three-wheeler tyres is declining.

4.2.1 By Type of Vehicle

Thailand's tyre market has rapidly expanded from the 2015 levels, driven by higher automotive production and local demand. Higher tyre sales are evident for passenger vehicles across all segments, including taxis (saloon cars), luxury cars, SUVs, mini-vans, and 4WD. Pick-up trucks represent a key segment of the passenger vehicles market in Thailand. They are used for a wide variety of work and leisure purposes. Many Thai households own one. The popularity of pick-up trucks provides immense opportunities for vehicle replacement tyres in the country.

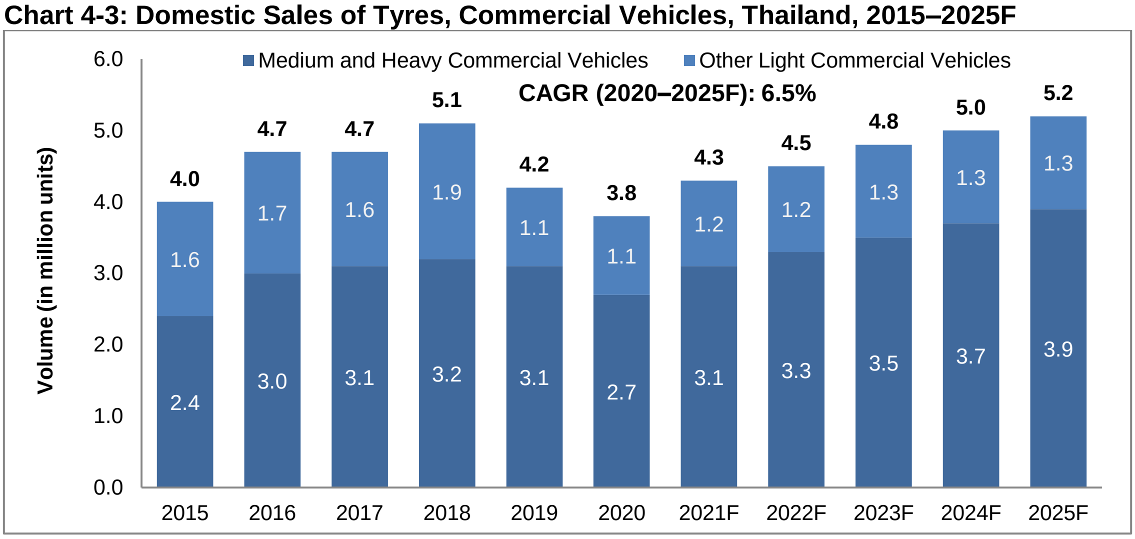
Chart 4-2: Domestic Sales of Tyres, Passenger Vehicles, Thailand, 2015–2025F



Source: Frost & Sullivan

Tyres for the commercial vehicle segment, comprising light trucks, heavy trucks, and buses, are primarily bias and also radial tyres. Mini trucks, passenger light trucks, and buses mainly ferry passengers, while cargo trucks and city buses are for daily commercial activities. Premium brands like Bridgestone and Michelin are increasingly being replaced by more affordable tyre brands in Thailand, both imported and locally produced. Deestone, a locally-owned tyre brand, capitalises on customers' preference for locally-made tyres in the passenger car radial tyre segment and commercial light, medium, and heavy truck tyre segment. The affordable prices and satisfactory quality levels are key factors driving the popularity of these brands among small and large businesses striving to optimise operational costs.

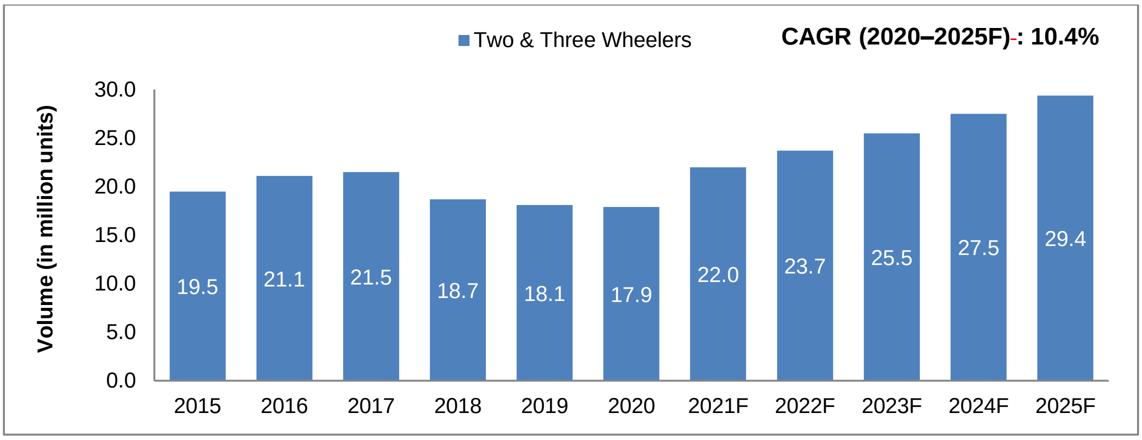
Chart 4-3: Domestic Sales of Tyres, Commercial Vehicles, Thailand, 2015–2025F



Source: Frost & Sullivan

The two-wheeler and three-wheeler tyre markets in Thailand are extensive, competitive, and lucrative at the same time. Major brands like Bridgestone, Michelin, Continental, Pirelli, Maxxis, Duro, Kenda and Inoue Rubber (IRC) account for a large market share, given their well-established presence in Thailand. Apart from foreign manufacturers, there are a handful of Thai manufacturers, including Vee Rubber, Deestone, and Thai Sin Rubber (Champion), competing in this market segment. Domestic brands adopt multi-brand strategies to command a larger share of the market. For example, Deestone, manufactures and sells the entire range of tyres for passenger cars, trucks and buses. Two-wheelers and off-the-road vehicle tyres are popularly sold under two main brands, Deestone and Thunderer. Vee Rubber, a Thai two-wheeler tyre manufacturer, operates under the Veetireco, Koogar, and Hut labels to compete in the market.

Chart 4-4: Domestic Sales of Tyres, Two-Wheeler and Three-Wheeler, Thailand, 2015–2025F

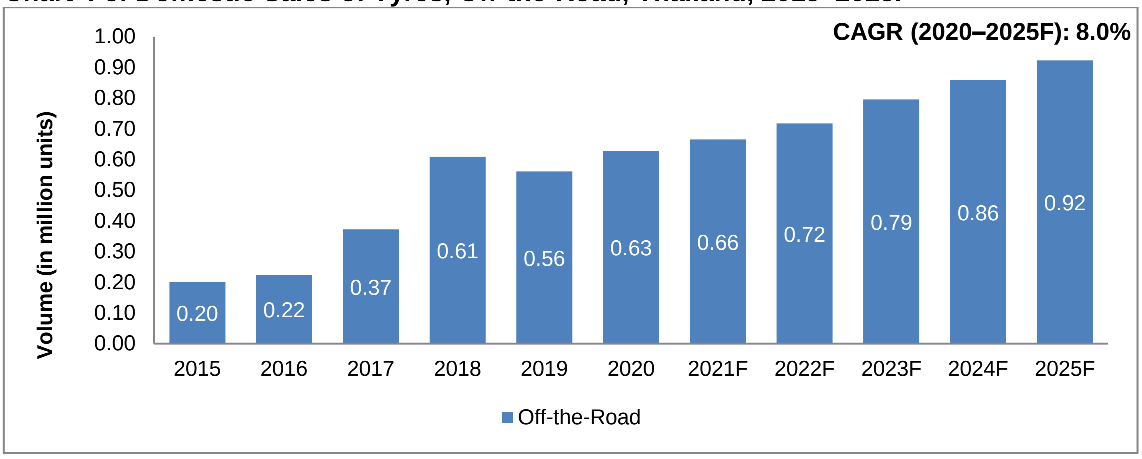


Source: Frost & Sullivan

The off-the-road (OTR) tyre segment in Thailand is large, mainly catering to industrial, construction, mining, port, agricultural, and farming activities. Bridgestone and Michelin are major market players in this segment. There are a handful of smaller global market players in this specialised market, like BKT, Trelleborg, and Yokohama. Chinese tyre players are also penetrating this segment, with popular brands like ZC Rubber, Triangle, Advance, Aeolus, and Linglong. Recently, ZC Rubber reportedly challenged Linglong in a successful bid to acquire off-the-road tyre producer Tianjin United, to expand its off-the-road tyre capacity.

Deestone and Otani are the main off-the-road tyre producers in Thailand. Deestone has built a formidable reputation and significant strengths in the off-the-road tyre segment. The brand serves the local market and is a prominent exporter of these tyres to the United States.

Chart 4-5: Domestic Sales of Tyres, Off-the-Road, Thailand, 2015–2025F

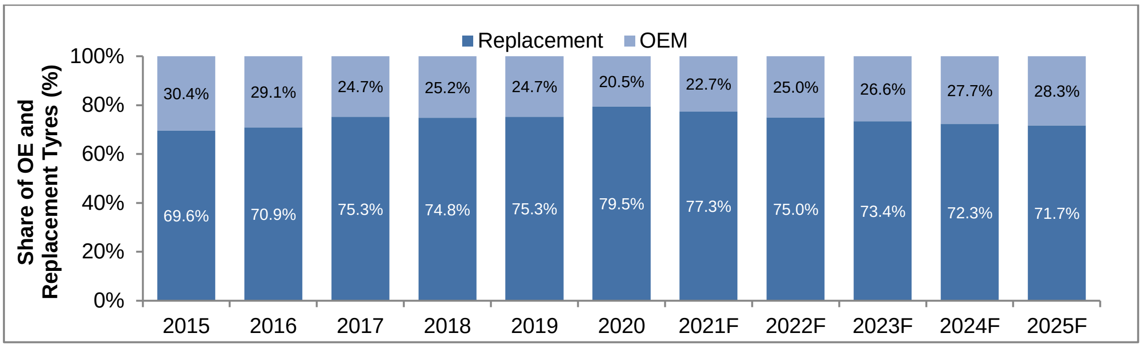


Source: Frost & Sullivan

4.2.2 By End Use

The replacement tyre market is the dominant tyre industry segment in Thailand, with the majority share in total tyre sales across vehicle segments. The bicycle market is the only segment where OE and replacement tyres account for a similar share of tyres sold. Most tyre manufacturers prefer the OE market as new vehicle buyers prefer to purchase the same brand of tyre once the OE tyres wear out. However, many foreign car makers (mainly Japanese automakers) in Thailand prefer supply from tyre brands that are pre-qualified by their headquarters. Hence, there is no competitive advantage on bidding prices. The larger, fast-growing, high-volume replacement market is more attractive for global and Thai tyre brands, including Deestone, Otani, and Vee Rubber. The quality of these homegrown brands' products is on par with that of international labels and offer competitive prices in the highly price-sensitive replacement market.

Chart 4-6: Share of Domestic Sales by End Use, OE and REP Tyres, Thailand, 2015–2025F

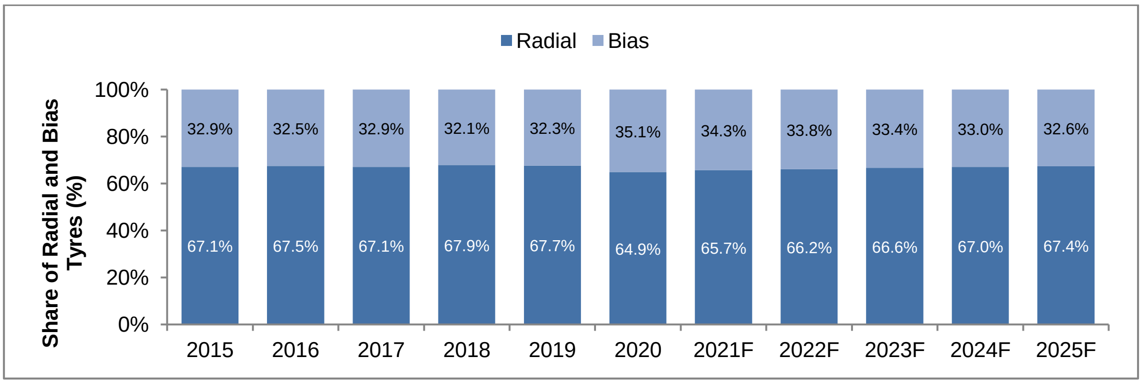


Source: Frost & Sullivan

4.2.3 By Tyre Design

Radial tyres attract higher demand compared to bias tyres in Thailand. In line with the country's economic development and improvements in road conditions, the uptake of radial tyres in newer vehicles is rising rapidly. In contrast, the share of bias tyres is expected to decline over the following years. However, similar to most developing or underdeveloped countries, bias tyres in Thailand still maintain a high share compared with developed markets. End users prefer to buy bias tyres because they are perceived to offer better performance than radial tyres in industries such as mining and logging. Radial tyres are generally more expensive than bias tyres because of their newer technology. However, due to supply shortages and the closure of bias tyre manufacturing plants, the prices of bias light truck tyres may at times rise higher than that of radial tyres. Today, the OE market mainly uses radial tyres, while bias tyres play a more prominent role in the replacement market. The choice between bias tyres and radial tyres highly depends on the road conditions of a country. In Thailand, bias tyres attract high demand in agricultural and industrial vehicles.

Chart 4-7: Share of Domestic Sales by Tyre Design, Radial and Bias, Thailand, 2015–2025F



Source: Frost & Sullivan

4.3 MARKET TRENDS, DRIVERS, AND RESTRAINTS

4.3.1 Trends

COVID-19 Impact on Replacement Frequency

Tyre replacement frequency varies across vehicle segments. Passenger vehicle tyres are typically replaced less frequently compared with commercial vehicle tyres. Two-wheeler vehicles also have different replacement frequencies. Motorcycle tyres are generally replaced every year, while bicycle tyre replacement frequency is subject to the owner's preference. Off-highway vehicle tyres are usually replaced depending on the application. The shift to remote working practices and movement control restrictions resulting from the pandemic has limited the use of vehicles, minimising tyre wear and tear and extending the tyre replacement cycle for passenger vehicles. However, this is offset by increased replacement demand from commercial vehicles used to deliver goods and essentials.

Switch to Non-Branded Budget Tyres to Mitigate Economic Effects of Pandemic

A growing number of Thai households consider lower-priced, non-branded tyres over premium branded options. For example, end users increasingly purchase affordable alternative tyre brands like Deestone rather than brand from premium manufacturers like Michelin and Bridgestone. COVID-19 is transforming buyer behaviours, making end users more cost-conscious due to the economic volatilities, rising unemployment rate, and high uncertainties about job security and future income.

Greater Variety of Replacement Tyre Sales Channels

The main channel to buy and change tyres differ across vehicle segments in Thailand. Professional tyre and car maintenance service centre franchises such as Tyreplus, B-quik, and Cockpit, are the primary choices for passenger vehicle owners, followed by independent tyre service shops. There is limited preference for modern trade companies. For commercial vehicles also, independent tyre service shops are the main choice. Commercial vehicle fleet operators, including logistics companies like DHL Express, Kerry Express, CJ Express, and supply chain operators and auto leasing companies like Orix and Sumitomo Mitsui, prefer to procure tyres in bulk and replace tyres in-house.

Motorcycle tyres are mainly purchased and replaced at independent motorcycle service workshops or authorised workshops. Bicycle owners prefer to replace tyres at bicycle shops or buy their tyres online and replace them on their own. Independent tyre service workshops, specialising in servicing off-highway and commercial vehicles, are the preferred sales channel for off-highway vehicle tyres.

The purchase of tyres via online websites across different segments has been growing during the pandemic. This is mainly due to the convenience of checking the preferred tyre brand, design, model, and price from the comfort of home. Many end users rely on online websites to buy two-wheelers and passenger car tyres; however, the preference for online channels is less prominent within the commercial tyre segment, for trucks, buses, industrial, heavy construction, and mining vehicles.

Rise of Electric Vehicles

In 2020, Thailand's battery electric vehicles (BEV) market grew by 120% over 2019 due to the increased availability of affordable BEV imports from China. The BEV market is forecast to increase from 940 units in 2020 to 3,000 units in 2021, a YoY increase of 220%.[45]

Electric vehicles are relatively heavier than ICE vehicles, increasing tyre wear and tear. The need to change tyres more frequently will stimulate demand for replacement tyres.

[45] Frost & Sullivan analysis

Autonomous Technology

Level 2 autonomous technology is offered in specific vehicle models in Thailand's mass market segment. Features include partially autonomous driving capabilities such as adaptive cruise control, kinetic energy recovery system supporting braking functions, traffic congestion assistance, lane departure warning, automatic emergency brake with pedestrian protection, and integrated cruise assistance. Tyres suited for autonomous vehicles need to have a high silica compound for better road grip and braking capability, driving demand for higher value-added tyres.

Connected Car Technology

Telematics systems and automated vehicle technologies allow vehicle users to remotely retrieve information on the condition of their car through smartphone applications. Manufacturers offer Vehicle Telematics Systems on various vehicle models in Thailand's mass market segment. Several tyre manufacturers, mainly European brand names, have developed intelligent systems that use sensors on each wheel to detect a puncture or alert the driver if the pressure falls below the required level.

4.3.2 Drivers

Positive Local Automobile Industry Outlook

Thailand's automobile industry is expected to emerge from the pandemic stronger in 2021, estimating to manufacture about 1.5 million vehicles in total, a 6% increase over the prior year. The vehicle export volume is forecast to increase about 2% compared to 2020.[46] Although the 2021 domestic sales figure is likely to reach approximately 750,000 units, representing a -3.0% drop from the year before, the decline will be lower than in 2020, which recorded a -21.3% decline in 2019. Gradual improvement in the local automobile industry will contribute to increased offtakes for both OE and the replacement tyre markets.

Growth of Construction and Development Projects

The Thai government is pushing mega infrastructure development, particularly the construction of a high-speed railway and expanding the mass transit system, spurring the demand for commercial vehicles and off-highway vehicles such as prime movers and earth-movers. The construction sector's contribution to GDP grew from 2016 to 2020 and is estimated to sustain the growth until 2025, signalling favourable prospects for the commercial vehicle segment.

Popularity of Aftermarket Wheels and Vehicle Customisation

Thai consumers, particularly pick-up owners, are enthusiastic about vehicle modification (both cosmetic appearance and engine tuning). Notable pick-up OEMs such as Toyota and Isuzu are updating their utilitarian image for a more sporty exterior with stylish modifications and accessories. Among the customisations Thai enthusiasts prioritise are larger aftermarket wheels and tyres with sporty tread patterns. The preference for aftermarket wheel sizes has grown from 16- to 20-inch tyres in 2010 to 22- to 26-inch tyres towards the end of 2020. Some tyre manufacturers are capitalising on this trend by offering even bigger 28- to 30-inch aftermarket tyres for 4WD vehicles. The popularity of the pick-up aftermarket customisation is expected to stimulate demand for replacement tyres with larger dimensions.

Bigger Factory-installed Wheels

The demand for locally-produced factory-installed wheels for vehicles in Thailand has grown considerably in the past 20 years. For a typical sub-compact passenger car, the size of stock wheels increased from 13 inches to 14 inches in the mid-1990s to about 16 inches to 17 inches by late 2020. This growth has contributed to higher revenue per tyre for the OE and replacement tyre markets.

Like the United States, Thai tyre buyers also have a significant demand preference for larger tyre and wheel sizes. Deestone has accumulated extensive expertise from its success in the

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[46] Thailand Automotive Institute's estimation – Thailand Automotive Institute: สรุปอุตสาหกรรมยานยนต์ไทยปี 2563 และแนวโน้มปี 2564, accessed August 2021

US market for bigger rim-size tyres, targeting SUVs and 4WD segments. The company plans to leverage this achievement by developing more sophisticated, bigger-size ultra-high performance (UHP) tyres for more advanced usage and meet the demanding road conditions of the European market. The UHP tyres are anticipated to command better pricing and margins than other competitively-priced smaller-size tyres.

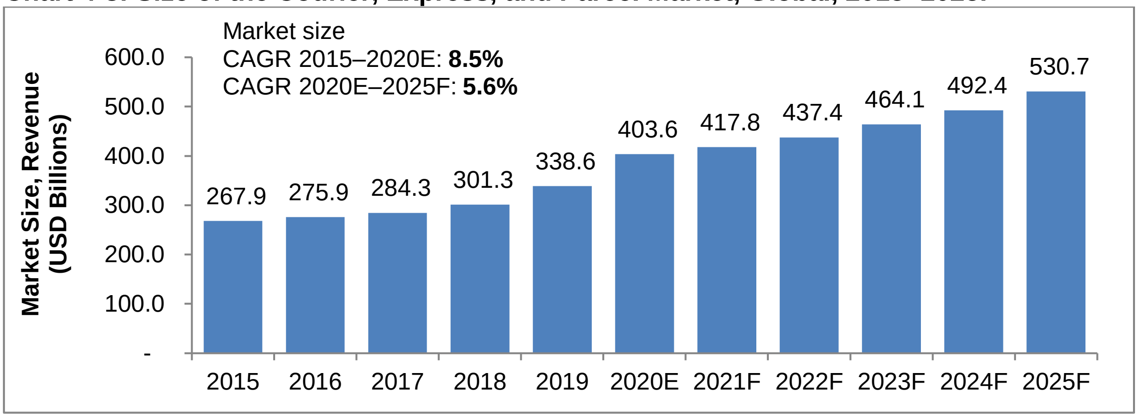
E-commerce Boom in Thailand

Lockdowns during the COVID-19 pandemic forced people to stay indoors, contributing to the high growth of Thailand's online retail market. In 2020, e-commerce nearly doubled, accounting for 8% of total retail sales in the country compared to 4.4% in 2019 and 2.8% in 2018. With more than 45 million online shoppers, the industry has the potential for rapid expansion within the forecast period. Robust e-commerce growth supports the tyre replacement demand primarily in commercial vehicles used widely for logistics and delivery purposes.

Growth in CEP and Last-Mile Delivery

In Thailand, Courier, Express, and Parcel (CEP) services continue to grow, with public and private express delivery companies expanding their capacity to meet growing market demand. The increasing demand for B2C parcel logistics is supporting the expansion in last-mile delivery services. With same-day delivery, orders are delivered within a few hours of purchase or at a chosen time of the same day, driving demand for express delivery services in the country. Motorcycles are most often used to handle same-day delivery services in Bangkok due to the traffic congestion. 4WD vehicles are used for low-traffic rural areas to carry out express delivery services due to the underdeveloped road infrastructure. These developments are expected to propel the need for motorcycle and commercial vehicle tyres in Thailand.

Chart 4-8: Size of the Courier, Express, and Parcel Market, Global, 2015–2025F



Note: data estimated as at October 2020
Source: Frost & Sullivan analysis

Thai Government Policy and Incentives for the Tyre Industry

The Thai government actively supports both local and global tyre manufacturers to establish their production facilities in Thailand. The government offers a wide range of tax and non-tax incentives for projects that meet national development objectives. This includes corporate tax exemption for 8 years, import duty exemption on raw or essential materials and machinery used to manufacture export products, and non-tax incentives such as permits to bring expatriate talent, own land, or take out or remit foreign currency abroad. These incentives increase industry attractiveness and encourage new investments.

4.3.3 Restraints

Rise of Vehicle Sharing

The number of vehicles in Thailand's shared economy, at an estimated 120,000 units in 2020, is forecast to reach 140,000 units by 2021, growing by 16.7% YoY.[47] The growing popularity of

[47] Frost & Sullivan analysis

the vehicle sharing segment is mainly attributed to the convenience it offers. This trend is expected to erode the justification to own personal vehicles and limit their use on the road, potentially impacting passenger vehicle offtakes and demand for OE and replacement tyres. However, increased use of shared vehicles results in more tyre wear and tear, leading to higher replacement tyre demand.

Remote Working Will Be the New Normal Post-COVID-19

Many organisations are likely to maintain work from home or teleworking practices or adopt a hybrid approach that combines remote and work from office options in the long term. The health crisis has restricted daily commutes for work, reducing tyre wear and tear and demand in the passenger vehicle replacement tyres market. However, the impact of this restraint is expected to be short term as vaccination rates in the Thai populace increase and businesses resume operations, reversing the trend.

Discontinuation of Spare Tyres in Some Vehicle Models

Several locally-made vehicles now come without a spare tyre and instead provide a tyre sealant foam repair kit. This trend to substitute spare tyres is a constraint likely to affect demand from the OE tyre market, primarily the premium car segment. Nevertheless, the repair kit has limited application in single tyres. Accordingly, this is unlikely to impact the replacement tyre market.

4.4 TYRE INDUSTRY OUTLOOK IN THAILAND

Once dubbed the “Detroit of Asia”, Thailand is a leading automotive and tyre manufacturing hub in Southeast Asia. It is well-positioned to maintain its dominance in the next 10 to 20 years. Market prices are highly competitive due to the diverse choice of local and imported brands to cater to the different income levels in Thailand. The types of vehicles in circulation are extensive, including two-wheelers, three-wheelers, tuk-tuks, industrial tyres, bigger saloons, and luxury passenger cars. This is a crucial advantage for Deestone as the brand covers a wide variety of tyre types. In addition, Deestone’s targeted advertising and marketing activities are effective in capturing different segments of the domestic market. In Thailand, almost every household has more than two vehicles and pick-up trucks are among the most popular options, presenting immense opportunities for Deestone to tap into this market.

In Thailand, the preference for pick-up trucks is mainly because of their dual purpose as a reliable workhorse and for family outings. These vehicles are economical and can be upgraded to appear sportier and more stylish. Motorists are inclined to fit these vehicles with trendy decorative designs and upsized 15- to 18-inch tyres. The Thai market is flooded with various Chinese imports (some reportedly brought in illegally without the Thai Industrial Standards Institute certification). These tyres, imported in huge volumes, monopolise this market segment. Thai manufacturers like Deestone can leverage their prominent local presence to develop more tyres of these sizes.

Overall, the Thai economy is developing, with many provinces outside the capital city (Bangkok) undergoing rapid development in roads and infrastructure construction. Accordingly, there are plenty of opportunities to expand the country’s commercial, industrial, and off-the-road tyre segments.

In the tyre segment for commercial vehicles, mini-light trucks and pick-up trucks are most commonly used to carry goods and ferry passengers and workers. This tyre market segment is hyper-competitive and price is the main factor tyre buyers consider. As a result, foreign tyre manufacturers are not enticed to venture into this tyre segment in Thailand. Moreover, most of the commercial tyres used in Thailand are bias tyres due to the poor road conditions in rural and sub-urban regions. Like China, many of the world’s biggest tyre-producing countries have reduced bias tyres’ production capacity. Most tyre factories in China are shifting focus to radial tyre production activities. Bias tyres generally consume more rubber than radial tyres, however, given the proximity of Thai tyre manufacturers to rubber resources, this does not pose a significant threat to supply availability for domestic Thai market participants. Most Thai tyre manufacturers, especially Deestone and Otani, are major players in bias tyre production. They produce these tyres cost-effectively and account for a substantial share of bias tyre supply to the rest of the world, including the United States, underscoring their leadership in this market segment.

Thailand's two-wheeler market is large, with major players present in the market. Thailand is among the leading two-wheeler markets in Southeast Asia, after Indonesia and Vietnam. Malaysia and the Philippines also have sizable markets. Several Thai tyre makers produce tyres for e-bikes to meet demand from the surge in e-bikes in China. Thai tyre factories like Vee Rubber and Deestone have over 40 years' experience in manufacturing two-wheeler tyres in Thailand. These brands are well-established household names in the tyre segment, enhancing their competitive advantage against new entrants or potential competitors in the local market.

The proximity of Thailand to neighbours like Myanmar, Cambodia, and Laos also creates a sizeable market on top of the domestic demand. Thailand's infrastructure and road network and the ASEAN Free Trade Area facilitate cost-effective cross-border trading opportunities with its neighbours. In 2020, Thailand exported 8.5% of its total tyre exports to these countries.[48]

Overall, Thailand is well-positioned to challenge its foreign rivals in the global tyre arena due to the abundance of raw materials (e.g., natural rubber), skilled local workforce, and labour at competitive cost from neighbouring countries. The popularity of electric vehicles may spark manufacturing innovations to improve the performance and design of tyres in the future. Tyre manufacturers may need to customise certain tyre specifications to match the future design requirements of electric vehicles. This poses a significant opportunity for Thai tyre manufacturers as the Thai government envisages the future of electric vehicles in Thailand.

5 TYRE INDUSTRY OUTLOOK IN THE UNITED STATES

The tyre industry is an important contributor to the manufacturing sector in the United States, with 57 manufacturing plants across 18 states. Major players operating in the market are Bridgestone, Goodyear, Cooper, Michelin, Continental, Hankook, Sumitomo, Yokohama, Pirelli, and Kumho. South Carolina is the top tyre-producing state, followed by and North Carolina. The replacement market dominates the US tyre market and features a large variety of products in terms of size and design through domestic production and imports.

The overall market demand for tyres in 2020 was close to 309 million units, making it among the largest tyre markets globally.

Thailand is a critical source of tyre imports for the United States,[49] accounting for a large portion of revenue for Thai tyre manufacturers. Made-in-Thailand tyres have a competitive edge in pricing over Chinese products in the US market (due to the anti-dumping duty on Chinese-manufactured tyres in the United States). The shift in demand for Asian-made tyres selling in the US market is due to the availability of attractive and functional tyre designs and patterns that match that of the major brands at affordable prices.

5.1 DOMESTIC SALES

5.1.1 By Type of Vehicle

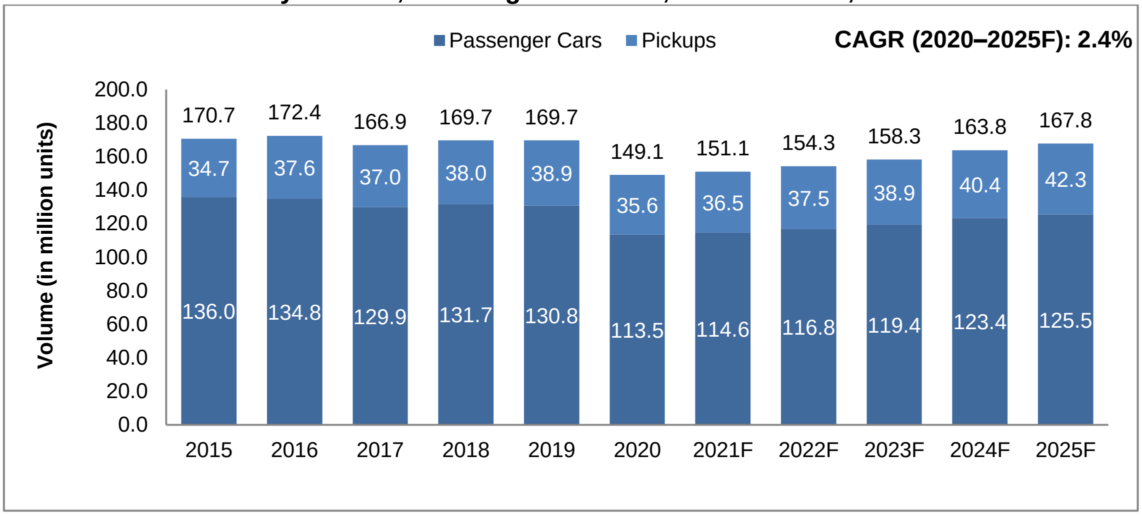
In the US market's passenger vehicle category, crossovers and sport utility vehicles (SUVs) constituted more than half of the new car sales in 2020. Pickup trucks are also a very popular form of personal transport in the country. This trend is expected to fuel the growth of larger diameter tyres. There is also growing demand for all-terrain tyres rather than all-season tyres, both on and off-road. These tyres have an open tread design that improves their traction and provides a strong grip on paved roads, rough terrain with rocks and mud, and snowy and icy surfaces.

Rugged-terrain tyres are the latest edition popularly seen after 2019 in the US market. These are the hybrid pattern between the mud-terrain and the all-terrain tyres. Many Chinese tyre companies with production bases outside China and niche private brands develop aggressive-looking tyre sidewalls and tread patterns for crossovers, SUVs, and 4WDs.

[48] UNcomtrade
[49] Rubber Intelligence Unit, Office of Industrial Economics

There has also been notable growth in the imported high-performance tyres market from 2015 to 2020. Initially introduced in premium high-speed cars, these tyres are now the tyre of choice in crossover utility vehicles (CUVs) and premium SUVs as they offer a firm grip for high-speed driving, increased ride comfort, and reduced noise.

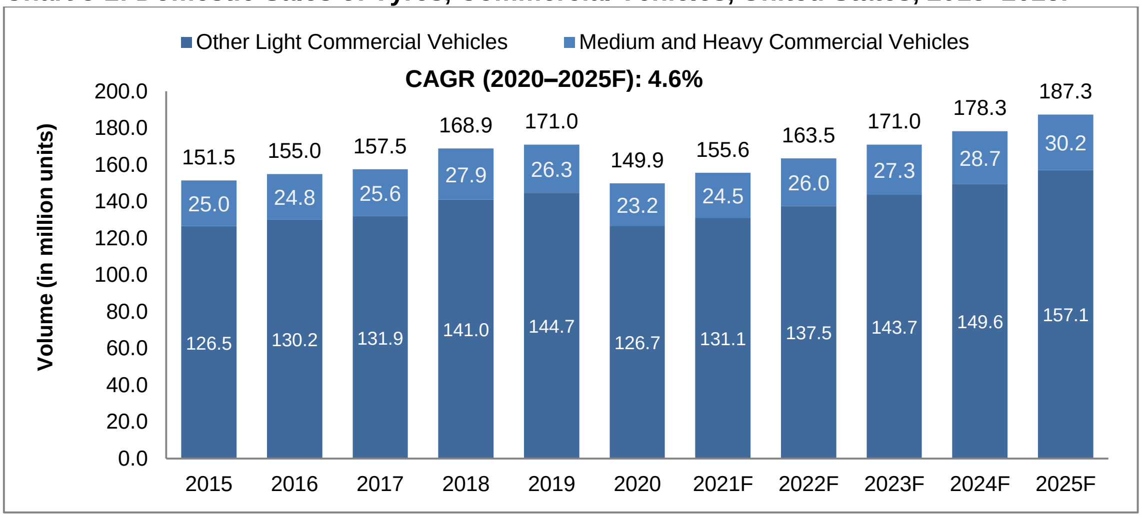
Chart 5-1: Domestic Tyre Sales, Passenger Vehicles, United States, 2015–2025F



Source: Frost & Sullivan

Commercial vehicles include light trucks and medium and heavy trucks and buses. Commercial vehicle replacement market is larger than the OE market in the United States. The majority of replacement tyres for commercial use are imported. The US market for commercial vehicle tyres is transitory and dynamic, and domestic manufacturers do not have the capacity and flexibility to cater to market demand. In addition, US tyre companies are focused on producing higher-value products for the popular passenger vehicle segments of SUVs and CUVs. Hence, the United States relies on imports to complement domestic production to offer a wide range of tyres to meet the diverse needs of the commercial vehicle replacement market. In 2020, with the surge in online shopping during the lockdown, the last-mile delivery business boomed, resulting in high demand for light truck tyres, which was met through additional imports from Taiwan, Japan, Costa Rica, and Canada. Thailand remained the top import source for the second straight year, reinforcing its position in both commercial vehicle categories.

Chart 5-2: Domestic Sales of Tyres, Commercial Vehicles, United States, 2015–2025F



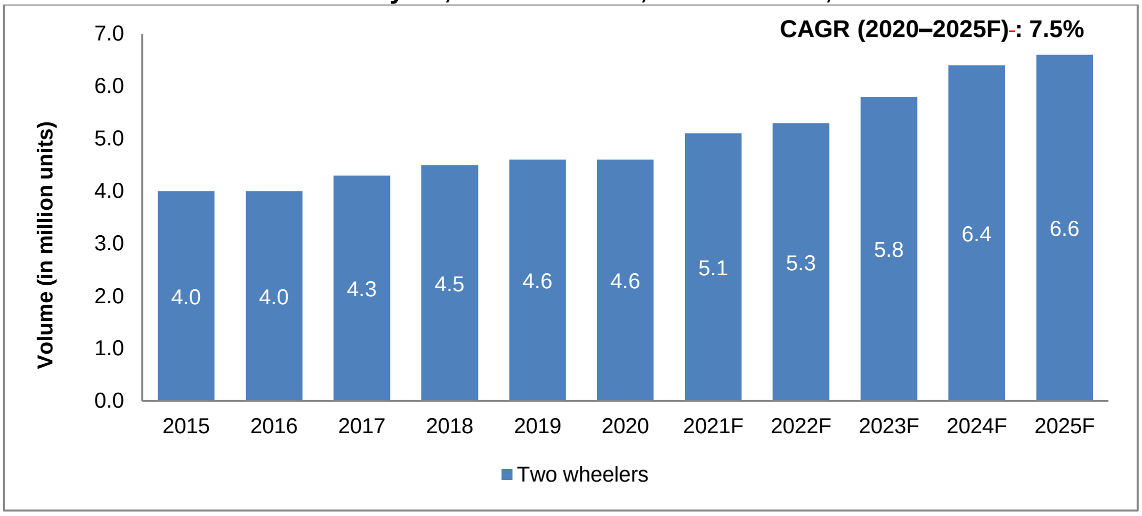
Source: Frost & Sullivan

The motorcycle segment represents the largest segment by volume in the US two-wheeler market. Motorcycles such as Harley Davidson are used mainly for recreation or sporty purposes, while cruisers and electric touring bikes are the largest registered motorcycle classes in the United States. However, the ageing demographic is leading to a gradual decline in the country's motorcycle demand.

Motorcycles for mobility are emerging as an option, particularly in congested cities like New York and Los Angeles. Many states in the warmer regions of the West Coast see increased sales for two-wheelers as a mode of transport as they work well in manoeuvring through traffic. E-bikes, or electronic bikes, is another two-wheeler segment growing fast in the United States. These battery-powered bicycles with an electric motor, battery, and drivetrain are equipped with lead-acid batteries to help them cover long distances with a single charge.

The tourism industry mainly drives the demand for e-bikes as tourists use them to explore local areas. Two-wheeler tyre manufacturers in the United States invest in technologically advanced tyres for e-bikes, which can be lightweight and safe. Government subsidies further encourage the ownership of e-bikes, making them price-attractive. As a result, states like California and Florida have seen over 90% growth in e-bike purchases. Even if growing fast, the US demand for two-wheeler tyres is estimated to remain negligible compared to Asian markets such as China, India, and Indonesia.

Chart 5-3: Domestic Sales of Tyres, Two-Wheelers, United States, 2015–2025F



Source: Frost & Sullivan

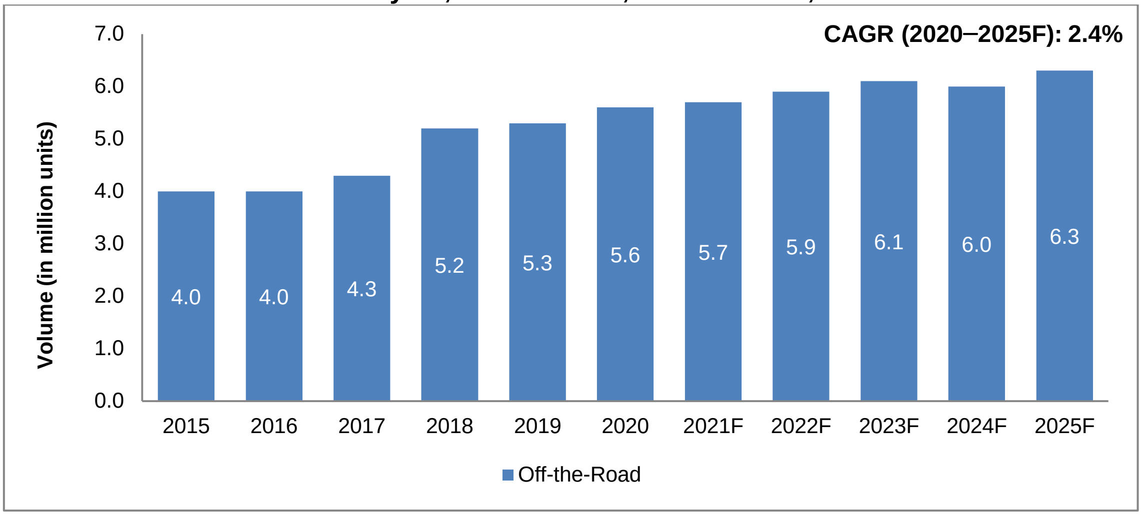
The US off-the-road tyre market includes tyres for agriculture vehicles such as harvesters, tractors, trucks, earthmoving, and construction equipment such as bulldozers, loaders, excavators, and material handling equipment, cranes, and forklifts.

Infrastructure projects such as road building, power plants, and other construction activities drive the steady growth of the off-the-road tyre market. The shift towards mechanised farming across the agricultural belt in the United States stimulates the higher demand for agricultural vehicle tyres. The approval of the USD715 billion infrastructure bill[50] by the US House of Representatives in July 2021 is expected to catalyse this market given the provisions for additional spending on roads, bridges, highway safety, electric vehicle charging stations, rail, transit, and drinking water and wastewater infrastructure.

Traditionally, off-the-road tyres have been largely bias tyres. However, radial off-the-road tyres are increasingly popular in the United States because of their firmer grip, which presents a considerable advantage, especially in mining and construction activities where drive terrains are uneven and rough.

[50] Reuters: U.S. House approves $715 bln infrastructure bill, July 2021

Chart 5-4: Domestic Sales of Tyres, Off-the-Road, United States, 2015–2025F



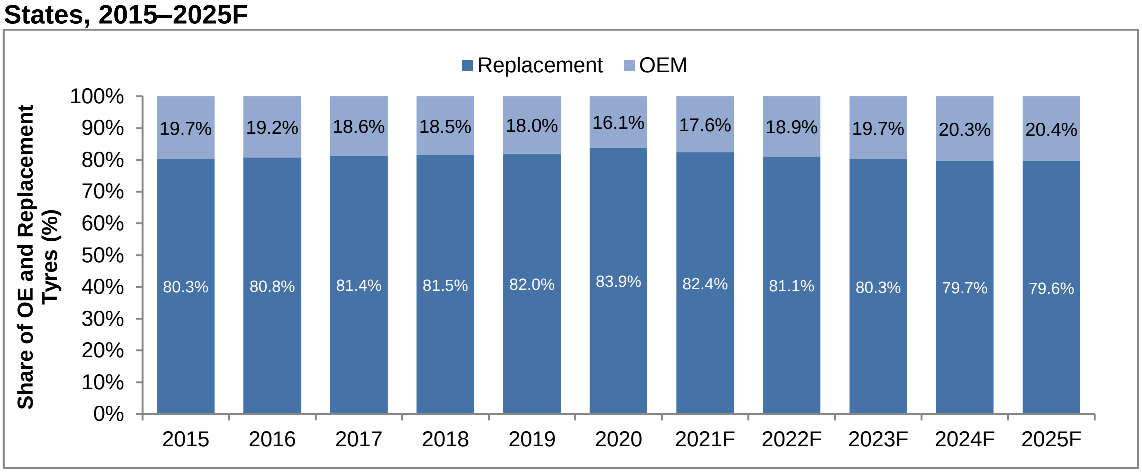
Source: Frost & Sullivan

5.1.2 By End Use

Nearly 84% of the total market demand for tyres in the United States comes from the replacement market. While most tyre manufacturers strive for OE contracts to enhance their brand's reach and reliability, the country's replacement market is more profitable. The OE demand for tyres is expected to rise with an expected growth in vehicle manufacturing in the country, especially commercial vehicles and electric vehicles. The share of imported tyres in both the OE and replacement markets is gradually increasing due to evolving customer needs and general availability of products.

The replacement tyre market comprises a vast mix of tyres in varying sizes and types met through domestic production and imports. The bulk of these imported tyres is sourced from Thailand, which has emerged as the single largest passenger vehicle and commercial vehicle tyre exporter to the United States. Thai tyres not only meet the required technical specifications and expected performance, but until 2019 (before the anti-dumping duty) were also available at attractive price points compared to those from countries such as China.

Chart 5-5: Share of Domestic Sales by End Use, OE and Replacement Tyres, United States, 2015–2025F

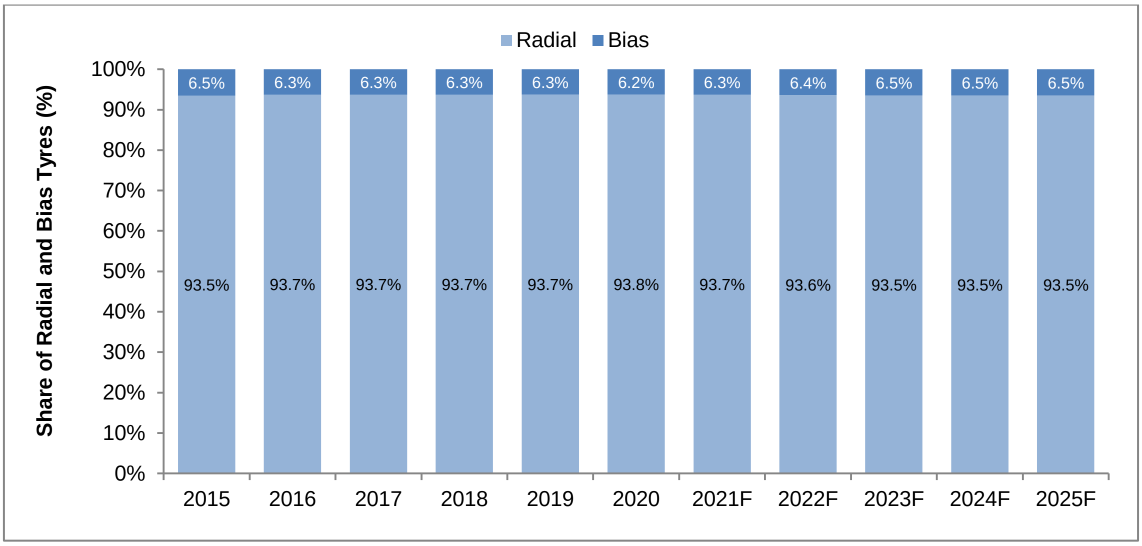


Source: Frost & Sullivan

5.1.3 By Tyre Design

More than 90% of the tyres in the United States are radial tyres. They have been standard OE equipment in all passenger cars in the country since 1981. Both passenger cars and commercial vehicles in the United States have almost completely switched to radial tyres as they offer advantages in terms of better traction and fuel efficiency. This switch is also being driven by improvements in road and infrastructure conditions in the United States. On the other hand, bias tyres in the United States find use in mainly off-the-road applications such as agricultural, industrial, and construction vehicles.

Chart 5-6: Share of Domestic Sales by Tyre Design, Radial and Bias, United States, 2015–2025F



Source: Frost & Sullivan

5.2 MARKET TRENDS

High Replacement Market Demand in the United States

On average, Americans drive more than the inhabitants of any other country globally. According to the Federal Highway Administration, the average number of miles driven per year by Americans is 14,300 miles. With a high average life span of vehicles at 11.9 to 12 years and high vehicle miles travelled (VMT), the average American has to go for a tyre replacement every 3 to 5 years, depending on the region and terrain they drive. Having higher income levels, better living standards, and incurring substantial insurance costs, car owners in the United States recognise the importance of regular vehicle maintenance, including periodically replacing the tyres. As a result, it has a large replacement market for tyres catered through an extensive network of tyre dealers, repair garages, motor vehicles dealers, and auto parts accessory stores. The replacement market demand is met through a combination of domestic production and imports from various countries. The US marketplace offers a wide variety of budget tyre choices, contributing to the growing demand for affordable imported tyres from Asia compared with the locally-made premium brand tyres.

High Dependence on Imports

The US market is estimated to remain dependent on tyre imports. It is costly for US tyre manufacturers to import the required raw materials and process them locally. The end product is not cost-competitive compared with that of imported tyres.

Multiple Sales Channels Cater to a Wide Replacement Market

With a large replacement market for tyres in the country, the United States has 51,164 tyre and auto service outlets across all states as of 2020, which serviced 264.9 million vehicles.[51] It has multiple wholesale and retail distribution channels across national, regional and local dealerships, general merchandise distributors, and tyre makers' outlets.

National dealerships have more than 40 outlets in 3 or more regions. In 2020, these dealerships sold nearly 46% of passenger tyres and 44% of light truck tyres. Regional dealerships with 10 to 40 outlets in two or more regions sold 17% of passenger car tyres and 22.5% of light truck tyres. Local dealerships with up to 9 outlets in a single regional distribution

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[51] USTMA

area sold about 24% of light trucks and 15% of passenger car tyres. General merchandise distributors include mass merchandisers and wholesale clubs that primarily sell passenger car tyres and a small percentage of light truck tyres. Tyre company outlets are those owned by tyre manufacturers selling a higher number of passenger cars than trucks. Other sales channels for tyres include service stations, garages, and auto dealers, selling passenger and commercial tyres. The United States also has an extensive network of retail tyre chains. The tyre sales channel in the United States is dynamic and fulfils the requirements of the large replacement market through focused service and promotional offers to attract customers.

Emerging Preference for High Performance and Ultra High-Performance (UHP) Tyres

In the US passenger vehicle category, crossovers and SUVs and pickups constitute more than half of the new car sales in 2020, emerging as the most preferred vehicles in the country. US vehicle owners are attracted by the perfect blend of performance and functionality of these vehicles as they offer a car's performance with the utility of a SUV. This has resulted in an increased demand for larger 17- to 20-inch rim diameter tyres. The preference for high-performance and UHP tyres in the OE and replacement markets are growing and mainly met through imports. High-performance tyres are optimised to provide quick response, superior and enhanced grip, and high-speed coping ability. Initially developed for race cars and motorsport vehicles, these tyres are now available on high-speed sports and luxury vehicles as well as high-end CUVs and SUVs. UHP tyres can handle the increased horsepower and enhance high-performance driving and traction levels, giving the driver a sporty and responsive drive. Deestone tyres are sold extensively in the United States, with many end users familiar with the brand and quality of tyres. Its track record, strengths, and experience are added advantages of Deestone to penetrate the UHP tyre market further.

Shift Towards Lesser-known Tyre Brands

Automotive OEMs in the United States typically prefer tyre brands other than the traditional major brands such as Goodyear, Michelin, and Bridgestone. More US carmakers are also sourcing from lesser-known tyre companies such as Cooper, Falken, Hankook, Kumho, and Nexen. Most of these customer-focused companies have manufacturing facilities in the United States, fulfilling the car company requirements by providing more flexibility in production and on-time deliveries per required specifications at competitive price points. This trend is also evident in the country’s replacement tyre market, where lesser-known brands offering comparable quality at lower prices are preferred. This shift in preferences creates opportunities for many private labels and small niche players in the tyre industry.

Increased Focus on Fuel Efficiency

Fuel economy standards such as the Corporate Average Fuel Economy (CAFE) imposed by the National Highway Traffic Safety Administration (NHTSA) in the United States regulates the distance vehicles should travel on a gallon of fuel. As such, tyre manufacturers continuously improve tyre manufacturing technologies to increase fuel efficiency. For example, to improve fuel efficiency, Bridgestone, through its “ologic” tyre technology, achieved 24% reduction in tyre rolling resistance in 2020 compared to 2005, contributing to a decrease in carbon dioxide emissions.[52] Bridgestone also uses a new generation of rubber tracks, leading to lower drive loss and improved fuel consumption.

New Airless Tyres for Autonomous and Other Vehicles

Airless or non-pneumatic tyres (NPT) are flat-free tyres not supported by air pressure and considered more sustainable, maintenance-free, and longer-lasting than traditional tyres. In July 2021, the Jacksonville Transportation Authority (JTA) and Goodyear rolled out the first autonomous test shuttle programme to test the airless tyre system developed by Goodyear to gather data on ride comfort, noise, and other variables. Goodyear plans to introduce the first sustainable and maintenance-free tyres by the end of the decade.[53] Other manufacturers such as Michelin, Bridgestone, and Hankook are also actively looking to introduce airless tyres in the

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[52] Bridgestone, “Our solutions for CO2 reduction”, as at July 2021
[53] WJCT News, “Industry First: JTA, Goodyear Roll Out Airless Tires For Autonomous Test Shuttle”, 13 July 2021

passenger vehicle market. Michelin has also developed airless radial tyres for recreation, construction, and small-scale utility vehicles. Goodyear sells airless tyres for radius mowers, while Cooper is developing them for military uses.

Tyre Retread Technologies

Commercial tyres, like truck and bus tyres (16-inch and above), are retreaded for second or third use. There are two types of tyre retreading processes, by hot-curing and cold-curing or the precured process. By tyre retreading, end users aim to maximise usage and the mileage achievable from a single tyre. Bald tyres or worn-out tyre casings are usually collected for the retreading process after being dismantled from the vehicle. The most reputable global tyre brands have tyre retreading capabilities and facilities to support new tyre sales. Since Deestone manufactures commercial radial truck tyres, the company may capitalise on improving the features and benefits of its tyres in the areas of retreadability, i.e., regroovability, strong tyre carcass, and high cost savings. Large vehicle fleet owners prefer to use retread tyres. However, in the past few years, the price of new tyres has become highly competitive due to massive production and price-dumping by Chinese tyre companies. This makes it commercially unviable and uneconomical for tyre retreading plants to sustain the competition and costs.

With the escalating shipping costs and protectionism, the opportunity for retread tyre sales may reemerge. Like how Michelin designs its commercial tyres to be retreadable and regroovable, Thai brands such as Deestone and Otani should capitalise on such features to stay competitive in the US market. Other than price constraints, the main challenge of the tyre retreading business is sourcing acceptable quality tyre casings. Retreadable tyre casings are widely available in the United States, Japan, and several developed countries in Europe.

Severe-Duty Solid Tyres

Industrial-application tyres like forklift tyres are widely used in food factories, construction sites, ports, and scrap yards. These tyres are constructed from both pneumatic and non-pneumatic or solid tyres. Chinese tyre makers monopolise the production of these tyres because of the competitive prices and absence of trade barriers. However, in the past 10 years, several Thai tyre manufacturers have started to build good quality solid tyres for export to the United States, Europe, and other Middle Eastern countries. Deestone is a major player in the segment.

Sustainable Materials

A growing number of tyre factories advocate using sustainable materials in tyre production to lower the rolling resistance and reduce carbon dioxide emissions. Michelin is committed to making its tyres 100% sustainable by 2050; 30% of the components used for its current tyre production are from natural, recycled or sustainable raw materials. China imports most of the natural rubber for its tyre industry's needs. As part of efforts to boost environmental awareness, a group of China-based reputable tyre manufacturers (Triangle, Linglong, Bridgestone, Continental, and Cooper) are committed to reducing synthetic rubber usage in the tyre industry.

Online Channels for Tyre Sales

Consumers browse social media and websites for reviews and information on brand performance or to compare prices before making a purchase. This mainly applies when buying tyres for two-wheelers, passenger cars, and light trucks. To purchase commercial vehicle and off-the-road tyres, end users usually rely on word-of-mouth recommendations from peers and tyre dealers. Having an informative and interactive online platform to serve these consumers will be an advantage for industry players. Online channels can also collect feedback on tyre performance by tyre manufacturers' sales and marketing personnel and R&D teams to enhance after-sales support services.

Tyres for Electric Vehicles

The United States is one of the three largest markets for electric vehicles globally, after China and Europe.[54] Approximately 1.74 million light-duty, plug-in electric vehicles have been sold in the United States since 2010. According to IHS Markit, electric vehicles make up 1.3% of

[54] Modern Tire Dealer: How Electric Vehicles Impact Tire Design, May 2021

vehicles sold in the country in 2020 and are forecast to account for 3.5% of light-duty vehicle sales in 2021. The growing shift towards electric and hybrid vehicles requires tyre manufacturers to address unique requirements such as the need for low-rolling resistance tyres, with minimum noise and vibration to enhance the performance of electric vehicles. Both OEMs and tyre dealers in the replacement channel must also ensure adequate availability of tyres tuned to electric vehicle performance and design in the forecast period.

5.3 Opportunities and Challenges in the US Market for Thai Tyre Manufacturers

5.3.1 Insufficient Local Production in the United States

Tyre companies in the United States manufacture a wide range of tyres for various applications, including automobiles, aeroplanes, inner tubes, and tyre repair products. Since 2016, global competition has intensified, shrinking the revenue of US tyre manufacturers. Fluctuations in rubber prices, which the US imports, also impact the profitability of tyre industry participants. The higher value of the US dollar throughout the study period has reduced the competitiveness of local industry operators. These factors slowed production levels in the industry until 2019. The onset of the COVID-19 pandemic in 2020 curbed tyre production further in the United States, resulting in significant market decline.

With dwindling production and rising demand for OE tyres in new vehicles and for replacement tyres in existing vehicles, US tyre producers supplement production through imports from various countries. That stated, the pandemic forced a sudden decline in tyre imports for truck, bus, and passenger vehicles in the United States in 2020. The decline was driven by the significant drop in new passenger car sales and transit ridership in the United States.

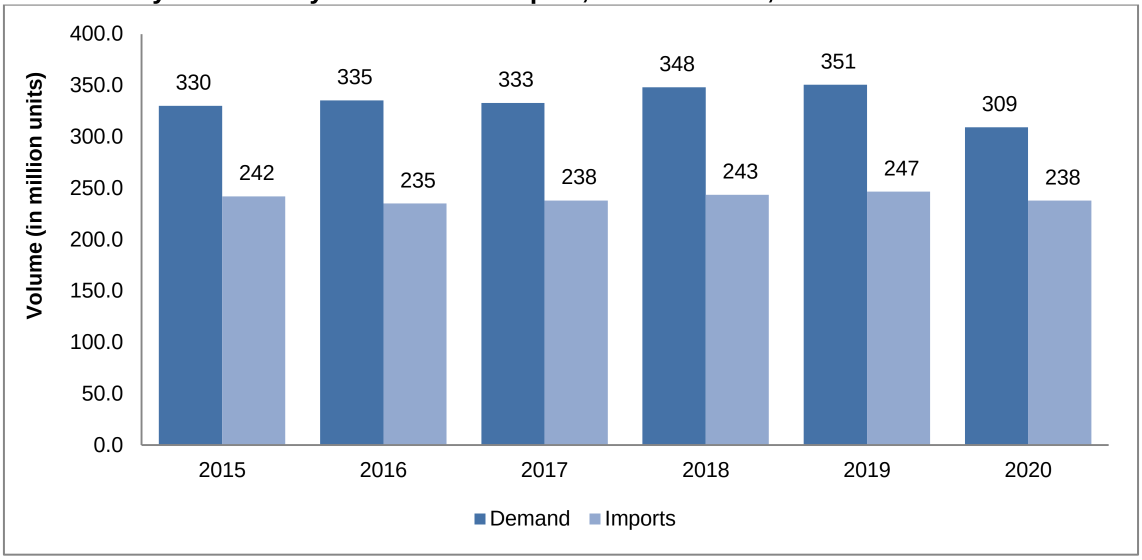
Volatile freight rates and limited shipping container space caused by the shortage of vessels have affected many US tyre importers. Many tyres were waiting to be shipped out from the shippers' warehouses and ports of discharge.

Prolonged US-China trade war tensions (even in the post-Trump era) are expected to affect the growth of more tyre categories. However, Thai-based tyre manufacturers have pockets of opportunities to increase production for high-volume categories (e.g., ATV/UTV tyres, lawn and garden tyres, farm tyres, ST/trailer tyres) traditionally supplied by China.

Tyre companies in the US market supplement their manufacturing capacity with imports. The US replacement market is diverse and varied. There is a requirement for a wide variety of tyres of different sizes, patterns, and specifications. While US-based tyre companies have large capacities and expansive product lines, they are not enough to fulfil the demands of OE and replacement markets in the country. As a result, the United States is one of the largest importers of tyres for passenger vehicles and commercial vehicles. Imports essentially target the lower segments of the market, which are not served by US producers that typically focus on larger size tyre rim diameters of 17 inches and above for the SUV and CUV segments.

Many tyre factories previously ceased operations due to persistent labour issues, such as labour strikes and union movements. To address this issue, the US government is aggressively trying to attract foreign investments to the United States to establish manufacturing operations. The Trump administration created trade barriers for imported products, advocating a "Made-in-USA" policy. This prompted new tyre factories to set up their base in the United States.

Chart 5-7: Tyre Market by Demand and Import, United States, 2015–2020



Note: Data for imports based on the HS code 4011: New pneumatic tyres of rubber (the data for imports excludes the HS code 401130)
Source: uncomtrade; Frost & Sullivan

US tyre manufacturers are unable to fulfil supply requirements, especially for the replacement market. To meet customer needs, retailers and distributors rely on imports to ensure product availability and offer a broad range of tyres of different specifications and sizes at various price points. In 2020, Thailand and China were the key sources of tyre imports to the country. Since 2015, the anti-dumping and countervailing duties on Chinese tyres enabled Thailand to replace China as the largest exporter of passenger vehicle tyres to the United States. Thai-made tyres for passenger vehicles and light trucks attract high demand and have a favourable brand value in the US replacement market.

Table 5-1: Origin of the Tyre Imports by Vehicle Segments, United States, 2020

Tyre Segment/ Origin for US Imports in Units	Passenger Vehicles	Light Commercial Vehicles	Buses or Lorries	Motorcycles	Bicycles	Off-the-Road
Top country of origin	***Thailand 35,913,849***	*China 31,617,420*	***Thailand 12,638,792***	*Indonesia 539,919*	*China 3,443,340*	*India 1,289,644*
2nd largest country of origin	*South Korea 14,855,584*	***Thailand 2,864,747***	*Canada 5,202,103*	***Thailand 479,911***	*Taiwan 3,003,260*	***Thailand 666,365***
3rd largest country of origin	*Mexico 13,883,968*	*Taiwan 2,383,401*	*Vietnam 4,092,390*	*South Korea 464,144*	***Thailand 982,335***	*China 367,636*
4th largest country of origin	*Indonesia 12,207,766*	*Vietnam 1,758,564*	*Japan 3,141,007*	*Japan 371,563*	*Germany 926,787*	*Sri Lanka 361,811*
5th largest country of origin	*Vietnam 10,290,243*	*Indonesia 455,320*	*South Korea 2,958,335*	*Taiwan 343,576*	*Japan 340,135*	*Vietnam 65,734*
Others	*Others* ***54,060,813***	*Others* ***213,246***	*Others* ***13,173,253***	*Others* ***1,033,585***	*Others* ***880,262***	*Others* ***567,302***

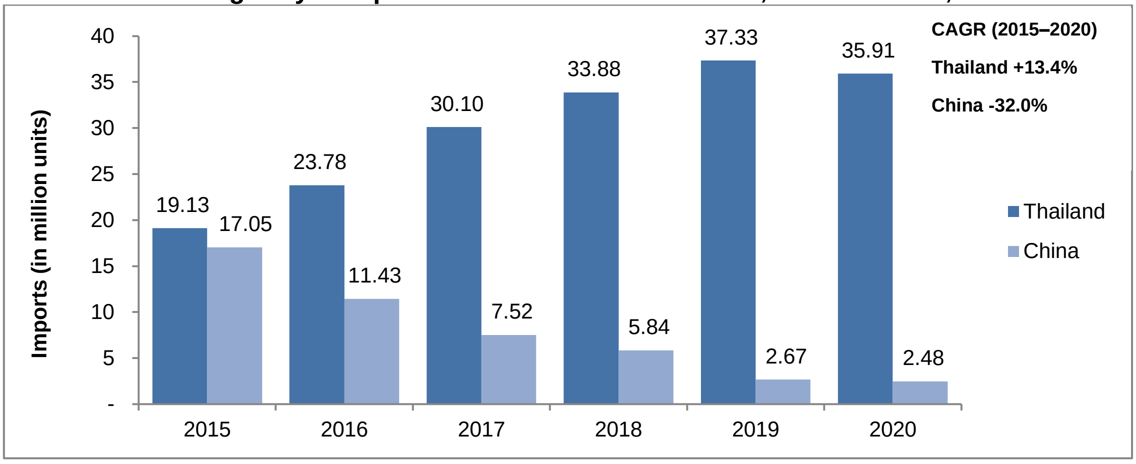
Note: Data for imports based on the following HS codes: Passenger vehicles (401110), Light commercial vehicles (401190), Buses or lorries (401120), Motorcycles (401140), Bicycles (401150), Off-the-Road (401170, 401180).
"Others" include Chile, Brazil, Philippines, Malaysia, Costa Rica, Portugal, Romania, Italy, Hungary
Source: uncomtrade; Frost & Sullivan analysis

5.3.2 Thai Tyre Manufacturers Emerging as Leading Import Players

In the past 5 years, Thai-based tyre makers have successfully captured opportunities in the US market, particularly in the passenger vehicle, truck, and bus tyre segments. The share of Thai-made tyres in the US market grew between 2015 and 2020, surpassing imports from China due to the imposed duties, specifically on truck tyres, taking effect in 2019. Thai tyre companies are recognised as flexible, customer-centric, and produce tyres with the precise performance and technical specifications required, enhancing their value proposition to importers.

The import of passenger tyres from Thailand steadily increased from 2015 to 2019 with the emergence of fast-growing Chinese-owned tyre plants, namely Linglong, ZhongCe, and Sentury, in Thailand. These factories expanded production capacity substantially, flooding the US market with cheaper imports. Thai-owned tyre factories, like Deestone, also increased production capacity to tap into the lucrative US demand. The surge in tyre imports into the United States triggered the US government to impose import duties on several Asia-Pacific countries, including Thailand, Vietnam, Taiwan, China, and South Korea. However, the duties on tyres from Thailand are much lower than those from South Korea and Taiwan.

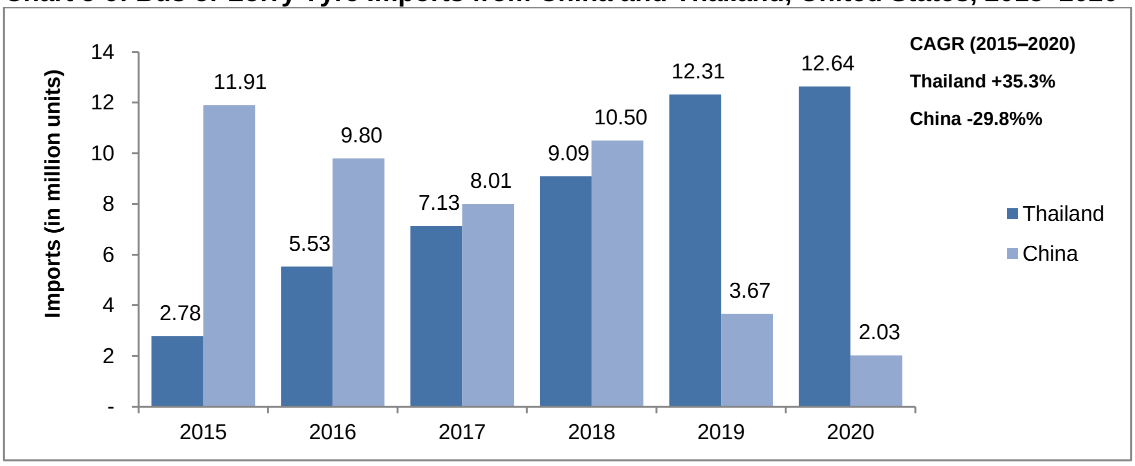
Chart 5-8: Passenger Tyre Imports from China and Thailand, United States, 2015–2020



Note: Data for imports based on the HS code of tyres for passenger vehicles (401110).
Source: uncomtrade; Frost & Sullivan analysis

As for the truck and bus segment tyres, Chinese tyre factories traditionally controlled supply to this segment in the US market. Before 2015, only Michelin, Bridgestone, and Maxxis had the capabilities to produce radial truck and bus tyres in Thailand. From 2015 onwards, more foreign-invested tyre factories like ZC Rubber and Linglong began to increase export volume to the US market, alongside Thai-owned factories like Deestone and Otani. In 2019, the US-China trade war limited the sale of Chinese radial truck and bus tyres to the United States, enabling Thailand to expand its supply over the previous year's sales records.

Chart 5-9: Bus or Lorry Tyre Imports from China and Thailand, United States, 2015–2020



Note: Data for imports based on the HS code of tyres for buses or lorries (401120).
Source: uncomtrade; Frost & Sullivan analysis

5.3.3 Challenges Ahead for Thai Tyre Makers in the United States

Thai tyre companies are among the key import partners of the United States. Tyre brands from Thailand attract high demand because of their quality per required technical specifications at attractive price points. However, recent developments in the US tyre market may pose some challenges to Thai tyre makers supplying to the United States.

Lockdown measures resulting from the COVID-19 pandemic in 2020 have transformed buying habits, with more consumers purchasing tyres from online stores rather than auto shops and other retail outlets. Thai tyre companies exporting to the United States will need to reexamine their sales channels and create an online presence in the country. Thailand's domestic and Chinese manufacturers are likely to be impacted by anti-dumping duties imposed on tyres imported into the United States from South Korea, Taiwan, and Thailand. Though the anti-dumping duties were removed for Vietnam, the country continues to face countervailing duties (CVD) since July 2021. However, Thai manufacturers maintain a pricing edge over exports from South Korea and Taiwan as Thai tyre exports are subject to lower anti-dumping duties than these countries.

Thai tyre companies are also likely to face competition in the US market from tech-driven Chinese-owned tyre factories with off-shore production outside China (e.g., in Vietnam, Cambodia, Malaysia, Pakistan, Sri Lanka, and Serbia). However, Thai-made tyre brands still possess competitive advantages over these new entrants because of their well-established relationships with US tyre distributors and strong brand positioning in terms of quality standards and competitive prices.

6 TYRE INDUSTRY OUTLOOK IN SELECTED ASIA-PACIFIC MARKETS

Asia-Pacific is home to several leading global automotive markets, characterised by their vast populations, growing income levels, favourable consumer sentiments, and lower motorisation rates. Indonesia, Thailand, Malaysia, the Philippines, and Vietnam are Southeast Asia's largest markets for new vehicles. The "spillover effects" of these factors in the tyre industry is significant, especially in Thailand, which is also a market leader and prominent player in the tyre manufacturing industry in the region outside China. Other major markets in Asia-Pacific are China, Japan, South Korea, and India. These countries are also automotive production centres for several international and domestic vehicle brands and important OE and replacement tyre markets. This section explores the Asia-Pacific tyre industry outlook, focusing on Indonesia, Malaysia, Vietnam, the Philippines, India, and Australia, the largest market in the Pacific.

Tyre markets in each of these countries have varying characteristics. While Australia has a large market for passenger tyres, Indonesia, Vietnam, Malaysia, and India generate greater demand for two-wheeler tyres. Together with Thailand and China, Indonesia, Vietnam, Malaysia, and India are natural rubber producers and possess ample advantage in raw materials availability. This has prompted global tyre manufacturers such as Michelin, Bridgestone, Goodyear, Continental, and Sumitomo to develop manufacturing facilities in several of these countries. High labour costs, rising operational expenditure, and union issues were other reasons that led these factories to relocate. Several domestic companies in these countries manufacture and export tyres, such as Friendship Rubber Industry (M) Sdn Bhd in Malaysia, Apollo Tyres and MRF Limited in India, and PT Elangperdana Tyre Industry and PT Industri Karet Deli in Indonesia.

6.1 INDONESIA

Indonesia, one of the largest and fastest-growing economies in Southeast Asia, is undergoing rapid industrialisation. It has a burgeoning automotive production industry with global participants. After Thailand, Indonesia is the largest automotive producer in ASEAN.

Indonesia is the second-largest natural rubber producer in the world after Thailand. Abundant availability of raw materials such as rubber and large motor vehicle fleets have encouraged the growth of the Indonesian tyre market. Many global tyre companies are establishing manufacturing plants in the country and expanding collaborations with leading auto OEMs to cater to the growing domestic automobile sector and to augment tyre market expansion. Indonesia is a major exporter of tyres to global destinations such as the United States and Australia. Other drivers encouraging Indonesia's tyre market growth include the introduction of import quota regulations by the government and favourable FDI guidelines to boost investor confidence.

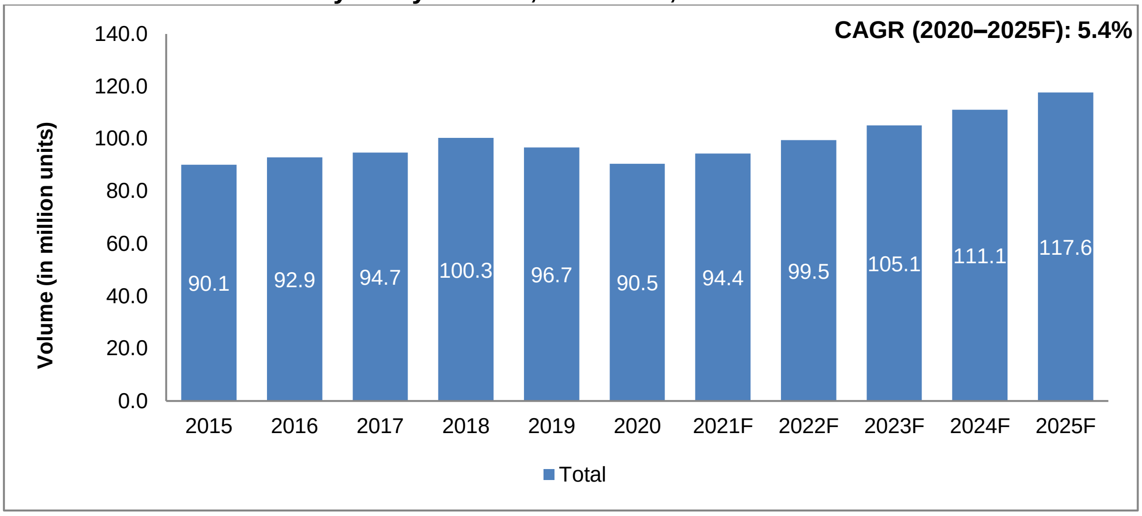
Indonesia has fewer than 20 tyre manufacturing facilities, comprising top global and domestic industry participants. Tyre manufacturers operating in Indonesia include PT Gajah Tunggal TBK, PT Suryaraya Rubberindo Industries, PT Sumi Rubber Indonesia, PT Bridgestone Tire Indonesia, PT Michelin Indonesia, PT Goodyear Indonesia TBK, PT Multistrada Arah Sarana, PT Hankook Tire Indonesia, PT. Industri Karet Deli, and PT Elangperdana Tyre Industry. Gajah Tunggal, an affiliate of Singapore-based Giti Tyres, is the largest integrated tyre manufacturer in Southeast Asia. The company holds a leadership position in Indonesia's tyre market, followed by global leader Bridgestone. The company supplies GT Radial and GITI brand tyres to several Japanese, Korean, and auto OEMs with manufacturing or assembly operations in Indonesia. PT Multistrada Arah Sarana, producing the Achilles and Corsa brands, was acquired by Michelin Tyres with an 88% shareholding in early 2019. Prior to the sale to Michelin Group, Achilles Tyre was one of Indonesia's fastest-growing passenger car radial tyre brands.

Most local tyre manufacturers are export-oriented; for example, PT Gajah Tunggal TBK exports more than 60% of its production capacity to the replacement market and leaving about 40% of its capacity for the domestic market and OE market. Likewise, Bridgestone and Hankook export most of their capacity as well.

Indonesia's tyre market has grown steadily from demand in the automotive market (rising vehicle population, especially two-wheelers) and positive economic factors, such as increasing disposable incomes, expanding middle-class, and lower interest on vehicle loans. Favourable FDI guidelines encouraged investments in the industry, pushing up tyre market growth.

With the investment of PT Hankook Tire Indonesia and Michelin on PT Multistrada Arah Sarana, the landscape of the passenger car tyre market changed. Better tyre designs and bigger rim size diameters of UHP tyres are available and more prevalent in the market. Traditional tyre makers like Bridgestone and GT Radial have established their position in the market by making mainly commodity tyre sizes for sales in the lucrative Indonesian market. Maxxis Tyres also taps into the market niche for off-the-road 4WD and SUV tyre markets. These are areas where there is not much competition compared to the sales of commodity tyre sizes.

Chart 6-1: Total Sales of Tyres by Volume, Indonesia, 2015–2025F

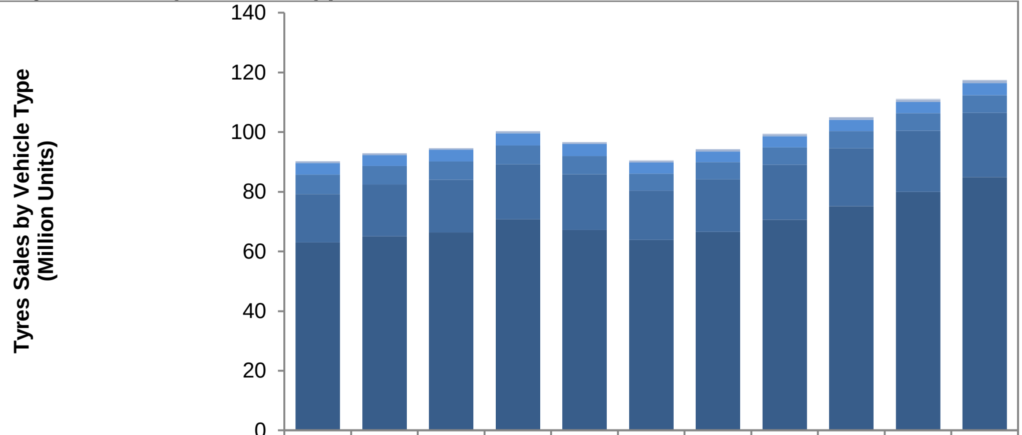


Source: Frost & Sullivan

Indonesia has one of the highest two-wheeler populations in the world, after China and India. Motorcycles and scooters are the primary transport mode in the country for people to move around and transport goods. Motorcycle e-hailing and e-sharing is also a big market in Indonesia. About 80% of the motorcycle population is concentrated in the Java and Sumatra islands of Indonesia. The two-wheeler category dominates the Indonesian tyre market and is projected to sustain in the forecast period. However, with growing GDP per capita and expanding middle-class with higher purchasing power, the passenger vehicle tyre market is expected to grow fast, especially in urban areas. Commercial vehicles and off-the-road tyres are also forecast to exhibit a steady rise in the Indonesian mining, energy, and infrastructure

/sectors. The Indonesian government plans to continue its spending on transportation and road infrastructure.

Chart 6-2: Tyre Sales by Vehicle Type, Indonesia, 2015–2025F

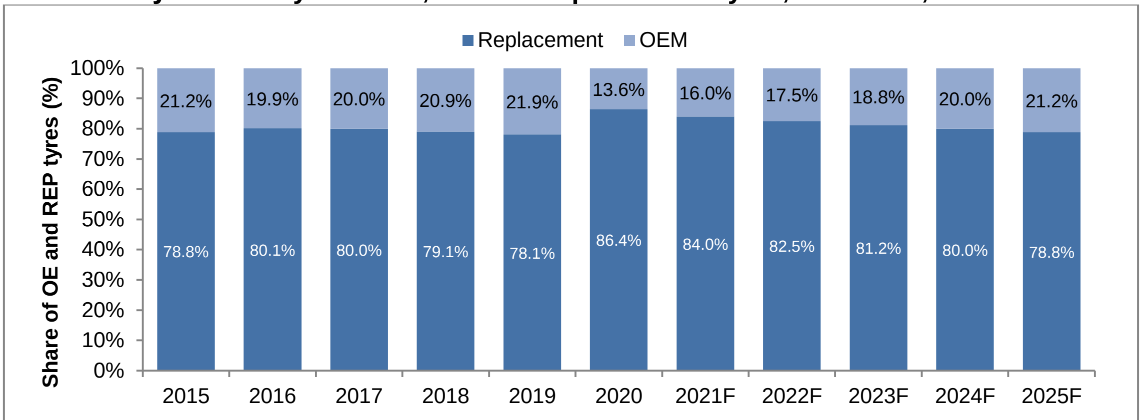


	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Three Wheelers	0.03	0.05	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3
Off-the-Road	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.9
Medium and Heavy Commercial Vehicles	3.8	3.7	3.9	4.1	4.0	3.7	3.6	3.7	3.8	3.8	4.0
Light Commercial Vehicles	6.6	6.2	6.2	6.3	6.1	5.7	5.8	5.8	5.8	5.9	6.0
Passenger Cars	16.2	17.3	17.7	18.5	18.7	16.5	17.6	18.5	19.4	20.4	21.5
Two Wheelers	63.0	65.1	66.3	70.7	67.2	63.9	66.5	70.6	75.1	80.0	84.9

Source: Frost & Sullivan

With a large number of registered motor vehicles on the road, the replacement tyre market in Indonesia is larger than the OE market. However, with rising automotive production and demand, the share of the OE market is expected to increase. The replacement market is distributed via an extensive network of wholesalers, dealers, and distributors. The online purchase of tyres and automotive components has also grown during the COVID-19 pandemic.

Chart 6-3: Tyre Sales by End Use, OE and Replacement Tyres, Indonesia, 2015–2025F



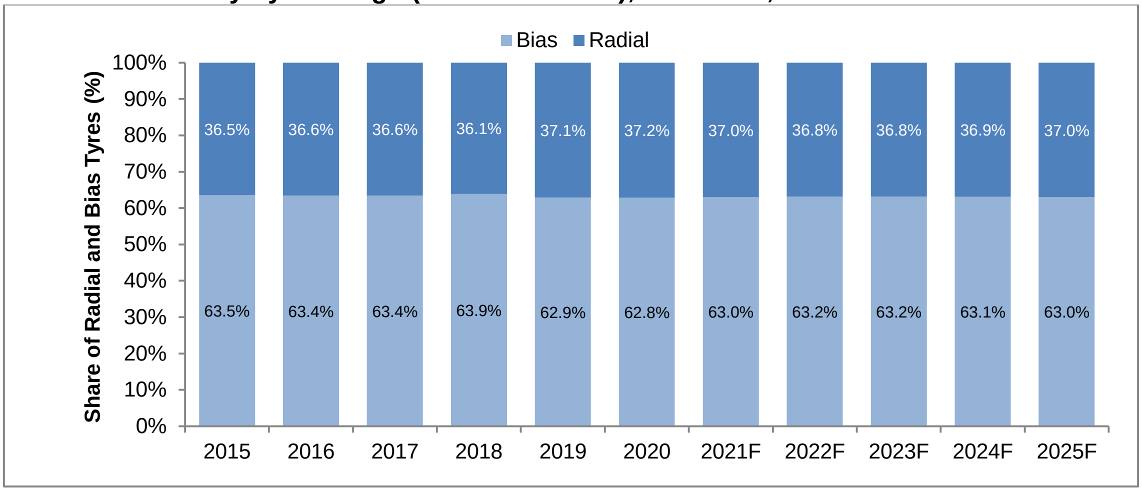
Source: Frost & Sullivan

The bias tyre segment, mainly produced by local tyre manufacturers for over 4 decades, dominates Indonesia's tyre market. Key tyre makers include Gajah Tunggal, Bridgestone, and Goodyear tyres. However, the pace of radialisation in Indonesia's tyre market, like that seen in China, remains slow. The cost of converting bias tyre factories into fully automated radial tyre plants is high. Generally, local tyre manufacturers already monopolise the Indonesian market and actively lobby the local government to impose protectionist measures, like implementing stricter importation policy and tyre quota measures to curb external competition. All imported tyres are subject to the Indonesian National Standard (SNI) certification, and the application process can be complicated and lengthy. Tyre importers are restricted by tyre import quotas and must meet eligibility criteria to apply. While these practices may be viewed as hindering healthy competition, most global tyre manufacturers in the country are satisfied with the

Indonesian government's favourable FDI policies. The government actively invests in infrastructure development of new roads and highways, stimulating demand for the passenger car and commercial vehicle radial tyre segments.

The radial tyres market is anticipated to expand rapidly, given its numerous advantages, particularly for passenger cars and SUVs.

Chart 6-4: Sales by Tyre Design (Radial and Bias), Indonesia, 2015–2025F



Source: Frost & Sullivan

6.2 MALAYSIA

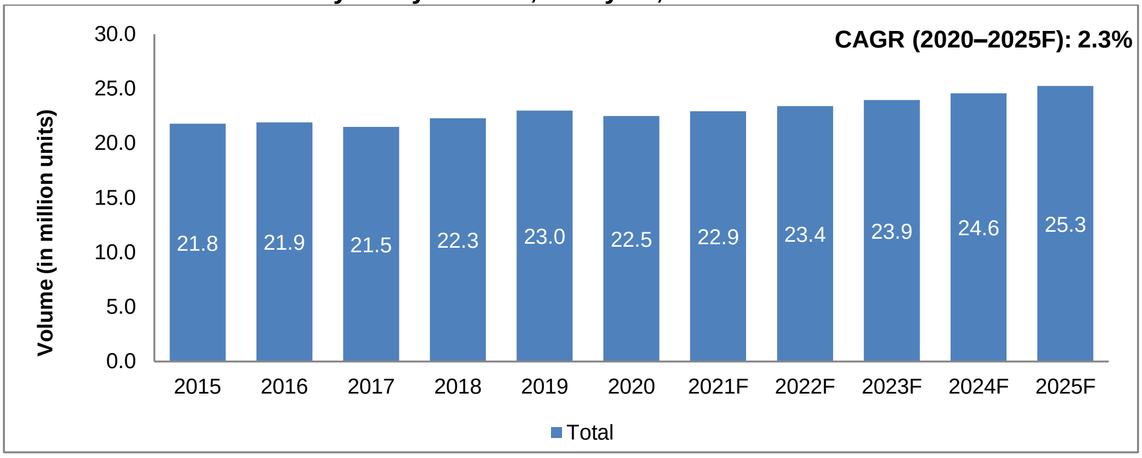
With growing income levels and high living standards, Malaysia is an important passenger vehicle market in Southeast Asia. The country has a robust automotive industry comprising domestic companies, Proton and Perodua, and substantial OE demand for tyres. Top tier tyre manufacturers like Goodyear Tire & Rubber Company, Continental Tyre PJ (M) Sdn Bhd, and Toyo Tire & Rubber Co., Ltd, have manufacturing facilities in Malaysia. Other top tyre companies like Michelin Malaysia Sdn Bhd, Bridgestone Tyre Sales (M) Sdn Bhd, Hankook Tire Co., Ltd., Pirelli Tyres S.p.A, only have sales and distribution offices in the country. Malaysia has 2 tyre makers, Fung Keong Rubber Manufactory (M) Sdn Bhd and Friendship Rubber Industry (M) Sdn Bhd, for the two-wheeler tyre market. Besides producing its own FKR brand, Fung Keong Rubber also manufactures IRC motorcycle tyres for Inoue Rubber Co., Ltd. (IRC) for the OE and the replacement tyre markets.

For commercial truck tyres, besides the top-tier brands, there is an influx of tyres from Chinese brands, like Westlake and Linglong, made in Thailand. These tyres deliver acceptable performance quality for trucks and buses plying the North-South Expressway across Peninsular Malaysia. Demand for these tyres creates additional opportunities once they are turned into acceptable tyre casings for tyre recycling or retreading businesses. Malaysia has several tyre retreading factories to vulcanise commercial truck tyres and off-the-road tyres. Goodway Rubber, Sunrich Global Marketing Sdn Bhd, and Kayel Tyre Retread Sdn Bhd are several medium-sized tyre retreading factories.

Malaysian consumer is practical and focus on comfort, quietness, good grip, and value for money before deciding to buy. There is increasing demand for low-cost tyres imported from Chinese manufacturers. With no tyre importation restriction, there is a growing demand for Chinese budget brands in Malaysia. Qingdao Full Run Tyre Corp., Ltd., a medium-sized Chinese tyre trader, turned into a tyre manufacturer, investing in a new passenger car tyre factory in Malaysia. Owners of premium cars and SUVs increasingly prefer high performance and UHP tyres from global brands. There is also increased demand for all-weather tyres as they are more suitable for Malaysia's tropical wet and warm weather conditions. With a growing preference for SUVs in the country, there is a shift in tyre size preference from the 14-inch diameter to the 16- to17-inch diameters.

Malaysia's improving living standards and higher purchasing power drive demand for passenger vehicles, such as sedans and SUVs. The growing automotive industry led by domestic brands such as Proton and Perodua has resulted in steady tyre demand at the OE level. With one of the highest motorisation rates in Southeast Asia, with nearly 31.2 million motor vehicles as of December 2019,[55] there is significant demand for replacement tyres in the country.

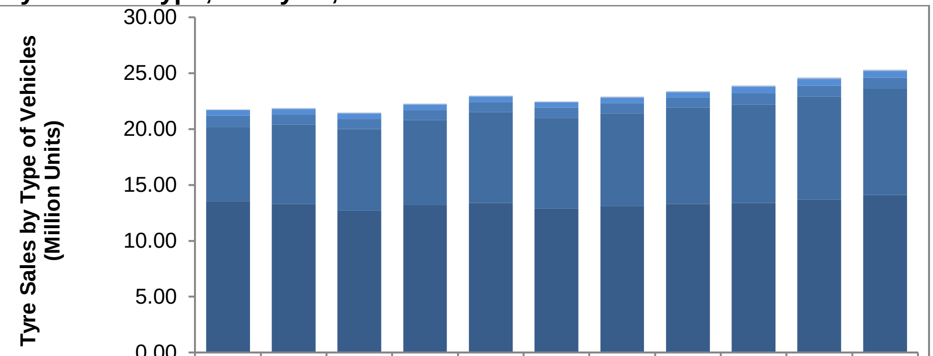
Chart 6-5: Total Sales of Tyres by Volume, Malaysia, 2015–2025F



Source: Frost & Sullivan

Passenger car tyres make up the largest portion of the Malaysian market, followed by the two-wheeler and three-wheeler tyre markets. Light commercial vehicle tyres are also in demand, mainly due to the growth of e-commerce and consumer goods industries. Within the passenger vehicles segment, SUVs and sedans are the most popular car types in Malaysia. There is an increasing interest among SUV and sports vehicle owners in Malaysia for UHP tyres. These new-age tyres have better road grip and superior performance, including better shock absorption and higher fuel efficiency. These tyres have wider 17- to 22-inch diameters. The pandemic has given rise to a new group of consumers in Malaysia who are performance-oriented yet price sensitive. Stamford Tyres Malaysia, the sole distributor of Falken tyres and a private brand owner of Firenza Tyres in Malaysia, is now selling low-priced, high-performance premium tyres of 15- to 18-inch diameters to cater to this emerging segment.

Chart 6-6: Sales by Vehicle Type, Malaysia, 2015–2025F



	2015	2016	2017	2018	2019	2020	2021F	2022F	2023F	2024F	2025F
Three Wheelers	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004
Off-the-Road	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Medium and Heavy Commercial Vehicles	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6
Light Commercial Vehicles	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.00
Two Wheelers	6.7	7.1	7.3	7.6	8.1	8.1	8.3	8.6	8.8	9.2	9.5
Passenger Cars	13.5	13.3	12.7	13.2	13.4	12.9	13.1	13.3	13.4	13.7	14.1

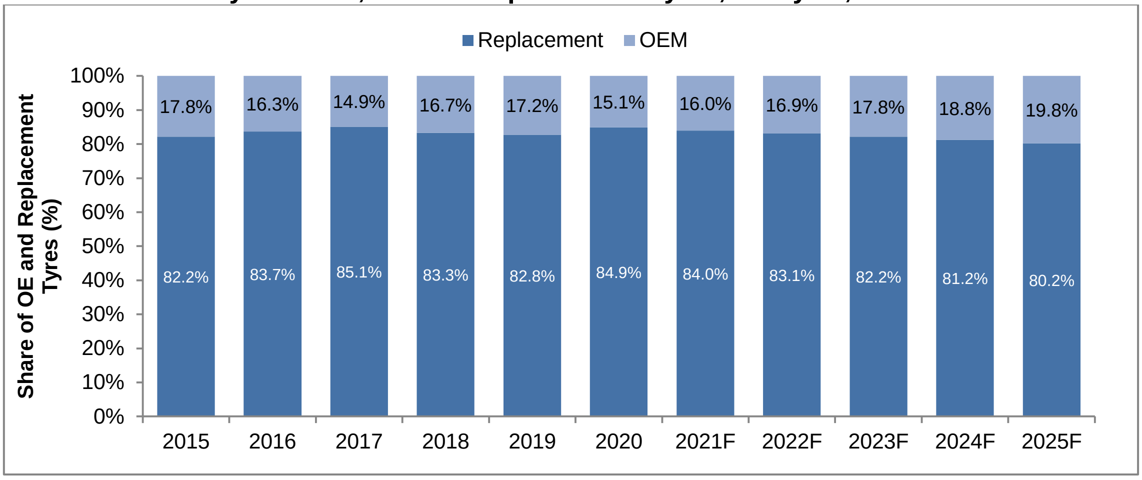
Source: Frost & Sullivan

Malaysia has one of the highest motorisation rates in Southeast Asia. Accordingly, the Malaysian replacement market is larger than the OE market. The replacement market is served

[55] https://paultan.org/2020/04/02/vehicles-registrations-in-malaysia-31-2-mil-as-of-2019/

through a network of independent and tyre company-owned dealerships. Malaysia has more than 20 manufacturing/assembling plants for passenger cars, commercial vehicles, motorcycles, and scooters. The Malaysian National Automotive Policy plays a critical role in promoting the country's automotive industry expansion. The OE tyre market is expected to maintain the growth momentum in the forecast period.

Chart 6-7: Sales by End Use, OE and Replacement Tyres, Malaysia, 2015–2025F

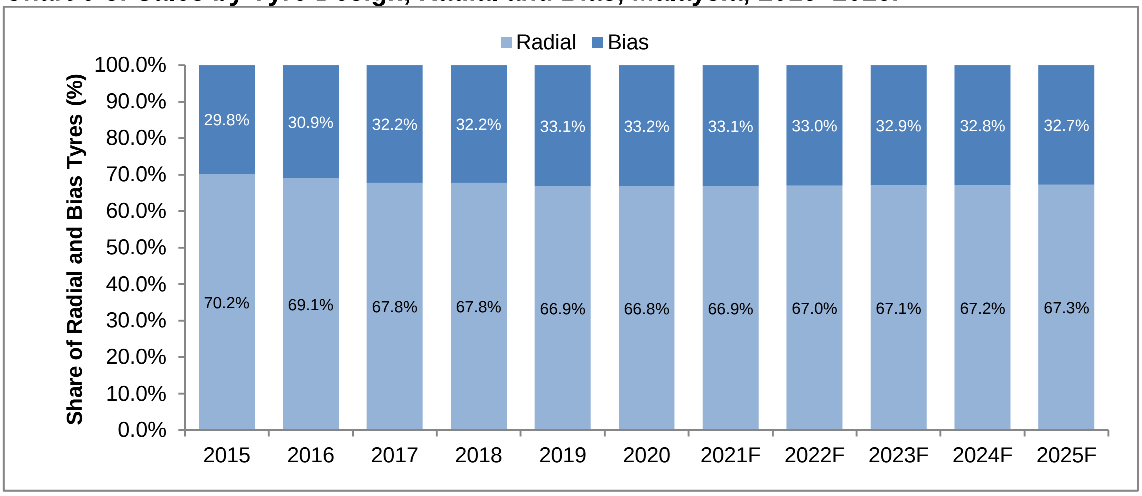


Source: Frost & Sullivan

With a high number of passenger vehicles, such as sedans and SUVs, the Malaysian tyre industry attracts a higher demand for radial tyres as a proportion of total tyre sales than other Southeast Asian countries. The share of bias tyres used for off-the-road and some heavy commercial vehicles is expected to decline in the forecast period.

There is solid demand for 15- to 16-inch bias tyres for light trucks used in the cities. Speciality and off-the-road heavy truck tyres represent a niche market in the logging industry. For instance, the 24-inch Super Timber King heavy truck tyres made by Goodyear hold a high market share in this segment. Even China-made radial imported logging tyres are unable to surpass this market share. This is also the main reason why certain bias tyres command a better price than radial tyres. Some end users choose tyres based on the application and are not price sensitive. For example, Jeep tyres used in the jungle and forest must be built using a bias construction, as radial tyres may not withstand the wear and tear caused by the rugged terrain. Vehicle owners will not hesitate to pay more for tyres that perform excellently demanding conditions.

Chart 6-8: Sales by Tyre Design, Radial and Bias, Malaysia, 2015–2025F



Source: Frost & Sullivan

6.3 PHILIPPINES

The Philippines' automotive industry encompasses 3 major markets—motor vehicles, motor vehicle parts, and component manufacturing. As of 2018, there are 5 passenger car assemblers and 22 commercial vehicle assemblers in the country with a combined capacity of 150,000 units per year. With a vehicle population of 12.7 million[56] in 2019 primarily dominated by two-wheelers, the Philippines has a significant demand for automotive tyres in the OE and replacement markets.

The Philippines is a lucrative market for bias tyres, especially for 12- to 20-inch tyres, just like in Indonesia. After the Indonesian domestic market, the Philippines is the second-biggest bias tyre market for PT Gajah Tunggal Tbk in Southeast Asia. The jeepneys plying in Metro Manila and other smaller cities still use mini-truck and light truck bias tyres as its poorly maintained road conditions are not conducive for radial tyres.

Indian-made commercial truck bias tyres like MRF, Birla, JK, and Ceat tyres held a significant market share previously. However, their shares have gradually diminished with the influx of China-made tyres in the market. However, demand for cheap bias tyres from China has not sustained. With more bias tyre factories in China converting their production to radial tyres, there is a notable vacuum in the supply of bias tyres. The supply gap is pushing up the price of bias tyres against radial tyres in this market segment.

The Philippines market presents sales opportunities for bias tyres targeting the light truck and heavy truck segments. For example, in the past 2 to 3 years, Vee Rubber tyres from Thailand has focused its marketing strategy on selling more bias tyres in the Philippines, especially 15- to 16-inch light truck bias tyres. The proximity of Thailand to the Philippines creates an advantage for Thai-based tyre manufacturers to compete with Indonesian and Vietnamese tyre manufacturers.

Major global tyre companies such as Bridgestone, Michelin, Goodyear, and Yokohama are present in the Philippines. However, only Yokohama has tyre manufacturing facilities in the country, while other brands are imported and sold through a network of dealers and distributors.

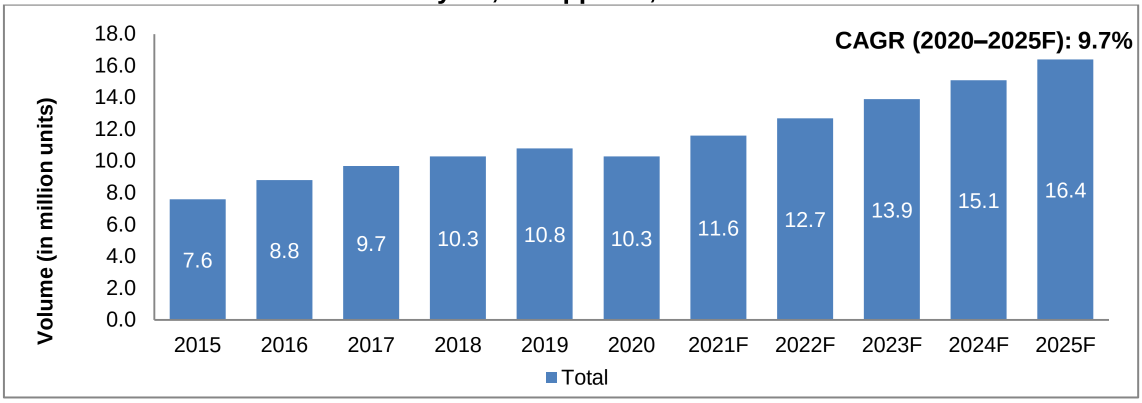
Yokohama Tire Philippines (YTPI), a subsidiary of Yokohama Rubber Co., Ltd., opened its tyre factory in the Philippines in 1998 in the Clark Special Economic Zone. YTPI manufactures radial tyres for passenger cars and recreational vehicles for global markets. Yokohama Tire Sales Philippines, Inc., is a wholly-owned subsidiary of the Yokohama Rubber Co., Ltd. It distributes Yokohama's complete product line for passenger cars, light trucks, commercial trucks and buses and other rubber goods for motor vehicles in the country. The Philippine Rubber Farmers' Cooperative (PRFC), composed of farmers from Mindanao and Palawan in the Philippines, formed a venture to build products from raw rubber. PRFC's company Pilipinas Agila Tires plans to make tyres for motorcycles, commonly known as "habal-habal".

Tyre sales in the Philippines are growing, barring the decline in 2020 due to COVID-19. The Philippines is one of Southeast Asia's most dynamic economies, with a growing urbanisation rate, a fast-expanding middle-income class, and a large, young population. These demographic factors encourage the purchase of vehicles and demand for OE and replacement tyres. With the government's expansionary fiscal programme and market-friendly monetary policy, the Philippines economy is on a firm recovery path post-COVID-19, propelling growth in automotive vehicles and tyre markets in the forecast period.

Robust construction and infrastructure development activities in Luzon, Visayas, and Mindanao regions are also expected to create demand for tyres, particularly off-the-road tyres used by construction vehicles like earthmovers, excavators, and road-rollers. Mining, farming, and agricultural tyres for tractors are imported from China, India, and other Southeast Asian tyre manufacturers.

[56] https://data.aseanstats.org/indicator/ASE.TRP.ROD.B.005

Chart 6-9: Total Sales Volume of Tyres, Philippines, 2015–2025F

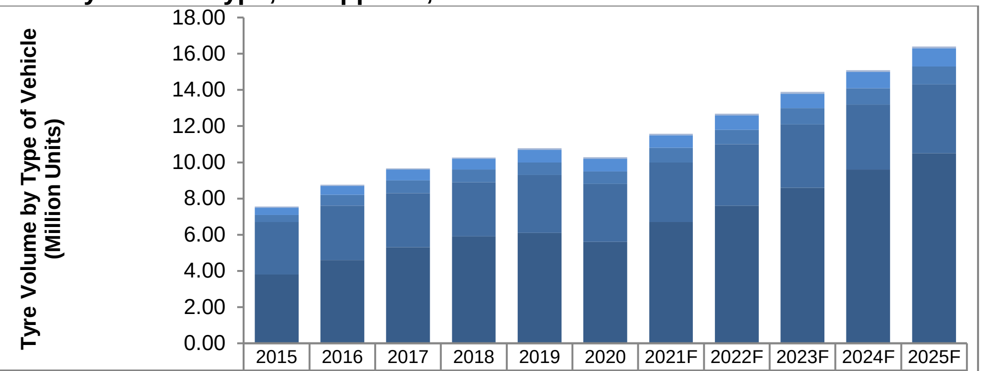


Source: Frost & Sullivan

The high two-wheeler population is expected to be the main driver for tyre demand in the forecast period. The country's burgeoning middle-class population views motorcycles as a cost-effective mode of transport for personal and business needs. Demand for motorcycles is poised to continue with the availability of easy credit schemes and increasing purchasing power. Although there are local tyre manufacturers that serve the two-wheeler market, Filipinos prefer imported tyres for their quality and competitive prices. Currently, brands from Indonesia and Thailand sell well in the market.

The Philippine government's push for infrastructure development is expected to boost demand for trucks, leading to a higher demand for truck tyres in the forecast period. This will create more business opportunities for Thai-made bias commercial truck tyres.

Chart 6-10: Sales by Vehicle Type, Philippines, 2015–2025F

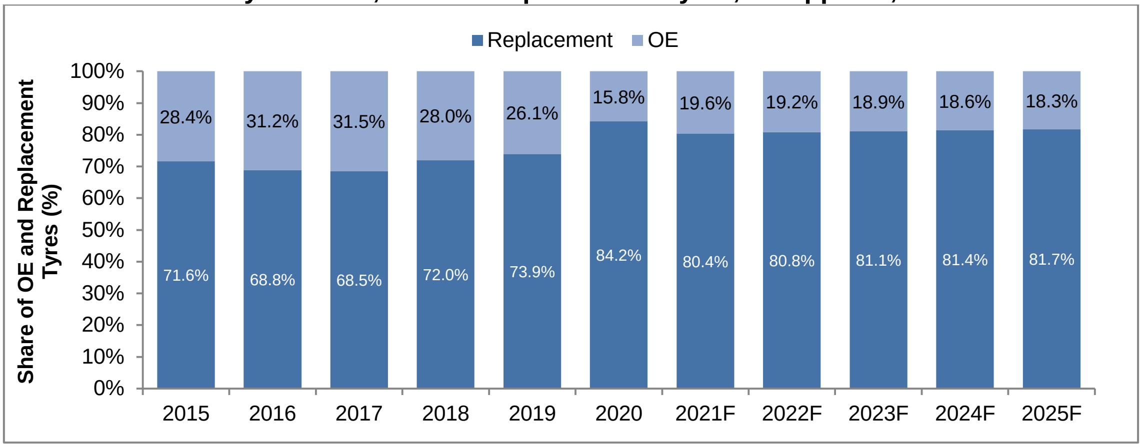


	2015	2016	2017	2018	2019	2020	2021F	2022F	2023F	2024F	2025F
Three Wheelers	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Off-the-Road	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Medium and Heavy Commercial Vehicles	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.9	1.0
Light Commercial Vehicles	0.4	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.9	1.0
Passenger Cars	2.9	3.0	3.0	3.0	3.2	3.2	3.3	3.4	3.5	3.6	3.8
Two Wheelers	3.8	4.6	5.3	5.9	6.1	5.6	6.7	7.6	8.6	9.6	10.5

Source: Frost & Sullivan

The replacement tyre market dominates the Philippines' tyre market. OE demand for tyres was considerably affected following the disruption in vehicle production due to COVID-19 and is expected to take a few years to recover. A network of distributorships owned by tyre companies service the replacement market. Overall, two-wheelers, which tend to have a long-life span, dominate the replacement market.

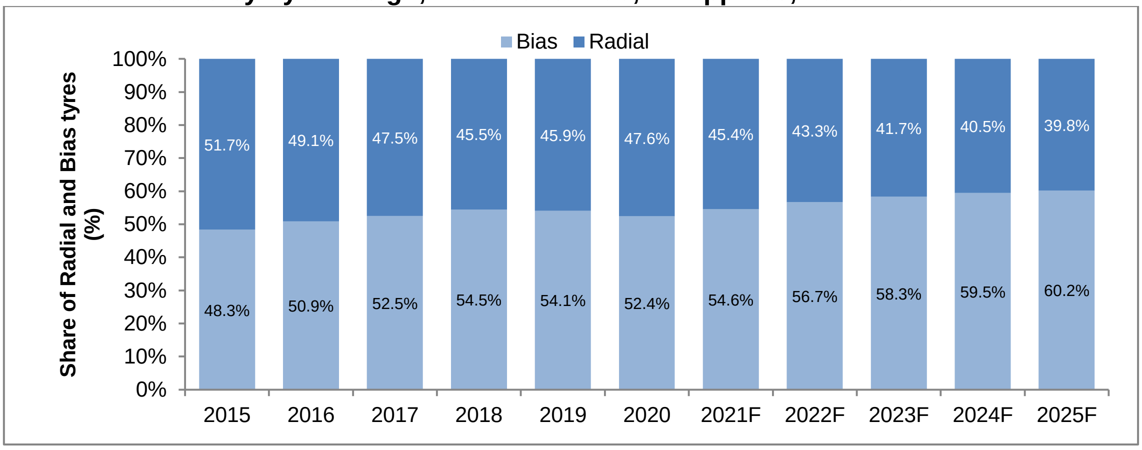
Chart 6-11: Sales by End Use, OE and Replacement Tyres, Philippines, 2015–2025F



Source: Frost & Sullivan

Bias and radial tyres are almost equally popular in the Philippines. Due to the low life cycle cost and better puncture resistance, radial tyres are expected to be a major revenue-generating segment, especially for passenger cars in the Philippines tyre market in the forecast period. That stated, the prominent two-wheeler market will continue to boost the bias tyre usage in the country, as the share of radial tyres continues to increase. In the medium term (5 to 10 years), both the bias and radial tyres will be mostly imported into the market as the country's limited number of tyre factories cannot cope with the growing demand.

Chart 6-12: Sales by Tyre Design, Radial and Bias, Philippines, 2015–2025F



Source: Frost & Sullivan

6.4 VIETNAM

Vietnam's automobile industry continues to thrive due to its expanding middle-class and growing consumer purchasing power. Although its car ownership rate is lower than other countries in the region, there is an increasing trend towards families upgrading to cars from motorcycles. The car ownership rate was low previously due to the high car prices from special taxes on luxury goods and car ownership. Car affordability was harder compared to owning a motorcycle or scooter. All major automotive manufacturers such as Toyota, Honda, Ford, Nissan, and Kia are present in Vietnam. However, compared with Thailand, Korean car manufacturer Hyundai-Kia has a stronger presence in Vietnam.

Motorcycles are the most common transportation choice in Vietnam because of their affordability and suitability for underdeveloped road conditions. For passenger car tyres, the demand for smaller tyres (i.e., below 18-inch diameter) is high. Most roads in the country are narrower in the main city centres, especially in Ho Chi Minh City and Hanoi, making it difficult for bigger vehicles like buses and trucks to move around. Commercial truck tyres are mainly used for the inter-provincial movement of goods.

In Vietnam, fast-paced economic development is expanding the tyre market to more cities across the Saigon River and modern satellite cities like Phu My Hung and locations in the Binh Duong provinces. Wider, better roads are prominent in these well-facilitated residential estates close to the newly-established industrial areas.

Vietnam is an emerging market and presents many untapped opportunities. The automotive tyre manufacturing industry in this emerging market has grown due to the higher motorisation rate and technological advancements in the automotive sector. At present, the OE market has considerable potential compared to the replacement market for passenger car tyres. Due to easy accessibility to high local natural rubber production, local tyre manufacturers can produce tyres and sell them at a lower price to improve their competitiveness against the 3 main state-owned tyre factories and foreign-owned tyre manufacturers. There were only a handful of local-based tyre factories in the past decade, producing mainly two-wheeler tyres and bias light truck and heavy truck tyres. Most passenger car tyres were imported via the Official Development Assistance (ODA) channel or official importation procedures by tyre importers.

Two-wheeler tyres constitute a significant segment of the Vietnamese tyre market. The southern region is the most important tyre market owing to the large vehicle fleet size linked to the high industrial and business activities and high population density. There are approximately 20 tyre manufacturing plants in the country, including large global tyre companies such as Bridgestone, Yokohama, Kumho, Kenda, and Inoue; Chinese companies such as Cheng Shin and Sailun; and Vietnamese tyre companies such as Casumina, Da Nang, and Sao Vang Rubber Company. Two Thai-owned tyre factories Camel Rubber Vietnam Pte Ltd and Asean Tire Company Ltd (owned by Vee Rubber Thailand), produce motorcycle tyres.

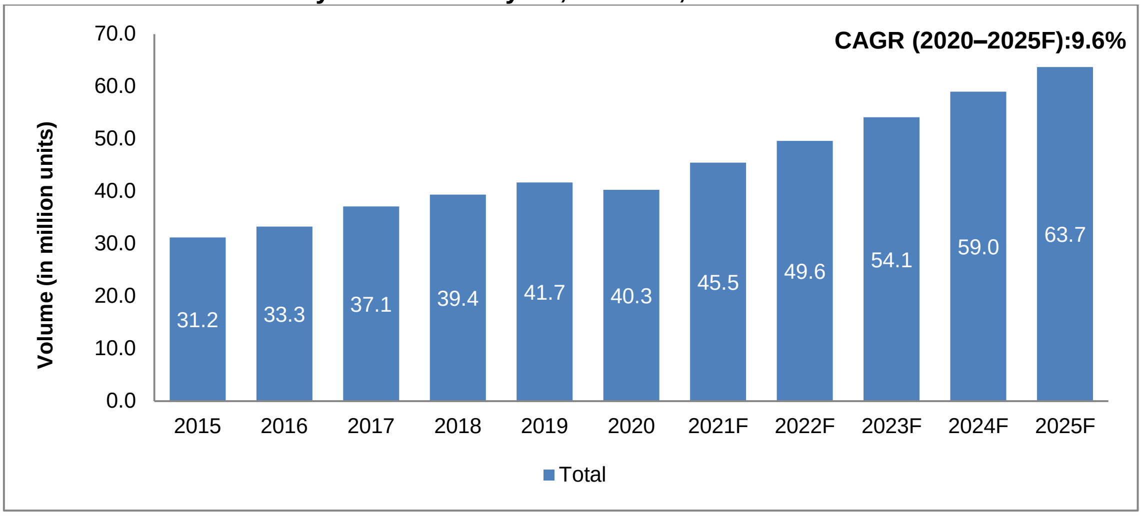
Advance Tyre (Vietnam) is the first offshore production site for China’s Guizhou Tyre Co. Ltd., producer of the Advance and Samson brands. The plant in the Tien Giang Province plans to manufacture 1.2 million truck and bus tyres a year. The investment-friendly policies of the Vietnamese government are attracting investment inflows in the tyre industry. Chinese company Jinyu (Vietnam) Tire Co, Ltd, set up a manufacturing facility commencing truck and bus radial tyres production in March 2021.

The Vietnamese tyre market has grown since 2015, except for 2020, when the COVID-19 pandemic affected the tyre sales. Tyre demand is expected to sustain in the forecast period, driven by the country's economic recovery and increased vehicle sales.

Apart from Bridgestone Tire Manufacturing Vietnam Ltd. Liability Company (BTMV) and Kumho Tires (Vietnam) Co., Ltd., which produce passenger car radial tyres, only Chinese tyre manufacturers invest heavily in the passenger car, truck, and off-the-road tyre factories. The other tyre factories in Vietnam mainly manufacture two-wheeler and three-wheeler tyres.

Chinese tyre manufacturers use their production base in Vietnam (outside China), among other countries, as an alternative gateway to sell products in various markets like the United States to avoid hefty import duties for passenger radial tyres, and like EU countries to evade paying higher taxes for commercial truck radial tyres.

Chart 6-13: Total Sales by Volumes of Tyres, Vietnam, 2015–2025F

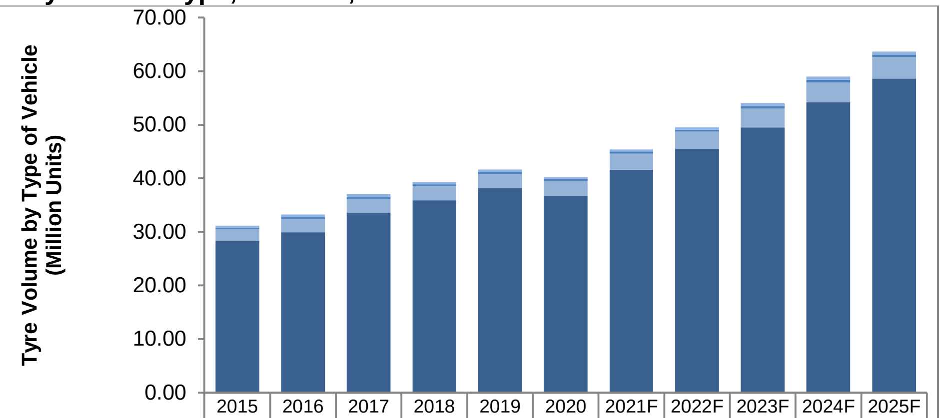


Source: Frost & Sullivan

Vietnam has an extensive road network, but the inferior road quality makes them highly suitable for motorbikes to move people around and transport goods. With 59.6 million[57] two-wheeler vehicles in operation in 2020, for a total population of 97.4 million,[58] Vietnam has one of the highest motorbike penetration rate in the world. Hence, two-wheeler tyres comprise the largest portion of tyre sales in the country. Vietnam's rapidly growing GDP and middle-class population are likely to contribute to a higher passenger car ownership in the future. The tyre market for commercial vehicles is also expected to get an impetus from Vietnam's rapid industrialisation.

The growth of passenger car tyres is restricted by the limited highways and broader roads in and outside the main cities. This is the main reason the share of two-wheeler and three-wheeler tyres is higher than that of passenger car tyres.

Chart 6-14: Sales by Vehicle Type, Vietnam, 2015–2025F



	2015	2016	2017	2018	2019	2020	2021F	2022F	2023F	2024F	2025F
Off-the-Road	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.09	0.10	0.11	0.12
Medium and Heavy Commercial Vehicles	0.3	0.4	0.5	0.4	0.4	0.3	0.4	0.4	0.5	0.5	0.5
Light Commercial Vehicles	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5
Passenger Cars	2.2	2.5	2.5	2.6	2.6	2.7	3.0	3.2	3.5	3.7	4.0
Two Wheelers	28.3	29.9	33.6	35.9	38.2	36.8	41.6	45.5	49.5	54.2	58.6

Source: Frost & Sullivan

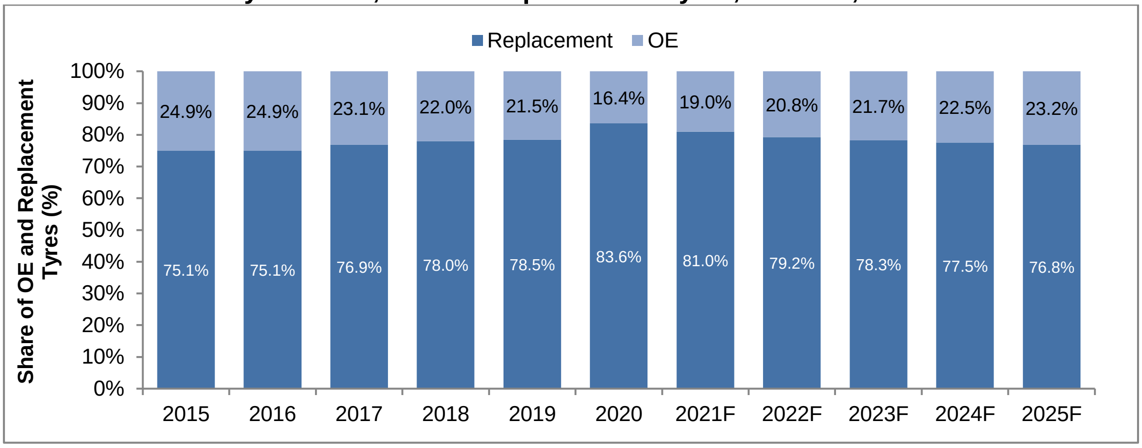
Growth in two-wheeler sales and fleet sizes are driving demand for the country's replacement tyre market. Vietnam's inferior road quality also requires frequent tyre replacements, driving replacement market demand. However, expansions by auto companies such as Ford Motors

[57] Frost & Sullivan
[58] IMF: World Economic Outlook, April 2021

and Hyundai and increased car production and assembly to support expanding vehicle demand are forecast to boost OE tyre market demand during the forecast period.

Only improvements in road conditions and increased car ownership in Vietnam will stimulate higher demand growth for the passenger car tyres in the replacement market.

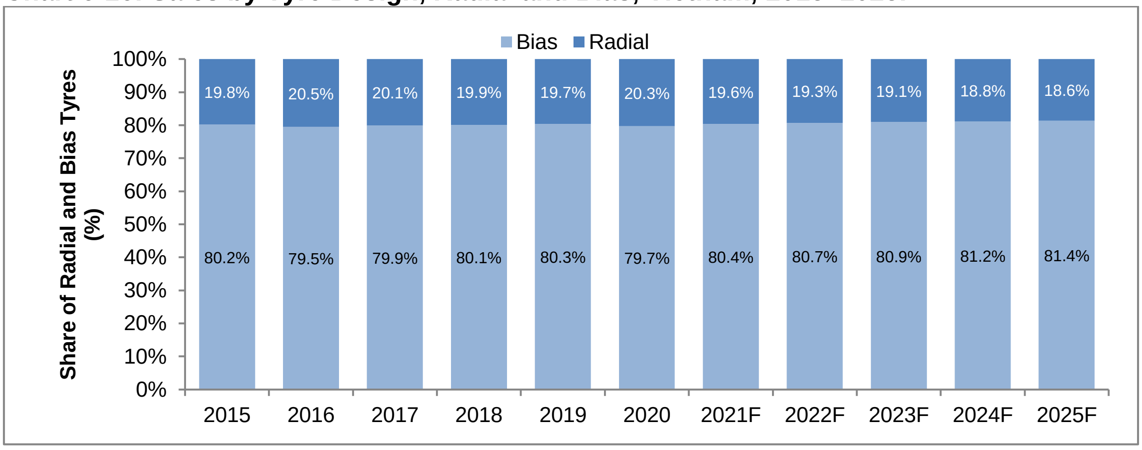
Chart 6-15: Sales by End Use, OE and Replacement Tyres, Vietnam, 2015–2025F



Source: Frost & Sullivan

With a large motorcycle and scooter population in Vietnam and many local motorcycle tyre manufacturers, there is little room for imported motorcycle tyre brands. Three leading local tyre manufacturers—Cacuminal, DRC, and SRC—dominate the supply of bias tyres. In the past, imported commercial truck bias tyres were mainly from India, Thailand, and Indonesia. However, as part of efforts to protect the domestic tyre manufacturing industry, the government has imposed tighter importation legislation and regulatory compliance, making tyre importation more challenging. Bias tyres still command robust demand, which is forecast to continue in the forecast period.

Chart 6-16: Sales by Tyre Design, Radial and Bias, Vietnam, 2015–2025F



Source: Frost & Sullivan

6.5 India

The Indian tyre Industry is an integral part of the automotive sector and contributes to almost 3% of the manufacturing GDP of India and 0.5% of the total GDP directly. In 2020, India was the fifth-largest auto market globally, with sales of approximately 3.49 million passenger vehicles and commercial vehicles. The two-wheeler segment by volume dominates the market owing to the country's growing middle-income class and young population. Moreover, the growing interest of companies to expand to rural markets further aids the sector's growth. Government initiatives and the expansion plans of major automobile players are expected to make India one of the world's largest two-wheeler and four-wheeler markets. The two-wheeler market is highly competitive with well-established local tyre manufacturers like MRF, CEAT, TVS, JK Tyres, and Apollo Tyres; and global players like Bridgestone, Michelin, and Maxxis tyres entering the fray. In 2018, new entrant, Vee Rubber from Thailand set up a 10,000 units/day motorcycle tyre manufacturing facility near Honda Motorcycle & Scooter India (HMSI) in Ahmedabad.

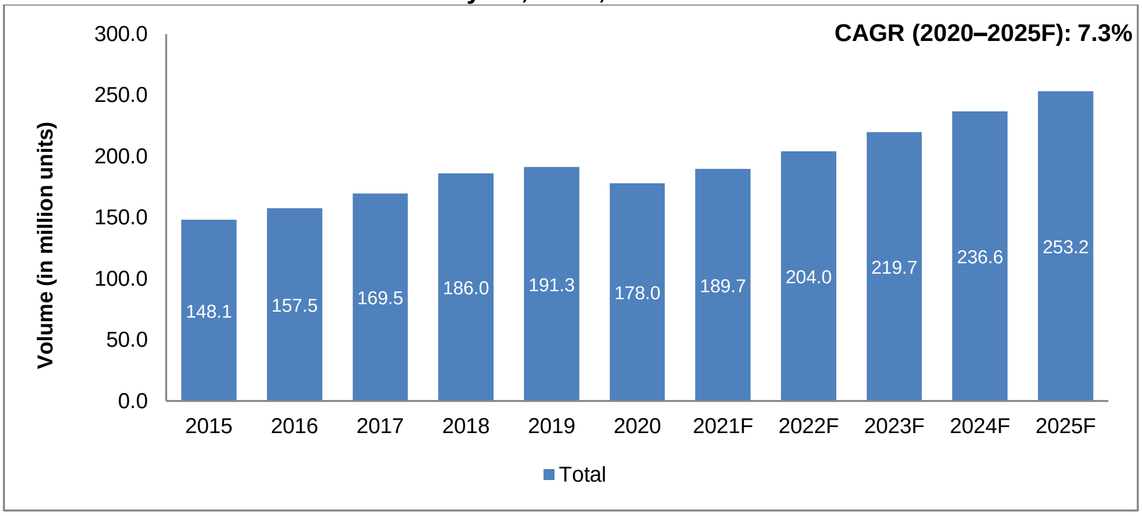
India’s tyre market is the fourth-largest in the world after China, Europe, and the United States. While the OE tyre market took a hit in 2020 due to the pandemic, the replacement market has remained buoyant. India has about 41 companies in the tyre industry, including global majors and domestic brands. Top tyre players have a presence in India, although 4 domestic brands dominate the market—MRF, JK Tyres, Apollo Tyres, and CEAT—in the truck and bus, passenger car, and two-wheeler tyre segments. No single company holds a dominant position in the Indian tyre market. Local tyre manufacturers still produce passenger car radial tyres below 18 inches. Most of the bigger high-performance sizes are dominated by imported brands like Michelin and Bridgestone tyres. For the past 5 to 7 years, China-made passenger car tyres have flooded the Indian market with low prices. This adversely affected the sales of the domestic tyre manufacturers. In mid-2020, the Indian government banned all imported tyres into India to protect local tyre manufacturers.

In 2017, the Indian government imposed anti-dumping duties on commercial truck radial tyres from China for 5 years to protect the handful of local tyre makers following an influx of Chinese tyres into India.

India is also an exporter of agricultural and construction tyres globally to nearly 175 countries. Reputable brands like BKT and MRL tyres sell well globally. The top export destinations are the United States, Germany, France, Bangladesh, and Indonesia.

With rapidly growing vehicle sales, the tyre industry in India grew between 2015 and 2019. However, this trajectory was curtailed by the advent of the COVID-19 pandemic in 2020 and the government's ban on imported tyres in mid-2020 to protect local manufacturers. This action was further aggravated by the border dispute between India and China, creating significant uncertainties amongst tyre importers. Many tyre importers were already speculating on the impending tyre ban by the Indian government as early as the end of 2019.

Chart 6-17: Total Sales Volumes of Tyres, India, 2015–2025F

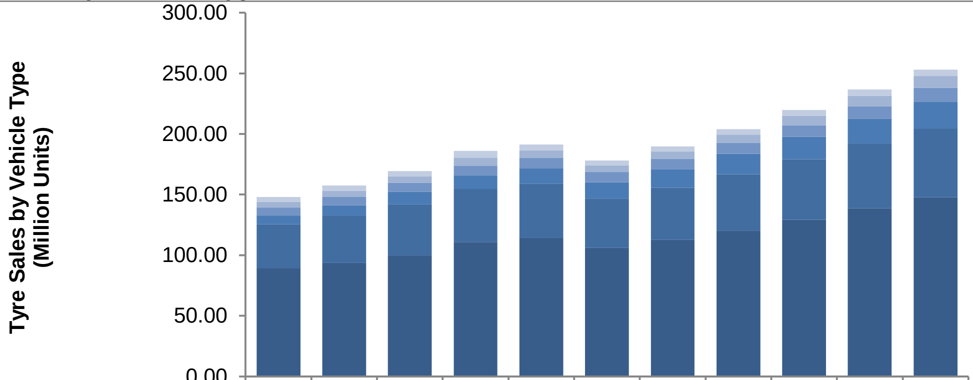


Source: Frost & Sullivan

Growth in India’s tyre industry peaked in 2019, driven by the auto industry, which was also in top form in terms of new vehicle sales. Two-wheeler and three-wheeler tyres dominate the Indian tyre market followed by passenger vehicles. Three popular local tyre brands—MRF, TVS and CEAT—dominate the two-wheeler tyre market.

The commercial vehicle segment is likely to grow, driven by infrastructure projects by both the private and public sectors, such as the Sagarmala project, with an investment of USD82.0 billion. The expansion of e-commerce and logistics activities, particularly during the pandemic period, led to an increase in demand for light commercial vehicles in the country, which is expected to grow in the forecast period. Being an agricultural country, off-the-road tyres are also forecast to be in demand, particularly tyres for tractors and other farm equipment.

Chart 6-18: Sales by Vehicle Type, India, 2015–2025F

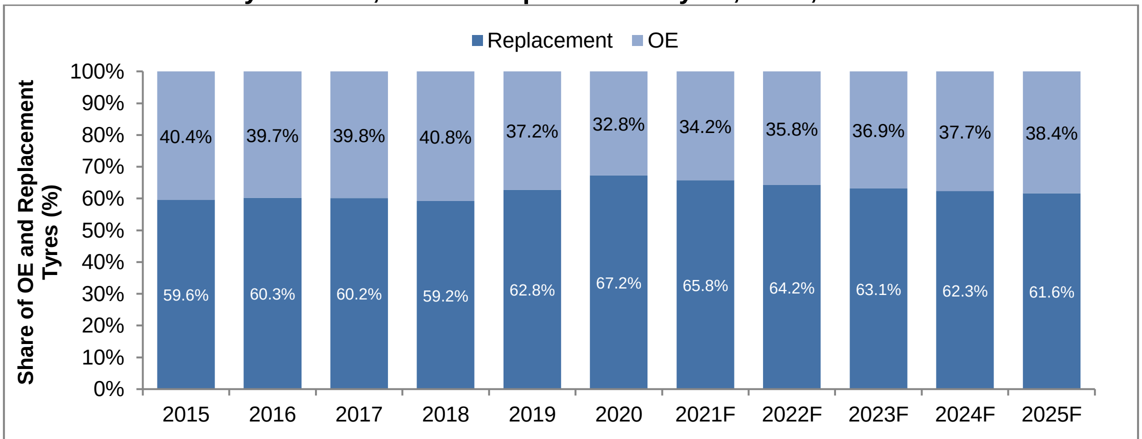


	2015	2016	2017	2018	2019	2020	2021F	2022F	2023F	2024F	2025F
Medium and Heavy Commercial Vehicles	4.1	4.4	4.6	5.6	4.8	3.8	4.1	4.4	4.7	5.1	5.5
Light Commercial Vehicles	4.7	5.0	5.3	6.4	6.2	5.5	6.1	6.9	7.8	8.7	9.7
Off-The-Road	6.7	7.0	7.4	8.3	8.9	8.5	8.6	9.0	9.5	10.3	11.3
Three Wheelers	7.1	8.5	10.3	11.0	12.6	13.6	15.2	16.9	18.6	20.4	22.2
Passenger Cars	36.1	39.0	42.1	43.8	44.5	40.6	43.0	46.5	49.8	53.3	56.8
Two Wheelers	89.4	93.6	99.8	110.9	114.3	106.0	112.7	120.3	129.3	138.8	147.7

Source: Frost & Sullivan

The replacement tyre market in India had a higher share than the OE market in 2020, particularly in product segments like truck and bus and light commercial vehicles. However, this ratio is expected to shift in favour of OE tyres for passenger vehicles first, then in favour of the two-wheeler and tractor segments in the medium term, and ultimately two-wheelers, commercial vehicles, and passenger vehicles in the long term, in light of new capacity expansions by leading automakers. In the two-wheeler tyre sales, MRF Tyres holds the highest share in the replacement market, while TVS Tyres has the highest share in the OE segment.

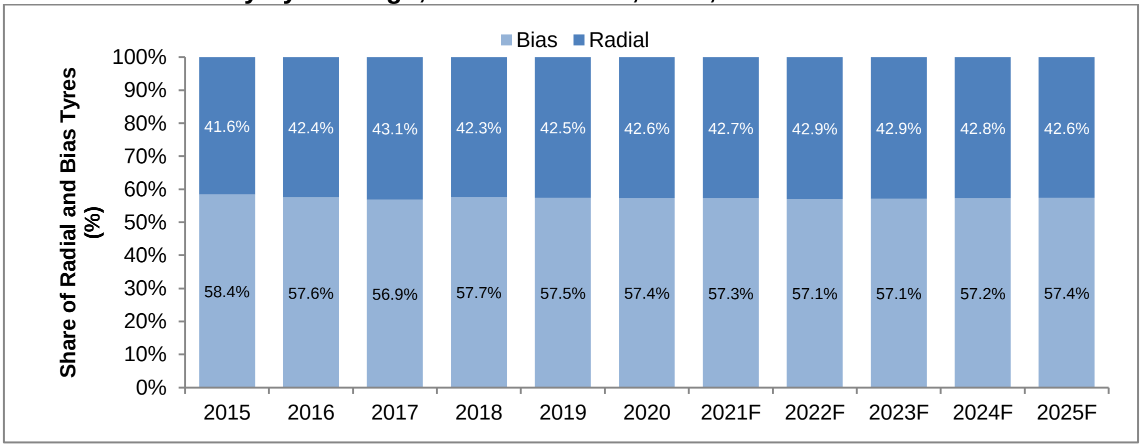
Chart 6-19: Sales by End Use, OE and Replacement Tyres, India, 2015–2025F



Source: Frost & Sullivan

Traditionally, India is a market leader for bias truck and bus tyres. Until today, Indian bias tyres with rib and lug patterns are still marketed globally. Bias tyres continue to be in higher demand in India than radial tyres. India is a latecomer in the production of commercial radial truck tyres, and Apollo Tyres is one of the few local tyre makers. However, there is an increasing trend towards radialisation in India, emphasising lowering emission levels and enhancing fuel efficiency. While nearly all new passenger cars in India use radial tyres, radialisation is likely to boost truck, bus, and heavy commercial vehicle segments. This is due to improvements in road infrastructure, the launch of multi-axle vehicles, and radial tyre capacity expansions by several tyre companies. Another important driver is the availability of low-cost radial tyres imported from China, Thailand, and other Asian nations. The newly-imposed import restrictions on tyre imports are unlikely to affect the shift towards radial tyres in India. There may be opportunities for Thai tyre manufacturers to sell more commercial radial truck and bus tyres into India.

Chart 6-20: Sales by Tyre Design, Radial and Bias, India, 2015–2025F



Source: Frost & Sullivan

6.6 AUSTRALIA

Tyre production in Australia has been discontinued since 2010. Since then, tyre demand in the country is wholly met through imports. In 2020, more than 60% of tyres in Australia were imported from China and Thailand. Over the past decade, many Chinese tyre manufacturers have seized the opportunity to sell competitively-priced tyres for all vehicle segments in Australia. Other major suppliers, including Japan, Indonesia, and South Korea, mainly offer premium tyres differentiated in terms of pricing and market positioning from the budget category of China-made tyres.

Australia’s tyre demand is primarily in the replacement market. It discontinued vehicle production in 2017 when major passenger car manufacturers such as Ford, Toyota, and Holden ceased vehicle production because of high operational costs and the absence of subsidies making imports cheaper than local production.

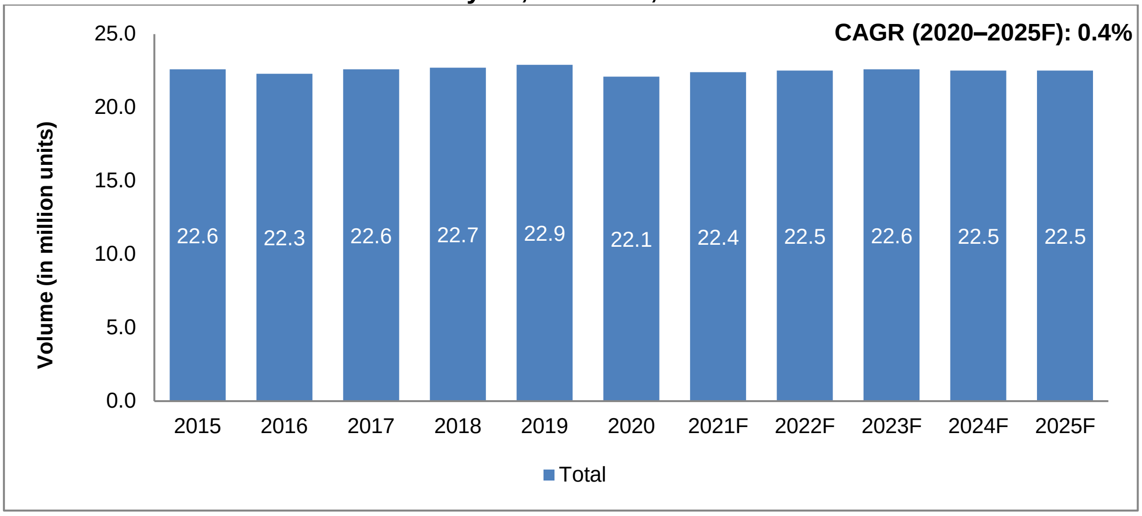
The Australian tyre market is very price-driven, making it an attractive market for Chinese tyre manufacturers to dump their excess production capacity into this market.

Harvest brand tyres are the only radial and bias agricultural tyre range designed and manufactured in Australia. These tyres are engineered specifically for Australian farm conditions and deliver performance across various applications and soil types. Top tyre producers of agricultural and mining tyres in China, like Triangle, Aeolus, and Advance Tyres, also sell tyres in the Australian market.

The growing number of registered motor vehicles in Australia has been a critical demand driver for tyres across vehicle segments. However, since 2018, Australia’s sluggish economic conditions have slowed tyre demand. Australia’s tighter lending requirements and lower wages because of natural calamities, like the drought in 2018, bushfires in 2019, and the COVID-19 pandemic in 2020, also impact tyre demand. That stated, natural disasters have created a dire need for renewed infrastructure development and reconstruction. Commercial radial truck tyres and tyres for heavy construction vehicles are forecast to attract high demand for the next 5 to 10 years.

In the passenger car tyres segment, COVID-19 has led to negative consumer sentiments and limited disposable income, affecting tyre demand. However, industrialisation and the manufacturing sector's recovery will likely increase replacement tyre demand in the forecast period. Demand for agricultural and mining tyres is also expected to grow due to the relatively high demand for food products and agriculture activities. The construction and mining tyres market is also estimated to grow due to the higher global demand for raw materials like steel and lithium. However, the Australian passenger car market has stagnated due to its mature market and ageing population in the country. This will affect the overall tyre demand, which is expected to slow down in the forecast period up to 2025.

Chart 6-21: Total Sales Volumes of Tyres, Australia, 2015–2025F

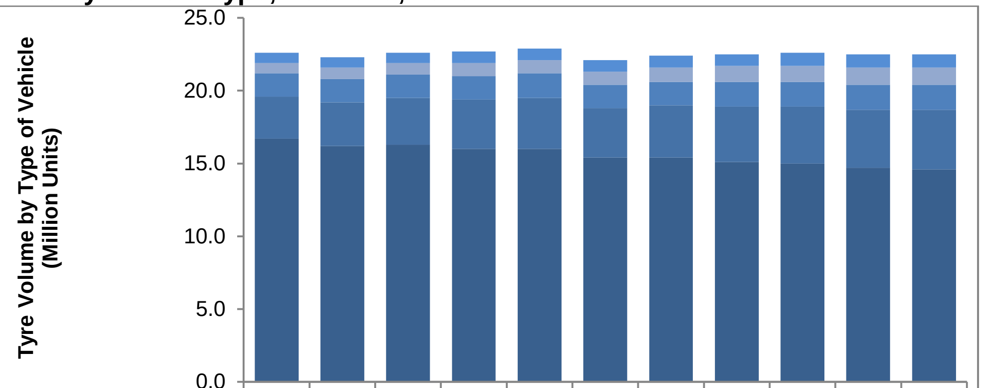


Source: Frost & Sullivan

Tyres for passenger vehicles dominate the Australian tyre market. As of 2020, Australia has one of the highest per capita car ownerships globally.[59] SUVs are the most popular passenger car segment in Australia, with Dunlop, Michelin, and Goodyear the most popular tyre brands in the segment. The high rate of industrialisation, a growing mining and construction industry, and high level of mechanised farming activities support demand for commercial vehicles and off-the-road tyres in Australia.

Australia's tyre industry is forecast to expand with the increase in motor vehicles and growth of the wholesaler and retailer networks in the country. Besides industrialisation, the expansion of e-commerce and logistics activities will augment tyre industry demand in the country.

Chart 6-22: Sales by Vehicle Type, Australia, 2015–2025F



	2015	2016	2017	2018	2019	2020	2021F	2022F	2023F	2024F	2025F
Two Wheelers	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9
Off-the-Road	0.7	0.8	0.8	0.9	0.9	0.9	1.0	1.1	1.1	1.2	1.2
Medium and Heavy Commercial Vehicles	1.6	1.6	1.6	1.6	1.7	1.6	1.6	1.7	1.7	1.7	1.7
Light Commercial Vehicles	2.9	3.0	3.2	3.4	3.5	3.4	3.6	3.8	3.9	4.0	4.1
Passenger Cars	16.7	16.2	16.3	16.0	16.0	15.4	15.4	15.1	15.0	14.7	14.6

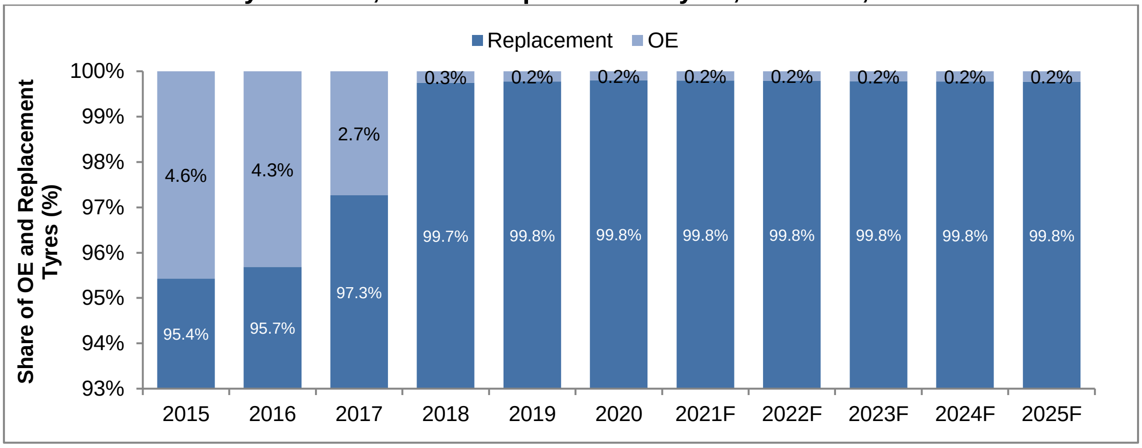
Source: Frost & Sullivan

The replacement market almost wholly dominates the Australian tyre market due to the discontinuation of vehicle production in the country since 2017. In addition, in the absence of locally manufactured tyres, the entire supply is sourced through imports from China, Thailand, Japan, Indonesia, and South Korea. The replacement market is serviced through a large tyre retailing industry comprising more than 2,000 tyre retailing businesses selling and distributing tyres across Australia. Of these, more than half are located in New South Wales and

[59] Australian Bureau of Statistics: Motor Vehicle Census, Australia, June 2021

Queensland. Bridgestone Australia Ltd, Goodyear Australia Pty Ltd, Tyrepower Ltd, and Conti Trade Australia Pty Ltd are key global brands with a leading presence and strong network of dealers and distributors. Australian consumers also increasingly seek out low-cost imported tyres from China and Thailand.

Chart 6-23: Sales by End Use, OE and Replacement Tyres, Australia, 2015–2025F

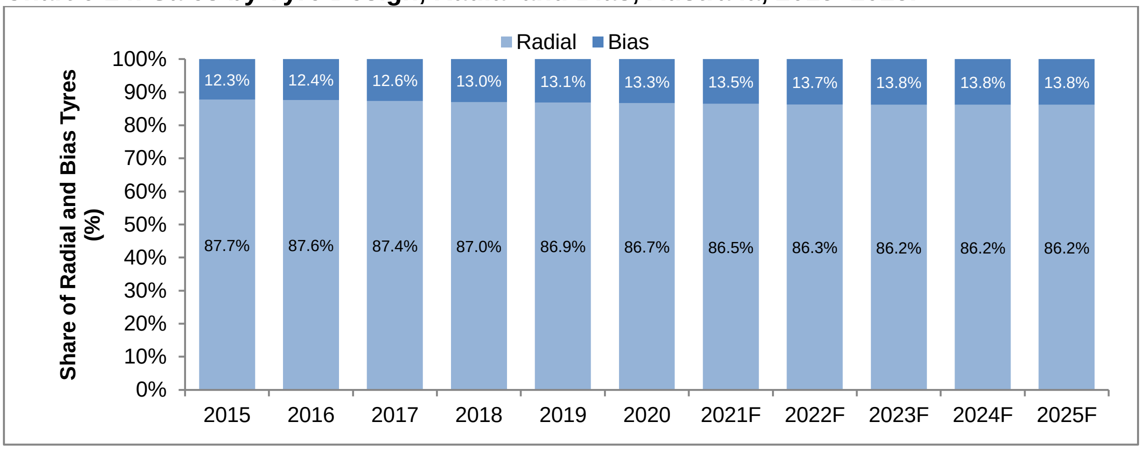


Source: Frost & Sullivan

The Australian tyre market is almost completely radialised. Radial tyres are ideal for passenger cars and SUVs as they offer lower rolling resistance, better fuel efficiency, and a smoother grip. Most of the commercial truck tyres have a radial construction. There is still a market for retread tyres in Australia.

Bias tyres, which give high performance in rough and harsh terrain and mining and logging work, are ideal as off-the-road tyres. There is a substantial business opportunity for Thai-based tyre manufacturers to capitalise on the production of such tyres to be sold in Australia The increasing freight costs and deteriorating Australia-China bilateral trade relationships under multiple impositions of trade barriers since 2020, are posing a challenge for imported tyres made in China for the next few years.

Chart 6-24: Sales by Tyre Design, Radial and Bias, Australia, 2015–2025F



Source: Frost & Sullivan

6.7 CAMBODIA, LAOS, AND MYANMAR

The tyre market in Cambodia, Laos, and Myanmar is small in USD value as at 2020, but it is projected to **grow at a fast pace** due to the rapid projected economic development and continuous population growth in the forecasted period. Thailand is a market leader in the tyre manufacturing industry among its neighbours like Cambodia, Laos, and Myanmar. Other than Thailand and Myanmar, both Cambodia and Laos have relatively smaller vehicle populations. Thai-made tyres command substantial market share and reputation in these markets.

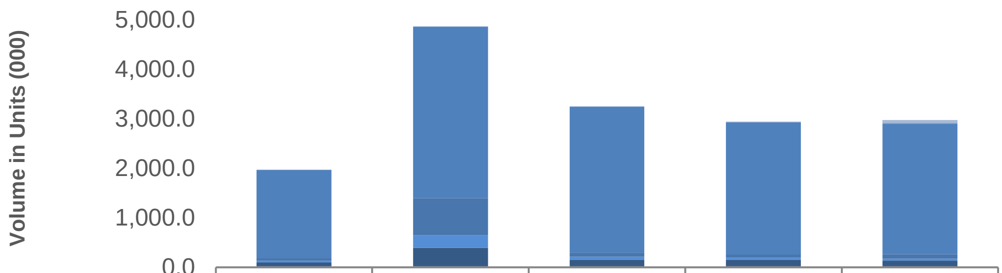
These countries have common borders, and hence, cross-border linkages facilitate daily transportation and movement of goods. For instance, goods move from Thailand to Myanmar via Mae Sot and Mae Sai to Myawaddy; from Thailand to Laos via the Friendship Bridge connecting both countries, and Thailand to Cambodia via Sakeao and others. These prominent borders and entry points connecting all the countries allow easy access and convenient direct importation of Thai-made products, especially tyres.

Due to their homogenous consumer choice and preference, there is a very close identity amongst the vehicle types and tyre usage in all these countries. Due to the economic status and prevalent poverty of Myanmar, Cambodia, and Laos, there is a firm reliance on imported secondhand or used vehicles from Thailand, Japan, and other countries. Many Thai-made secondhand vehicles, like pick-ups and saloon cars, are predominantly found in these countries. Even sub-standard and rejected tyres made by a few local Thai manufacturers are popular in Myanmar's tyre retail market. This has created easy access and opportunity for Thai manufacturers to dispose of their rejected tyres in these nations, where end-users prioritise low prices over quality due to their weak economic power.

Cambodia, with a population of fewer than 17 million people, has a small vehicle population size. Very few people own a car and prefer to have branded tyres to be fitted on their vehicles. Most passenger car owners in bigger cities like Phnom Penh, Siem Reap, and Sihanoukville opt for tyres from top brands, including Bridgestone and Michelin, which are imported mainly from Thailand. Although there are also tyres imported (mainly from China) officially through the Sihanoukville Port, the fastest channel to move tyres into Cambodia is via the Thai-Cambodia borders. Significant numbers of tyres are also imported from the Bangkok Port and transported to Cambodia. Cambodia's ongoing industrial and infrastructural development fueled by investments from China presents considerable opportunity for commercial and construction tyres. Bias tyres for commercial trucks and industrial tyres have high demand potential as the country's economic growth accelerates in the next 5 to 10 years.

Demand for tyres in the two-wheeler segment is relatively stable, with most tyre brands imported mainly from Thailand and Vietnam. Motorcycles and tuk-tuks are still the primary transport mode for many people, though there is a substantial increase in passenger cars. Thai brands for two-wheeler tyres are popular and widely accepted in Cambodia's price-sensitive market. Thai-made commercial bias truck tyres are also popular in the country. Tyres from China offer some competition, though they are mainly preferred by owners of imported China-made trucks and buses that fit Chinese tyre brands at the OE level. However, Thai-made commercial vehicle tyres have a significant advantage in cost competitiveness due to the shorter delivery times and lower transportation costs from Thailand to Cambodia.

Chart 6-25: Tyre Imports by Vehicle Type, Cambodia, 2015–2019



	2015	2016	2017	2018	2019
Light Commercial Vehicle					56.5
Off-the-Road	0.3	5.4	9.3	15.4	18.3
Bicycles	1,777.9	3,469.7	2,944.3	2,675.5	2,640.6
Motorcycles	53.6	750.1	86.5	59.3	88.5
Buses or Lorries	42.4	249.7	61.6	47.6	39.8
Passenger Vehicles	91.3	392.8	147.7	145.4	132.1

Note: Data for imports based on the following HS codes: Passenger vehicles (401110), Light commercial vehicles (401190), Buses or lorries (401120), Motorcycles (401140), Bicycles (401150), Off-the-Road (401170, 401180).
Source: uncomtrade; Frost & Sullivan analysis

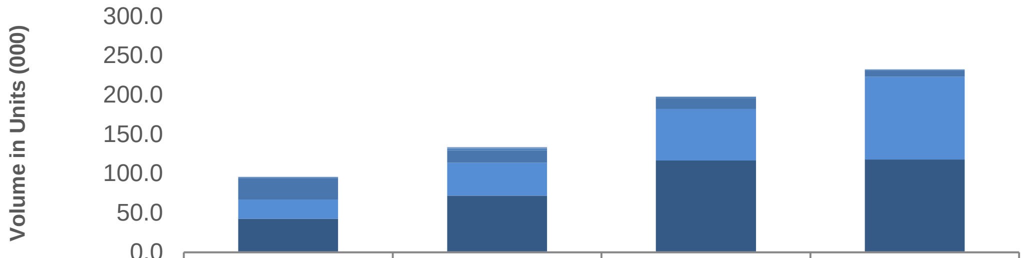
The Cambodian market is widely influenced by Chinese investments in the manufacturing and hospitality industries. Cambodia's government provides incentives to attract FDI and support the growth of the natural rubber industry. As of 2021, foreign tyre manufacturers like Sailun, General Science Group, and Cart Tires announced their plan to set up manufacturing plants in Cambodia. Mega-sized Chinese public-listed tyre manufacturers, like Sailun and General Science Group, pledge multimillion-dollar investments in Cambodia to remain competitive. Unlike Thailand that has many tyre manufacturers, Cambodia is an untapped market without significant competition. The new tyre factories can capture the spillover talent availability from tyre factories in Thailand and benefit from the natural rubber resources in Cambodia. Hence, investing in Cambodia may be the next best option. On the other hand, tyre industry observers note that both Sailun Group and General Science Group are expanding production operations primarily in Southeast Asia, outside of China, mainly to ensure a stable supply to support their global export strategy. The ultimate export market continues to be the United States. Sailun has manufacturing facilities in Vietnam outside of China, while General Science has a tyre plant in Thailand.

Laos is a sparsely populated, landlocked nation. Vientiane, the capital and largest city in the country, has only 1 million people. Its economic growth is restricted mainly by its apparent geographical disadvantage since most of the country's imports, including tyres, need to pass through Thailand via Thai ports.

Laos and Thailand share many similarities. For example, cities in Laos are much like the provincial cities of Thailand, with only a few major urban centres. The types of vehicles and tyres used in Laos are also almost the same as in Thailand. Hence, the preference and demand for vehicles and tyres are similar in both countries. The SUV and 4WD tyre market in Laos offers considerable potential as road conditions are poor in many areas.

At the end of 2017, Laos charted a major milestone in advancing its land-linked strategy following China's pledge to link China to Laos by rail via its Belt and Road Initiative (BRI). The BRI project will transform Laos from landlocked to a land-linked country, improving transportation and logistics. For Beijing, the 411 km China-Laos rail line, originating in Kunming, in China's southern Yunnan province, to Vientiane in Laos, represents a crucial part of its ambitious goal to improve cross-border connectivity eventually linking China with mainland Southeast Asia. The China-Laos railway is ultimately designed to connect all the Greater Mekong Subregion countries (includes Thailand), Malaysia, and Singapore. The BRI has sparked multibillion-dollar mega-infrastructure projects to construct bridges, railways, roads, infrastructure developments such as Laos' first Boten Special Economic Zone. The BRI is poised to boost rapid economic growth in Laos, igniting demand for passenger car tyres and commercial truck and bus tyres in the near future.

Chart 6-26: Tyre Imports by Vehicle Type, Laos, 2015–2018



	2015	2016	2017	2018
Off-the-Road	0.6	1.9	0.3	0.5
Bicycles	1.6	2.4	1.5	1.4
Motorcycles	26.7	15.7	13.6	7.8
Buses or Lorries	24.4	41.8	65.6	105.2
Passenger Vehicles	42.5	72.0	116.5	117.7

Note: Data for imports based on the following HS codes: Passenger vehicles (401110), Light commercial vehicles (401190), Buses or lorries (401120), Motorcycles (401140), Bicycles (401150), Off-the-Road (401170, 401180).
Source: uncomtrade; Frost & Sullivan analysis

Currently, Laos imports most passenger car and commercial vehicle tyres from Thailand. Compared to other regional neighbours, tyre manufacturers in Thailand have the advantage of direct access to Laos via the Thai-Laos Friendship Bridge to transport tyres.

Mining, road, and heavy construction tyres currently attract demand due to the ongoing development projects. Bias tyres made in Thailand can leverage this opportunity to capture this market. Completion of the projects will create new jobs, promote urban growth, and increase cross-border cargo movement in Laos, boosting demand for tyres in the country.

Myanmar's tyre market is extensive and highly lucrative. Although Myanmar is not as well-developed as Thailand, its tyre trade is well organised. Most Burmese love to buy Thai-made tyres from retailers concentrated in the 2 largest tyre markets in Yangon-Bayinnaung and Myaynigone. Yangon is the main tyre trading market and tyre distribution centre.

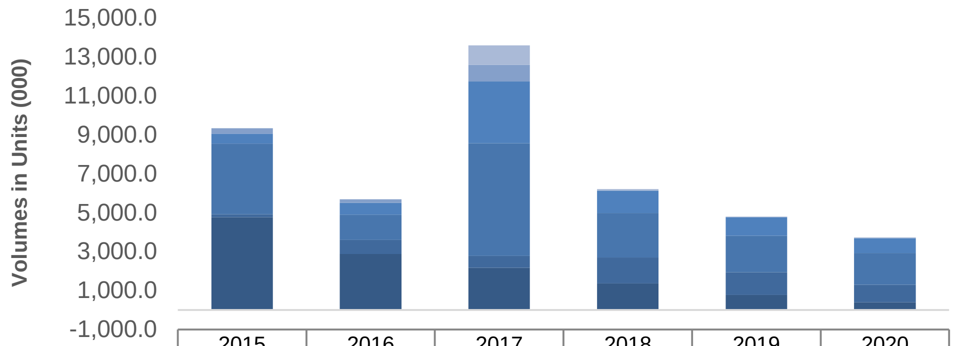
Following the Obama administration's lifting of US sanctions on Myanmar in 2016, the country's economy flourished, attracting many investors and imports from Thailand, as Thai-made products are highly sought-after by the Burmese community. However, Myanmar's growth and development has been short-lived. The military coup that started in early 2021 has disrupted economic activities.

Myanmar's huge market with an estimated population of 54 million people has a growing population of vehicles. Most of these are imported used vehicles from Thailand, Japan, and other countries. There is an opportunity for the replacement car tyre market since tyres installed in used imported vehicles need to be changed immediately. Myanmar imports tyres for various vehicle segments, including two-wheelers and industrial vehicles commonly used in its mining industry.

The production capacity of local tyre factories is insufficient to cater to the growing market demand, requiring a high reliance on imports. In the mid-90s, there was only one state-owned tyre factory, Myanmar Heavy Industry, manufacturing bias tyres for trucks and agricultural vehicles. Three more local tyre factories were set up in Myanmar after 2000—Tristar Tyre Factory and Yangon Tyres in Yangon and Flying Wheel in Mandalay. Tristar Tyre Factory, established in 2010, produces passenger car tyres and commercial bias and radial tyres for trucks and buses. Yangon Tyres mainly produces bias tyres for commercial light and heavy trucks, as well as agricultural vehicles. Flying Wheel manufactures bicycle, motorcycle, and tractor/agricultural tyres.

Burmese consumers prefer to use imported passenger car tyres for their vehicles mainly due to the lack of confidence in locally-produced tyres. Local tyre manufacturers are viewed as having limited experience in producing car tyres. Major brands such as the made-in-Thailand Michelin, Bridgestone, Goodyear, and Yokohama have a substantial market share in Myanmar. Tyres from Chinese tyre manufacturers also have a large market share in Myanmar as their prices match market expectations. However, most tyre dealers still choose Thai-made tyre brands, which offer more durability and reliability. There is stiff price competition among Chinese tyre imports in the market. Bias tyres primarily attract demand from the mini-truck, light, and heavy truck segments, largely monopolised by local brands like Tristar Tyre Factory and Yangon Tyres. For motorcycle tyres, Thai-made brands like Deestone, Vee Rubber, Koogar, and Hut, are widely accepted, apart from Myanmar's locally-produced brands.

Chart 6-27: Tyre Imports by Vehicle Type, Myanmar, 2015–2020



	2015	2016	2017	2018	2019	2020
Light Commercial Vehicles			996.7	61.0	2.7	11.8
Off-the-Road	270.5	188.2	855.2	19.7	20.8	42.2
Bicycles	517.2	606.5	3,171.9	1,154.2	945.2	749.3
Motorcycles	3,626.7	1,293.1	5,798.8	2,293.0	1,874.9	1,635.1
Buses or Lorries	151.3	732.2	610.2	1,334.5	1,167.3	903.4
Passenger Vehicles	4,763.3	2,871.7	2,162.8	1,352.9	775.1	386.2

Note: Data for imports based on the following HS codes: Passenger vehicles (401110), Light commercial vehicles (401190), Buses or lorries (401120), Motorcycles (401140), Bicycles (401150), Off-the-Road (401170, 401180).
Source: Uncomtrade; Frost & Sullivan analysis

As at August 2021, Myanmar's political landscape remains uncertain due to the domestic unrest caused by the military coup. The pandemic situation is also slowing economic recovery. The challenging economic condition is likely to persist in Myanmar until a democratic government is reinstated. Until there are improvements in the country's political and economic situation, it may be challenging to penetrate its tyre market. As at August 2021, the domestic market relies heavily on locally manufactured tyres.

6.8 SUMMARY OF GROWTH PROSPECTS FOR SELECTED MARKETS IN ASIA-PACIFIC

Asia-Pacific is one of the largest and fastest-growing automotive markets globally and a major demand centre for automotive tyres. This section examines the tyre market outlook in selected automotive markets, including Indonesia, Malaysia, the Philippines, Vietnam, India, Australia, and smaller, emerging markets of Cambodia, Laos, and Myanmar.

Barring Australia, all the tyre markets considered are dominated by two-wheeler tyres, primarily high-performance motorcycle tyres. The 5 largest global motorcycle markets are concentrated in the region led by India and followed by Indonesia, Vietnam, the Philippines, and Malaysia. For bicycle tyres, there is escalating demand for leisure-style, sport, biking, and racing tyres. Two-wheelers also dominate the tyre markets in Cambodia, Laos, and Myanmar, where car ownership is limited. The majority of vehicles in these countries are second-hand vehicles imported from Thailand, Japan, and other countries. Asia-Pacific countries are also witnessing a shift towards passenger vehicles driven by rising incomes, expanding middle-class populations, and a growing automotive sector, generating demand for tyres in this segment.

Commercial vehicle demand is also growing due to industrialisation, increased manufacturing activity, e-commerce growth, and logistics and infrastructure development projects. The adoption of mechanised farming has proliferated the demand for off-the-road tyres for tractors and other farm equipment. In Australia, the growing mining and construction industry has been a major driver for off-the-road tyres. There is an emerging trend in the selected countries towards tyres with higher diameter size above 17 inches. This trend is further by the increasing preference for high performance and ultra-high performance tyres, particularly for premium sedan, sports cars and SUVs. Both tyre types are of a higher diameter than 17 inches.

The replacement market is higher than the OE market across all the countries under consideration. The OE Market forms a significant share of the tyre market in India. In Australia, in the absence of automotive manufacturing in the country, the OE share is almost nil. In Vietnam, the Philippines and Indonesia, a growing automotive manufacturing and assembly industry is expected to push up the OE share of the market in the forecast period while the REP market will continue to dominate.

In Indonesia, Vietnam, the Philippines, and India, consumers prefer bias tyres for commercial vehicles primarily because of overloading and unpaved road conditions. There is a very high share of two-wheeler tyres in these markets. There is a higher preference for radial tyres across all vehicle segments in Australia and Malaysia, and these markets are likely to be more radialised in the short to medium term. Well-constructed road infrastructure and long-haul conditions play a part in this preference.

Major global players such Bridgestone, Michelin, and Goodyear have manufacturing plants in India, Indonesia, Vietnam, and Malaysia. In the Philippines and Australia, these companies source their tyres through imports from their manufacturing facilities in other countries and sell them through a network of dealers and distributors. They have also ventured into using a second brand to differentiate themselves and compete in the market while maintaining the top-tier position in their market positioning strategy. For example, Bridgestone Tyres has introduced the Dayton brand tyres to another group of its customers. Domestic tyre companies dominate the tyre markets in India, Vietnam, and Indonesia, while global players dominate in Malaysia, the Philippines, and Australia. Low-cost imports from China mainly cater to the replacement markets in these countries. Thailand is a key import source for tyres for all the countries considered, led by Malaysia, Australia, Vietnam, and the Philippines. In Cambodia and Laos, most of the tyres are imported from Thailand, China, and Vietnam. Myanmar has a few local tyre manufacturing companies, but their production is not enough to meet demand. Myanmar also imports tyres from Thailand and China.

There are pockets of untapped opportunities for bias tyres in the abovementioned markets for off-the-road, agricultural, farming, and other speciality tyres that China manufacturers pursue. However, the high transportation costs pose a huge obstacle for these factories to compete in pricing and delivery times. Thai-based tyre manufacturers that sit strategically in Southeast Asia have a distinct advantage since they can leverage their proximity to markets in the Asia-Pacific. Cost savings from freight charges and shorter delivery lead times will disable the competitiveness of the China-made speciality tyre market.

[END OF THE REPORT]