SBD Explores: Electric transition

Why are Japanese OEMs lagging in the BEV race?

10-minute Insight

Japanese OEMs were early adopters of hybrid electric vehicles, having a significant impact on the automotive carbon footprint.

However, despite being pioneers initially, Japanese OEMs have now found themselves lagging.

Our report will delve into Japan's automakers' reluctance to embrace BEVs and examine the strategies employed by them to regain their competitive edge.

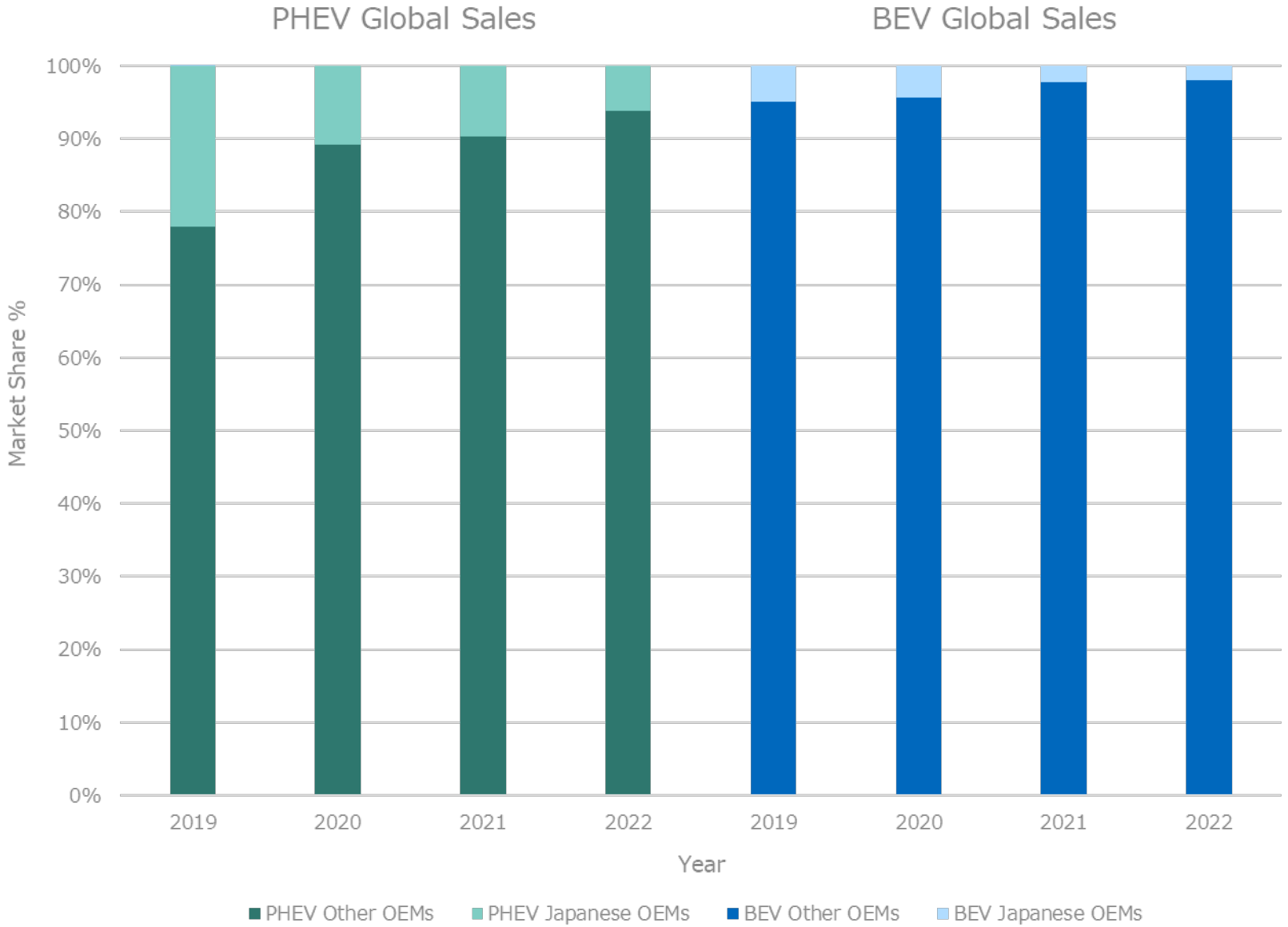
Target audience

Product planning Strategy Marketing

Focus market(s)

Global

What is happening?



Key takeaway

Due to their reluctance in releasing competitive BEVs, Japanese OEMs are experiencing a decline in their market share within the EV industry.

In the past 4 years Japanese OEMs PHEV global sales have dropped significantly from around 22% to 6%. They've also lost global BEV market share of the already small percentage they had.

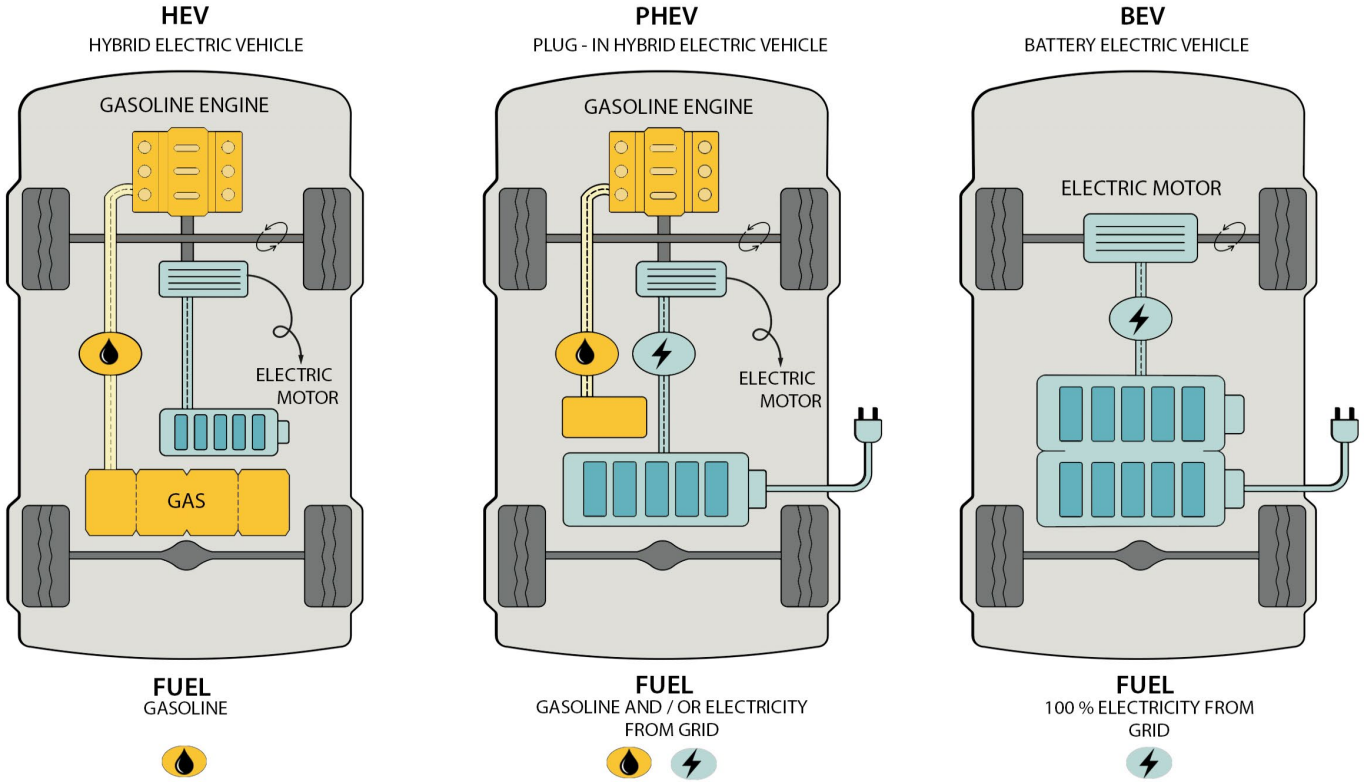
Toyota claims that 90 HEV batteries could be made using the raw materials used in the long-range battery of a single BEV which has the potential for more carbon reduction overall.

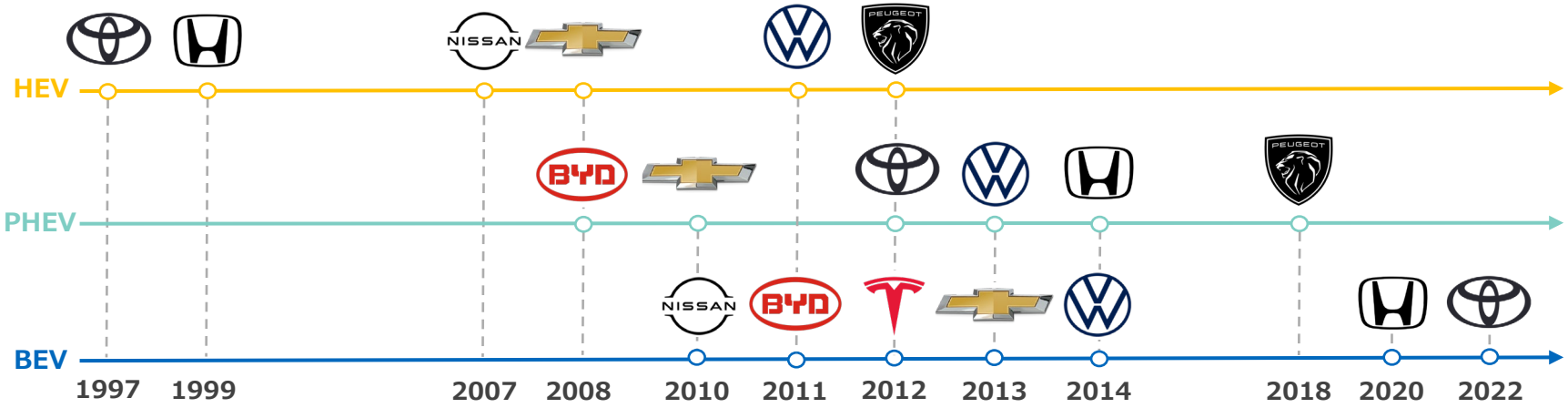
Japanese OEMs do believe in an electric future, but challenges can be addressed efficiently by transitioning gradually from HEVs to BEVs. These challenges include Japan's low resources leading to supply chain issues, destructive mining for resources, and reliance on polluting fossil fuels for electric energy.

Each of these factors together has meant that hybrids and hydrogen have been prioritized over BEVs.

As more consumers switch to BEVs, the lack of Japanese BEVs on sale has led to a subsequent loss of EV market share.

Why does it matter?





Timeline: Release of OEM's first **HEV**, **PHEV** and **BEV**.

Key takeaway

Japanese OEMs were the first to bring BEVs to market with the Nissan leaf in 2010. Since then, major players have risen in the BEV market whilst Japanese OEMs haven't kept up.

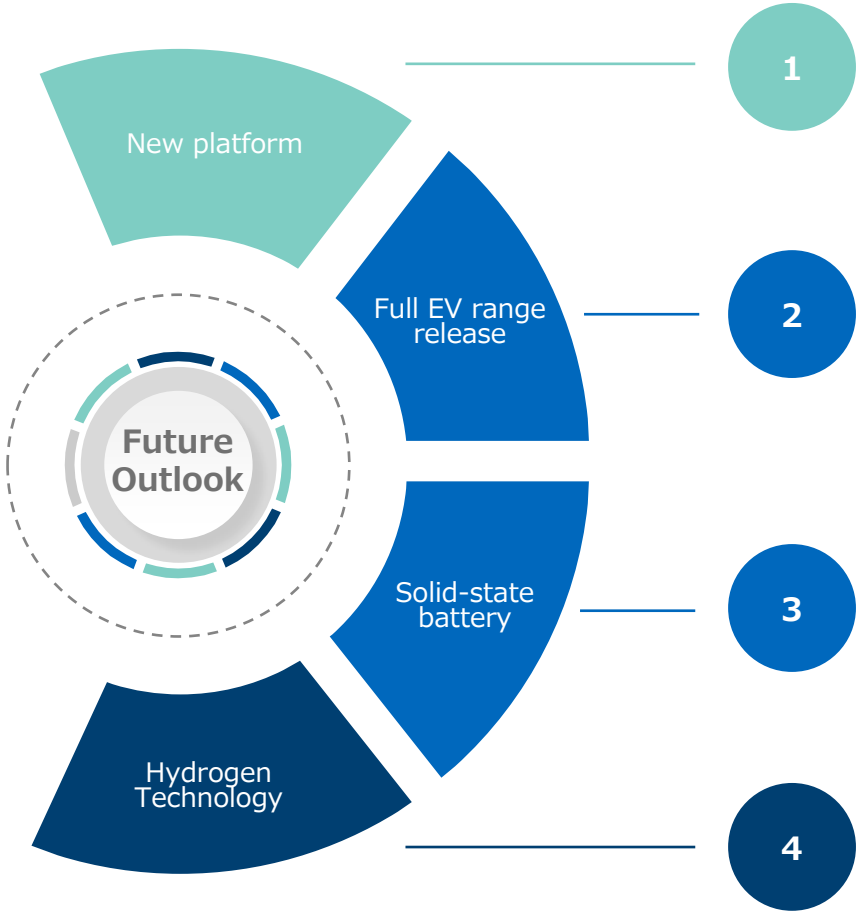
Japanese OEMs could have built on their existing knowledge and architecture of HEVs to produce BEVs and have an advantage over the competition.

Toyota and Honda's transition from HEVs to PHEVs to BEVs took around 20 years, whilst other major OEMs took much less time. This is partly since Japanese OEMs prefer to perfect technologies before large commercial rollouts.

Due to Japan's limited resources for batteries, their government has placed priority on the hydrogen strategy to envision a carbon-neutral society. Consequently, Japanese OEMs chose to invest in hydrogen technologies rather than focusing extensively on pure BEV technologies.

This focus on hybrid and hydrogen vehicles has allowed the competition to gain a massive lead in BEV development and commercialization. It may be difficult for the Japanese OEMs to gain market traction in the BEV space especially as competitors have been winning conquests in the form of consumers looking for BEV choice.

Where Next?



Japanese OEMs are actively manufacturing and beginning to unveil their upcoming lineup of BEVs, built on new platform.

As the latest BEVs begin to be sold and gain popularity, Japanese OEMs will start to take market share from major players, such as Tesla, VW and BYD.

Solid-state batteries will become ready for implementation into new platforms, with Japanese OEMs having already invested heavily in the technology.

Continued development of Hydrogen technology could lead to a breakthrough within the industry and may provide a serious challenge to BEVs.

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Key takeaway

In the Japanese market, hydrogen had been considered the next step from hybrid technology. Until now, where OEMs have been forced to join the BEV race.

Toyota, Honda and Nissan have announced plans to increase their EV market share. Each company has announced plans to launch a comprehensive range of electric vehicles by 2025, 2026, and 2030, respectively.

Solid-state batteries represent the latest breakthrough in battery technology, and Toyota, Honda and Nissan are all optimistic about achieving production of solid-state batteries by the mid to late 2020s. If this advancement is viable, it will enable these OEMs to surpass their current competitors by leveraging this innovative technology.

Japanese OEM's new focus is on BEVs, as they continue research of hydrogen technology. Further progress of hydrogen is promising, but not yet feasible. It is still unclear whether hydrogen will ever become a viable fuel source for the automotive industry.

Who to watch out for?

Battery Technology		Tesla is considering partnering with CATL, whose semi-solid-state battery boasts an energy density of 500Wh/kg, almost double the average of Li-ion batteries.
		BMW partnered with Solid Power to create prototype solid-state cells by the end of 2023.
		VW invested $300 million in QuantumScape to develop solid-state batteries for electric vehicles by 2024.
		Honda will start a pilot line of manufacturing for solid-state vehicles by 2024, if that is successful, they plan to launch a vehicle by 2028.
		**Toyota** have been researching solid-state technology since 2012. In 2021 they built a BEV prototype powered by solid-state battery and claimed that they would have a hybrid with a solid-state battery on sale by 2025.
		Stellantis entered a partnership with Factorial Energy to achieve solid-state battery production by 2026.
		Nissan have claimed they'll have solid-state in production by 2028.
		Mercedes-Benz partnered with ProLogium for solid-state batteries, aligning with their goal to electrify their lineup by 2030.
Hydrogen Technology		Hyundai Motors remains focused on hydrogen technology and established a hydrogen Fuel Cell factory in China. They are also reportedly putting their N-Vision 74 FCEV into production.
		Honda, Yamaha, Suzuki and Kawasaki have formed a research partnership called HySE that will consider the development of hydrogen-powered motorcycles that use internal combustion engines.
		Toyota are committed to continue developing hydrogen technology and are still producing their FCEV, the Mirai.
		Bosch and Ligier have recently revealed their Le Mans race car that is powered by a hydrogen ICE.

Key takeaway

Although Japanese OEMs have become BEV laggards, they have the potential to be leaders in future hydrogen and solid-state battery technologies.

Even though Japanese OEMs have lagged behind in the EV race, each Japanese OEM is taking a different approach to the EV scenario. Toyota is gradually stepping up from HEV to PHEV to BEV while Nissan made a direct transition from HEV to BEV.

Having BEVs in production means implementing solid-state batteries will be much easier than creating a new platform.

At the same time, a hybrid platform allows for easy integration of future zero-carbon fuels, and as Toyota points out, even with petrol or diesel, hybrids may do more to reduce carbon emissions than BEVs.

Japanese OEMs, by diversifying their powertrain investments, may be able to surpass existing leaders in the EV industry. The reason behind this lies in the Japanese OEMs' ability to expedite the adoption of both solid-state batteries and hydrogen technology. While many prominent OEMs are shifting towards BEVs, they would need to develop completely new platforms for hydrogen fuel cell technology.

How should you react?

1 Observe

Understand how Japanese OEMs have been laggards but now could become leaders with solid-state and hydrogen technology.

2 Evaluate

Consider whether your internal roadmap extends beyond today's BEV technology.

3 Strategize

Plan to collaborate with leaders or implement the technology if there is already the technical expertise necessary.

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