EnginLink™ Update *Bulletin*

March 26, 2025

Q1 2025 REVIEW AND FORECAST

Power Systems Research
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EnginLink™ is a comprehensive database containing global historical and forecasted engine production volumes. This document outlines important forecast trends as well as the additions and enhancements applied to the database in the first quarter of 2025.

Highlights

Global
Risk Looms for NA Recession. Page 8

North America
Only Time Will Tell How This Year Ends. Page 10

Europe
Europe Faces Thin Balance. Page 12

China
2025 GDP growth Projected at 4.5%. Page 17

Far East
In Turbulent Environment, Few Growth Drivers. Page 25

Southeast Asia
Strong Demand Despite Moves from Major Powers. Page 31

South America/Brazil
Uncertain Global Issues Challenge 2025 Economy. Page 34

India
India's Auto Sector Shows Growth and Transition. Page 42

Inside

I. Executive Notes 3
II. Introduction 5
III. EnginLink™ Database Update Notes 6
IV. Forecast Trends 8
V. Research Methodology 46
VI. Forecast Methodology 47
VII. Contact Information 48

Commercial Vehicle Outlook

Production of heavy-duty vehicles in North America is expected to drop by an estimated 20% in 2024 to 255,000 vehicles, according to research by Power Systems Research (PSR).

Analysts cite a number of reasons for this anticipated production decline heading into 2024, including a slowdown in freight resulting in excess truck capacity, pent-up demand being mostly satisfied by the end of this year and continued high interest rates expected to extend into next year.

To get the full story, contact us today.

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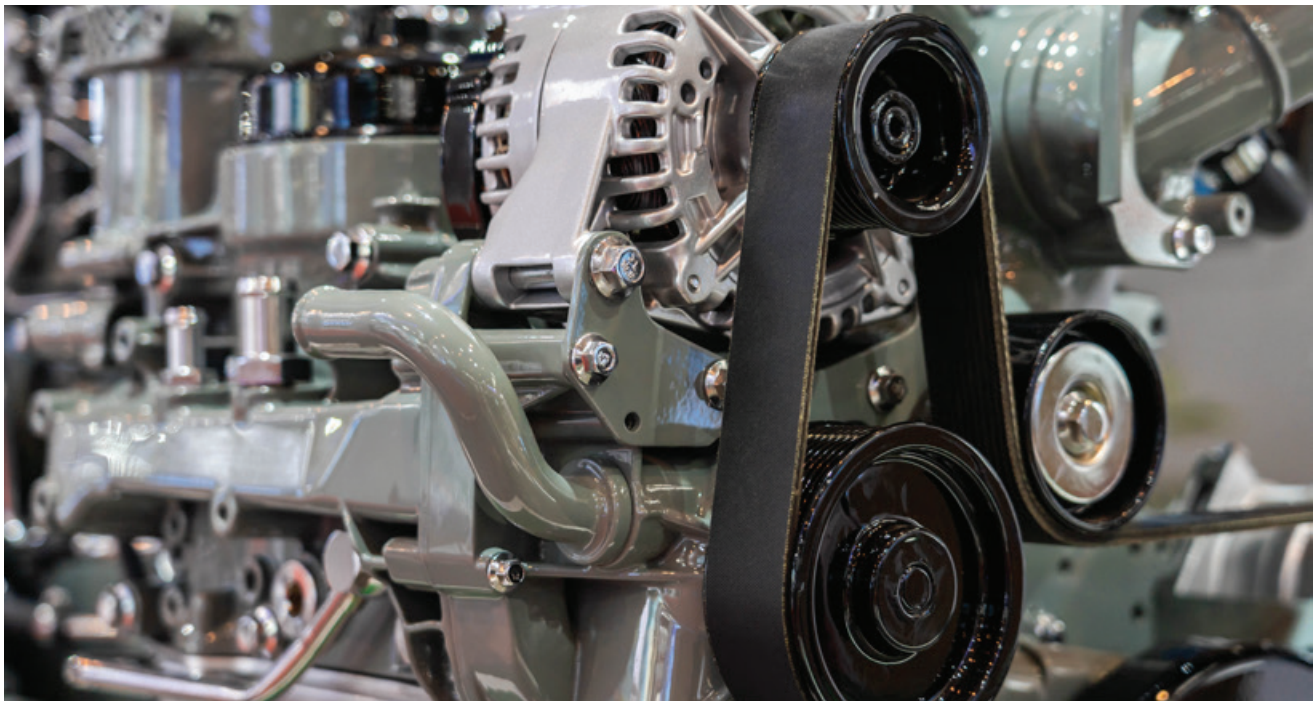
I. Executive Notes



New Tariffs, More Questions

In last quarter's Update Bulletin, I touched on the fact that many U.S. companies were planning for anticipated changes as the incoming presidential administration was preparing to take office in January 2025.

The question at that time was whether or not President Trump's administration would follow through on proposed tariffs levied on goods coming into the U.S. from China, Mexico and Canada, among other countries.

What we have seen so far in early 2025 is that President Trump has indeed followed through on those stiffer tariffs with an additional 10% on all Chinese goods as well as 25% tariffs on most goods coming into the U.S. from Canada and Mexico. Shortly after these were originally announced, President Trump backtracked and made some exceptions for energy imports from Canada but by and large these new rates are scheduled to go into effect April 2, 2025.

These tariffs could have substantial effects on the producers of goods as well as on end consumers.

I thought it would be helpful to touch on examples of preemptive measures Polaris, Inc., has taken in the last months in anticipation that these tariffs were a real possibility.

Polaris, based in suburban Minneapolis, is a leading brand in the powersports segment and has a manufacturing presence in both China and Mexico. The company has ramped up the flow of vehicles coming out of its factories and into distribution centers and sped up production schedules as well.

They also have ramped up shipments of product from China to take advantage of the grace period before the latest tariffs are enacted. The goal was to get products into the U.S. dealer network as soon as possible.

Author

Joe Zirnhelt is President and CEO of Power Systems Research.

Recently, the company noted they have approximately 100 days of inventory on-hand.

In effect, these strategic moves to consolidate and move inventory towards the dealers help to insulate customers from anticipated price increases – at least in the near term.

Polaris' manufacturing footprint in Mexico is sizable, and the company is actively working to plan surcharges for the vehicles that are continuing to be shipped from that country. About a third of Polaris' production is based in Mexico, with 60% of its off-road segment produced there.

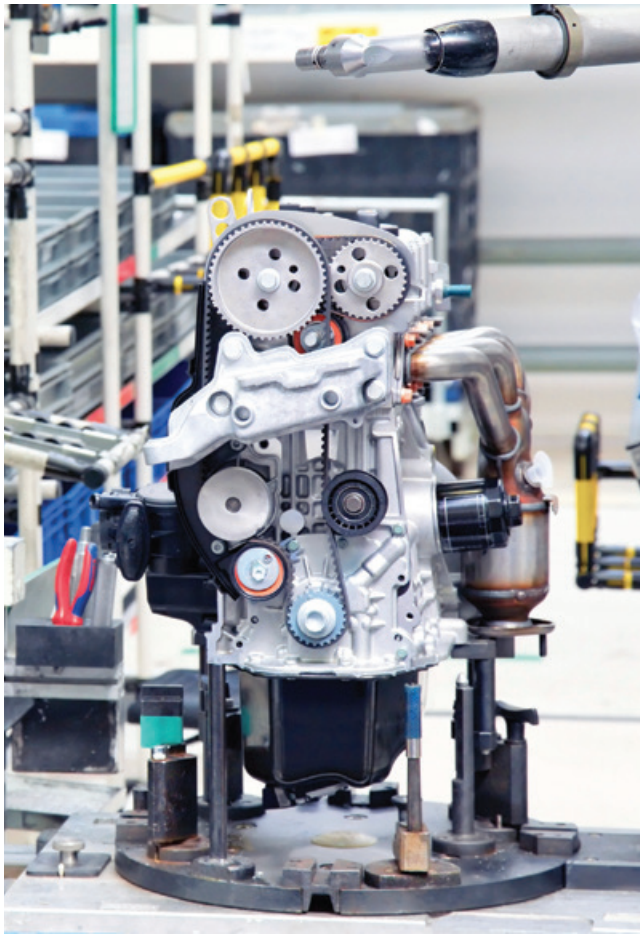
The company recently said that if tariffs are going to be enacted for the long-term, the company would need to consider moving production out of Mexico. A change like this cannot happen overnight and would take several years and would be expensive. It should also be noted that Polaris' plant in Mexico is about two times the size of its current U.S. based manufacturing location in Huntsville, Alabama.

This provides just a small sample of the types of decisions that companies are currently struggling to assess. It is definitely a very complex situation. There are many other questions, too, including to what degree a company chooses to pass along increased costs via tariffs to the end customers. In a market where consumer debt levels and interest rates are already high, consumer-focused markets may not be receptive to price hikes at any point in the near-term.

Just these small examples here illustrate what a difficult next few years it may be to navigate some new territory in terms of tariffs and the far-reaching effects from decisions on production locations, pricing, managing inventory and keeping pace with how quickly things could change in a trade war like scenario.

At Power Systems Research, we are aware of the implications of tariff policy changes and will continue to follow relevant shifts in manufacturing operations as they develop.

Today, there are many forces at play in the current environment for the worldwide production of powered equipment. As we move forward, you can be assured



that Power Systems Research will continue to monitor developments and reflect this knowledge in our data and intelligence. Our mission is to keep you as informed as possible while we support your market planning and forecasting initiatives.

As we prepared this Q1 2025 update, we incorporated important insights we have gathered during the quarter to provide our best outlook for 2025 as well as our five-year forecast.

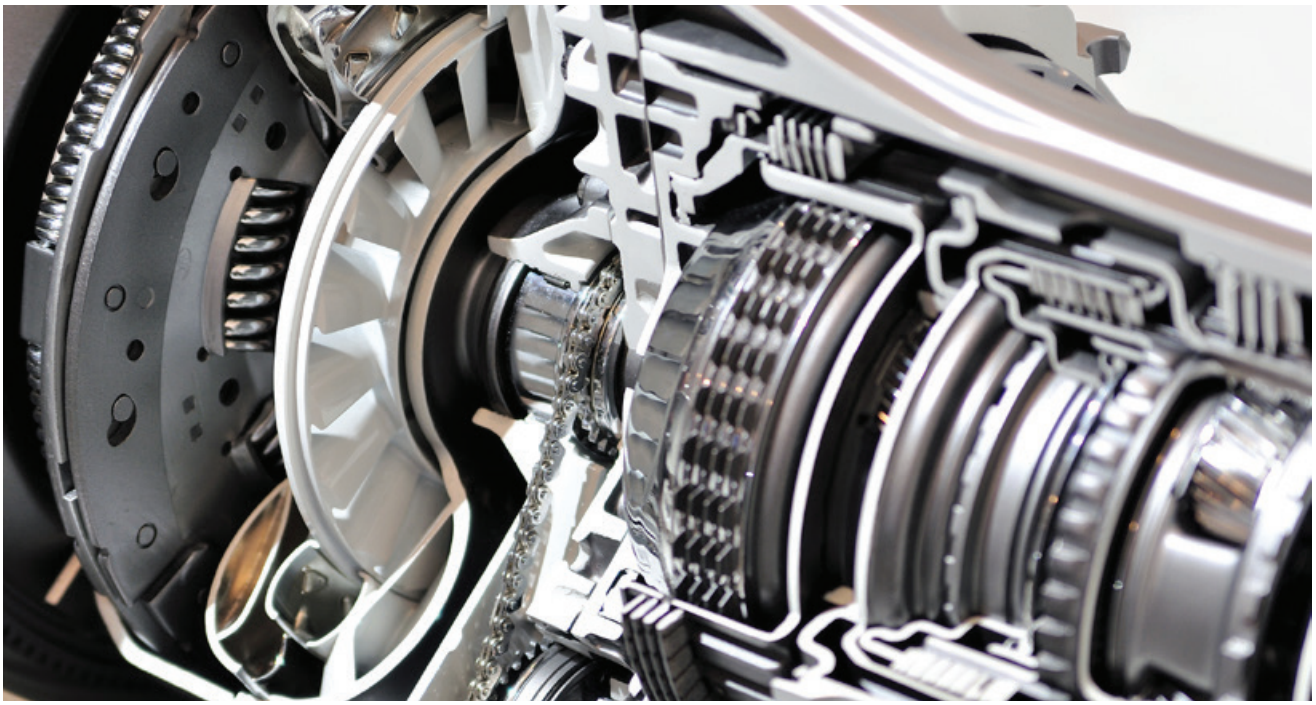
We hope you find this database update of value at this important time. As always, we appreciate your feedback and continued dialogue as you review this latest update.

If you are facing new challenges or issues that require data-driven solutions, talk to us.

We can be an important resource.

Thanks for reading and for being a valued client of Power Systems Research. **PSR**

II. Introduction



Power Systems Research (PSR) has developed and maintained comprehensive market data specific to the power products and drivetrain industry since 1976. Because accurate and reliable market data has always been at the heart of its activities, PSR has developed a unique family of highly specialized databases. These core databases include:

- **EnginLink™** – Engine Production and Forecast Database
- **OE Link™** – Original Equipment Production and Forecast Database
- **CV Link™** – Commercial Vehicle Production and Forecast Database
- **PartsLink™** – Original Equipment Population Database

The **PowerLink™ 3.0** dashboard effectively combines all market databases into one Internet-based tool. Using this system, subscribers can easily access, organize and download the latest engine-powered market data anytime, anywhere in the world.

The PowerLink™ 3.0 dashboard has extensive reporting capabilities and allows for customization and report distribution within your organization. This innovative system sharpens your business and planning strategies by finding hidden opportunities and targeting potential customers. The PowerLink™ 3.0 dashboard is your link to a competitive advantage in the marketplace.

EnginLink™ is continuously updated; this Update Bulletin reflects changes made to EnginLink™ during the first quarter of 2025. Included in this Update Bulletin are EnginLink™ database notes listing significant data modifications and an explanation of our research and forecast methodology. Additional Power Systems Research initiatives also are outlined here.

Please feel free to circulate these research notes to your colleagues and internal data users

If you have any questions regarding this update, please contact us via email at support@powersys.com or by phone at 651-905-8400. Our support email account is monitored 8-5 CDT M-F by associates at our corporate offices and at our data center.

Thank you for your continued support of Power Systems Research. **PSR**

III. EnginLink™ Database Update Notes

Engine Manufacturer News and Notes

Arrow Engine Company has been purchased by IES Holdings. The purchase includes Arrow's Tulsa-based production facility and will not affect branding of Arrow Engines moving forward. IES Holdings designs electrical systems and technology solutions for data centers, and commercial and residential applications, including power generation solutions.

MAN Energy Solutions announced that their ME-LGIA, an ammonia-fueled engine series, has completed its first 100% engine load test. Posited as a milestone for new, renewable energy for the marine industry, MAN Energy Solutions will now further refine fuel consumption and emission control systems before beginning market production.

Winterthur Gas and Diesel has announced that their X-DF-A engine series has passed a series of final validation tests before they begin delivery of the engine series. While limited to a single 52 centimeter bore cylinder, the successful testing has paved the way for multi-cylinder testing to begin this year. WinGD will continue to hone fuel and emissions standards before customers receive the engine series.

Yanmar Co. Ltd has received approval from the Japanese government to begin developing hydrogen engines for marine applications. Planning to pursue a reduction in carbon dioxide emissions, the approval allows Yanmar to move their hydrogen engine production plans up from 2050 to 2040.

Yuchai has entered into an agreement with Futa Group's subsidiary Kim Long Motor Hue that allows Kim Long Motor Hue to begin producing Yuchai engines for the Light Commercial Vehicle and Medium and Heavy Vehicle segment needs in Vietnam. Yuchai will also provide support for the construction of a new manufacturing site for the licensed engines, along with the parts needed for engine assembly and service.

EnginLink™ Update Editor

Eric Best is the Engine Research Analyst at Power Systems Research.

Major Manufacturers with Data Updates

- Anhui Quanchai Ltd
- Arctic Cat
- Bashan Motorcycle Manufacturing Co. Ltd
- Briggs and Stratton
- BRP-Rotax
- Caterpillar
- Chongqing Rato Power Co. Ltd.
- Cummins Engine Company
- Deere
- Deutz AG
- EMAK
- FPT Industrial
- Gas Gas Motos S.A.
- GM Powertrain
- Honda Motor Company
- Husqvarna
- Jiangsu Changfa
- Jiangsu Changgong Power Machinery Company Ltd
- KTM Sportmotorcycle Gmbh
- Kunming Yunnei Power Company LTD
- Shangdong Laidong Internal Combustion Engine Co., LTd
- Lifan Group
- Lombardini Srl
- Loncin Group
- Mercury
- MTU Friedrichschafen
- MWM International Motores
- Perkins Engine Company
- Piaggio Veicoli Europei S.P.A.
- Polaris Industries
- Power Solutions International
- PSA
- Renault
- Scania Power Solutions
- Shanghai Diesel Engine Co. Ltd (SDEC)
- Solo
- Stihl
- Toyota Motor Company
- Volkswagen AG
- Weichai Power Engine
- Yamaha Motors
- Yanmar Co. Ltd
- Yituo Luoyang Diesel Engine Co. Ltd (YTO)
- Yucahi
- Zongshen Power

Engine Models Added

Manufacturer	Model
Audi AG	2.5L5TSFI-20V-600
Chongqing Cummins Engine Co. LTD	KTA38-G2B, KTA38-G2A
Cummins Engine Company	6BTAA5.9-G12, 6BT5.9-G2, 6LTAA9.5-G1, KTA50-GS8, M15-G8, QSK60-G12, QSK78-G15, QSK95-G5, QSZ13-G6, QSZ13-G10, KTA19-G8, B6.7LH, QSB5-G11, QSB5-G11 60Hz, X10-380 (2027), X10-450 (2027), QSL9-G9, B6.7 Octane-300, QSL9-G9-358
Deere	3029HG530, 4045HFG04, 4045HFG09, 4045HG551, 6068CG550, 6068HG550, 6090CG550, 6136CG550, JD14P, JD14X, JD18P, 6068HFU79
Dongfeng Cummins Engine Co. Ltd	4BT3.9-G1, 4BTAA3.9-G3, 6CTA8.3-G1, QSB3.9-G2, QSB3.9-G3, QSB3.9-G39, QSB5.9-G3, QSB6.7-G3, QSB6.7-G31, QSL8.9-G30, QSZ13-G2, QSB6.7-G32, 6ZTAA13-G3, 4BTA3.9-G11
FPT Industrial	CR16 TE1W, C13 TE1F, C87 TE3F
Honda Motor Company	OB2354-4 EFI, OB4952 EFI
Innio	Jenbacher Type 6-624
KTM Sportmotorcycle Gmbh	MC249-1 EFI, MC300 EFI, MC249-5 EFI, MC144-2 EFI, MC125-6 EFI, MC50-1, MC500-1 EFI, MC450-1 EFI, MC300-1 EFI, LC4c-390, LC4c-250, LC4c-125, LC8c-990, LC8c-RC21, LC8c-RC23, LC8c-RC24
Kubota Corporation	D1703-BG, D1703-M-E4-BG2, D1803-CR-TI-E4-BG, V2203-BG, V2403-CR-TE5-BG, V2403-CR-TI-E4-BG, V2403-M-DI-BG, V3300-T-E2-BG2, V3800-CR-TE5-BG
Moteurs Baudouin S.A.	6M11G160/6, 4M10G70/5, 4M10G88/5, 4M10G88/5, 4M10G100/6, 4M10G110/5, 4M11G110/5, 6M11G110/6, 6M11G135/6, 6M11G176/6, 6M33G6D3/5, 8M33G2D3/5, 8M33G4D3/5, 12M33G8D3/5, 12M55G4D3/5, 12M55G6D3/5, 16M33G8D3/5, 16M55G2D3/5, 20M33G4D3/5, 6M33G8D3/5, 8M33G6D3/5, 4M08G2D3/5, 4M08G4D3/5, 4M08G8D3/5, 4M08G10D3/5, 4M12G2D3/5, 6M12G4D3/5, 6M12G8D3/5, 6M16G8D3/5, 6M21G2D3/5, 6M21G8D3/5, 6M33G2D0/5, 6M16G250/6
Perkins Engine Company Ltd	1706A-E93TAG1, 2506D-E15TAG2, 2806A-E18TTAG4
Stihl	358
Suzuki	OB284 PEI, OB1502 EFI, OB3615 EFI, OB490 EFI, OB490-1 EFI, OB3615-1 EFI, OB2044-2 EFI
Volvo Group	TWD1683GE
Yamaha Motors	OB5559-2, OB4300 - 350HP, OB2785-4 EFI, OB995-1 EFI, OB995-2 EFI, OB995-3 EFI

New Engine Manufacturers & Name Changes in EnginLink™

Name Changes and Updates

None for this quarter.

IV. Forecast Trends

Global

Risk Looms for NA Recession

AGRICULTURAL. The Agricultural sector is showing consistent signs of good growth with around growth of +3.2%in 2025 before falling back in 2028 to +1.0%. The average growth rate remains at +2.2% and the market grows by +628k by the end of the forecast period. Most of this growth comes from China (averaging +3.5%) and India (averaging +2.0%) with Japan declining at an average rate of -2.3% over the forecast period

CONSTRUCTION. The global construction equipment sector is expected to grow by a modest +0.6% in 2025 and then grow well for 3 years before dropping back to much more modest growth for the rest of the forecast period. The average growth rate remains at +1.5% and the market is forecast to grow by +122k by the end of the forecast period. Of the major countries, Germany remains in flat and adds barely +100 units by the forecast end.

INDUSTRIAL. Industrial starts the forecast period with a negative -0.5% but is expected to remain positive throughout the rest of the forecast period with average growth rate remains a good +2.4% and the market grows by +813k by the end of the forecast period. The big two manufacturing countries remain in positive growth throughout the period with China averaging +3.9% and USA averaging +2.3%, however the fastest growing region is India with average growth of +5.3%.

LAWN & GARDEN. Lawn & Garden remains positive in all forecast years except for 2030 when it is expected to decline by -0.4%. The average growth rate remains at+2.1% and the market grows by +3.438m by the end of the forecast period. The USA is the largest producer for this sector with almost half of the total volume so a fall in 2030 of-3.5% contributes significantly to the 2030 market decline. Of the big five producers, only China remains positive throughout the whole forecast period.

> *The global construction equipment sector is expected to grow by a modest +0.6% in 2025 and then grow well for 3 years before dropping back to much more modest growth for the rest of the forecast period.*

LIGHT COMMERCIAL VEHICLES. This segment is expected to remain positive throughout the forecast with growth of between 0.2% and 3.5%. The average growth rate remains a good +2.3% and the market is expected to grow by +1.734m by the end of the forecast period. Of the top two countries (China & USA) China remains positive throughout the period and adds +609k while the USA shows a mixed growth/decline figures throughout most of the forecast but still ends the forecast period with limited volume growth of +20k

MARINE AUXILIARY/MARINE PROPULSION. This segment is expected to grow marginally until 2030 when it will decline. The average growth rate remains modest at +1.2% and +0.6% respectively, and the market grows by +36k by the end of the forecast period. Japan is the largest producer with over half the volume and is expected to barely grow by an average of +0.3%.

MEDIUM & HEAVY VEHICLES. This segment is expected to have high growth of +5.4% and low of +0.0%. The average growth rate remains good at +2.0% and the market grows by +424k by the end of the forecast period. Of the big three production countries, only China remains positive throughout the period with

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Global: Risk Looms for NA Recession

Continued from page 8

growth rates ranging from +3.0% to +5.0% and adding 279k in volume.

PASSENGER CARS/MINIVANS & SUVs. Generally, 2025 is expected to remain a good year for Minivans (+3.0%) and a bad year for Passenger Cars with a decline of around -0.3% The average growth rate remains healthy at +2.7% and the market is expected to grow +12.176m by the end of the forecast period. China and USA produce a little over half of the volume in these segments and both remain strongly positive throughout the forecast period with China averaging +3.5% and USA +4.8%. Germany starts the forecast period off with a decline of -1.6% in 2025 before returning to growth

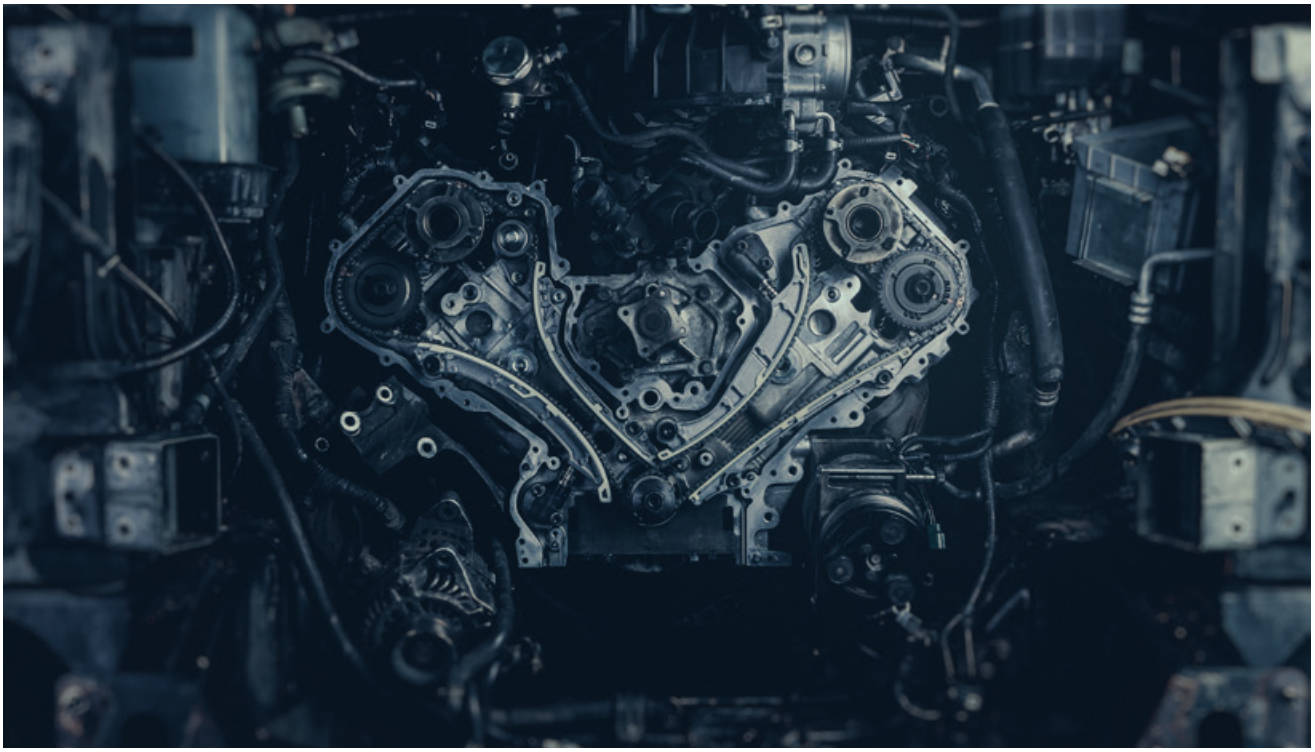
POWER GENERATION. Power generation is expected to continue to grow strongly during the whole of the forecast period with growth ranging from +1.5% to +4.3%. The average growth rate remains solid at +3.3% and the market should grow by +1.638m by the end of the forecast period. Both the top two power generation countries (China and United States) show good growth for every year of the forecast period until 2030 when USA is expected to decline by -5.5%

RAILWAY. Global railway production is expected to grow strongly throughout the forecast period with an average growth rate of +5.8% and increase in size by just over 2,000 units. The market is dominated by China (60% of the production) which is forecast to have an average growth rate of +3.5%.

RECREATIONAL PRODUCTS. This segment continues to grow strongly with volumes growing on average by +3.6% and adding 23.968m units by 2030. The size of this segment is so large that it can distort overall market views.

Growth rates for the future years are driven by China and India who dominate the market (over 80% share) The key factors to better performance in recreational products are affordable personal transportation, significant demand for these products, the impact of electrification and higher consumer spending with more disposable income.

ALTERNATIVE POWER. After growth of +6.8% in 2025, Battery Electric Vehicles are expected to grow at between +5.3% and +8.7%, with an average growth rate of 7.3%, and add an extra 30.943m units by 2030. The Internal Combustion vehicles on the other hand are growing much slower with changes ranging from -0.2% to +1.7% and averaging +0.8%. **PSR**



North America

Only Time Will Tell How This Year Ends

SUMMARY. GDP growth slowed to 2.3% in Q4 2024, down from 2.8% in Q3 2024. Inflation is still rising but is slowing from its peak. However, inflation is expected to pick up a bit in H2 2025. The labor market is loosening with the current unemployment rate at 4.1%.

The US recently implemented another 10% tariff on all Chinese imports. This now puts the total tariff on goods from China at 20%. The White House has postponed 25% tariffs on many imports from Mexico and some imports from Canada until April 2025. The risk of higher inflation and recession are real concerns with the tariff situation, trade policy/war, and tighter immigration strategy.

North American total production, including all market segments, is expected to be up less than 1% in 2025 over 2024. The expectation for 2025 production is that many of the market segments (agricultural, construction, industrial, and recreational products) will be down over 2024. A few segments are showing some growth; these include minivans/SUVs, power generation, and railway.

The forecast for 2026 is for market growth of 4.2%, following a rebound in growth from 2024 and 2025. Overall, for total North American production, stronger rates of growth in 2027 and 2028, 5.1% and 5.7%, respectively are expected.

AGRICULTURAL. Agricultural machinery production for 2025 is currently forecasted to have a negative growth rate of -2.7%, down from 2024. Crops (cash receipts) were down in 2024 10% over 2023 and will be down again in 2025. The war in Ukraine is still having a dramatic negative effect on wheat and fertilizer exports and also contributes to a slowdown in this segment.

Author

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Current trade policy could also hurt this market in North America.

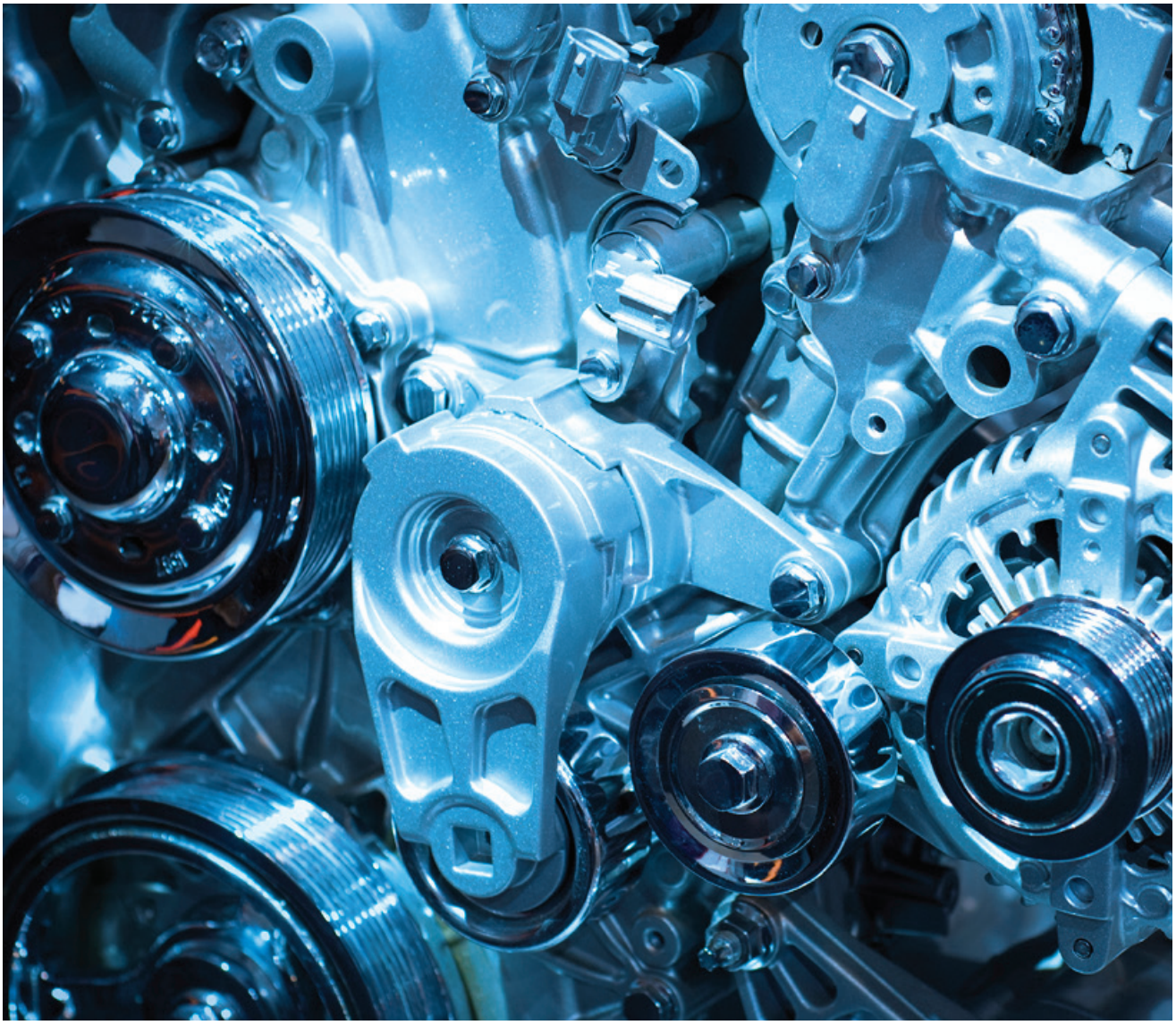
PSR anticipates 2026 will keep up with a growth rate of 3.3%. Demand should continue to pick up and crop yield will improve by 2027 and 2028.

> *Inflation is still rising but is slowing from its peak. However, inflation is expected to pick up a bit in H2 2025. The labor market is loosening with the current unemployment rate at 4.1%.*

CONSTRUCTION. PSR is forecasting that in 2025 equipment production will drop with a growth rate of -2.6%. Construction equipment's undeveloped demand is a factor as well as higher costs and some lingering supply chain issues. The impact of tariffs is also a contributing factor. However, government expenditures for infrastructure expansions should help with new equipment demand, and lower interest rates should also increase demand. PSR expects growth again in 2026. 2026 growth rates are projected to be up 2.7%. 2027 growth is projected to be around 3.6%.

INDUSTRIAL. The industrial segment follows similar growth patterns to the construction segment. Industrial equipment production is expected to slow down in 2025. With predominant backorders, this is predicted to continue to increase into the future. This year's growth, 2025, is projected at -4.3%. As mentioned earlier, the trade policy within North America currently may have a negative effect on the market. PSR is projecting a growth rate of 2.5% in 2026 over 2025 and with more positive growth of 3% in 2027.

MEDIUM & HEAVY VEHICLES. There are significant issues that will impact the medium and heavy commercial truck market forecast for 2025 and beyond. The uncertain state of the economy, much of



North America: Only Time Will Tell How This Year Ends

Continued from page 10

which is driven by the impact of tariffs this year. While freight tonnage was up sharply in February, it is yet to be known if this may be indicative of an improving economy or is this simply a buy ahead on freight to get ahead of the potential tariffs. Another issue is how much of the truck pre-buy ahead of the 2027 emission regulations will be in 2025 vs 2026.

PSR is forecasting lower production levels during the second and third quarters before production ramps up in the fourth quarter of this year. This forecast assumes there will be no changes to the implementation of the phase 3 GHG emission regulations that are scheduled for MY2027 trucks. We should know more about this in the coming months. Medium and heavy truck production is expected to decline by 8.4% this year compared with 2024.

RECREATIONAL PRODUCTS. Production of recreational products is expected to be down this year, 2025. Production is projected to decline by 4% this year compared to 2024. The powersports market has seen a decline in consumer spending in recent years. This segment is facing challenges including a weak retail in environment, overproduction, tariffs on products produced in Mexico, Canada and China, and high dealer inventories. This is leading to lower sales. 2026 should see a return to growth by at least 1%. **PSR**

Europe

Europe Faces Thin Balance

SUMMARY. Geopolitical tensions remain one of the major factors affecting the wider European economy. Almost three years have passed since Russia's invasion of Ukraine, and uncertain progress towards peace continues. The war remains fierce, and Russia continues shelling Ukrainian lands. While Europe continues to face many problems, Russia's war on Ukraine has intensified several issues, and it has created a socio-economic emergency on the European continent, increasing disruptions in raw material supplies and trade routes.

In recent months, after several claims from President Trump regarding the relevance of NATO, and his negotiations with Putin to find a truce in Ukraine, doubts and criticisms have been sparked among some European leaders. The EU has outlined ambitious plans to rearm the continent in response to geopolitical challenges and the perceived need for increased defense capabilities.

In addition, the unpredictable nature of Trump's tariff policies has created economic uncertainty in Europe. This uncertainty has made it difficult for businesses to plan and invest, potentially leading to reduced economic growth and innovation.

On March 12, US President Trump imposed a 25% tariff on imports of certain metals from the EU. The European Union (EU) planned two sets of countermeasures, initially set to begin April 1 and mid-April. At the time of this writing, the situation is uncertain, since the delay in the EU response is aimed at negotiating with the US to avoid or reduce the tariffs.

At the same time, Trump has announced more tariffs in the coming months although at the moment how this will evolve remains very uncertain. However, considering that imports of US goods to Europe account for a small proportion of the European GDP, we do not expect this to have significant impact on inflation. On the other hand, exports from Europe to the US might suffer in 2025, at least initially. In fact, if Trump's new government will indeed lower corporate taxes, and attract international investors, the dollar could significantly appreciate towards the Euro, mitigating the effect of the import duties.

In recent months, after several claims from President Trump regarding the relevance of NATO, and his negotiations with Putin to find a truce in Ukraine, doubts and criticisms have been sparked among some European leaders.

Despite all these factors, the European economy is showing timid signs of stabilization, with a slight improvement in 2025 forecast. The manufacturing industry is showing a small percentage increase (although 2024 ended worse then expected), while key markets like housing and infrastructure development are picking up thanks to more stable and affordable interest rates. Nevertheless, inflation is yet to reach the 2% goal set by the EU, and with the harsh geopolitical environment, it is expected to trend more towards 3% during this year.

There was brisk improvement in component shortages in the second half of 2023, with many companies reporting improvement in supply chain dynamics, returning to pre-Covid levels. The recent attacks of Houthi militias in the Red Sea, have not caused significant impacts on logistics, but the situation could deteriorate further, given the ever-increasing atrocities in Gaza, and the expansion of the war in neighboring countries such as Lebanon and Syria. Overall, supply chain indices keep improving. However, we have not yet

Author

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Emiliano Marzoli and Natasa Mulahalilovic contributed to this report.

Europe: Europe Faces Thin Balance

Continued from page 12

reach pre-pandemic levels.

While economic factors are improving, some business segments struggled in 2024. Euro zone PMI is showing a negative trend, and orders of new machines are lacking. OEM inventories are still high, and many companies are trying to reduce their components stocks. We expect this trend to ease in 2025, but not to a significant degree.

Nevertheless, the resilience of the economy, the improvement in monetary policies, and the end of the elections in the EU should favor a very mild revival in orders during 2025. We will closely monitor the evolution of the market, particularly given the difficult economic environment in Germany, one of Europe's key markets. The newly elected German government plans to reform the brake on debt and create a special investment fund. This move aims to increase public spending on infrastructure and defense, which is expected to boost domestic demand and stimulate economic growth. The reforms are seen as a significant shift in Germany's traditionally conservative fiscal policy.

AGRICULTURAL. Some momentum has already appeared in the market during Q1 2025, and the outlook for this year, even though, not very good is slightly better than 2024. This should translate into an uptick in sales and production for 2025, although it might take a few months to fully manifest itself as many players are still expressing some concerns. Low overall market confidence could delay a recovery, especially with the fear of the looming threat of tariffs and trade wars that could be occurring. Ag especially would be hit the hardest.

Nevertheless, the cautious optimism that we have been seeing for the last few months has been highlighted by a slight uptake in business activity and higher business activity expectations for the next six months reported by the CEMA (European Agricultural Machinery Association) barometer could indicate some light at the end of the tunnel.

CONSTRUCTION. This segment is following the same trend that we see in the Agricultural Segment. Demand, similar to the Agricultural Segment, was declining in

Europe: Europe Faces Thin Balance

Continued from page 13

2024. We are seeing this decrease across many business activities, especially in the residential and private sectors. We are seeing a clear decrease in activity reported by CECE (Committee for European Construction Equipment) and other trade associations. The overall trend is likely to mimic Agricultural, and we can expect it to recover slightly in 2025, but it seems that it will take a few months for it to be felt. It's possible that the recovery process could take longer due to a possible shortage of labor to fill so many incentivised positions.

The same risks are applicable to Construction as to the other segments. For example, the potential looming recession applies, but possible government and investment help and funding on new projects could keep the markets afloat. Similar to the CEMA, the CECE's members have reported the possibility of slightly higher revenue and order intake for the next six months.

LAWN AND GARDEN. We are seeing a slowdown overall due to lower demand, especially on the residential consumer side. The same risks could be reduced by the electrification shift that is increasingly prevalent throughout the EU. The overall segment slowed in 2024, partly due to the lower sales and order intakes. There was hope that the consumer side of this segment would be balanced by professionals and new homeowners which bring a certain level of elastic demand. Unfortunately, this was not the case for 2024, but we are seeing some signs that a small recovery will take place this year but not quite enough to offset the decrease from last year.

Furthermore, many consumers are investing or switching to battery-powered equipment, and even professionals are switching so they can use it as a USP (unique selling point), especially since many government contracts now call for a portion of all machines used on the job to be low emission. This trend, while small, should continue to be fuelled by the many electrification incentives being pushed into 2025 for many member states.

INDUSTRIAL. This segment has been experiencing similar trends to both Agriculture and Construction on a more subdued level. We saw a decrease throughout the segment in 2024 although at a diversified rate between different applications. We expect this trend to

continue in 2025 showing an overall slight recovery, not yet catching up to 2023 levels. However, we will see a few applications outperform others such as forklifts and terminal tractors. This being said, we might need a few months before seeing the uptake in orders. This segment has a strong possibility to get heavily affected by tariffs and trade wars maybe more so than Ag.

MARINE PROPULSION. This segment will remain relatively flat overall in 2025 as it starts to feel the effects of reduced demand. We expect this segment to taper off as the year continues. There are still some issues that must be resolved before recovery can regain full momentum. We expect this slowdown to continue throughout 2025, but to pick up around the end of the year.

PLEASURE BOATS. The European pleasure boat market slowed in 2024, and sales of new boats drastically decreased compared to the two previous years. Segments being the most affected were small boats in size under 7 meters and monohull sailboats in size from 9 to 16 meters. Motorboats in size 12 to 16 meters made slight progress.

Sales of luxury motor yachts from 16 to 24 meters and superyachts have been relatively stable, depending on the brand and innovations brought to the latest models. The best sellers remain motor and sail multihulls,

Europe: Europe Faces Thin Balance

Continued from page 14

thanks to the global rental market being in a constant growing phase.

Overall, sales of a new boats manufactured in Europe dropped by 25% in 2023/2024.

The second-hand yacht market was relatively dynamic but also saw a decrease of 10% compared to 2022/2023.

A very complex geopolitical context, global economic slowdown, persistent inflation, and general uncertainty, are the main factors that make manufacturers and industry experts believe that the negative trend will not change direction soon. Our estimate is that demand for new boats manufactured in Europe will decline by 10-15% in 2025.

The Marine pleasure industry faces other challenges such as environmental changes, ecological requirements, new technologies and innovations, and final product prices. The new generation of boaters go towards innovative, clean and affordable boating. This will require significant changes to the existing business models and related actions to dynamize the market.

P**ASSENGER CARS, MINIVANS & SUVs.** Demand for new Passenger Vehicles in Europe remained stable in 2024 compared to 2023. However, 2024 was an extremely complicated year for the European car industry, and there is not much good news on the horizon.

Production of passenger vehicles decreased by 2% in 2024, the CAGR compared to 2019 is an alarming -8%, or some 400,000 vehicles. This trend will continue in 2025, with large groups like Volkswagen and Stellantis announcing production cuts in the next 12 months. In addition, new average CO2 emissions rules have entered in force in January 2025, with a potential (unlikely) effect of billions of euros in fines towards OEMs that will not be able to lower their average fleet CO2 emissions. However OEMs are allowed to buy credits from other OEMs, and this should enable them to avoid expensive fines.

The Euro 7 emissions standards soap opera has come to an end. With the latest developments, EU lawmakers have agreed to leave limits on toxic NOx and the mass of particles emitted from new cars untouched. Furthermore, the new standards have been postponed until 2029. The new regulations put the EU in a follower position on environmental standards, behind the more stringent US EPA tier 3 Final and China 6b standards. The latest developments highlight the way in which the car industry is regaining its weight and power after a few years of weakness following Dieselgate in 2014.

A very complex geopolitical context, global economic slowdown, persistent inflation, and general uncertainty, are the main factors that make manufacturers and industry experts believe that the negative trend will not change direction soon.

Uncertainty still remains very high. The European and German car manufacturers are struggling to convince consumers to move to battery electric vehicles. Chinese and Indian manufacturers are penetrating the market, while in previous years they were almost non-existent. They can offer very cheap and practical EVs. BYD, one of the leaders in production of batteries and EVs, is now developing its production facility in Hungary to anticipate any measure from the EU and offer EVs made in Europe.

The emissions regulations that in the past worked like a barrier protecting the European market, are now becoming irrelevant. If the EU and the European manufacturers do not realize that a greater challenge than Euro 7 is on the horizon, they might find themselves in much more agitated waters.

POWER GENERATION. Gen-Set production and demand in Europe was hurt by the pandemic. However, the sector quickly rebounded in 2022. Demand remained positive in 2023, but we saw signs of a decrease in the last months of last year. 2024 will turn negative for this segment, when final numbers are available, but this is not a surprise, given the unprecedented levels gained during 2022 and 2023.

However, with a rebound in investments towards the end of the year, Gen-Set demand will start to pick up, and in 2025 the segment will return to a timid growth, followed by a more robust performance in 2026.

Europe: Europe Faces Thin Balance

Continued from page 15

RECREATIONAL PRODUCTS. The segment was taken by storm at the end of November 2024: KTM AG, Europe's largest motorcycle manufacturer, is currently facing significant financial challenges that have led to a strategic restructuring plan. KTM has recently secured a US$ 810 million (€750 million) restructuring plan, which has been approved by creditors. This plan allows KTM to restart production at their Mattighofen headquarters and begin repaying their debts. The company had been facing significant financial challenges, including a large stockpile of unsold bikes and debts amounting to approximately US$2.7 billion (€2.5 billion).

The restructuring plan requires KTM to repay $US648 million (€600 million) to creditors by May 23, 2025, covering 30% of their total debts1. Additionally, they have secured a $54 million (€50 million) financial injection from an extended circle of shareholders. While this is a positive step, it does not guarantee KTM's future survival, but it does allow them to resume production and continue their operations. Considering the high demand for second scooters and motorcycles registered in 20224, and the slow start of 2025, we expect to see a decline in European production, caused in part by KTM's restructuring plan, and in part by low demand for 2025.

RAILWAY. Demand in this segment is less affected by current market trends as contracts are usually reach out several years. We are seeing a slow but steady increase continuing into 2032. As a result, we are seeing a high percentage of contracts being fulfilled, although the numbers are still relatively low compared to other segments. Incentives are still very present for the push to reduce CO2 emissions for 2030 for many member states and outside of Europe demand. **PSR**

China

China's 2025 GDP growth Projected at 4.5%

SUMMARY. In 2025, China's economy is expected to face opportunities and challenges, and it will steadily go through changes and upgrades. On the domestic side, deeper reforms, faster technology innovation, growth of the digital economy, higher consumer spending, and efforts to become greener will help boost local demand and improve the industrial setup.

This shift should increase the share of high-tech and high-value industries, and lay a strong foundation for steady growth. However, this transformation may also bring some difficulties—such as the pain of adjusting old industries, issues with excess production capacity, and challenges related to labor supply and skills as the population ages.

On the global side, uncertainties about the world economic recovery, increased geopolitical risks, and rising trade tensions, especially between China and the United States, could lead to fluctuations in exports and international investment. Still, initiatives like the Belt and Road and trade deals such as the Regional Comprehensive Economic Partnership (RCEP) may help China open more trade channels and improve its position in global supply chains.

In short, while maintaining a steady GDP growth rate of around 4% to 5%, China is likely to rely on growing domestic demand, technological advances, and green development to speed up its transformation toward high-quality, balanced, and sustainable growth despite various challenges at home and abroad.

AGRICULTURAL. Driven by smart agriculture, policy incentives, and technological advancements, China's agricultural machinery market is projected to experience rapid growth in 2025, reaching a market size of 120 billion RMB, with the plant protection drone market expected to reach 19.462 billion RMB. The widespread application of technologies such as the Internet of Things (IoT), big data, and artificial intelligence (AI) is continuously enhancing the intelligence and efficiency of agricultural machinery, providing multi-faceted data support for precision agricultural production.

> *On the global side, uncertainties about the world economic recovery, increased geopolitical risks, and rising trade tensions, especially between China and the United States, could lead to fluctuations in exports and international investment.*

Simultaneously, national policies such as the "Guiding Opinions of the Ministry of Agriculture and Rural Affairs on Vigorously Developing Smart Agriculture," the "Opinions on Further Deepening Rural Reform and Solidly Promoting the Comprehensive Revitalization of the Countryside," and the "National Smart Agriculture Action Plan (2024-2028)" are constantly increasing support, providing clear direction and broad market prospects for technological innovation and product upgrades in the agricultural machinery industry.

Furthermore, the national encouragement of agricultural machinery trade-ins and the replacement of old machines, coupled with the international agricultural cooperation promoted by the "Belt and Road" initiative, are releasing domestic and international market demand, indicating a new era of comprehensive intelligent, efficient, and green development for the future agricultural machinery market.

- **Subsidy Policy:** China's agricultural machinery subsidy policies will focus on intelligence,

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China:
China's 2025 GDP growth Projected at 4.5%

Continued from page 17

sustainability, and high performance, maintaining purchase subsidies as the core while complementing them with scrapping/renewal, deep soil loosening, operational, and R&D innovation subsidies, along with loan interest reductions to lower acquisition costs.

Priority support will target agricultural cooperatives, family farms, major grain producers, and social service organizations, while also providing limited subsidies to ordinary farmers. Differentiated subsidy rates and caps will apply to intelligent machinery, energy-efficient equipment, and key technology development, with regional variations across different areas.

To enhance efficiency and transparency, the policy will further streamline administrative procedures, strengthen information management, and implement online applications, with strict oversight and credit system establishment to encourage green development, intelligent manufacturing, socialized services, and regional coordination. Macroeconomic conditions, national agricultural development strategies, technological advances, and farmer demands will collectively influence subsidy intensity and direction.

- **Market Demand.** China's agricultural machinery demand will undergo five major structural transformations:

  First, accelerated penetration of intelligent and unmanned technologies, with Beidou navigation and AI-driven autonomous agricultural machinery (such as plant protection drones and harvesting robots) accounting for over 30% of total demand.

  Second, green and low-carbon technologies will dominate equipment upgrades, significantly increasing the penetration rate of new-energy agricultural machinery and phasing out more than two million highly polluting machines below the National III emission standard.

  Third, regional and scenario-specific differentiation will intensify, with high-performance large-scale machinery (e.g., harvesters with feeding capacity ≥12 kg/s) dominating plain regions, specialized

equipment markets for hilly and mountainous areas surpassing 8 billion yuan, and machinery for specialty crops (e.g., tea-picking machines) growing at an annual rate of 25%.

Fourth, socialized agricultural services will drive the rise of sharing models, with plant protection drone leasing reaching 5 billion yuan, and "ride-hailing style" dispatch platforms improving equipment utilization by 30%.

Fifth, industrial chain collaboration will accelerate technological adaptation, significantly boosting demand for dense-planting seeders, facility agriculture machinery (market size reaching 12 billion yuan), and export-oriented models (such as small rice harvesters for Southeast Asia).

- **Industry Reshuffling and Intensified Competition.** After the switch to Tier 4 products, the agricultural machinery industry will face more intense competition. The markets for large and medium-sized tractors, rice harvesters, and corn harvesters have begun to show a phenomenon of multiple superpowers and strong competitors. The industry has entered a new round of reshuffling, promoting the transformation of industrial manufacturing and the high-quality upgrading of products. The growth rate for 2025 is 5%, and 3% in 2026.

China:
China's 2025 GDP growth Projected at 4.5%

Continued from page 18

CONSTRUCTION. In 2025, China's construction machinery market is projected to exceed one trillion RMB, exhibiting a "stable growth with quality improvement" trend. Deep application of intelligentization and digitalization (such as 5G and AI-driven unmanned excavators and remotely controlled cranes) and the transformation towards new energy (with electric and hydrogen-powered equipment becoming widespread in mining and port scenarios) are the core driving forces, promoting the upgrading of the product structure towards high-end and large-scale equipment. Simultaneously, the "Belt and Road" Initiative is driving the continued expansion of the export market, leading to an increase in the international market share of high value-added equipment, and propelling the industry towards a new stage of high-quality development characterized by green and low-carbon practices and technology leadership.

- **Domestic Market.** China's domestic construction machinery market will shift from extensive growth driven by large-scale infrastructure investment to structural growth and quality-oriented improvement. Due to real estate regulation and weakening traditional infrastructure stimulus, overall growth will slow down but remain at a relatively high demand level.

  Emerging drivers such as "new infrastructure," rural revitalization, urban renewal, and clean energy projects will accelerate demand for specialized equipment, including small-sized, multifunctional, green, and intelligent machinery.

  Demand for medium and large-sized construction machinery and loaders will remain relatively stable, while aerial work platforms and electric construction machinery will exhibit higher growth potential.

  Conversely, concrete machinery and traditional mining equipment may experience declining demand due to the downturn in the real estate market and stricter environmental regulations.

  Regionally, eastern China will focus on high-end equipment and urban renewal, while central and western regions will steadily advance infrastructure and rural revitalization projects, and western and northeastern regions will release demand in infrastructure and agricultural modernization.

  Facing risks such as macroeconomic fluctuations, local government debt, technological changes, and rising raw material costs, companies should deepen R&D investment, optimize product portfolios, and strengthen full life-cycle services and risk management to seize structural opportunities and achieve sustainable competitiveness.

> *In 2025, China's construction machinery market is projected to exceed one trillion RMB, exhibiting a "stable growth with quality improvement" trend.*

- **Overseas Market.** Driven by both the Belt and Road Initiative and rising global infrastructure demand, China's construction machinery exports are expected to expand steadily, with the export product mix evolving toward high-end and intelligent offerings. Emerging markets such as Southeast Asia, Africa, the Middle East, and Latin America—benefiting from accelerated infrastructure construction, urbanization, and increased investment in mining, energy, and transportation—will continue to fuel demand for excavators, loaders, cranes, and concrete equipment.

  Meanwhile, advanced markets in Europe and North America have seen growing demand for high-end, eco-friendly machinery, prompting Chinese enterprises to leverage technological innovation, product upgrades, and brand building to progressively enter these premium segments.

  With the global shift toward green, low-carbon development accelerating, the demand for electric, intelligent, and energy-efficient construction machinery is rising rapidly, further optimizing export product opportunities.

  Although challenges remain—from a complex international trade environment and exchange rate

China:
China's 2025 GDP growth Projected at 4.5%

Continued from page 19

fluctuations to geopolitical risks—companies can achieve high-quality, sustainable export growth by strengthening risk management, bolstering overseas service capabilities, and refining their global expansion strategies. The growth rate is 1.8% in 2025 and 3% in 2026.

INDUSTRIAL. China's forklift market is expected to maintain steady growth, with market size projected to reach RMB 120–150 billion by 2025, although the growth rate may slow compared to previous years. Driven by expanding domestic demand and continuous technological innovation, China will remain the world's largest forklift market.

From a macro perspective, stable economic growth, rapid expansion of the logistics industry, manufacturing transformation and upgrading, and accelerated construction of warehousing and logistics facilities will provide strong demand momentum for the forklift market.

Meanwhile, rising labor costs and stricter environmental regulations are prompting enterprises to increasingly adopt electric forklifts, driving the industry toward greener and smarter solutions.

Electric forklifts will continue to increase their market share, accounting for over 60% of total sales by 2025. Lithium-ion battery forklifts, benefiting from higher energy density, longer lifespan, and faster charging capabilities, will gradually become mainstream. With the development of intelligent warehousing systems, demand for automated guided vehicles (AGVs) and unmanned forklifts will also grow rapidly. Additionally, customized, lightweight, and compact forklifts tailored to specific application scenarios will become increasingly popular in the market.

Regarding the competitive landscape, China's forklift market remains relatively concentrated, dominated by a few leading domestic and international companies. Domestic brands continue to make progress in technology and quality, gradually narrowing the gap with foreign brands, though market competition remains

China:
China's 2025 GDP growth Projected at 4.5%

Continued from page 20

intense, and price wars occasionally occur. In the future, comprehensive service capabilities, including after-sales support, leasing, and maintenance services, will become critical competitive advantages for enterprises, further shaping the industry landscape.

Between 2025 and 2029, China's forklift market is expected to maintain steady growth, with especially notable expansion anticipated in the fields of new energy forklifts and intelligent forklifts. The growth rate is 4% in 2025, and the rate will stay at 4% in 2026.

LAWN AND GARDEN. China's gardening machinery market presents a three-dimensional landscape of "upgraded domestic demand + differentiated exports + technological iteration." In the domestic market, rising urbanization rates (projected to exceed 70% in 2025), upgraded household gardening consumption, and higher municipal greening standards are driving average annual demand of over 8% for products such as lawnmowers and hedge trimmers, with significant trends towards high-end products (such as intelligent robotic lawnmowers) and lightweight designs (lithium-ion battery-powered handheld devices). In terms of exports, the European and American markets are being forced by environmental regulations (such as the EU's new emission standards for small engines in 2025) to rapidly increase the proportion of electric products to over 50%, while emerging markets such as Southeast Asia and the Middle East still primarily rely on cost-effective gasoline engine models. However, with the improvement of photovoltaic energy storage facilities, the penetration rate of electrification is expected to exceed 30% in the next three years. The entire industry's technological path is accelerating its transformation from fuel-powered to brushless motors and intelligent IoT. At the supply chain level, domestic companies are gradually breaking the monopoly of European and American brands in the high-end market thanks to their lithium battery production capacity advantages (accounting for over 70% of the global total) and modular design capabilities. However, they need to be wary of international carbon tariffs, patent barriers, and shortcomings in localized services. Overall, the industry will enter a "period of

electric technology dividend release" in 2025, with clear structural opportunities driven by both domestic sales and overseas expansion. The rate is 2% in 2025, and the rate will be 2.5% in 2026.

MEDIUM AND HEAVY VEHICLES.

- **Macroeconomic Drivers & Market Trends.** In 2025, China's medium and heavy truck market is expected to achieve steady growth under the dual support of a robust economy and favorable policies. With GDP growing at around 5% and driven by the expansion of new infrastructure and the logistics industry, demand for medium and heavy trucks will continue to rise. Logistics truck sales are anticipated to exceed 1.2 million units, accounting for over 60% of the overall market. Moreover, propelled by the National VII Emission Standard and the "dual carbon" targets, the market share of new energy medium and heavy trucks is expected to increase from current levels to between 15% and 20%, while the penetration rate of new energy in urban logistics trucks may exceed 30%.

- **Technological Upgrades & Export Breakthroughs**. Technological innovation is a key engine for enhancing market efficiency. Pilot programs for Level 3 autonomous driving in commercial applications and the use of lightweight designs (which can boost per-vehicle capacity by 10%) are accelerating the replacement of

China:
China's 2025 GDP growth Projected at 4.5%

Continued from page 21

existing fleets, with an estimated annual replacement rate of 5% to 8%. Additionally, the application of connected vehicle technology is expected to reduce fleet operation costs by 15% to 20%.

On the export front, leveraging infrastructure demand generated by the Belt and Road Initiative, Chinese heavy truck exports are projected to reach between 300,000 and 350,000 units, capturing roughly 25% of the global market share, with new energy models constituting 20% of exports and achieving a competitive edge with a cost advantage of 20% to 30% compared to European and American brands.

- **Sales Forecasts & Risk Challenges.** Overall, it is estimated that by 2025, the total sales of China's medium and heavy trucks will reach between 1.4 million and 1.5 million units, reflecting a growth rate of 3% to 5%. Domestically, logistics trucks are expected to account for approximately 65% of sales (with new energy models comprising around 18%), while construction trucks will constitute about 30% (with 8% being new energy models).

  In the export market, traditional fuel trucks will dominate (accounting for 80%), with new energy models mainly targeting the EU market under carbon tariff regimes (with a penetration rate of approximately 5%).

  At the same time, industry faces challenges such as a potential slowdown in infrastructure investment, raw material price fluctuations (e.g., cost pressures on key components for lithium batteries and hydrogen fuel), and an accelerated electrification pace in Europe and North America.

- **Core Enterprise Strategies & Future Direction.** Enterprises should develop breakthrough strategies aligned with emerging market trends by focusing on full-stack R&D for new energy "three-electric" systems (electric drive, battery, and electronic control) and intelligent driving to build robust patent barriers and maintain a competitive edge.

  Domestically, firms should concentrate on deepening new energy applications in urban distribution and long-haul logistics. Internationally, they should expand steadily by combining competitively priced products (such as models tailored for Southeast Asia) with new energy vehicles that meet EU carbon tariff requirements. Furthermore, by collaborating with energy enterprises and logistics platforms to create integrated "vehicle-energy-carrying capacity" closed-loop solutions, companies can secure a strategic advantage in the global transformation of the commercial vehicle industry.

> *Overall, it is estimated that by 2025, the total sales of China's medium and heavy trucks will reach between 1.4 million and 1.5 million units, reflecting a growth rate of 3% to 5%.*

The growth rate of medium and heavy trucks in 2024 was -2%, indicating a market decline. With the arrival of market recovery and rebound, it is expected that the growth rate of medium and heavy trucks is 4.3 in 2025 and 4.5% in 2026.

PASSENGER CARS. The Passenger car market will maintain steady growth driven by three major trends—widespread electrification, an explosion in intelligent technologies, and breakthroughs in globalization. Total sales are projected to reach between 28 and 30 million vehicles with an average annual growth rate of roughly 3%–5%, while the new energy vehicle penetration is anticipated to exceed 40% (with pure electrics accounting for 25% and plug-in hybrids 15%), and exports could surpass 5 million units, capturing over 15% of the global share.

On the policy front, the dual carbon targets, the continuation of purchase tax exemptions, and the accelerated rollout of charging and battery swapping networks (for example, building 8 million charging stations by 2025) will provide ongoing impetus for electrification upgrades.

Demand-wise, consumer preferences for intelligent features—with widespread Level-3 autonomous driving—and personalized vehicles (customized models

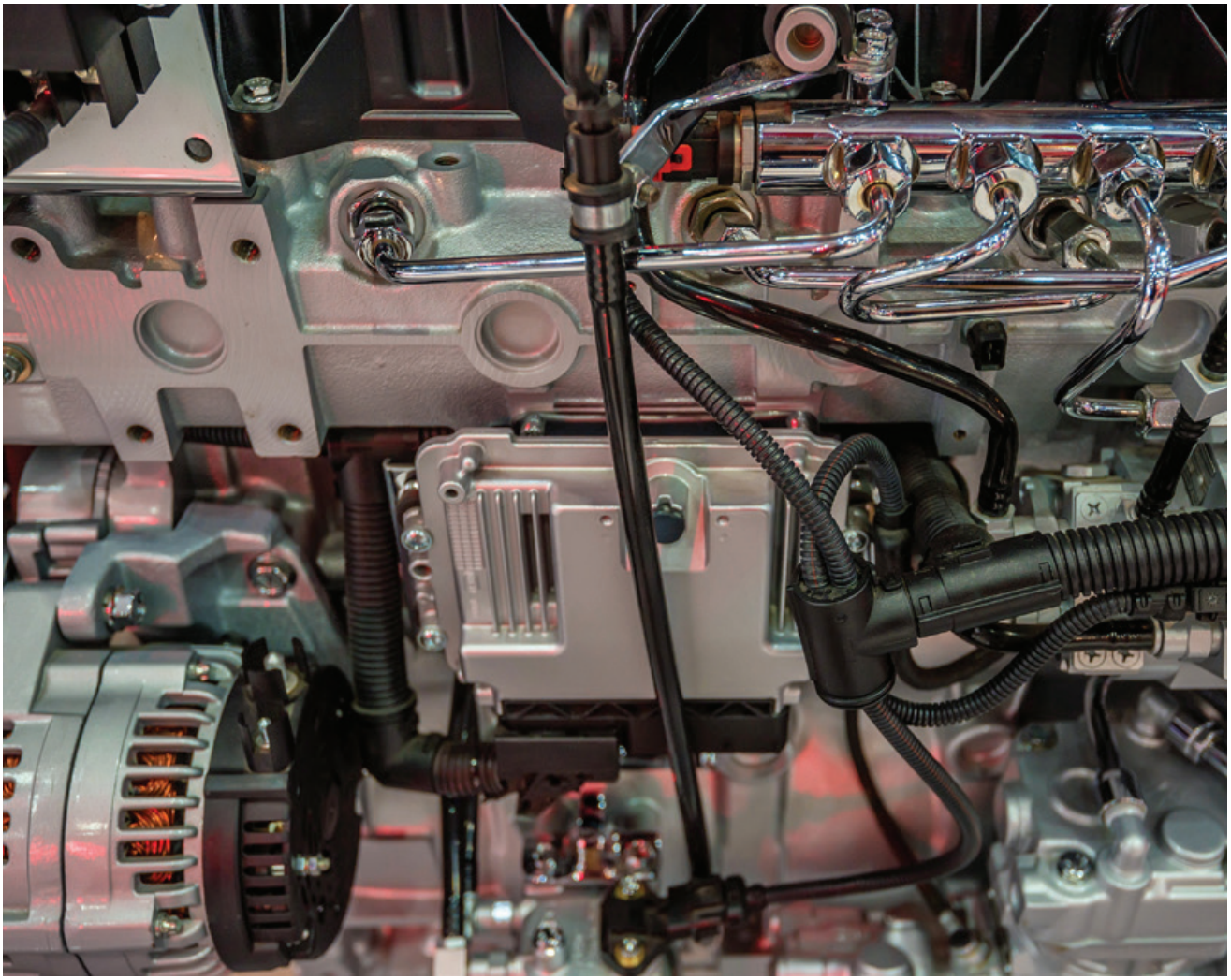
China:
China's 2025 GDP growth Projected at 4.5%

Continued from page 22

accounting for over 20%) are resonating with urban renewal trends, further driving market expansion. Technological innovations, such as the mass production of solid-state batteries (with energy densities exceeding 400 Wh/kg) and the proliferation of 800V high-voltage platforms, are expected to significantly lower overall vehicle costs and improve user experiences.

Meanwhile, domestic brands are leveraging hybrids and high-end sub-brands to accelerate profitability transformations, while foreign and joint-venture companies, lagging in their electrification transitions, face the risk of declining market share and a further fragmented competitive landscape. Hydrogen fuel cells have already been piloted in the commercial vehicle segment, although their application in passenger cars remains in the developmental stage. Companies should closely monitor supply chain uncertainties—such as shortages of battery raw materials and chips—as well as policy risks from international trade barriers and subsidy rollbacks, and adopt an integrated strategy of "technological competitiveness + market segmentation + ecosystem collaboration" to actively seize both domestic and international market opportunities, continuously driving differentiated innovation and sustainable development amid the global transformation of the vehicle industry.

In summary, China's passenger car market in 2025 will continue to be influenced by the rise of new energy vehicles, intensifying market competition, export growth, and the development of smart technologies, overall



China:
China's 2025 GDP growth Projected at 4.5%

Continued from page 23

showing a trend of steady growth with some increases. We expect that the sales volume of passenger vehicles in China will be around 2.2% in 2025, and rate will grow another 3% in 2026.

POWER GENERATION. The generator set market will see a significant structural divergence: high-horsepower diesel generator sets and natural gas generator sets are expected to maintain stable growth, driven by both the energy structure transition (coal-to-gas conversion) and the demand for backup power generation to support renewable energy sources.

Conversely, small gas generator sets face significant volatility risks due to their over-reliance on export markets, putting pressure on market stability. Especially in the small horsepower segment, the North American market, as a global core battlefield, has entered a mature phase. The stable but competitive growth rate of 3% over the next two years highlights market saturation.

In contrast, the high-horsepower diesel and natural gas generator set markets have a relatively clear competitive landscape due to the rigid demand for industrial electricity and technical barriers, making the overall outlook more positive. The market exhibits a differentiated characteristic of being driven by both "traditional rigid demand + energy transition," with technological iteration and regional policies becoming key variables. The growth rate is 3.1% in 2025, and the rate will be 4% in 2026

RECREATIONAL PRODUCTS. As a marginalized industry, China's motorcycle market is projected to exhibit a marked trend of structural differentiation. In the domestic market, traditional gasoline-powered motorcycles—supported by relatively low prices and well-established maintenance networks—will likely continue to see stable demand in rural areas and small-to-medium-sized cities. However, due to increasingly stringent environmental policies and growing consumer awareness of sustainability, overall growth may decelerate or even contract in certain segments.

In contrast, electric motorcycles stand to benefit from rising urban short-distance travel needs, government policy support, and technological advancements such as improved battery performance and broader charging infrastructure. While their share is expected to grow in first- and second-tier cities, as well as some smaller urban centers, they also face intensified competition and serious challenges with product homogenization.

> *The generator set market will see a significant structural divergence: high-horsepower diesel generator sets and natural gas generator sets are expected to maintain stable growth.*

On the export side, gasoline-powered motorcycles remain competitive in emerging markets like Southeast Asia and Africa, thanks to cost advantages and mature manufacturing processes. Nevertheless, manufacturers must closely monitor tightening emission and safety standards globally, proactively upgrading products and ensuring compliance. Electric motorcycle exports will profit from worldwide electrification trends and China's strengths in battery technology and vehicle manufacturing, offering significant future potential. However, companies must bolster brand development, product safety certifications, and after-sales service systems to meet diverse international market demands.

Overall, by 2025, China's motorcycle market will be driven by a dual momentum of "traditional rigid demand + technological transformation." Domestically, the market structure will adjust substantially, with electric motorcycles gaining momentum while gasoline-powered models maintain a stable footing. In exports, product compliance and brand advantages will be crucial, alongside continued efforts to explore emerging markets. To adapt to changing conditions at home and abroad, companies should harness the opportunities of industrial transition by accelerating technological R&D, expanding market deployment, and adopting flexible product strategies. The growth rate is 2.9% in 2025, and the rate will be 5% in 2026. **PSR**

Far East (Japan and South Korea)

In Turbulent Environment, There Are Few Growth Drivers

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FAR EAST SUMMARY: From 2024 onwards, the manufacturing economies of Japan and South Korea have been on a very gradual recovery path, and for the whole of 2025, growth will generally be less than 3%. Depending on the development of the global situation, it is possible that this forecast will be lower. Whether this is seen as stagnation or a good fight depends on your point of view, but the current situation will be explained below, divided into positive and negative aspects.

Positive aspects

- **Increasing capital investment.** Many manufacturing companies say they plan to increase capital investment, which will lead to the expansion of production capacity and the strengthening of the industrial base.
- **Accelerating DX.** Digital transformation (DX) is progressing in every segment, and production efficiency and cost reduction are being promoted. Smart factories and AI-based design and maintenance are being adopted mainly by large enterprises, contributing to competitiveness. This trend is also spreading to small and medium-sized companies, and we expect the profitability of the manufacturing industry to improve.
- **Global demand recovery.** Infrastructure demand in Asia, especially in Southeast Asia, will gradually pick up. This will have a positive impact on East Asian countries. Although political instability in North America and Europe may slow international trade, demand is strong and this trend will lay the foundation for economic recovery in the Far East.

Negative aspects

- **Supply chain instability.** Since much of the procurement of raw materials (steel, non-ferrous metals, etc.) depends on overseas sources, geopolitical tensions (US-China conflict, Ukraine situation, US administration tariffs, etc.) and rising logistics costs are affecting production plans, and there are concerns about increased costs and delivery delays.
- **Labor Shortage.** The rate of decline in the birth rate and aging of the population in Japan and South Korea is significantly faster than in Europe and the United States. It is predicted that the working population will decline to 60% of the current level by 2050. In particular, the number of young people working in manufacturing is declining. In addition, the retirement of skilled engineers is reducing the competitiveness of companies. In Europe and the United States, the labor shortage is being filled by immigrant workers, but in Japan and South Korea, cultural and language

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Far East: In Turbulent Environment, There Are Few Growth Drivers

Continued from page 25

barriers, visa restrictions, etc., make it difficult for them to settle.

- **Lagging innovation.** The pace of technological innovation is slower than that of Western companies and China, leading to a decline in the international competitiveness of products.
- **Political turmoil.** Japan is trying to push through tax increases even as inflation worsens the economic situation of the people and criticism of the current government is growing. In South Korea, the president has been impeached and suspended until a final decision is made, and the struggle between the right and left wings is intensifying. Neither Japan's nor South Korea's politics have the power to drive the economy.

In summary, while the region is supported by positive factors such as growth opportunities in DX and expanding capital investment, it also faces challenges such as unstable supply chains, labor shortages, and rising manufacturing costs. Companies must take steps to address these risks and face the difficult task of maintaining and expanding their global competitiveness.

AGRICULTURAL. Japan. Although unit sales of agricultural machinery, led by tractors and combine-harvesters, are gradually declining, overall sales are increasing due to rising sales prices associated with the increasing size and multifunctionality of the machinery. However, operating income has decreased due to increases in manufacturing costs, including raw materials.

To compensate for this decline, each manufacturer is focusing on generating profits in overseas markets, and as a result, the performance of agricultural machinery manufacturers looks good for the whole of 2024. In 2025, Kubota and Yanmar will continue to actively seek to gain overseas market share, and they will increase their presence in Southeast Asia and India.

In 2024, the overall export value of Japanese agricultural machinery was on a downward trend, but

Far East: In Turbulent Environment, There Are Few Growth Drivers

Continued from page 26

tractors with a power of over 75 kW and under 130 kW increased by 10% compared with the same period the previous year. This indicates that overseas demand for medium to large models for livestock farming and large farms is increasing. 30% of exports go to Vietnam, and the number of instances in which used Japanese tractors are used for agricultural mechanization in Vietnam is increasing.

In terms of business activities, Yanmar and Iseki have announced that they will strengthen their cooperation. This is an attempt to achieve synergy by making the most of each other's strengths, rather than a move to catch up with industry leader Kubota. They plan to jointly produce small agricultural machinery. This type of move can be seen in many other segments where the domestic market is beginning to shrink.

In terms of new technology, unmanned tractors (not fully unmanned, but with partial automated driving functions) are gradually being introduced to the market. At present, level 1 (i.e., vehicles that move with a person on board, such as those with straight-line assist functions) can be covered by the Agricultural Machinery Mutual Assistance System if there are accidents or equipment breakdowns, but there are an increasing number of cases where level 2 (i.e., unmanned operation under the farmer's supervision) cannot be covered, and this situation may hinder the spread of these vehicles.

While such problems with the system are gradually being resolved, it is necessary to focus on improving the environment to promote the spread of these vehicles as quickly as possible.

South Korea. According to a survey on the age of agricultural machinery owned conducted by the Rural Development Administration of South Korea on a continuous basis with 1,500 fixed-point farms, as of 2017, out of a total of 712 tractors, 373 tractors, or 52%, were 10 years old or less. However, in a survey conducted in 2022, of the total of 758 tractors, only 292 were 10 years old or less, accounting for 39%.

In other words, the number of tractors that have been in use for more than 10 years since they were manufactured has increased significantly. The study indicates that demand for replacing these old farm machines will increase within the next five years.

> *In terms of business activities, Yanmar and Iseki have announced that they will strengthen their cooperation. This is an attempt to achieve synergy by making the most of each other's strengths, rather than a move to catch up with industry leader Kubota.*

It is also worth noting that there are around 700 tractors for every 1,500 farms in South Korea. The same survey results for Japan show that there are 1.05 tractors per farm, with a total of 1.17 million farms in Japan. This means that in South Korea, if the scale of farming is small or if it is greenhouse cultivation, then instead of tractors, tillers or cultivators are being introduced.

This suggests that South Korean farmers are avoiding purchasing tractors, which are becoming more expensive every year. This is also seen in the fact that after-market automatic steering systems are widely used, rather than the genuine automatic steering systems made by OEMs.

A device called PLUVA Auto, sold by a South Korean venture company called GINT, is very popular. Since it was first sold in 2022, 1,500 units have been sold in just two years. It has already captured a 60% market share. Even with older tractors, it is possible to reduce labor and increase work efficiency by installing inexpensive retrofit units. It is expected that South Korea will become more widespread than other countries in the field of retrofit equipment for agricultural machinery.

CONSTRUCTION. Japan. Although the growth rate has slowed somewhat, both domestic and foreign demand remain strong, and it is forecasted that the growth rate for the whole of 2025 will be 1-2%. The

Far East: In Turbulent Environment, There Are Few Growth Drivers

Continued from page 27

largest company in the industry, Komatsu, has changed its president from Mr. Ogawa to Mr. Imayoshi. This is seen as a move that shows a sense of crisis about the possibility of a return of trade wars. Mr. Imayoshi has spent 12 years of his career in China and the U.S. and understands the huge markets of the U.S. and China in the global market.

Although Komatsu is a special case, with overseas sales accounting for more than 90% of its total sales, construction equipment manufacturers such as Hitachi Construction Machinery and Kobelco are also focusing on expanding their overseas sales channels in the same way as Komatsu. This trend is likely to continue for some time. In the construction equipment segment, Chinese brands are rapidly advancing their global strategies, and they will be competitors around the world. But in this case, the presence and track record that Japanese brands have cultivated in each country and region will be a weapon. China will lead in a simple price war, but in a battle of overall strength, including things like after-sales maintenance and service expertise also are important.

South Korea. In 2024, the performance of major Korean manufacturers was affected by the global market downturn. HD Hyundai Infracore recorded an 11.7% decrease in sales and a 56% decrease in operating profit compared to the same period the previous year. Although uncertainty is increasing due to factors such as U.S. tariffs and the impact of the global supply chain, the pace of recovery is forecasted to strengthen in 2025, and equipment manufacturers are focusing on strengthening their competitiveness.

MARINE. Japan. The trend toward larger outboard models will continue in 2025. Manufacturers are also launching a series of high-output models. High performance, low fuel consumption and quiet operation are the keywords. There are various developments in terms of electrification and environmental measures, but there is almost no pure demand for electrification. Neither buyers nor users are clamoring for electrified models. Of course, there are places in Europe and

parts of North America where only electric models are allowed to operate, but these are extremely rare. Most people say that factors such as reliability, durability, low incidence of problems, and a stable operating record are more important than the benefits of electric or hybrid power. In other words, the points that electric and hybrid models should appeal to the market are related to brand image and are more about economy, reliability, and convenience. Factors such as significantly better fuel economy than internal combustion models, short charging times, and robustness and durability are important. This will be a long-term requirement, not just for this year or next.

In the field of large commercial ships, China, South Korea and Japan account for about 90% of the world's shipbuilding, so if it is not possible to procure ships and marine equipment in Japan, it will be necessary to rely on countries such as China for procurement, and there is a risk that this could cause serious problems in securing shipping, which accounts for 99.5% of all trade, so the government is working to strengthen the supply chain for ship-related equipment.

Among core equipment, the main engine, propeller and sonar, for which there is a real risk of production stoppages, have been identified as key materials and a budget has been set aside to support investment. Particularly in large engines for commercial vessels,

Far East: In Turbulent Environment, There Are Few Growth Drivers

Continued from page 28

the aging of crankshaft production facilities and the aging and retirement of skilled workers are progressing, and the number of test hours is increasing due to the tightening of international environmental regulations, leading to a decline in production capacity. Shipyards will be busy with the current order backlog from 2025 to 2027, but beyond that the level of orders is uncertain.

South Korea. The South Korean shipbuilding industry, which is strong in the construction of high value-added ships such as LNG-fueled vessels and large LNG carriers, is seeing an increase in orders as shipping demand grows. Although there is a large difference in the number of ships compared with China, the high value-added nature of these ships means that they can be sold at high prices, ensuring sufficient profits. The industry has secured a backlog of orders until around 2027, but competition with China is expected to intensify beyond that point, so maintaining competitiveness will be an issue going forward.

INDUSTRIAL. Japan. The forklift market continues to grow steadily. According to the Japan Industrial Vehicle Association, the number of forklifts produced in December 2024 was 8,559 (up 7.6% YOY), of which 5,375 were battery-powered (up 1.7% YOY) and 3,184 were engine-powered (up 19.2% YOY).

The number of forklifts produced in January 2025 showed a significant increase. It was 5,223 (up 26.1% YOY) for battery-powered forklifts and 3,651 (up 38.4%) for engine-powered forklifts, for a total of 8,874 (up 30.9%). However, this trend is expected to slow somewhat in the second half of this year because companies face economic uncertainties.

In addition to forklifts, warehouse equipment that contributes to automation and labor savings is also attracting attention. The logistics industry is more affected by labor shortages than other segments, and automation of material handling equipment is an urgent issue. The Japanese government is planning to build an automated freight transport system, a "conveyor belt road," that will connect Tokyo and Osaka. The project aims to address the chronic shortage of delivery drivers and meet the high demand for delivery services. Automated forklifts will load containers and connect airports, railways and ports. Trial operation is scheduled for 2027 or early 2028, with full operation expected by the mid-2030s.

> *The South Korean shipbuilding industry, which is strong in the construction of high value-added ships such as LNG-fueled vessels and large LNG carriers, is seeing an increase in orders as shipping demand grows.*

LAWN & GARDEN. Japan. The special demand for gardening equipment caused by the pandemic has already passed, and it is forecasted that sales will generally be flat or increase by 1-2% in 2025. Although the number of units is small, there is also strong demand for engine models, and small and medium-sized manufacturers are meeting this demand.

PASSENGER CARS / MINIVANS and SUVs. Japan. The production figures for the whole of 2024 have not yet been announced. However, considering the main trends, it is forecasted that the figures will be tough due to the impact of factors such as sluggish sales in the Chinese market and production adjustments by some manufacturers.

The collaboration between Nissan and Honda, which was reported in December, ended in failure. It is reported that this was due to Nissan's sales performance falling sharply, and that the banks and the government urged them to cooperate to survive. As a result, the deal fell through, and President Uchida stepped down at the end of March and was replaced by Mexican national Mr. Ivan. Business conditions remain difficult, and it has also been reported that Taiwan's Hon Hai Precision Industry is showing signs of involvement in a takeover. There is also the possibility that the new president will again seek cooperation with other companies, so it is still unclear what will happen to Nissan in the future.

Far East: In Turbulent Environment, There Are Few Growth Drivers

Continued from page 29

The following table shows the situation of EV penetration in each region / country.

Region	Fiscal Year	EV Sales Volume	% of New Car Sales
Japan	2023	44,000	1.7%
USA	2022	9,370,000	6.7%
Europe	2022	1,1240,000	12.1%

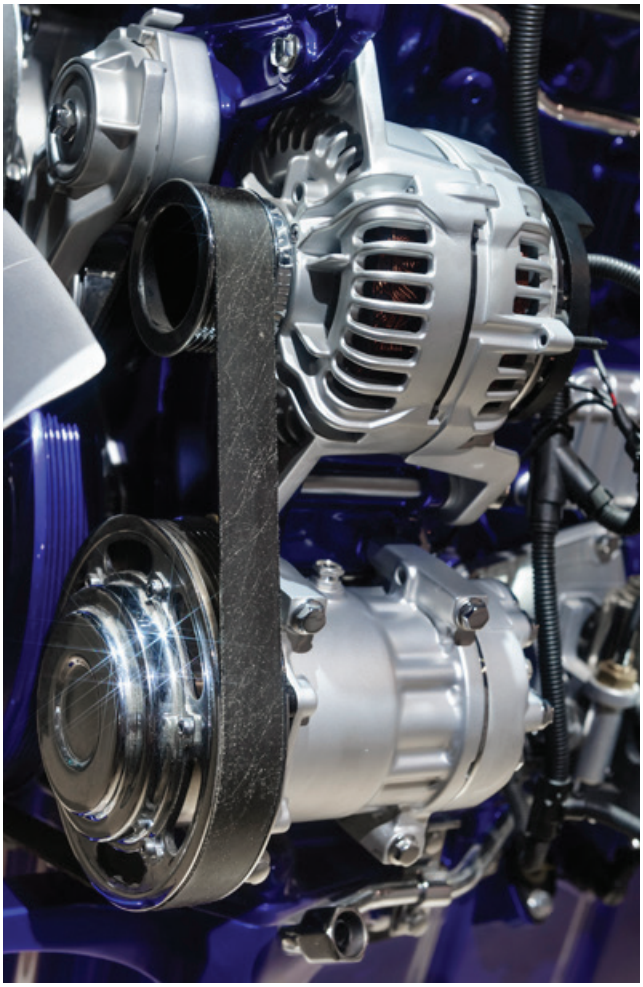
EVs have not become as popular in Japan as they have in Europe and the United States. There are many reasons for this, but the following are some of the most common opinions.

Charging infrastructure issues. There are few parking spaces in urban areas, and few people have parking spaces at home. In urban areas, there are many cases where more than 65% of car owners rent and contract parking spaces separate from their homes. If car owners want to install charging equipment in parking lots, they need permission of the lot owner. Even if parking lot owners don't prepare the charging unit, the lots fill up quickly, so there is little economic incentive for lot owners to install charging units, and most monthly parking lots don't have charging facilities. In rural areas, there are not as many charging stations as in urban areas. As a result, users do not choose EVs for fear of running out of power.

The proliferation of HVs. As a result of the proliferation of hybrid vehicles, there is no need to go out of your way to switch to a BEV.

The high price of EVs. EVs are more expensive than gasoline and HVs, which is a barrier to purchase. Even with subsidies, the price difference is large.

To change consumers' minds, innovative products are needed, but unless the fundamental problem with BEVs, namely the long charging time, is solved, I forecast that HVs will continue to be the mainstream in Japan. We need technological innovation in the batteries themselves, and even if that is achieved, consumers will not make a purchase decision until the price comes down to a level comparable to that of gasoline vehicles. It will take at least five to ten years for that to happen.



South Korea. There are no major changes to the forecast from Q4 2024. Hyundai Motor Group plans to invest a record $16.65 billion in South Korea in 2025. This investment will focus on areas such as next-generation product research and development, electrification, software-defined vehicles, and hydrogen fuel technology. It also includes strategic investments in areas such as EV production line adjustments and autonomous driving technology.

RECREATIONAL PRODUCTS. Japan. The end of production of 50cc motorcycles, previously scheduled for November 2025, may be brought forward to June 2025 due to the revision of technical standards for lighting equipment. As a result, the 50cc motorcycle market is expected to transition to a new standard of EV motorcycles and 125cc motorcycles. **PSR**

Southeast Asia

Strong Demand Despite Moves from Major Powers

SUMMARY. The economies of Southeast Asia are expected to grow at different rates in each country in 2025. Below is a summary of the current situation and economic outlook related to the manufacturing industry in key countries.

Indonesia. The Indonesian government has set a target to increase the share of manufacturing in GDP from the current 19% to 22% by 2025. The government also aims to increase this to 28% by 2045. To achieve these targets, growth is expected in the automotive, electronics, consumer goods, etc. sectors. The Indonesian economy is expected to return to its pre-COVID average growth rate by 2025, with growth accelerating on both the domestic and external demand fronts.

Malaysia and **Singapore** have agreed to establish a special economic zone in the state of Johor to attract investment and promote economic growth. The initiative includes a wide range of projects, from manufacturing to healthcare, and is expected to create 20,000 skilled jobs over five years. By 2025, Malaysia aims to establish itself as an energy and semiconductor manufacturing hub. The Prime Minister announced plans to leverage its strategic location and significant investments to become a global leader in oil and gas, semiconductors, and Islamic finance.

Philippines. The growth rate is somewhat weak compared to other Southeast Asian countries. In the fourth quarter of 2024, the GDP growth rate in the Philippines increased by 5.2% year-on-year, which was the same growth rate as in the third quarter, but lower than market expectations. Growth in the manufacturing sector is slowing due to the impact of weak global demand and geopolitical tensions. In particular, the semiconductor industry has been cited as needing to review its products to respond to changes in demand.

Malaysia and Singapore have agreed to establish a special economic zone in the state of Johor to attract investment and promote economic growth.

Thailand. Thailand's economic growth rate was only 3.2% in the fourth quarter of 2024 and 2.5% for the full year. The main reason was a contraction in manufacturing output. Key industries such as automobiles, chemical products, rubber and plastics, electronics, and construction materials faced increased competition from imported goods, and their share of the domestic market declined. In addition, the outbreak of a new trade war between the United States and China is having a negative impact on Thailand's manufacturing industry. Foreign products are encroaching on the domestic market in areas such as steel, plastics, home appliances, food supplements, garments, glass, and cosmetics.

Vietnam. The World Bank has forecast that Vietnam's GDP growth rate will be 6.8% in 2025. This is below the government's target of 8.0%, but the country is expected to continue to grow at a high rate. In recent years, investment by Chinese companies in Vietnam has increased, accounting for about 30% of all new projects. This is seen as part of a move to avoid US tariffs on China. As a result, Vietnam's trade surplus with the US has reached a record high of $123.5 billion. However, it has been suggested that this could increase the risk of US trade sanctions.

The Asian Development Bank forecasts a growth rate of 4.7% for Southeast Asia in 2025. Among the individual countries, the Philippines and Vietnam are expected to grow by 6.2%, Cambodia by 6.0%, Indonesia by 5.0%,

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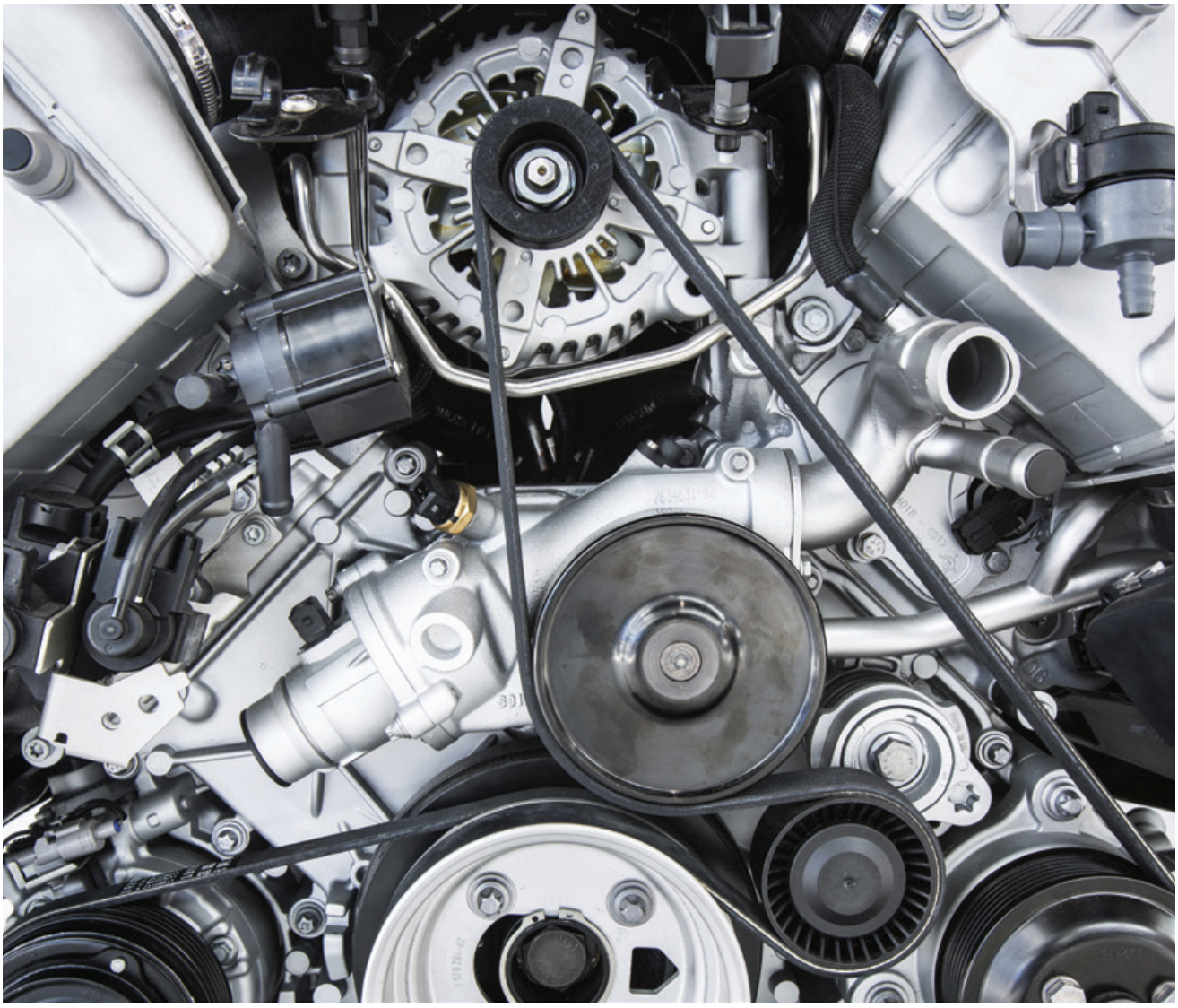
Southeast Asia: Strong Demand Despite Moves from Major Powers

Continued from page 31

and Malaysia by 4.6%. On the other hand, Thailand is expected to grow by 3.0%, but this is below its potential growth rate and structural problems have been pointed out. Risks in Southeast Asia include exchange rate and interest rate volatility, the impact of US trade policy, and capital flow developments.

AGRICULTURAL. The agricultural equipment market in Southeast Asia showed generally stable growth in 2024. Although the harvest in Thailand was lower than expected due to bad weather, the GDP growth rate of the agricultural sector in Thailand is expected to be around 3% in 2025. Siam Kubota, Thailand's largest agricultural machinery manufacturer, announced a sales target of USD 1.9 billion (67 billion baht) for 2025. This is an increase of 8% from last year. This shows that the market has the potential to grow. Currently, 60% of the company's sales come from the domestic market and 40% from the Southeast Asian market (Cambodia, Laos, Myanmar, etc.). The Thai government's policy to promote precision agriculture is creating new business opportunities.

CONSTRUCTION. Southeast Asia is probably the region in the world where the most extensive infrastructure development is currently taking place. Projects for ports, airports, railways, roads, etc. are underway in every country. It is said that the quality of road construction by Chinese companies has improved considerably, but in many cases serious damage to the road surface



Southeast Asia: Strong Demand Despite Moves from Major Powers

Continued from page 32

begins to appear after 5-10 years, and in addition to the demand for new road construction, the demand for road surface maintenance in urban areas is becoming apparent. For this reason, the demand for road rollers is increasing year by year. In addition, as economic partnerships between ASEAN countries deepen, the physical transportation network is also beginning to expand. As this infrastructure demand is expected to continue to grow in the long term, the demand for construction equipment used in this area is also expected to increase year by year.

PASSENGER CARS / MINIVANS and SUVs. Overall, it seems that Chinese EVs are becoming more visible in the market, and with the expansion of charging stations and government support measures, EV penetration is likely to accelerate.

Thailand. The Thai government has announced plans to introduce tax incentives to produce plug-in hybrid vehicles starting in 2026. The goal is to revive the country's flagging auto industry, and discussions are underway with major automakers. The Federation of Thai Industries has set a target of 1.5 million vehicles to be produced in 2025, an increase of about 2.1% from the 1.469 million produced in 2024. The breakdown is expected to be 1 million for exports and 500,000 for domestic sales.

Vietnam. VinFast has announced plans to install up to 100,000 EV charging stations across Indonesia. In addition, a plant with an annual production capacity of 50,000 is currently under construction in West Java and is expected to be operational in 2025.

Indonesia. The Indonesian Automotive Industry Association (Gaikindo) forecasts that vehicle sales will reach 900,000 in 2025, up from 865,723 in the previous year.

RECREATIONAL PRODUCTS. The spread of electric motorcycles is also gradually beginning in Southeast Asia, which is the world's largest motorcycle market alongside India.

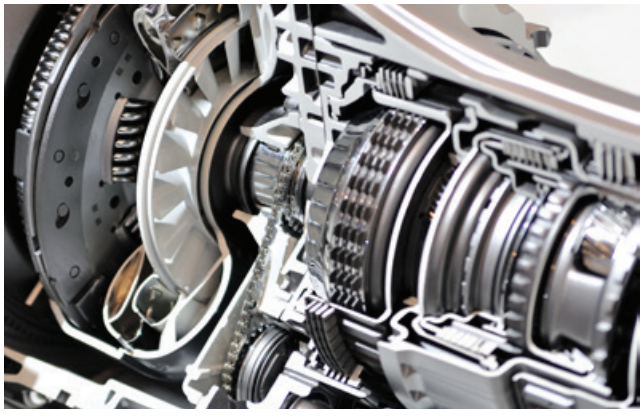
Thailand. According to the Federation of Thai Industries (FTI), the number of motorcycles produced in 2024 was approximately 2.43 million, down 1.9% from the previous year. The FTI expects that it will be difficult for motorcycle demand in 2025 to exceed that of 2024 due to the increase in household debt and stricter lending criteria by financial institutions.

Overall, it seems that Chinese EVs are becoming more visible in the market, and with the expansion of charging stations and government support measures, EV penetration is likely to accelerate.

Vietnam. Honda Vietnam will sell approximately 2.15 million motorcycles in 2024, when final numbers are available. That's an increase of 2.8% from the previous year, accounting for approximately 80.9% of the market share.

Indonesia. According to the Association of Indonesian Motorcycle Industries (AISI), domestic motorcycle sales totaled 6,333,310 units in 2024, an increase of 1.5% from the previous year.

It is difficult to expect rapid growth in the full-year forecast for 2025. There are many uncertain factors, such as the US-China friction and tariffs, and this is a segment where future forecasts become difficult. There are also delays in delivery times for some models due to logistics and rising material costs. There is also a movement to shift from motorcycles to cars as the economy grows, so the future is uncertain. **PSR**



South America/Brazil

Uncertain Global Issues Make Brazil 2025 Economy Challenging

ECONOMY

SA

The uncertainties in the global economy caused by President Donald Trump´s tariff actions and political decisions, as well as conflicts in the Ukraine/Russia war and Middle East, combined with the lack of decisions by local government make economic progress a challenge for Brazil in 2025.

Brazil. While many economists have suggested a reduction in expenses to reduce inflationary pressure, the Federal government has increased expenses and incentives to try to accelerate GDP growth.

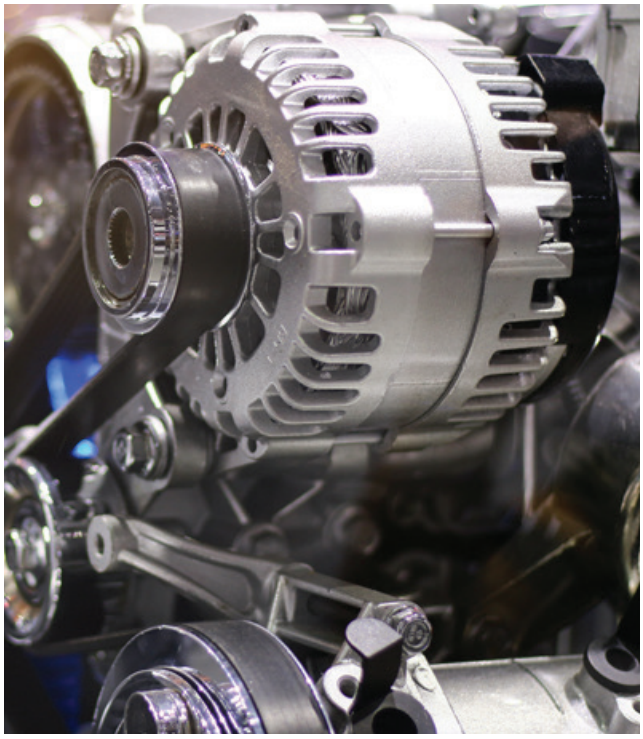
As a result, the Central Bank has increased interest rates to 14.25% in March and another increase to 15% is expected in May.

It looks as though GDP will decline from 3.6% in 2024 to 2.0% in 2025.

This scenario has caused volatility in the local currency, but Brazil still has $450 billion USA in international reserves which is enough to prevent a crisis.

Argentina, **Colombia** and **Chile**. In **Argentina**, local government has continued its plan of drastic reduction of government expenses. Inflation dropped from 13% in December 2023 to 2.4% in November 2024. Accumulated 12 months inflation in 2024 reached 160% vs 250% in 2023. Inflation in January and February of 2025 was 2.5%, indicating that the target of 25% in 2025 will be achieved.

The public accounts have reached a +1.2% surplus. GDP is expected to grow 4% in 2025 vs -3.5% in 2024.



Despite these achievements, strong recession is impacting people and poverty has accelerated, reaching 50% of the population.

Lack of international reserves and international debts are preventing Argentina from exploring more exports, but an agreement with the main creditor, MIF, is expected soon.

Colombia and **Chile**. In 2024, both countries achieved GDP growth in the range of 2%, and inflation in the range of 5%. Inflation and GDP should stay in the same range in the coming years.

LEGISLATION

Brazil. LV and MHV. New Legislation for emission and energy efficiency was launched by government Dec. 30, 2023. The program's name now is MOVER (Green Mobility and Innovation). Congress has approved incentives for the plan, but emissions regulations have not been defined yet.

Author

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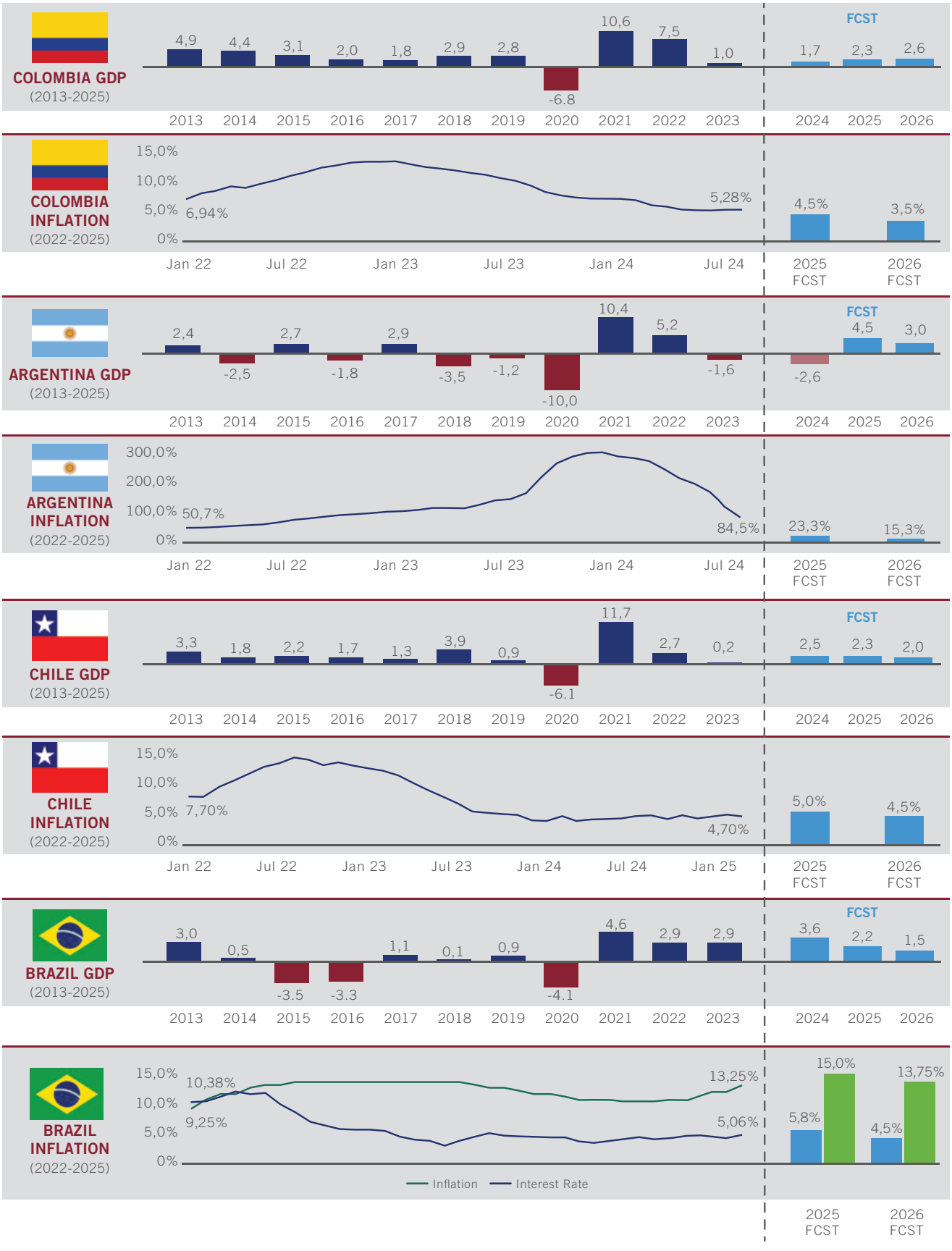
GDP AND INFLATION BY COUNTRY

Source: Central Bank of each country



South America/Brazil: Uncertain Global Issues Make Brazil 2025 Economy Challenging

Continued from page 34

There is a clear direction on measuring CO2 emissions using the well-wheel concept which could be favorable to biofuels.

LV:

- **Emission legislation.** Continuous reductions of toxics emissions are already contemplated with introduction of Proconve L8 starting in 2025. This step of legislation also covers energetic efficiency, and it is fully aligned with US Tier 3. Next steps will be detailed by MOVER program.
- **EV and HEV.** Last July, the Government increased import tax for EV and HEV from 10% to 20%, and will increase to 28% in July 2025, and 35% in July 2026.
- **Biofuels**. As an incentive for biofuels, the government has approved an increase of Ethanol content in Gasoline to 27%.

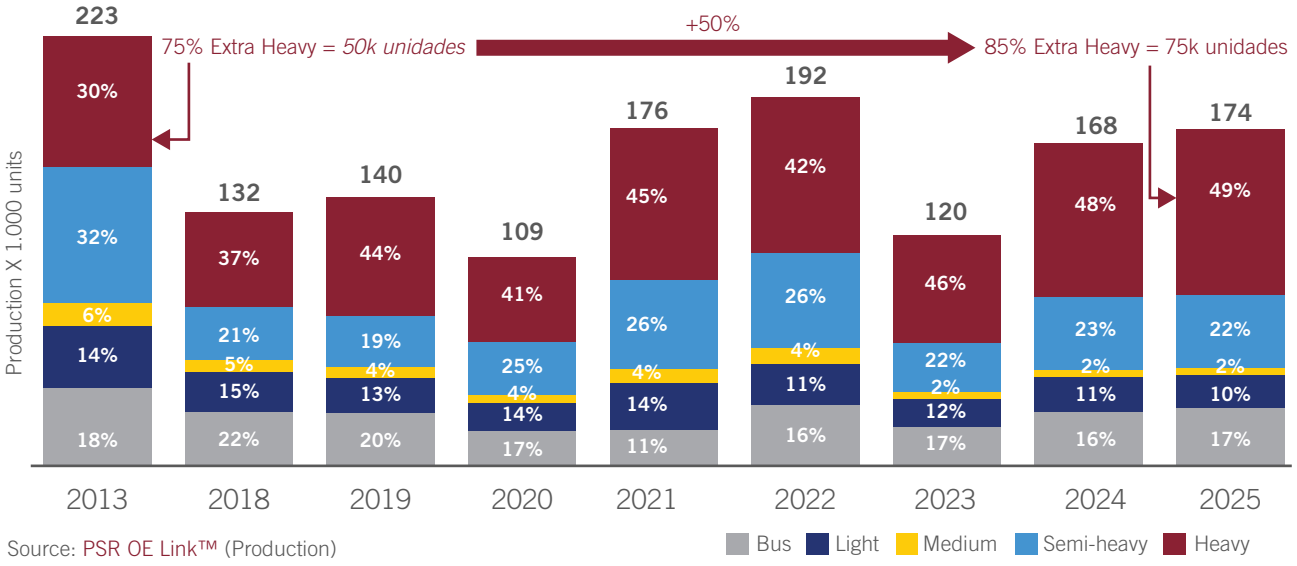
MHV:

- **Biofuels.** Government agency has just approved the increase of biodiesel in fossil Diesel to 14% or B14. The plan is to reach B25 by 2030. There is a dispute between Petrobras, supported by the OEM´s, versus soybean farmers, supported by the government. Current biodiesel, which formula is an Ester is considered more harmful to the Diesel IC process as its % increases. Other solutions such as HVO and R10 are considered more adequate to improve emissions reductions as well as to improve efficiency are now approved. The expectation is that the **MOVER** program can give more directions on this.
- **Safety.** 2025 – Introduction electronic stability system for HD trailers. The system is being introduced in trailers as EBS, becoming Truck/trailers in Brazil one of the safest in the world.
- Electric Buses. Recent change in Sao Paulo city legislation move the target to replace 1000 Diesel buses to Electrical per year. The population of urban buses in Sao Paulo is 13,000 units.
- 2028 – Introduction of Anti Intrusion Bar and Crash Test legislation.

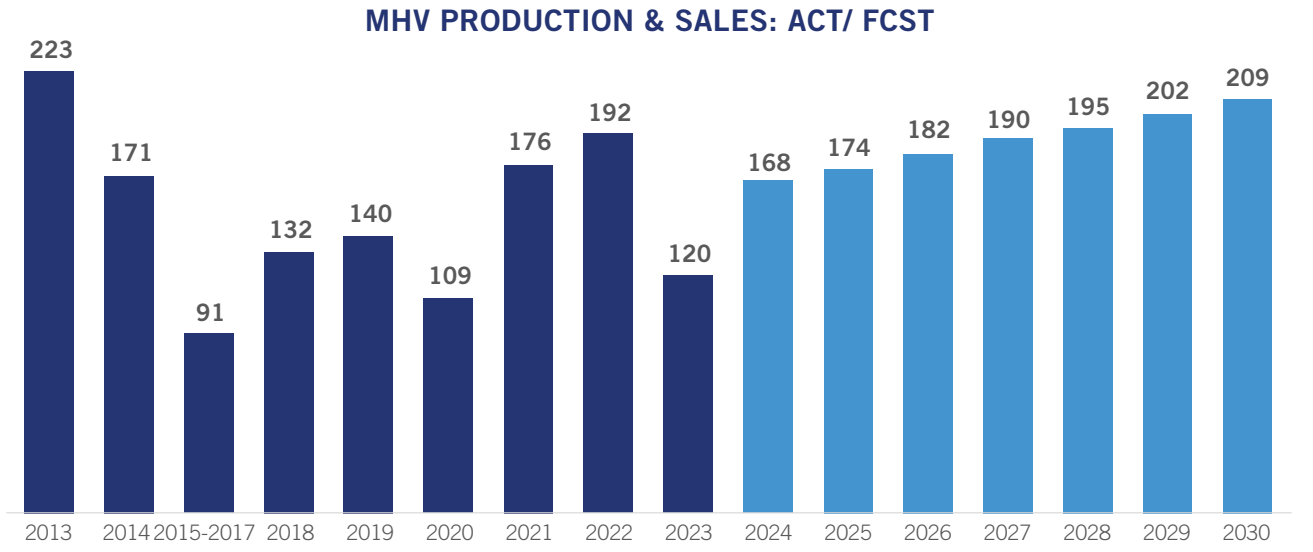
MOTORCYCLES BRAZIL

PROMOT M5 (equivalent to Euro 5) standards, was introduced on January 1st, 2023, for new models and will be introduced on January 1st, 2025, for all new vehicles. The standards will apply to all vehicles sold in Brazil.

MHV PRODUCTION BY SUBSEGMENT–2018 TO 2024



Source: PSR OE Link™ (Production)



South America/Brazil: Uncertain Global Issues Make Brazil 2025 Economy Challenging

Continued from page 36

Motorcycles companies in Brazil has facing difficulties on exports since the legislation is not requires in other South America countries.

OFF HIGHWAY MACHINES (CE and AG)

MAR II (Equivalent to Stage IV): AEA (Automotive Engineering Association) has submitted to CONAMA (National Environment Council) approval. The introduction of new legislation would be in 2028, starting with new models above 130 KW. Pre-buy is expected when the date is defined.

SEGMENT COMMENTS

Brazil. The increase in interest rates, as mentioned before, is the most important barrier for the economy, especially in H2 2025, and it will be a challenge for all segments.

Argentina. Potential agreement with MIF may accelerate the growth in H2 2025.

LIGHT VEHICLES: PASSENGER CARS, MINIVANS, SUVs, LCV

Brazil. Total LV production grew 10% in 2024 and is forecasted to grow 4% in 2025, reaching 2.7 million units in 2027 and 3.0 million units in 2030.

By subsegment, LCV grew 14% in 2024, and the forecast is to grow 4% in 2025 and keep growing 5% in coming years. The same trend exists for SUV, which grew 11% in 2024 and is expected to keep growing at average of 7% in the coming years.

Passenger cars turned down– 5.4% in 2024 and will be flat in 2025. This is the trend for Passenger cars moving forward.

Chinese OEMs are gaining market share, and increasing penetration of EV and HEV, but the government is increasing import tax for these vehicles from 20% to 28% in July 2025 and to 35% in July 2026.

There are around 100,000 Chinese cars in Brazilian ports waiting for customs clearance to avoid taxes.

This will increase China's share of imports of LVs in Brazil.

An increase of imports tax, as stated before, is driving decisions of Chinese OEMs to localize production in Brazil by 2025. This increase would make Brazil the production hub for South America.

Argentina. The economic situation in 2024 drove reductions for LVs in 2024, as Passenger Cars declined -27% and LCVs declined – 21%, while SUVs gained slightly by +3%.

The new economic situation in Argentina is driving and expected recovery in 2025 for Passenger Cars, up +6.3%, LCVs, up +8% and SUVs, up +5%.

South America/Brazil: Uncertain Global Issues Make Brazil 2025 Economy Challenging

Continued from page 37

Colombia. As a result of the current economy plus the phase-out of the GM operations in the country, the production dropped 60% for LCVs and -30% for Passenger Cars in 2024.

The full impact of GM´s phaseout will be in 2025, with an additional reduction of -3.5 % for Passenger Cars and -20% for LCVs.

MEDIUM AND HEAVY VEHICLES

Brazil. After recovering 39% in 2024, the forecast is to grow 3.5% on the way to reaching a volume of more than 200,000 units by 2030.

The volume in 2025 contemplates a move of 3,000 units of VW trucks from Brazil to Argentina.

As stated before, it is important to note that the mix of production in 2013, which is considered the record year, is a production mix totally different from 2024. The HD subsegment has gained share in total production as shown below.

Additionally, as a trend over the years Extra-Heavy or GCW above 45 tons represents approximately 85% of the Heavy subsegment.

At same time, the low end of the segment has lost share to LCVs in the last mile applications.

Vehicles fueled by NG or Biogas are increasing their penetration in the segment in sugar cane and garbage plants applications. Currently, it represents only 0.2% of sales but the forecast is to reach 5% by the end of this decade.

EV units are also gaining share due to urban electrical buses and the last mile applications. Our forecast is that MHV Electrical will reach 5 % of the market in the segment by 2030, but given the recent change in Sao Paulo city legislation, this may be too optimistic.

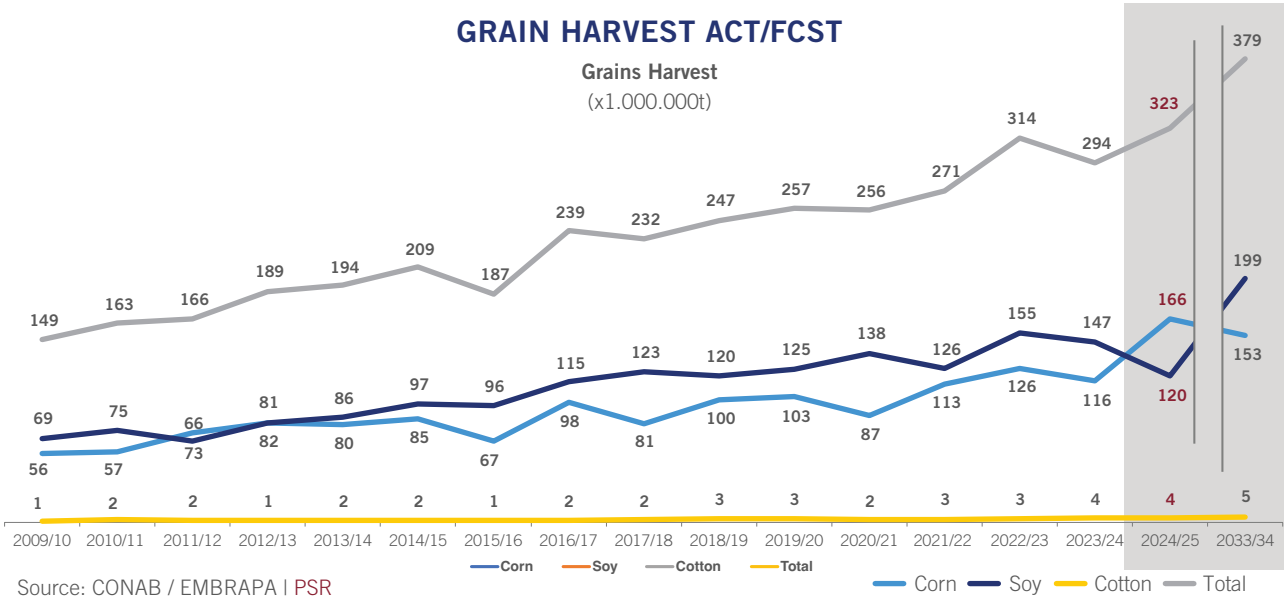
Argentina. In 2024, MHV grew 14%, mainly due to exports to Brazil. The recovery in 2025 plus the move of production of 3000 units from Brazil to Argentina should produce growth of 39% for 2025.

Columbia. After a downturn of - 60% in 2024, a new downturn of – 30 % is forecasted for 2025 because of the economy and the full year of GM phase out.

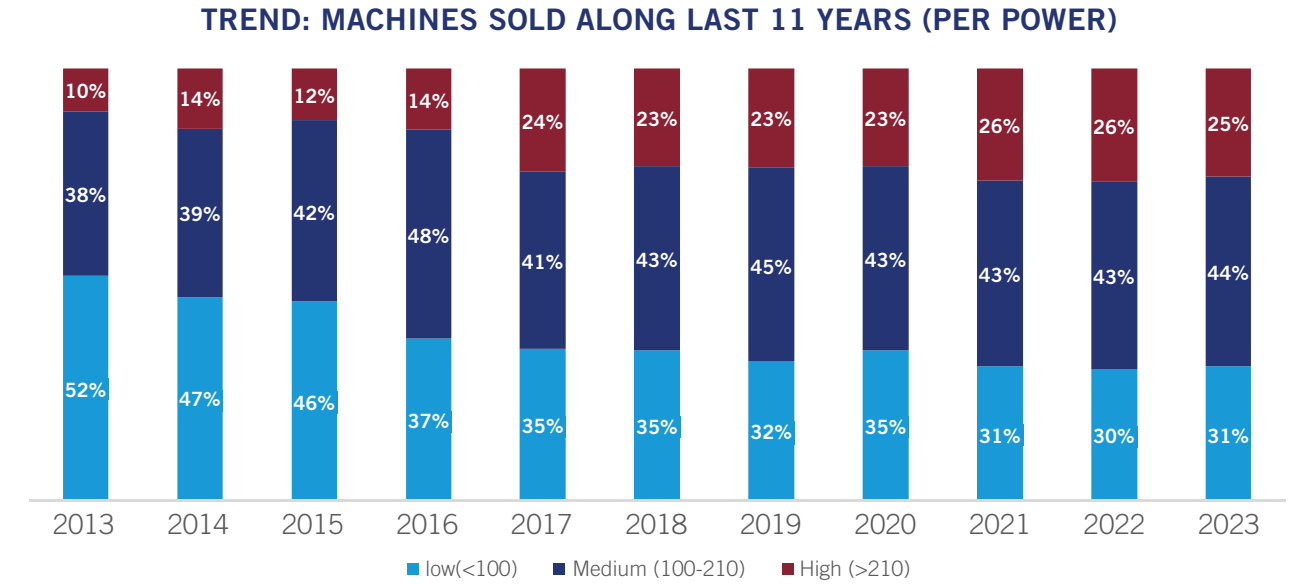
AGRICULTURAL MACHINES

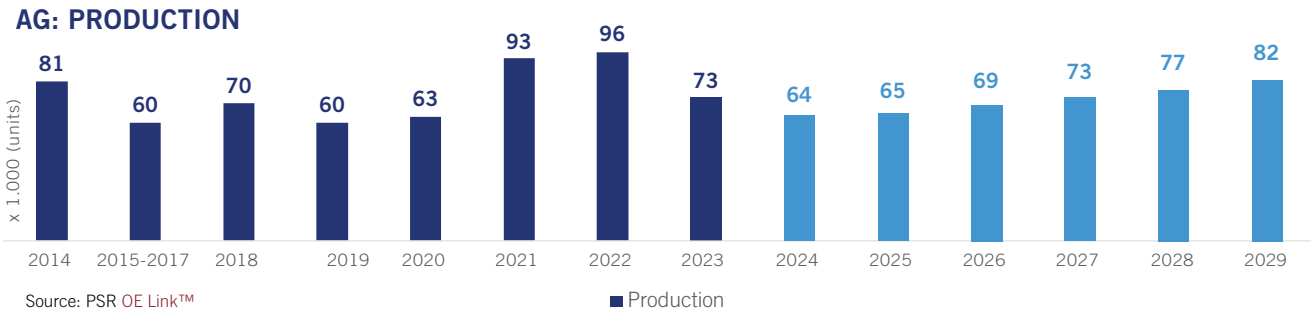
Brazil. Overall, the agricultural segment keeps doing well and Brazil is taking advantage of being one of the largest agricultural commodities producers in the world.

2024 was a challenge for Ag machines for several reasons:



Source: CONAB / EMBRAPA | PSR





Source: PSR OE Link™

South America/Brazil: Uncertain Global Issues Make Brazil 2025 Economy Challenging

Continued from page 38

- Grain harvest dropped 6% compared to 2023
- Commodities prices, such as soybean and corn, are at the lowest level in the last two years.
- Reduction of agricultural machines exports, mainly to Argentina.
- Machine power is increasing, reducing the need for machines units.

A small recovery of 3.0% is expected in 2025 since a record harvester is planned for 2025, and the harvester in Argentina is doing well too, but interest rates and credit availability became a barrier for growth.

The Impact of the tariff dispute between the US and China, can be favorable to Brazil by increasing exports to China, which would improve financial position of Brazilian´s farmers.

Additionally, large properties are concerned with reducing CO2 emissions, which need new and modern machines. The implementation of 5G will provide more opportunities for connected machines which will provide productivity increases.

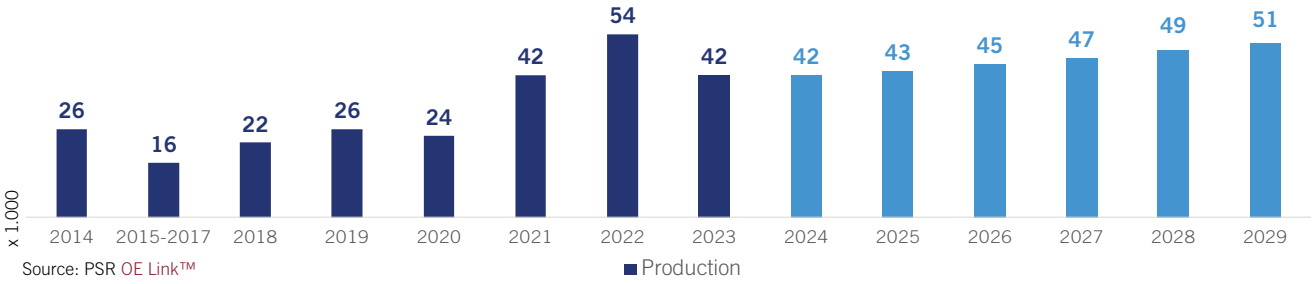
Argentina. Machine production dropped -20% in 2024 but is expected to recover +3% in 2025. The recession drove farmers to keep current machinery in 2024, and also impacted imports from Brazil.

CONSTRUCTION MACHINES.

Brazil, as the hub of production for South America region, produced 54,000 units in 2022, which was way above the former record of 32,000 units produced in 2013.

In 2024, high interest rates impacted construction activities as well as the AG segment where CE are

CE: PRODUCTION



Source: PSR OE Link™

South America/Brazil: Uncertain Global Issues Make Brazil 2025 Economy Challenging

Continued from page 39

used too. OEMs with local production are facing tough competition with imports from China due the low price of Chinese machines.

Additionally, exports are declining due to the economic problems in the country and the penetration of Chinese machines. Construction activities had a good level of activities in 2024 due to the government program to build small houses for low-income people.

The forecast is for small growth for 2025, but attractiveness to foreign investors in infrastructure opportunities, as well as an increase of mining activities due to diversification to highest value ores such as cooper and other rare metals can potentially increase this growth.

On the other hand, interest rates and credit availability are the most important barriers to growth in this segment.

The introduction of 5G as well as initiatives by mining and steel mills to reduce CO2 emissions will also require replacement of old machines.

RECREATIONAL PRODUCTS

The price increase of LV and fuels plus e-commerce activities boosted the motorcycles segment in Brazil.

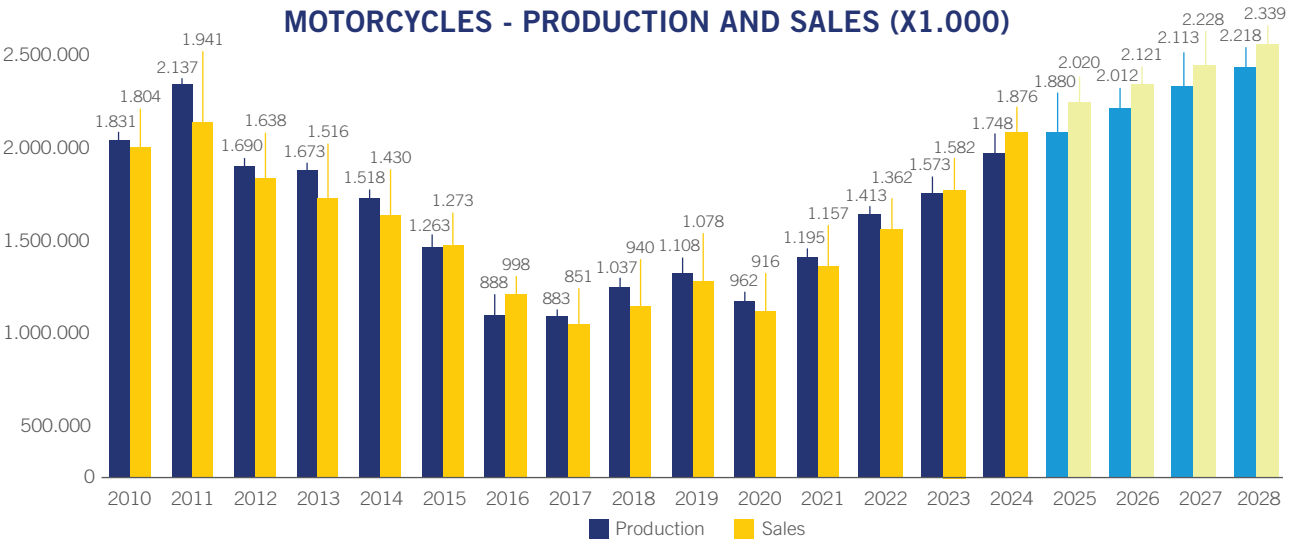
Production kept growing in recent years. 2024 growth was 11% over 2023, and the 2025 forecast is 8% over 2024, and we expect 2 million units to be reached in 2026.

Motorcycles produced in Brazil already use fuel injection, so PROMOT 5 legislation has not impacted volumes.

In Colombia, motorcycle production in 2024 was 5% over 2023 and the forecast is for a growth of 3% in 2025.

In Argentina, the segment was flat in 2024 but will start recovery of + 3% in 2025.

MOTORCYCLES - PRODUCTION AND SALES (X1.000)



South America/Brazil: Uncertain Global Issues Make Brazil 2025 Economy Challenging

Continued from page 40

INDUSTRIAL

Industry GDP will grow in 2024. Since there is a mix of products in this segment not linked to industry, our forecast is in the range of 2% for 2024. There is a remarkable change in the production level of Forklifts in Brazil due the penetration of Electrical units powered by Li batteries imported from China.

Brazilian OEMs are launching similar models in Brazil. At same time, the share of Electrical models will increase over the IC powered units. This is not considered yet in our forecast.

Lift Trucks sales in Brazil were in the range of 50,000 units but only 25% were produced in Brazil. The difference is due to imports of electrical units with Li batteries from China.

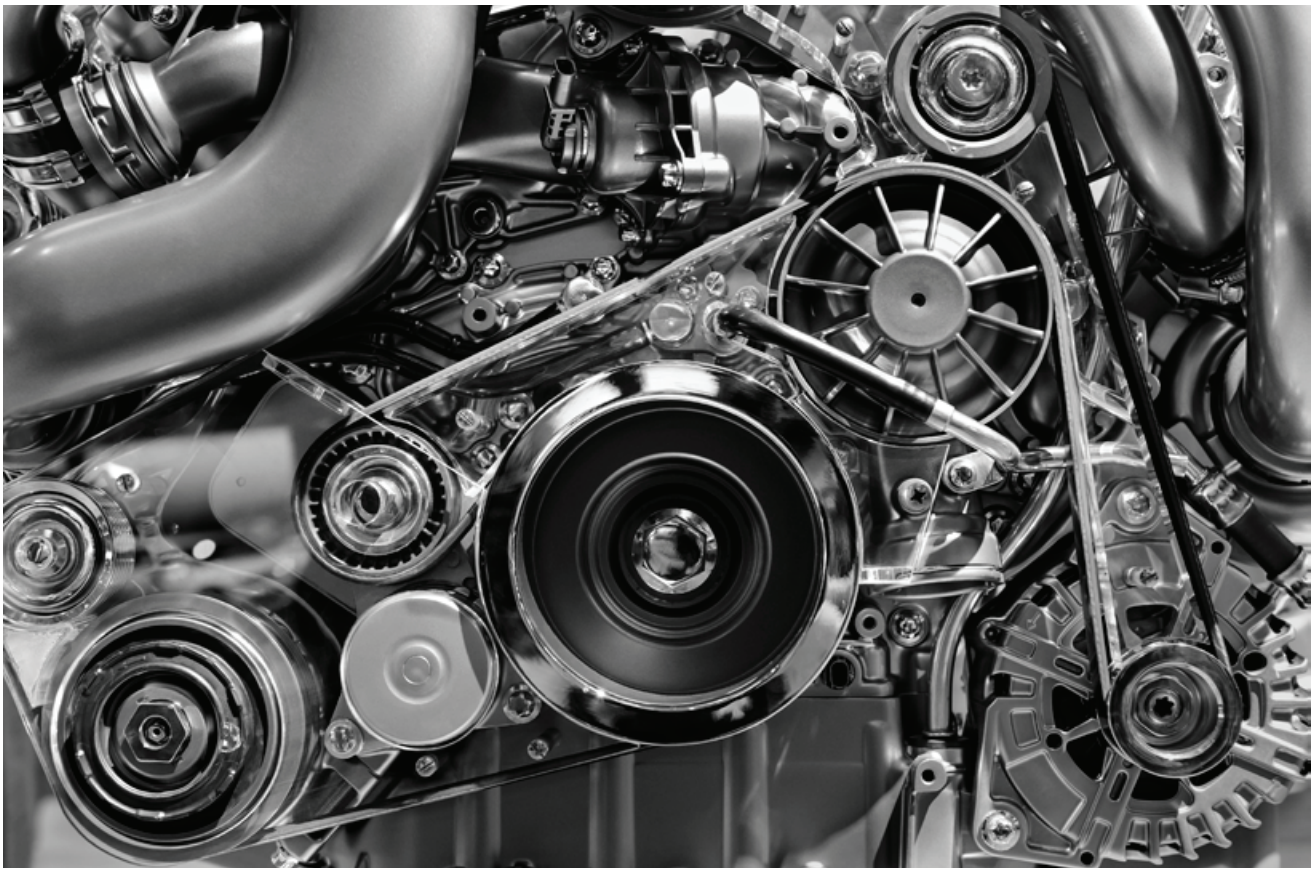
POWER GENERATION.

The risk of power shortage is over, now that the pandemic has ended, but the segment still grew 14% in 2023. In the coming years, due to an increase of generation capacity while demand remains flat, our forecast is low growth since electricity in the "free market" is cheaper.

RAILWAY

This segment maintained low demand in the last decade. Now, with new infrastructure plans announced by the government in September 2021 based on legislation MP 1065/2021, the segment grew +110% in 2021. Our forecast is an average of 40% growth per year for the coming years since the new government is keeping the plan for railway expansion. There was an increase in 2024 vs 2023, mainly due to low demand in the last year, but there is no investment from the government side to increase the demand.

Lack of legislation to build railways in indigenous lands is the most important barrier to accelerate grow in this segment. **PSR**



India

India's Auto Sector Shows Growth and Transition

India's automotive sector has cemented its position as the world's third-largest market, propelled by rising consumer demand, evolving preferences, and government-backed initiatives. Policies such as the Production Linked Incentive (PLI) scheme, FAME-II, and the PM E-DRIVE program have played a crucial role in driving domestic manufacturing that fosters EV adoption and encourages innovation. As the industry moves toward a more sustainable future, continued policy support remains essential.

The upcoming 2025-26 Union Budget, with a strong focus on eco-friendly mobility, technological advancements, and employment generation, is expected to further accelerate this momentum. Key measures could include targeted incentives for EV and battery production, GST reforms to enhance affordability, and infrastructure investments to strengthen local supply chains. Such initiatives aim to attract both domestic and international investments, reinforcing India's position as a global automotive hub.

However, one of the biggest challenges remains India's increasing dependence on imported lithium-ion cells, with imports surging from US$ 20.86 billion (₹18,000 crore) in FY23 to US$ 27.82 billion (₹24,000 crore) in FY24, largely from China. To address this issue, the government may introduce policies to support local battery production, aligning with the 'Aatmanirbhar Bharat' vision. The Ministry of Heavy Industries is also working on an incentive scheme to boost battery component manufacturing, ensuring long-term sustainability for India's EV ecosystem.

Additionally, economic incentives such as income tax deductions for EV buyers, road tax exemptions, and financing support could further accelerate green mobility adoption. With a well-balanced policy framework, India's auto sector is poised for sustained growth, seamlessly integrating innovation, sustainability, and self-reliance.

> *Key measures could include targeted incentives for EV and battery production, GST reforms to enhance affordability, and infrastructure investments to strengthen local supply chains.*

RECREATIONAL PRODUCTS

Motorcycle and Scooters. The higher-base Indian two-wheeler industry is set to grow at low single digit, supported by strong macroeconomic conditions, rising consumption, and steady rural demand. Higher MSPs, strong agricultural output, and last year's above-average monsoon, which boosted reservoir levels to 87% capacity, are expected to sustain growth. Additionally, easing inflation and potential rate cuts could further aid market momentum.

Last year saw a surge in premium motorcycles (125cc and above), which grew 19-21%, outpacing the 7-9% rise in commuter bikes. The scooter market also expanded, driven by urban demand and higher female workforce participation. However, the implementation of Onboard Diagnostics 2 (OBD2) Phase B norms in April 2025 could raise prices by 1-3%, temporarily slowing demand and inventory movement.

The industry is witnessing a strong shift towards premium models, including a rising preference for 125cc scooters over 110cc ones. Meanwhile, EV penetration increased to 6% despite reduced subsidies. With growing charging infrastructure, improved

Author

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India: India's Auto Sector Shows Growth and Transition

Continued from page 42

financing, and cost advantages over ICE models, EV sales are projected to rise 28-35%, with penetration reaching 7-7.5% this year.

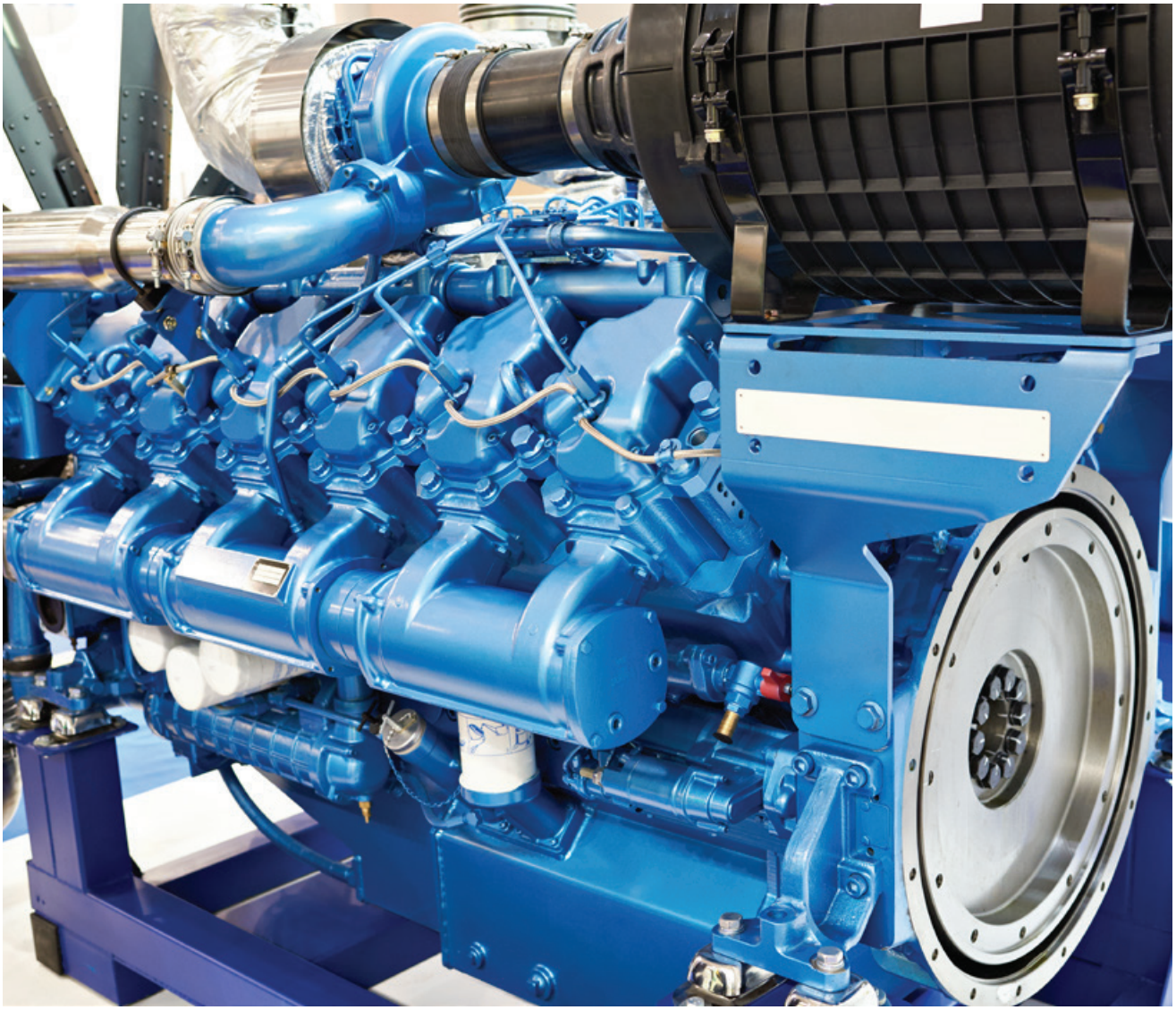
Three Wheelers. The Indian three-wheeler industry witnessed a strong recovery in 2024, fuelled by a rebound in exports and an accelerating transition towards electric mobility. Improved demand from key international markets, coupled with supportive government policies and rising fuel costs, further reinforced this shift.

Bajaj Auto strengthened its market position, leveraging a robust export performance, particularly in Sri Lanka, Kenya, and Nepal. The depreciation of the Indian Rupee also enhanced its competitiveness, allowing it to capture a larger share of overseas demand. In contrast, TVS Motors faced a significant setback, losing a substantial portion of its export market to Bajaj.

Looking ahead, Bajaj is aggressively betting on the electric three-wheeler segment, anticipating market consolidation. The company has set ambitious targets to increase its passenger segment share by 10% over the next two years. To achieve this, Bajaj has launched three new electric three-wheeler variants and plans to introduce up to four additional models within the next one to two quarters.

PASSENGER CARS, MINIVANS & SUVS

The Indian passenger car market showed remarkable resilience in 2024, setting new records in domestic sales despite multiple challenges. The SUV segment continued its dominance, capturing 55% of total passenger vehicle sales, driven by urban recovery, aggressive year-end discounts, and increasing adoption of CNG-powered models. Rather than EVs, alternative fuel options spearheaded growth, with Maruti Suzuki taking the lead by integrating hybrid technology into smaller cars. This strategy aligns with government initiatives positioning hybrids as a practical interim solution while the EV infrastructure gradually expands, making fuel-efficient vehicles more accessible to a wider consumer base.



India: India's Auto Sector Shows Growth and Transition

Continued from page 43

As the industry moves into 2025, growth will largely hinge on GDP trends and shifting consumer sentiment, which currently appears cautious. Automakers have already announced steep price hikes, making competitive pricing strategies essential to sustain demand in a post-pent-up demand phase.

While higher marketing spending may offer diminishing returns, a balanced approach combining strategic discounting and sensible pricing could help maintain sales momentum. Additionally, the introduction of mass-market EVs will broaden consumer choices, though their near-term impact on overall demand remains uncertain.

COMMERCIAL VEHICLES

The Indian commercial vehicle (CV) industry is set for a modest recovery in FY26, with wholesale volumes expected to grow 3-5% YoY after a flat FY25, which saw an early-year demand slow down due to general elections. Growth will be driven by infrastructure projects, stable rural demand, and rising replacement sales, particularly in the M&HCV segment, where the average fleet age is around 10 years. Increased government spending on roads, highways, and urban transport projects will further support demand.

Segment-wise, M&HCV trucks are projected to see marginal 0-3% growth in FY26 after a 7% contraction in the first nine months of FY25. LCVs may expand by 3-5%, recovering from a slight decline, while buses

India: India's Auto Sector Shows Growth and Transition

Continued from page 44

remain the strongest segment, expected to grow 8-10% following an 11-14% rise in FY25. The scrappage of old public transport vehicles is driving fresh demand, particularly from state transport undertakings, with new orders expected to exceed past records.

Diesel retains an 88% market share in YTD FY25, though CNG, LNG, and EVs are slowly gaining ground. The bus segment is leading EV adoption, with penetration reaching 5% due to government incentives and fleet electrification programs. Regulatory changes, such as mandatory AC cabins for trucks from October 2025, could increase vehicle prices by ₹20,000-30,000, impacting buyer decisions. However, investments in new vehicle models, alternative fuel technologies, and digital fleet solutions are expected to drive innovation and efficiency across the sector.

Manufacturers are ramping up capacity expansion and product development, with planned investments of US$ 674.54 billion (₹58-60 billion) in FY25-FY26. Focus areas include fuel-efficient powertrains, smart connectivity features, and compliance with evolving safety norms. With steady demand from core sectors such as logistics, mining, and construction, the industry is poised for gradual but sustained growth.

AGRICULTURAL

The Indian agriculture sector is poised for 3-5% growth this fiscal, driven by favorable monsoons, a 4.8% increase in kharif sowing, and higher MSPs. Strengthened rural cash flows, growing demand for agri-inputs, and increased government investment in rural infrastructure further support the sector's momentum.

The tractor industry is expected to expand by 4-5%, aided by improved rainfall and rising reservoir levels. While northern states like Haryana, Punjab, and Uttar Pradesh show strong sales, southern states are still recovering from last year's decline. A stable rural economy, higher mandi prices, and rising farm mechanization are expected to sustain long-term demand.

Mahindra & Mahindra is accelerating its global expansion with the OJA platform, targeting a twofold increase in exports to 36,000 units by FY26. The company is strengthening its presence in ASEAN and Europe, including key markets like Germany, Italy, and Spain.

Investments in new vehicle models, alternative fuel technologies, and digital fleet solutions are expected to drive innovation and efficiency across the sector.

CONSTRUCTION EQUIPMENT

The Indian construction equipment (CE) industry is experiencing strong growth, driven by large-scale infrastructure initiatives such as the National Infrastructure Pipeline (NIP), Gati Shakti, and government programs like PMGSY, Bharat Mala, and the Smart Cities Mission. Rising demand for excavators, backhoe loaders, and road construction machinery is supporting both urban expansion and rural connectivity. Private sector investments in real estate, industrial corridors, and renewable energy further boost the industry's momentum.

The introduction of Bharat Stage V emission and safety standards in 2025 will align Indian manufacturers with global benchmarks, enhancing export potential in markets like the EU and US. This regulatory shift is accelerating innovation in electric, hybrid, and alternate fuel-powered machinery, positioning India as a key player in sustainable construction solutions.

With increased infrastructure spending and major projects in highways, metro systems, and logistics corridors, the CE industry is set for sustained expansion. Domestic and international manufacturers are strengthening India's position as a global hub for CE innovation. As the country advances toward its 2047 development goals, the sector will play a crucial role in bridging infrastructure gaps and driving economic growth. **PSR**

V. Research Methodology

Power Systems Research (PSR) Research Methodology

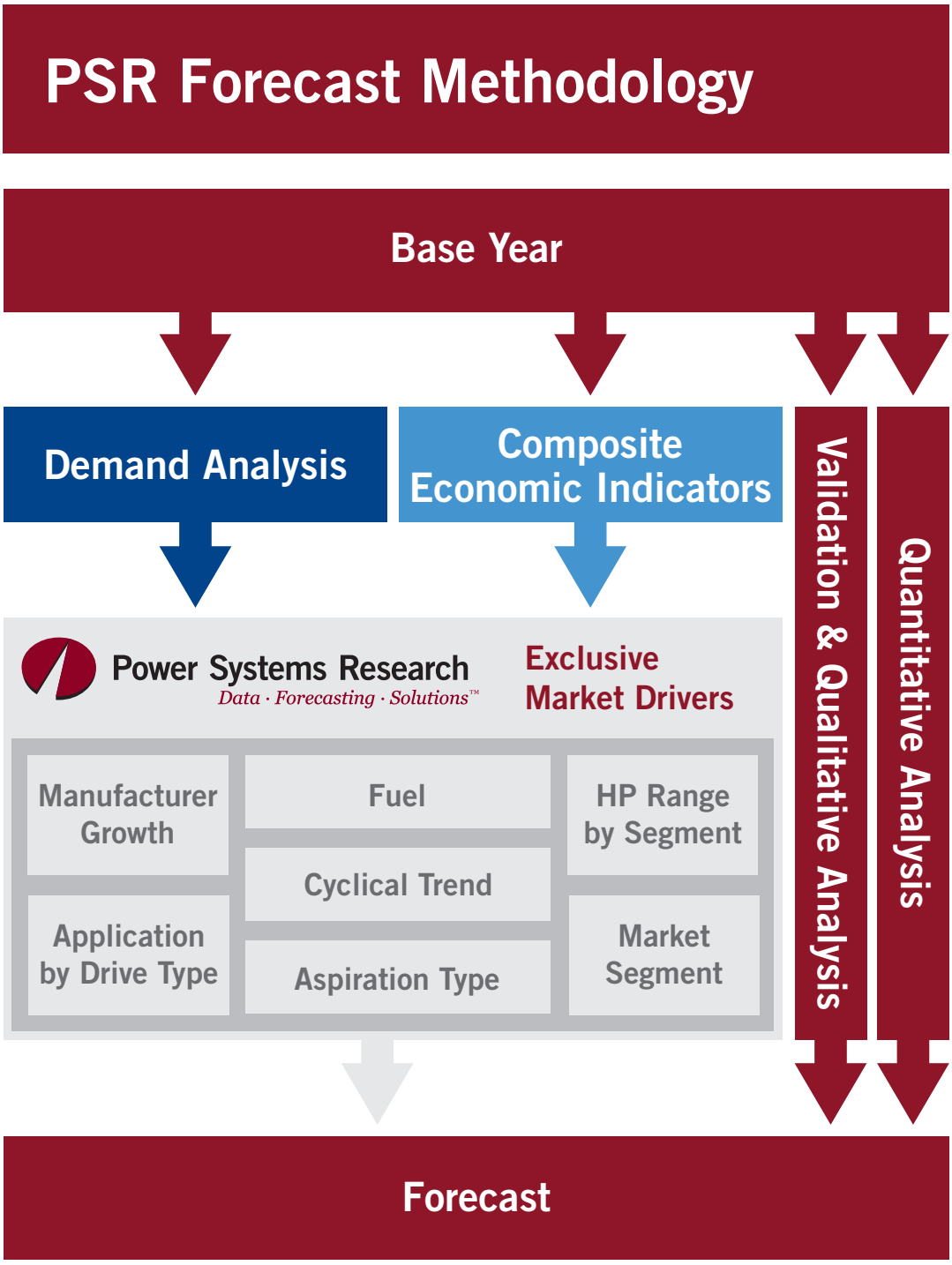
Research begins with the gathering of information from primary and secondary sources. Next, the PSR analyst team reviews and validates all data against industry benchmarks. If our analysts discover anomalies in the data, additional research and validation is performed before publishing.

PSR RESEARCH METHODOLOGY

VI. Forecast Methodology

Power Systems Research (PSR) Forecast Methodology

The analysis begins with the Base Year and key historical data then adds current and future economic indicators and market demand. Next, our exclusive market drivers are entered and the Power System Research proprietary algorithm is applied. Extensive analysis and discussion by our PSR Analyst team validates and produces the forecast.



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About Power Systems Research

Power Systems Research (PSR), established in 1976, is the leading source of data, analysis and forecasting on the global production of engines and engine-powered equipment, including class 8 vehicles. One of its databases, EnginLink,™ includes production figures down to the model level for OEMs in key market segments, such as commercial vehicles. PSR's global research network includes eight offices and stretches across 200 countries and four continents.

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