



Electric vehicles

Industry Focus

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Electric vehicles



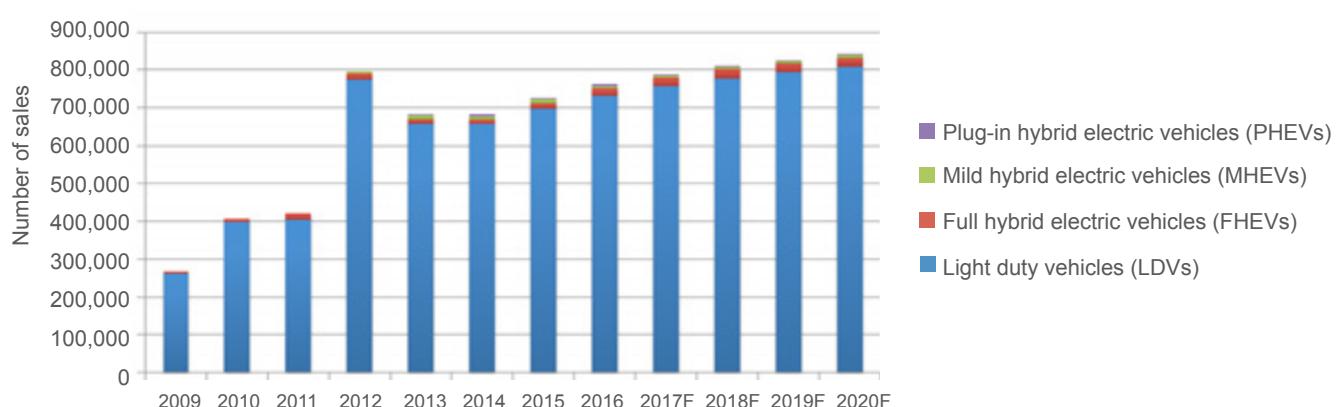
Thailand electric vehicles

According to statistics from the Land Transport Department report as of June 2017, the number of registered hybrid electric vehicles (HEVs) and plug-in hybrid electric vehicles (PHEVs) were at 84,236 units, while only 63 units were battery electric vehicles (BEVs). In other words, the popularity for electric vehicles (EVs) in Thailand is still low, although HEVs have been launched since around 2009-2010.

HEVs seem to be the initial focus for EV producers in Thailand, thanks to the combined use of engines and electricity. After which, the focus might be on PHEVs and BEVs because of higher technology requirements. Moreover, the government also face challenges in developing parts for EVs because 70% of the engine parts for EVs are different from those found in oil-fuelled vehicles. In the near future, EVs are likely to constitute only 1% of passenger cars in Thailand.

However, the incentives of Board of Investment (BOI) might encourage Thai manufacturers to start production of HEV parts in the initial phase. Commercial EVs are expected to be launched in the Thai market by 2025. By 2036, the Thai government aims to have 690 charging stations and 1.2 million electric vehicles nationwide.

Thailand sales by fuel technology



Source: Thai Automotive Institute; LMC Automotive: Global Hybrid and Electric Vehicle Forecast, Bangkok Post

Excise tax rates for BOI-promoted companies that produce electric vehicles (as of 16 September 2017)

Car type	CO ₂ emission	Cylinder	New tax rate
HEVs/ PHEVs	Pickup-based passenger vehicle (PPV)	<= 175 g/km	<= 3,250 cm ³ 18%
	Double-cab pickup truck	<= 175 g/km	<= 3,250 cm ³ 8%
	Passenger car	<= 100 g/km	<= 3,000 cm ³ 4%
		101-150 g/km	<= 3,000 cm ³ 8%
		151-200 g/km	<= 3,000 cm ³ 10.5%
		> 200 g/km	<= 3,000 cm ³ 13%
BEVs	–	–	2%

As presented in the above table, the Thai government revised the excise tax, effective until 31 December 2025, to promote investment for companies that produce HEVs, PHEVs, and BEVs. These BOI incentives are likely to reduce prices of EVs for consumers.

In January 2018, Thailand was required to liberalize imports of EVs from China under the ASEAN-China free-trade agreement (FTA), bringing down EV import tariffs to zero. This led to concerns on strong competition from Chinese-imported EVs. However, this might also be an opportunity to develop Thailand as a hub for the production and distribution of EVs.

Source: Ministry of Finance, Thailand Automotive Institute, The National News Agency (NNA), Bangkok Post, The Nation

“The technological advances in power storage together with the urgent need to improve air quality in the cities to compensate for the consequences of urban development will fuel the growth of EV’s popularity tremendously. It can be anticipated that the market penetration of EV in Thai society is undeniable and inevitable. Auto industry and power industry have to reassess their business model and prepare for the technological and behavioral changes. It is an example of disruption at its best.”

Paul Flipse
Head of Climate Change
and Sustainability Services
KPMG in Thailand



Global electric vehicle trends

According to a study by the International Energy Agency, the number of registered EVs worldwide was 750,000 units in 2016; while the world has a stock of two million units. In 2040, the number of EVs globally is forecasted to rise to be 35% of all vehicles. There are two key factors which will support higher demand of EVs:

- 1) Steep reduction in the cost of battery technology
- 2) Decarbonized policy introduced by the government

Lithium ion battery pack costs are on the decline globally

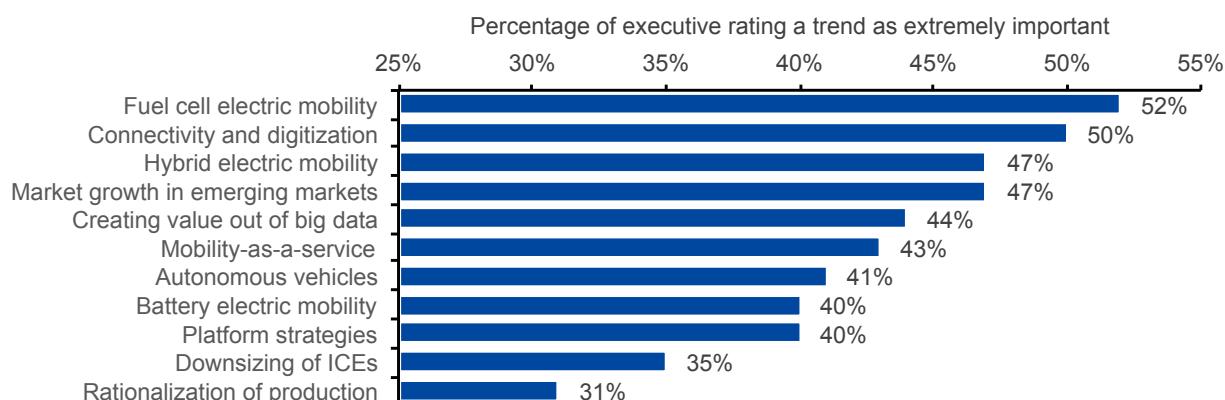


Source: KPMG Publication; Electric Vehicles: A case for a proactive approach, The Nation; International Energy Agency

Based on the *KPMG Global Automotive Executive Survey 2018*, fuel cell EVs have replaced battery EVs as the top key trend until 2025. By 2040, there will not be a single solitary drivetrain technology; executives project a split for BEVs (26%), FCEVs (25%), ICEs (25%) and hybrids (24%). Most executives agree that revolutionary electric drivetrains still need time for implementation, while traditional internal combustion engines (ICEs) will still continue to be important for a long time. Interestingly, the future of diesel is still undecided as 50% (compared to 47% in 2017) of executives still believe that diesel is a technologically viable option. An imposed growth of e-mobility subsidized by tax benefits, or imposed by bans of ICEs will fail if the foundation of a reliable charging infrastructure is not put in place first.



Global automotive executive key trends until 2025



Source: KPMG Publication; Electric Vehicles: A case for a proactive approach, KPMG Global Automotive Executive Survey 2018

What do the governments need to do to boost Electric Vehicles' uses?

- 1) Create certainty of demand to instigate investments by the auto industry:** The incentive program to encourage adoption is desirable in the initial period. The support can be through interest subventions on EV car loans or outright incentives on car purchases with a subsidy on the base price of EVs.
- 2) Encourage creation of public infrastructure:** Public transport vehicles can be early adopters as economics can be worked out sooner. Public investment in charging structures can be a solution. Distribution utilities can be encouraged to build this network through suitable incentives and grants.
- 3) Creation of private infrastructure:** The current interpretation of electricity regulations suggests that such infrastructure requires regulatory licenses or concessions with the local utilities. Therefore, liberalizing these regulations would help unleash private market forces into creation of infrastructure.
- 4) Need for a central authority at the central level for program monitoring:** Given the criticality of this program, a well-defined authority to drive and monitor this program is necessary.

Source: KPMG Publication; Electric Vehicles: A case for a proactive approach

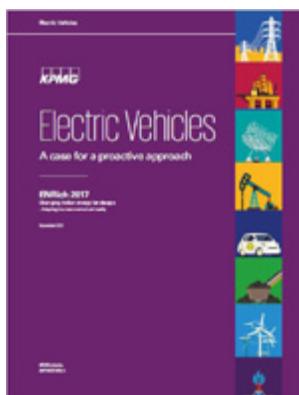
"In the future, new technologies such as automatic battery charge by self-running vehicles might be invented and become standard. If so, investments on power stations across the country based upon the current EV technology requirements will become obsolete. Connectivity will become the key factor for future vehicles, including EVs, and hence the government should support investments on communication infrastructures."

Hidenori Furukawa
Partner, Advisory
KPMG in Thailand



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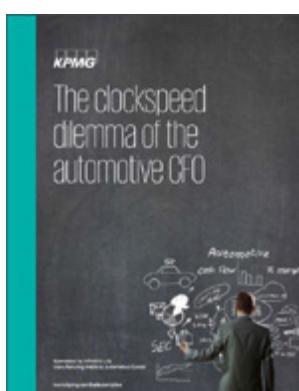
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