

In This Issue

Global Economic Recovery Looks Strong

Global MHV Production To Grow in 2022-2023

DataPoint: North America Rollers

Europe: Kohler Introduces Small Block Diesel

South America

- Bad Weather Hurts Brazil Ag Machinery Production
- Trailer Production Grows 33%
- Brazil Segments See 4% Growth in 2022

China: Construction Machinery Electrifies

Japan: Look for EV Growth Here

South Korea: LG Chem To Build Battery Plant

Southeast Asia: Japan Could Miss EV Growth

India: Semiconductor Incentive Plan Okayed

Russia:

- KAMAZ Launches 720 hp Engine
- Autotor To Produce EVs in 2023
- Ural To Begin Axle Production
- Ford Auto Plant Sold

About Us

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 [Click Here To Go To Page 1](#)

Global Economy

By *Yosyf Sheremeta, PhD, Director of Product Management and Customer Experience*

Global: Recovery Is Strong, but Uneven



Yosyf
Sheremeta

SUMMARY. The global economy performed very well in 2021 and continues to recover, along with trade, employment and incomes. But the revival is unbalanced, with regions/countries, businesses and people facing very different economic realities. Recent improvements also conceal structural changes, which means that some sectors, jobs, and technologies will not return to their pre-pandemic trends. Based on the most recent economic developments and trends, Power Systems Research remains somewhat optimistic about the global recovery.

Many of us hoped to be in the post-Covid phase by now, but it is evident that there is no quick way out. The pandemic has had a profound impact on the world economy, and it will continue to challenge established norms of life and business into the foreseeable future. As we start the new year, many challenges remain, new and old alike: re-surgency of COVID variants, restrictions on travel, supply chain challenges, shortages of materials/goods, inflation, and employment, as well as renewed geopolitical tensions across many parts of the globe.

Power Systems Research witnessed a strong economic recovery globally in 2021, despite regional differences. Output in most OECD countries has now either surpassed or is about to reach pre-pandemic levels, but lower-income economies, particularly those where vaccination rates are low, are at risk of being left behind. Furthermore, the rebound will continue to vary widely among different market segments.

Global inflation re-surfaced in 2021 and presents a real risk to economic recovery in all regions. The renewed inflationary pressure risks lasting longer than was expected a few months ago. The surge in retail and wholesale energy costs in late 2021 will undermine economic growth prospects for large parts of Europe and Northeast Asia well into 2022. Rising food and energy prices already have impact on low-income households in particular.

Government support in the form of fiscal policies and public health management are driving the economic rebound and largely explain variations in performance across countries. With the targeted monetary support to consumers and certain industries, the demand for products and services globally bounced back in 2021, and we expect this trend to continue in 2022.

The overall economic recovery performance has been universal and shows a positive trend globally, but how, when and if specific countries will rebound remains unclear. According to a report from the Organization for Economic Co-operation and Development as of December 1, 2021, global GDP growth was on track to be 5.6% in 2021, a downward revision of 0.1% since September 2021. According to the

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 [Click Here To Go To Page 1](#)

Global Economy

Continued from page 2



OECD report, GDP has already risen above its pre-pandemic level, but the recovery remains uneven with countries emerging from the crisis facing different challenges.

For the global outlook in 2022, the OECD left its forecast unchanged since September at 4.5 %.

To briefly summarize the global industrial outlook for 2022, despite ongoing challenges, it is clear that every market segment globally will continue on the recovery path and show positive growth vs. 2021.

Among all industry segments on the global scale, the On-Highway segments such as Minivan/SUVs and Passenger Cars are expected to grow at 4.7—5.7% globally in 2022. This rate is slightly improved from last quarter projections due to the expected improvement in supply chains. The car industry is one of the major manufacturing sectors being hit by shortages of intermediate goods such as semiconductors, and by bottlenecks in shipping and metals. Car production and sales have been struggling to meet the demand globally while prices for both new and used vehicles have risen in a number of countries.

Following a rapid deterioration of production levels in 2020, we expect global demand and production to continue to increase across the board in 2022, averaging 5.6% vs 2021 among all market segments, which is slightly lower than our previous projection from Q3 2021 (at 7.4%). The decrease in growth expectations is primarily driven by higher inflation rates, ongoing supply chain challenges as well as increased tension with global political agenda.

AGRICULTURAL. In comparison to all other industries, the agricultural machinery segment performed well during the pandemic. Last year, globally, the segment showed almost 10% growth vs. 2020. We expect growth to continue for the next few years. However, the growth rates will be slower than in 2021. We estimate the industry will add 2.8% globally, which is lower by 1.4% from previous Q3 2021 estimates. Overall equipment production volumes are smaller mainly due to changes in farming practices and are driven by the transition to larger equipment and machines.

CONSTRUCTION. The global Construction machinery sector showed a strong rebound last year at 9.5% vs 2020 and is well positioned for continues growth over the next few years.

As we expected, the growth in economic activities regained ground last year; currently, we estimate the global construction equipment market will grow 5.7% in 2022 vs. 2021. This estimate is higher from the previously forecasted growth from three months ago by about 1.8%

In terms of 2022 growth trends among regions, South/Central America, North America, and India will post the highest recovery rates in 2022 vs 2021, at +16%, 10% and +8.5%, respectively. The estimates for this sector are slightly improved from our previous quarter projections (Q3 2021).

[↑ Click Here To Go To Page 1](#)

Global Economy

Continued from page 3

Other Off-Highway segments, such as Industrial, Lawn and Garden and Power Generation, closely followed the latest global economic conditions last year and we expect the growth will follow the general recover trend as well.

Other **OFF-HIGHWAY** segments, such as **INDUSTRIAL, LAWN AND GARDEN** and **POWER GENERATION**, closely followed the latest global economic conditions last year and we expect the growth will follow the general recover trend as well. We estimate that recovery growth in 2022 vs 2021 in these segments will be +11.3%, +9.1% and 8.6%, respectively.

For Industrial and Lawn and Garden segments, these estimates are slightly improved from our previous numbers from Q3 2021. The Power Generation market made much bigger improvements in activities during past quarter. At the same time, we do not expect any significant growth in this sector, and we see it averaging 5-6% over the next few years.

For the **ON-HIGHWAY** sectors in 2021, we saw a solid recovery in production volumes across all product classifications, despite major supply chain disruptions. Cumulatively, across all on-highway sectors the overall rebound was 4.6% in 2021 vs 2020. As economic activity rebounds, we expect this trend across all product categories to accelerate in 2022. The Passenger Cars segment contributes almost 40% of the volume to the overall on-highway vehicles segment. We estimate a solid gain in growth in 2022 vs 2021 at 5.1% globally, which is lower by 1.5% from the previous estimates, mainly due to overall slower economic projections for 2022.

PASSENGER CARS. The car industry is one of the major manufacturing sectors being hit by shortages of intermediate goods such as semiconductors, and by bottlenecks in shipping and metals. Car production and sales have fallen globally while prices for both new and used vehicles have risen in a number of countries.

Globally, passenger car production is expected to grow at 5.7% in 2022 vs. 2021. India, Europe, North America, and South/Central America will contribute the most to the increase with rates of 9.6%, 6.6%, 10.1 % and 26.7%, respectively. Brazil and India are estimated to grow faster than other countries, mainly due to emerging market conditions. Furthermore, we will continue to see a transitioning trend towards SUVs, which will further impact growth in the passenger cars market.

RECREATIONAL PRODUCTS. This segment follows consumer-oriented products, and the pandemic has provided new opportunities, mainly due to the lock downs and improved work/life balance. Last year, this segment posted a 6.6% gain vs. 2020 and we expect the growth to continue at 4.5% in 2022 vs 2021.

Regionally, we expect North America and South/Central America to lead the growth in 2022 at 15.3%, and 39.3% vs 2021, respectively. **PSR**

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Global Commercial Vehicle Production

By *Chris Fisher*, Senior Commercial Vehicle Analyst

MHV Production Growth Expected in 2022-2023



*Chris
Fisher*

SUMMARY: Global demand for Medium and Heavy Commercial Vehicles (MHV) rebounded in 2021 but overall growth in the segment was flat. Going forward, we expect the growth to accelerate in 2022 and 2023. The exceptions to this rebound trend are in China and India, which continue to decline and sharply drive overall global production numbers into negative territory.

We expect global production volumes in 2022 to gain 3.7% vs 2021, with a positive trend in all regions, except for China, where we expect production volumes to be down -3.6% in 2022 vs 2021. China experienced a surge in demand during 2020 due to the change in emissions regulations, so 2021 was down significantly, about 20%.

NORTH AMERICA: While supply chain disruptions continue to negatively impact the commercial vehicle market, medium and heavy commercial vehicle production is expected to finish 2021 15.8% higher than 2020. The forecasted production growth rate is expected to continue to show improvement through 2023 as supply chain disruptions ease and truck capacity in the market begins to align with demand. The disruption in the supply chain and on-going issues with Covid will continue to impact the market this year.

EUROPE: Medium and heavy truck production is expected to finish up 17% over 2020. While the truck segment showed solid improvement over a low production base in 2020, bus demand was still soft last year. In 2022, production is expected to grow by 8% and continue to improve through 2024. However, continued supply chain disruptions and possible negative impacts from Covid will likely continue through much of this year.

SOUTH ASIA: Medium and heavy commercial vehicle production in India is expected to finish at 287,000 vehicles in 2021, an increase of 70% over 2020. Slight demand growth in India is expected in 2022 and 2023 before declining in 2024, partially due to its being an election year. In India, the focus is moving toward more infrastructure spending, which is good for the vocational market. However, increasing use of rail freight, worker shortages and increasing commodity prices will likely slow truck demand during the next few years.

SOUTH AMERICA: Medium and heavy commercial vehicle production is expected to increase by 55.6% in 2021 over 2020 and production is expected to further increase by 10.4% in 2022 over 2021. Continued supply chain disruptions along with uncertainty regarding the Omicron variant will likely impact the market throughout the year.

[↑ Click Here To Go To Page 1](#)

Global Commercial Vehicle Production

Continued from page 5

Automotive production in Japan is starting to see improvement with strong gains over October and November. While this is good news, the supply chain issues have yet to be resolved and the Omicron COVID variant will likely pose challenges throughout the year.

JAPAN/KOREA: Medium and heavy commercial vehicle production in Japan and South Korea is expected to increase by 16.7% in 2021 over 2020. In 2022, production in the region is expected to grow by 4.7% over 2021. Automotive production in Japan is starting to see improvement with strong gains over October and November. While this is good news, the supply chain issues have yet to be resolved and the Omicron COVID variant will likely pose challenges throughout the year. Component costs are expected to rise this year as a result of supplier's air freighting parts that they are unable to ship by Sea.

GREATER CHINA: The medium and heavy commercial vehicle market declined by approximately 20% in 2021 over 2020, partially due to a truck pre-buy ahead of the China VI emission standard implementation in July 2021. The cost of the emission technology for China VI vehicles are not offset with any significant improvement in fuel economy. This year, the market will still be unstable as the covid virus continues to impact the economy. Demand is expected to decline slightly through 2023 before a slow recovery in 2024. **PSR**

DATAPOINT: North American Rollers

6,245

By *Carol Turner*, Senior Analyst, Global Operations

6,245 units is the estimate by Power Systems Research of the number of rollers to be produced in North America (U.S., Canada and Mexico) during 2021.

This information comes from industry interviews and from two proprietary databases maintained by Power Systems Research: **EnginLink™**, which provides information on engines, and **OE Link™**, a database of equipment manufacturers.

Market Share: With 48.5% of total units produced, U.S. based Wacker Neuson leads in production of Rollers in North America. In second position is Caterpillar's combined plant totals of 21%; third, is Volvo Construction with 15.5%.

Export: Collectively, up to 50% worldwide.

Trends: In 2020, production of Rollers in North America dropped 31.5%, but production is expected to rebound 16% in 2021 over 2020. The decline in 2020 is solely based on COVID-19 related factors that impacted the global supply chain. There are material shortages (parts/supplies), shipping issues (moving goods is slow paced), material prices increased and workforce matters (due to company shutdowns or can't find workers).

With supply chain problems gradually being resolved, the 2021 increase is also attributed to the launching and demand for new, more versatile products, along with the stabilization of the overall economy, mostly regarding the housing/construction markets. The demand for rental machinery is also on the rise.

[Click Here To Go To Page 1](#)

Datapoint

Continued from page 6

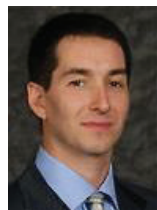


Many new models are boasting increased fuel efficiency that are desirable to operate. Tandem drum vibratory rollers account for nearly half of all compactors produced and sold each year that range from 5-8 metric tons. Expect the production of rollers in NA to increase an additional 10% by 2025. **PSR**

Europe Report

By *Emiliano Marzoli*, Manager European Operations

Kohler Engines Introduces Small Diesel



*Emiliano
Marzoli*

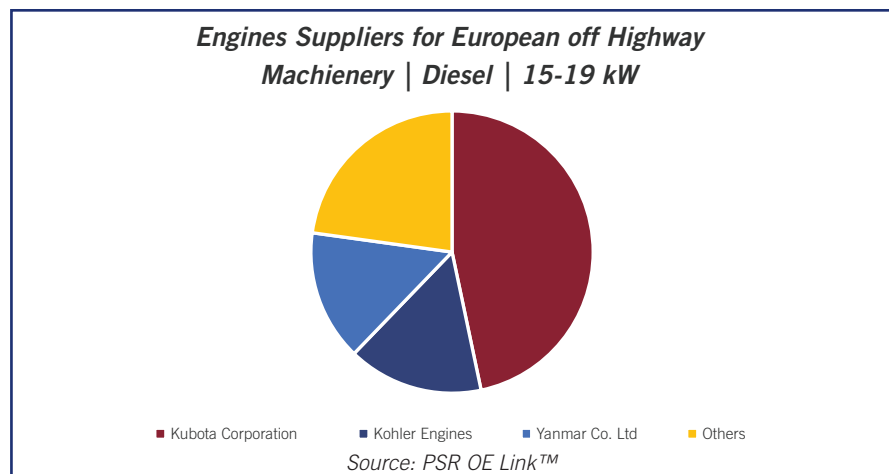
Kohler Engines has introduced a new series of small diesel engines: the KSD. At launch three models will be available:

- KSD 1403NA (Naturally aspirated)
- KSD 1403TC (Turbocharged)
- KSD 1403TCA (Turbocharged with aftercooler)

Later on, more variants will be released, completing further the series. Developed as a new electronic engine, this platform is capable of meeting all current emissions legislations, globally. All engines sit in the critical below 19 kW power node, and with 1.4L is a compact solution that can fit different applications.

One key aspect of the engine is the specific blend between indirect injection and electronic control. According to Kohler, this enables maximum engine performance, response and very low-end torque.

Read The Article



PSR Analysis: Around 35,000 diesel machines are built every year in Europe between 15 and 19 kW. These machines are used in Off Highway applications and are a critical market in the European economy.

 [Click Here To Go To Page 1](#)

Europe Report

Continued from page 7

With this new engine series, Kohler expects to attract new customers and be more competitive. Considering that the engine family will be able to accommodate an even larger basin, once all the models will be launched, we expect Kohler to increase their reach and market share in the coming years.

According to our database OE Link™, Kohler is the second largest supplier of diesel engines between 15 and 19 kW in Europe, second only to Kubota. **PSR**

Brazil/South America Report

By Fabio Ferraresi, Director Business Development-South America

Bad Weather in Brazil Jeopardizes Ag Machines Market



*Fabio
Ferraresi*

During the last week of 2021 and the first week of 2022, grain crops faced unfavorable weather conditions. At Mato Grosso and Paraná Regions the lack of rain has been the big problem, while in states like Tocantins and Bahia the problem is an excess of rain, influenced by the climatic phenomenon called La Niña. In some states, such as Paraná, the harvest forecasts are 40% lower than the initial forecast and the losses are estimated at US\$ 5 Billion in Paraná.

Source: *Valor Economico* [Read The Article](#)

PSR Analysis: The loss in Agribusiness affects farm cash flow directly and farmer's ability to invest in Ag Equipment. Moreover, the mood of farmers could be negatively impacted in a year with new waves of COVID 19 and with political instability due to elections. Ag equipment forecasting in 2022 may be challenging and sales results may surprise OEMs, many who expect double digit growth.

2021 Trailer Industry Grows 33% to 163,000 Units

The Brazil trailer industry registered 163,000 new license plates in 2021 vs. 122,000 in 2020, growing 33.5%. The result could have been even better since the segment was affected by a lack of components, such as steel, tires, etc. Export sales climbed to 4,600 units vs. 2,100 units in 2021.

Source: *M&T / Anfir* [Read The Article](#)

PSR Analysis: The growth is in line with truck sales that confirm the health of the transportation industry. The growth of exports confirms the recovery of key markets of Trailers and MHV.

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Brazi/South America Report

Continued from page 8

According to Abimaq, the total machine segment, that includes Construction Equipment, Agricultural Equipment, Power Gen-Sets, Industrial Equipment and others, grew 20% in 2021 and should grow more than 4% in 2022.

Off-Highway, Industrial Sectors See 4% Growth in 2022

According to Abimaq, the total machine segment, that includes Construction Equipment, Agricultural Equipment, Power Gen-Sets, Industrial Equipment and others, grew 20% in 2021 and should grow more than 4% in 2022. When breaking down by subsegment, ABIMAQ see the segments impacted by infrastructure growing around 15% and the segments impacted by Agriculture growing pushed by the harvest growth.

Source: *M&T / Abimaq* [Read The Article](#)

PSR Analysis: The just released projections are in line with the fourth quarter projections we did for 2022. Our Agricultural Equipment forecast is more conservative than that released by ABIMAQ due to risk factors we see impacting this segment. Indeed, we are already seeing negative news at the harvest due to weather conditions as we are reporting in this PowerTALK Edition. **PSR**

China Report

By Jack Hao, Senior Research Manager - China

In 2025, China's Construction Machinery Electric Drive Products May Reach 25%



*Jack
Hao*

Electrification has become one of the important directions of green development within China's construction machinery segment. Domestic construction machinery leaders have increased the development of equipment electrification and have launched a variety of electrification products.

Some professional organizations predict that by 2025 the penetration rate of main products may reach 25%. The electrification of construction machinery initially replaces conventional diesel engine drive with electric drive and then the hydraulic device is replaced by an electric device. Concrete mixers, truck cranes, muck trucks, excavators and wheel-loaders are the most easily electrically driven products, especially for small construction machinery.

Source: *CLS* [Read The Article](#)

PSR Analysis: At present, the subcategories applicable to closed and fixed working environments such as ports, municipal vehicles and mines have taken the lead in moving towards electrification. Most Off- Road products face several challenges. One is that the capacitance is not enough and a lithium iron phosphate battery has a service life of less than five years. There is a big gap compared with traditional diesel engines.

 [Click Here To Go To Page 1](#)

China Report

Continued from page 9



On the other hand, the use cost has been reduced, but the manufacturing cost or one-time purchase cost is still very high.

At the same time, construction conditions of electric construction machinery charging pile limit the scope of electric machinery. Mines and other remote construction sites face these challenges. The current use environment is not particularly positive, because the charging conditions at the work site are generally not very good.

The implementation of China IV emission standards of the Off-Road segment will bring benefits to the electrification of the construction machinery from the policy level. How to reduce product cost is still a difficult problem for enterprises, and battery cost may be a problem for many enterprises.

Some other issues such as poor battery safety, short mileage and insufficient supporting charging equipment will also be the key to technical breakthrough in the future. **PSR**

Far East: Japan Report

By Akihiro Komuro, Research Analyst, Far East and Southeast Asia

Look for Unprecedented Launch of EVs in Japanese Market



*Akihiro
Komuro*

The Japanese market in 2022 will be greatly affected by two factors: COVID-19 in its third year and the semiconductor shortage. Despite this, companies are making steady progress in their approach to the industrial issues of the environment and safety, and in particular, the full-scale development of EV products is positioned as a major step toward the realization of carbon neutrality by 2050. The launch of EVs in the Japanese market in 2022 will be on an unprecedented scale.

Nissan will start selling its new model "ARIA" at the beginning of the year. Nissan and Mitsubishi are also jointly developing a mini-EV which they plan to launch early in 2022. Toyota and Subaru will also gradually roll out their first jointly developed SUV in Japan and overseas markets starting in mid-2022. Toyota's "bZ4X" and Subaru's "SOLTERRA" are the best-selling mid-size SUV EVs globally and will be the touchstone for future EV development. Honda will launch its first two Honda-brand EVs in China in the spring of 2022. These are also SUVs and will be marketed under the name "e:NS1" by Dongfeng Honda and "e:NP1" by Guangqi Honda, both of which are local joint ventures, and will be considered for export from China to global markets.

In Japan, where high-performance HVs are favored, it is still difficult to increase sales of EVs at a rapid pace. In order to break through this situation, the

[↑ Click Here To Go To Page 1](#)

Far East Report

Continued from page 10

Japan's domestic auto market is already starting to shrink, and it will become more difficult to develop a growth strategy as the birthrate declines and the number of working people decreases.

government is expanding the subsidies for new EVs in the FY2022 budget. The subsidy will be doubled to a maximum of 800,000 yen for models that meet certain conditions, such as having an external power supply function. These subsidy expansion measures were also included in the FY2021 supplementary budget and have already been applied.

The new car market will continue to be uncertain in 2022: the first half of the domestic new car market in 2021 (January to June) was higher than the same time in 2020, but from July onward, the market failed to reach the same level as 2020. This was due to the significant impact on parts procurement from Southeast Asian countries.

As for semiconductors, some companies believe that procurement will recover in Q1 2022. Suzuki said it does not expect to receive all of its planned supply in fiscal 2022, and some observers believe that the tightness will continue for a long time. It is becoming quite difficult to restore the new car market to the 5 million unit level in 2022.

Source: Response

PSR Analysis: Japan's domestic auto market is already starting to shrink, and it will become more difficult to develop a growth strategy as the birthrate declines and the number of working people decreases. However, Japanese manufacturers still have a large presence outside of Japan, and I think this article is very good for understanding exactly where Japanese manufacturers are today.

For a long time, Japanese manufacturers have been regarded as lagging behind their foreign counterparts in electrification. The reason for this assessment is that Toyota has been obsessed with PHVs and has not been proactive in EVs. In this context, it was sensational that Toyota unveiled 16 EV models at once in December last year.

The highlights of the press conference:

- 8 trillion-yen investment in electrification from 2022 to 2030
- 4 trillion-yen for EVs and 2 trillion-yen for onboard batteries
- Launch 30 EV models by 2030 (16 models unveiled on the day of the press conference)
- Annual EV sales target is 3.5 million units
- All Lexus cars to be EVs by 2035
- Installation of charging facilities at 5,000 Toyota dealers in Japan by 2025

Considering Toyota's stance to date, this is a very dramatic announcement, and 2022 may be the first year of EVs for Toyota.

Of course, not only Toyota, but other Japanese manufacturers cannot ignore this trend. The key word is collaboration with other companies. This does not only mean joint development between automakers, but also synergy with sensor manufacturers and electronics companies, otherwise it will be difficult to make up for the gap that has been opened up with foreign manufacturers.

 [Click Here To Go To Page 1](#)

Far East Report

Continued from page 11



Procurement of batteries, which we have discussed in previous articles, will also be a major issue. The market where a company's stock price rises simply by announcing its EV strategy is over. From now on, a company will be judged on its profitability, and whether it can turn EVs into profits. **PSR**

極東 > 日本レポート:

小室 明大 – 極東及び東南アジア リサーチアナリスト

日本市場に空前のEV投入…コロナ禍と半導体不足の挟撃続く

2022年の日本市場は、3年目のコロナ禍と半導体不足という2つの外乱に活動が大きく左右される年となる。そうしたなかでも各社の環境と安全という産業課題へのアプローチは着実に進み、とりわけEVの本格的な商品展開は、2050年のカーボンニュートラル実現に向け、大きな1歩を踏み出す年と位置付けられる。とくに2022年の日本市場へのEV投入は、かつてないスケールとなる。

日産は、年初から新モデル『アリア』の販売を始める。日産と三菱は軽自動車のEVも共同開発しており、2022年度の早期に登場させる計画だ。トヨタとスバルも、共同開発第1弾となるSUVを2022年半ばから日本や海外市場に順次展開していく。トヨタは『bZ4X』、スバルは『ソルテラ』、これらはグローバルで売れ筋のミッドサイズSUVのEVであり、今後のEV展開の試金石となる。ホンダは中国で初となるホンダブランドのEV2車種を2022年春に発売する。これもSUVであり、現地合併の東風本田から『e:NS1』、广汽本田からは『e:NP1』の名称で売り出し、中国からグローバル市場への輸出も検討する。

高性能なHVが支持されている日本では、EVの急ピッチの販売増は依然として難しい。政府はそうした状況を打破する狙いから、2022年度予算でEVへの新車補助金を一気に拡充させる。外部への給電機能があるなど、条件を満たすモデルで最大80万円と、従来比で倍増となる。こうした補助金拡充策は、2021年度補正予算にも盛り込まれており、すでに適用されている。

新車市場は2022年も不透明な情勢が続く。2021年の国内新車市場は、前半の1～6月はいずれも前年同月を上回ったものの、逆に7月からは前年同月に届かないまま終わった。東南アジア諸国からの部品調達に大きな影響が出たことによる。半導体については一部の企業で年明けから調達が回復するという見方もある。ただ、スズキの社長曰く「2022年度も計画に対して100%の供給が受けられるとは考えていない」とあるように、ひっ迫は長期化するとの観測もある。2022年の新車市場が500万台ラインに復元するのは、相当厳しい情勢となっている。

出典:レスポンス (一部筆者により元記事内容を改編しました)

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Far East Report

Continued from page 12

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PSR 分析: 日本国内の自動車市場はすでに小さくなり始めており、今後は少子化と労働人口の減少に伴って成長戦略を描くことは難しくなっていく。だが依然として国外での日系メーカーの存在感は大きく、日本メーカーの現在地を正しく理解するうえでこの記事は非常に良質だと私は思う。

電動化について日系メーカーは海外メーカーとの比較で遅れている、と長い間評価されてきた。トヨタがPHVに拘り続けており、EVに積極的ではない、というのがその評価の原因だった。その中で昨年12月にトヨタが一気に16車種のEVを披露したのはセンセーショナルだった。会見の要旨は、

- 2022～2030年で電動化に8兆円投資
- 内訳はEVに4兆円、車載電池に2兆円
- 2030年までにEVを30車種投入（うち16車種は会見当日に発表）
- 年間EV販売を350万台に
- 2035年にレクサスを全車EV化
- 2025年までに国内のトヨタ販売店5,000店に充電設備を設置

という内容だった。今までのトヨタの姿勢を考慮するとこれはとても劇的な発表であり、2022年がトヨタにとってEV元年と言えるのかもしれない。もちろん、トヨタだけではなく他の日系メーカーもこの流れは無視できない。キーワードとなるのは上記記事にもあるように、他社との協業だ。自動車メーカー同士の共同開発だけを指すのではなく、センサーメーカーやエレクトロニクス企業とのタッグをうまく組んでシナジーを得ないと、すでに海外メーカーと大きく開いた差を取り戻すのは難しい。すでに過去記事でも取り上げたバッテリーの調達も大きな課題になる。すでにEV戦略を公表するだけで株価が上がる相場は終わっている。今後はEVを利益に出来るかという、収益性を見極められることになる。**PSR**

Far East: South Korea Report

By Akihiro Komuro, Research Analyst, Far East and Southeast Asia

LG Chem To Build Plant for Auto Battery Materials in Korea

LG Chem says it will build a cathode material plant for automotive battery materials in Gumi, central South Korea. LG Chem has the second largest automotive battery business in the world. They will continue to invest in increasing production in the materials field to meet the increasing demand and plans to start mass production by 2025 and will build a dedicated line for cathode materials with high nickel content, called NCMA, which can increase the output of batteries.

LG Chem's new plant will be its fourth; it has two cathode material plants in operation in Korea and one in China. The current production capacity is 80,000 tons. LG Chemical produces its own cathode materials, separation membranes,

[↑ Click Here To Go To Page 1](#)

Far East Report

Continued from page 13

LG Energy, which is growing rapidly against the backdrop of the global shift to EVs, is scheduled to be listed on the Korean stock exchange in late January, and LG Chemical, the parent company of LG Energy, is also searching for a new pillar of growth

and adhesives, and supplies them to LG Energy Solution, its battery subsidiary. LG Chem is working with Toray Industries, Inc. to secure the amount of separation membrane to be procured.

LG Energy, which is growing rapidly against the backdrop of the global shift to EVs, is scheduled to be listed on the Korean stock exchange in late January, and LG Chemical, the parent company of LG Energy, is also searching for a new pillar of growth. Judging that demand for battery materials will continue to grow for the time being, the company decided to invest in increased production of key components.

Source: The Nikkei

PSR Analysis: LG has been very active. LG Energy Solutions has agreed to team up with Stellantis in North America to establish a joint venture to produce batteries for EVs. This is the second battery joint venture for LG Energy Solutions in North America. It has already formed a joint venture with GM. As for other Korean companies, SK Innovation announced a joint venture with Ford and Samsung SDI announced a joint venture with Stellantis. All three Korean battery giants have now entered into a joint venture with the North American Big Three and have decided to build a large-scale battery plant.

The establishment of a battery materials plant in Korea, as announced in the article above, is clearly aimed at increasing their international presence in the battery field where demand is expected to grow.

The cathode material, which accounts for about 40% of the battery production cost, is an important material that determines the battery's capacity, life span, and other important performance characteristics. The cathode material, together with the anode material, separation membrane, and electrolyte, is called the four major battery materials.

The construction of the Gumi plant is a dedicated line for NCMA (nickel-cobalt-manganese-aluminum) cathode materials for next-generation EV batteries, which LG Chem is intensively developing. The NCMA cathode material is a product that integrates LG Chem's best material technology. It is characterized by an increase in the nickel content, which determines energy density, to the 90% level, and by the use of aluminum, which enhances safety and provides excellent stability and output.

The battery environment for EVs in Korea, led by LG Chem, is growing rapidly, but at the same time, we hear that the shortage of human resources is becoming more serious.

However, in the long run, this problem will be solved. As it is common for growth industries to naturally attract talented engineers. In the past, there have been some problems, such as a large-scale recall due to battery ignition problems, but these problems have been overcome and the presence of Korean battery manufacturers is expected to increase in the future. **PSR**

 [Click Here To Go To Page 1](#)

Far East Report

Continued from page 14



極東 > 韓国レポート:

小室 明大 – 極東及び東南アジア リサーチアナリスト

LG化学、韓国に車載電池材料の新工場

韓国LG化学は1月11日、韓国中部の亀尾（グミ）市に車載電池材料の正極材工場を新設すると発表した。投資金額は5000億ウォンで、年産能力はEV50万台分に相当する6万トンとする。LG化学は世界2位の車載電池部門を抱える。需要増に対応し、材料分野でも増産投資を続ける。2025年までに量産を始める計画だ。電池の出力を高められる「NCMA」と呼ぶニッケル含有量の高い正極材の専用ラインを構築する。

LG化学は韓国国内に2カ所、中国に1カ所の正極材の工場を稼働させており、新工場は4カ所目となる。現在の生産能力は8万トン。新工場の建設と既存工場の追加投資で、2025年には生産能力を17万トンに引き上げる。LG化学は電池部材のうち、正極材と分離膜、接着剤を自前で手掛け、電池子会社のLGエネルギーソリューションに供給している。分離膜は東レと組むことで、調達量の確保を急いでいる。

世界的なEVシフトを背景に急成長しているLGエネが1月下旬、韓国取引所に上場することが決まっており、親会社のLG化学も新たな成長の柱を模索中だ。当面は電池素材の需要拡大が続くと判断し、主要部材の増産投資を決めた。

出典: 日経（一部筆者により元記事内容を改編しました）

PSR 分析: LGの動きが非常に活発だ。LGエナジーソリューションは北米でステランティスと組み、EV向けバッテリーを生産する合併会社を設立することに合意した。LGエナジーソリューションの北米でのバッテリー合併は、ステランティスの前にGMとも合併が成立しており、これで二つ目の事例となった。その他の韓国勢は、SKイノベーションがフォードと、サムスンSDIがステランティスとの合併を発表している。韓国のバッテリー大手3社は、これで揃って北米ビッグ3との合併にこぎつけ、大規模なバッテリー工場の建設が決まった。

上記記事内で発表された韓国国内での電池材料工場設立も、明らかに今後需要が伸長するバッテリー分野における国際的なプレゼンスを高めようという狙いが背景にはある。バッテリー生産原価の約40%を占める正極材は、バッテリーの容量や寿命など、重要性能を決定する重要素材で、負極材や分離膜、電解液と共に、バッテリーの4大素材と呼ばれている。今回着工した亀尾工場はLG化学が集中育成している次世代電気自動車バッテリー用NCMA（ニッケル・コバルト・マンガン・アルミニウム）の正極材専用ラインで構築される。NCMA正極材は、LG化学の最高素材技術力が集約された製品で、エネルギー密度を決定するニッケル含量を90%水準に増やし、安全性を強化するアルミニウムを採用し、安定性と出力が優れているのが特徴だ。

このようにLG Chemを筆頭に韓国のEV向けバッテリー環境は非常に速く活発に成長を続けているが、一方で、人材不足が深刻化しつつあるという声も聞

[↑ Click Here To Go To Page 1](#)

Far East Report

Continued from page 15

While Chinese and Korean manufacturers are aggressively entering the market, Japanese manufacturers, which hold an 80% share of the new car market, have not made any significant moves.

く。だが、長期的にはこれも解消していくだろう。成長産業には自然と優秀な技術者が集まるのは世の常だからだ。過去にはバッテリーの発火問題で大規模なリコールを実施するなどのトラブルもあったが、そうしたことも乗り越えて今後も韓国/バッテリーメーカーの存在感はますます高まることが予想される。PSR

SouthEast Asia: Indonesia and Thailand Report

By Akihiro Komuro, Research Analyst, Far East and Southeast Asia

Japan, Don't Miss Out On Southeast Asia's Shift To EVs

Competition in the development of EVs is fierce, and the momentum for their introduction is growing in Southeast Asia. While Chinese and Korean manufacturers are aggressively entering the market, Japanese manufacturers, which hold an 80% share of the new car market, have not made any significant moves.

Although the COVID-19 disaster has brought the market to a standstill, Southeast Asia, with a population of 660 million and a rising middle class, will continue to be a promising growth market.

A proactive EV strategy is required to protect the current market dominance. In Indonesia and Thailand, the two largest markets in the region, Japanese cars have a 90% share of the market. However, it is only the Chinese and South Koreans who are providing the buzz about EVs.

In Indonesia, South Korea's Hyundai Motor Co. will begin producing EVs in March at its completed vehicle plant that recently went into operation. For the time being, it will rely on imports for key components, but it is building a plant for mass production of onboard batteries in collaboration with LG Group, another Korean electronics giant.

In Thailand, China's SAIC Motor Group and Great Wall Motor have already started selling EVs. The latter plans to start mass production of EVs in 2023 at a plant it acquired from GM in the US. Compared to China and South Korea, which are trying to secure a scale of production with an eye to exports, Japan is generally cautious, with Toyota and Mitsubishi considering local production of EVs in Thailand starting in 2023.

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[↑ Click Here To Go To Page 1](#)

Southeast Asia Report

Continued from page 16

If Japan continues to give reasons why it can't, it will find itself in an "innovation dilemma" where the winners of existing businesses lag behind in entering new ones.

There is a reason for this reticence. In Southeast Asia, thermal power generation using coal and natural gas is the main source of electricity, and the government claims that increasing the number of EVs alone without the support of renewable energy sources will not reduce greenhouse gas emissions. There is also a delay in the development of charging facilities. There seems to be a desire to prioritize the production of EVs in Europe, the U.S. and China, where environmental regulations are stricter and purchasing power is higher, while leaving Southeast Asia as a production base for gasoline and diesel vehicles.

However, the demand for the introduction of EVs by the governments of various countries is not only for environmental measures, but also for the creation of next-generation industries. Chinese car manufacturers have begun to build their own charging facilities in Thailand.

If Japan continues to give reasons why it can't, it will find itself in an "innovation dilemma" where the winners of existing businesses lag behind in entering new ones, and Japan may see China and South Korea cut into its tiger markets. Japan needs to be more proactive in demonstrating its support for the shift to EVs in Southeast Asia while engaging in dialogue with the governments of other countries.

Source: The Nikkei

PSR Analysis: The views expressed in this article are exactly what I am concerned about. As I have mentioned many times in past PowerTALK™ News articles, there is a risk that the shift to EVs will result in the loss of the presence of Japanese manufacturers in the Southeast Asian mobility market, which has been built up through the great efforts of their predecessors, not only for automobiles but also for motorcycles.

The trust that the Japanese brand enjoys among local citizens today is very strong. This is only because the industry itself, including the maintenance network from dealers to repairers, has been nurtured and a system to respond to users' problems and concerns has been built locally. The fact that they listened to local demands and reflected them in their products was also significant.

However, Chinese and Korean companies, which have price competitiveness that far surpasses the products of such Japanese manufacturers, are looking for business opportunities by taking advantage of the preferential measures offered by Southeast Asian governments, such as EV subsidies and tax exemptions when attracting investment.

Southeast Asia, where purchasing power was weak and motorization was considered to be a long way off, no longer exists. Especially for EVs, there are abundant resources for battery materials, and the potential for the EV market to grow is high. Demand is particularly strong in urban areas, and if the right product with the right price and quality is introduced to the market at the right time, it will be accepted, even if it is not made in Japan. **PSR**

 [Click Here To Go To Page 1](#)

Southeast Asia Report

Continued from page 17



東南アジア > インドネシア・タイレポート:

日本は東南アジアのEV化に乗り遅れるな

開発競争が激しいEVは、東南アジアでも導入機運が高まっている。中国や韓国のメーカーが参入に積極的な一方、新車市場でシェア8割を握る日本メーカーの動きは目立たない。COVID-19禍で足踏みしているものの、人口6億6千万人を抱え、中間層が台頭する東南アジアは、今後も有望な成長市場だ。現在の市場優位を守るため前向きなEV化戦略が求められる。域内の二大市場であるインドネシアとタイに限れば、日本車のシェアは9割に達する。ところがEVに関して話題を提供しているのは中韓勢ばかりだ。

インドネシアでは韓国の現代自動車がこのほど稼働させた完成車工場で、3月からEVの生産を始める。基幹部品は当面輸入に頼るが、同じ韓国の電機大手LGグループと共同で、車載用電池の量産工場の建設を進めている。タイでも中国の上海汽車集団や長城汽車がすでにEVの販売を開始した。後者は米GMから取得した工場で、2023年からEVの量産に乗り出す計画だ。輸出も視野に入れて生産規模を確保しようとしている中韓に比べて、日本はトヨタと三菱が2023年からタイでEVの現地生産を検討しているくらいで、総じて慎重姿勢が目立つ。

及び腰には理由がある。東南アジアは石炭や天然ガスを使う火力発電が中心で、再生可能エネルギーの裏付けなしにEVだけを増やしても、温暖化ガスの排出は減らせないと主張する。充電設備の整備の遅れもある。環境規制がより厳しく、購買力も高い欧米や中国でのEV生産を優先し、東南アジアは他の新興国向けにもらんだガソリン車やディーゼル車の生産拠点として残したいという狙いもあるようだ。

だが各国政府のEV導入の要請は、環境対策だけでなく、次世代の産業創出の意味合いも大きい。中国車メーカーはタイで自ら充電設備の整備に乗り出した。

できない理由を並べていては、既存事業の勝者が新しい事業への参入で後れをとる「イノベーションのジレンマ」に陥り、虎の子の市場を中韓に切り崩される恐れが拭えない。各国政府との対話を重ねつつ、日本は東南アジアのEV化への協力姿勢をもっと積極的に示すべきだ。

出典: 日経 (一部筆者により元記事内容を改編しました)

PSR 分析: この記事で述べられている主張はまさに私が懸念していることと一致している。過去のPowerTALKでも何度も言及しているように、四輪だけでなく二輪も含めて、過去の先人たちが払った大きな努力によって築かれてきた東南アジアのモビリティ市場における日系メーカーの存在感が、EVシフトによって失われるリスクがある。

現地市民から得られている今日の日本ブランドの信頼はとても厚い。ディーラーから修理業者までのメンテナンス網も含めた産業自体を育成して、ユーザー

 [Click Here To Go To Page 1](#)

Southeast Asia Report

Continued from page 18

A specialized and independent “India Semiconductor Mission (ISM)” was launched Dec. 29, 2021, to drive the long-term strategies for developing a sustainable semiconductor and display ecosystem in India.

の悩みや困りごとに対応するシステムを現地で構築したからに他ならない。現地の需要を正しく聞き、製品に反映したことも大きい。

だが、そうした日系メーカーの製品をはるかに凌駕する価格競争力を持っている中国・韓国勢の攻勢は、東南アジア各国政府のEV助成金や投資誘致時の免税などの優遇措置を追い風にして、商機を伺っている。購買力が脆弱でモータリゼーションも先のことだとされてきた東南アジアはもう無い。特にEVに関してはバッテリーの素材資源も豊富であり、EV市場が成長し得るポテンシャルは高い。特に都市部での需要は厚く、正しいタイミングで正しい価格と品質を持つ製品が市場に投入されれば、それが日本製ではなかろうと、受け入れられるだろう。 **PSR**

India Report

By Aditya Kondejkar, Research Analyst – South Asia Operations.

Cabinet Okays Rs 76,000-cr Semiconductor Plan



*Aditya
Kondejkar*

The India Cabinet has cleared a Rs 76,000-cr incentive plan for semiconductors that will set up more than 20 semiconductor design, components manufacturing and display fabrication units over the next six years.

A specialized and independent “India Semiconductor Mission (ISM)” was launched Dec. 29, 2021, to drive the long-term strategies for developing a sustainable semiconductor and display ecosystem in India. The ISM will act as the nodal agency for efficient and smooth implementation of the schemes on semiconductors and display ecosystem.

Read The Article

On December 15, 2021, India's Union Cabinet approved the Program for Development of Semiconductors and Display Manufacturing Ecosystem in India, with an outlay of US\$10 billion (INR 760 billion) for the development of a sustainable semiconductor and display manufacturing ecosystem in India.

The Minister of Electronics and Information Technology, Ashwini Vaishnaw, has announced that all programs have been uploaded on the website and a portal has been prepared for receiving the applications.

It is hoped the Program for Development of Semiconductors and Display Manufacturing Ecosystem in India will position the country as a global hub for electronic system design and manufacturing. The much-needed package for the sector comes at a time when India is facing a component shortage that has crippled the Indian automotive, consumer electronics, and mobile handset manufacturers. **PSR**

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Russia Report

By *Maxim Sakov*, Market Consultant, Russia Operations

KAMAZ Launches 720 hp Engine



*Maxim
Sakov*

KAMAZ said it is installing new 6-cylinder engines working on methane gas and having 720 HP on its trucks. Switching to NG fuel is one of the main trends of the Russian automotive giant. It builds Inline 6 and V8 engines

Inline 6 cylinders engine will be made in several versions but the 720 hp will be available in the top model only. For the economy segment, the OEM will offer a 450 hp engine; the price of this model will be significantly cheaper.

Read The Article

PSR Analysis: A few years ago, KAMAZ started developing new 6-cylinder inline engines in co-operation with Liebherr. The R&D now is program successfully expanding into a new stage, developing a new range of HHP NG-powered engines. **PSR**

Autotor To Produce Two Models of Electric Cars in 2023

Autotor said it plans to start mass production of electric cars next year. One of the new models will be a city car for young drivers, and second one will be a car for people with limited liabilities.

The OEM already has developed a concept vehicle with the designers from Europe, and there are plans to assemble a test lot of several thousand electric vehicles in 2023. Three possible OEMs are considered as partners in the venture: Kia, Hyundai and BMW.

Read The Article

PSR Analysis: Considering that there is almost no market for electric passenger cars in Russia, the OEM can expect limited demand for these new cars. And without massive development of a charging infrastructure, there will be no chance for this market to develop. Additionally, climate conditions also add problems for electric car owners and reduce their sales potential. **PSR**

Ural To Produce Axles for Heavy Trucks

The Fund of Industrial Development has approved a loan of US\$ 27 million (2 Bln rubles) under the "Priority Projects" program, which will allow Ural to build axles at a new production facility. The new site will allow OEM to double production of heavy load trucks and to create about 4,000 jobs.

Currently, these axles are being purchased in China. Ural is going to make this

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Russia Report

Continued from page 20

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product for its own use, and for sale to other truck makers. Production under the program is expected to begin in 2023.

The money will be spent to purchase automatic lines with CNC control to work on drums, hubs, and brake disks, and also for renovation of forge production. In 2025, the OEM plans to make at least 18,800 drive axles for its own needs, and about 5,000 components for special machines. Under the project, Ural will produce 13 models of on-road axles, and 20 axle models for road construction machines.

Read The Article

PSR Analysis: This is another example of State support for the Russian automotive industry. **PSR**

Ford Automotive Plant Sold To Korean Sungwoo Hitech

The South Korean company Sungwoo Hitech, a manufacturer of auto components that is part of the Hyundai group, has purchased an abandoned Ford plant in Vsevolzhsk.

Details of the deal have not disclosed. However, the plant, which is partly stripped and which has been idle for two years, is being sold for US\$ 20 million, a total considered to be far below market value.

For now, the new owner said it is not planning to resume car production there, but the company said it is going to rehab the plant and start production in 2023. Sungwoo Hitech said at this time it plans to invest about US\$ 70 million and employ 520 people. Production capacity will be about 265,000 units per year.

Sungwoo Hitech has been working in Russia since 2010. With production in Leningrad region, it supplies the Hyundai plant with bumpers and frames for car doors.

Read The Article

PSR Analysis: The trend of Western car makers yielding the Russian market to companies from Asia is clearly visible. However, this purchase is puzzling because it's not clear what product the new owner is going to produce in the plant. **PSR**

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