

# Thailand's Electric Vehicles Industry



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# Content

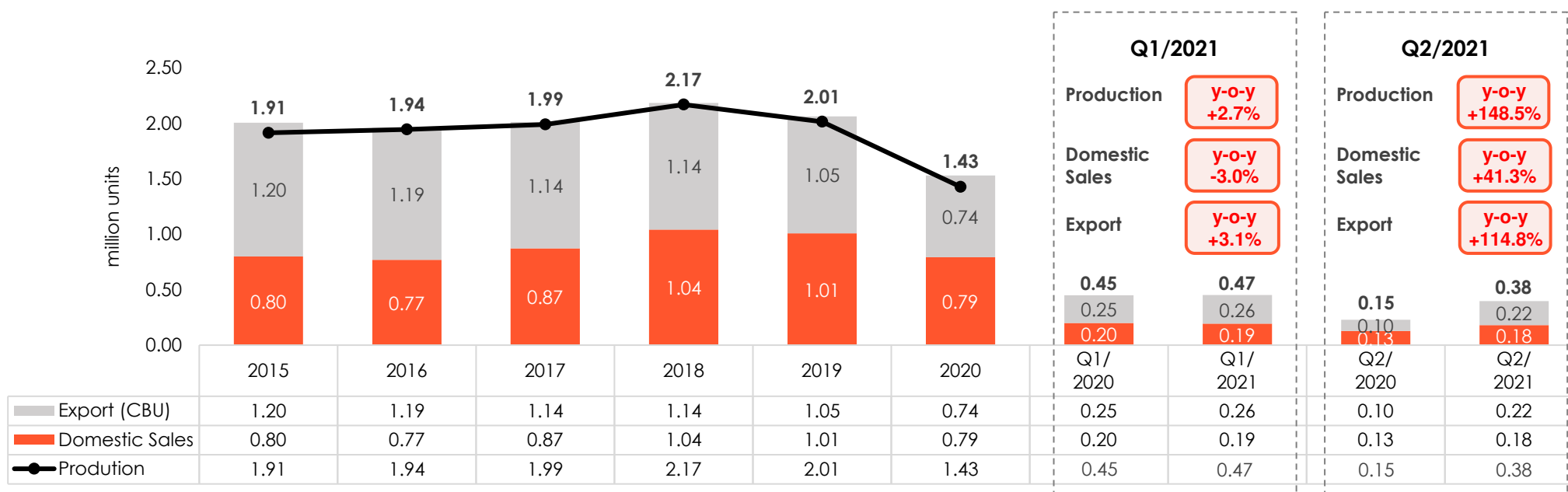
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- **Electric Vehicles in Thailand**
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# Thailand's Automobile Industry Overview (1)

- In the past year, the COVID-19 pandemic from mid 2020 has caused huge disruptions to automobile supply chains across Thailand due to the drop in demand of domestic and overseas consumers.
- However, as the automobile industry in Thailand is being promoted continuously by the government and the COVID-19 situation is under control, so the industry trends are to recover as can be seen from automobile production, domestic sales and export in Q2/2021, which increased 148.5% (y-o-y), 41.3% (y-o-y) and 114.8% (y-o-y), respectively.

## Automobile Production and Sales in Thailand



Source: The Federation of Thai Industries, Department of Land Transport and Forecast by Kasikorn Research Centre (KRC)

Note: 1/ "Automobile Export" includes only Completely Built Up (CBU).

2/ "Automobile Domestic Sales" includes Passenger Cars and Commercial Vehicles (Van/Micro bus, Pick-up Truck, Truck, Bus, Four-Wheel Drive, and others/not specified).

3/ "Automobile Production" includes Passenger Cars, OPV, Van, Micro Buses, Pick-up Trucks, PPVs, Buses, and Trucks.

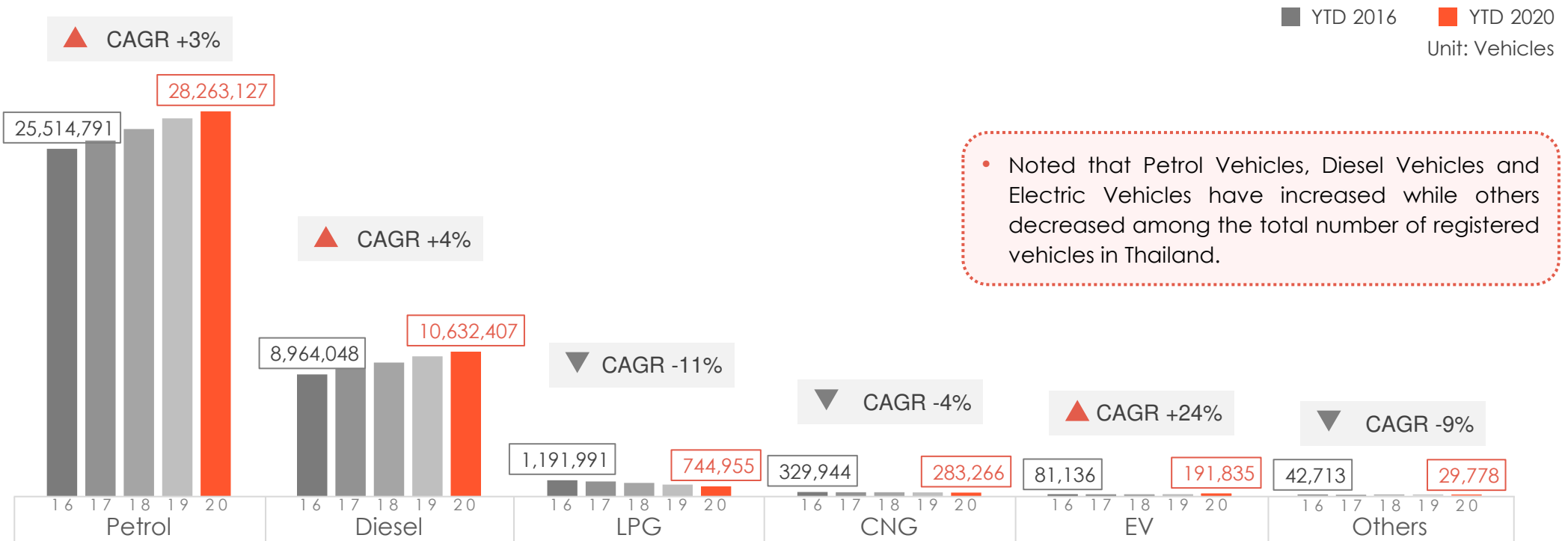
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## Thailand's Automobile Industry Overview (2)

- In 2020, there are 40 million registered automobiles<sup>1/</sup> in Thailand. The electric vehicles (EV)<sup>2/</sup> segment holds about 0.5% of the total registered automobile share.
- Thailand recorded electric vehicles (EV) registrations totaling almost 192,000 vehicles in 2020, rising from 81,000 vehicles in 2016. EVs shows the highest growth of total registered automobiles with a CAGR of 24%.

Thailand Automobile Volume Growth, 2016-2020



Source: Transport Statistics Sub-Division, Planning Division, Department of Land Transport

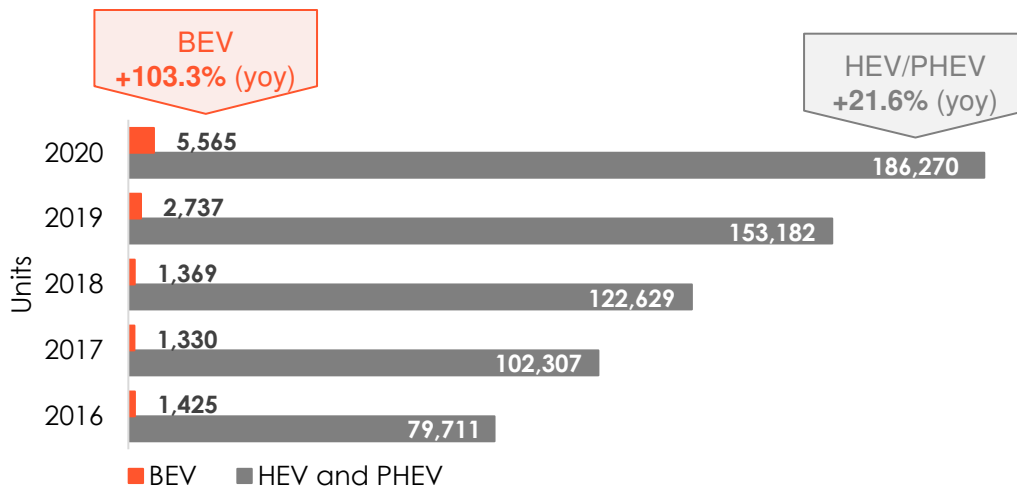
Note: 1/ The figures above include only vehicles under the total vehicle motor act. "Vehicle under Motor Vehicle Act" includes Sedan (Not more than 7 Pass.), Microbus & Passenger Van, Van & Pick-up Truck, Motor-tricycle, Interprovincial Taxi, Urban Taxi, Fixed Route Taxi, Motor-tricycle Taxi (Tuk-Tuk), Hotel Taxi, Tour Taxi, Car For Hire, Motorcycle, Tractor, Road Roller, Farm Vehicle, Trailer, Public Motorcycle or Motorcycle Taxi)

2/ "Electric Vehicles" includes HEVs, PHEVs and BEVs.

# Electric Vehicles in Thailand (1)

- In Thailand, there are 191,835 accumulated EV units registered in 2020, which consists of HEVs and PHEVs: 186,270 units (increased 21.6% from 2019) and BEVs: 5,565 units, which increased more than 2-fold from the previous year.
- As many players have launched electric vehicles (EV) in the market after receiving BOI investment support, sales of electric vehicles (EVs) in Thailand based on new vehicle registrations shows rapid growth, especially in the BEV market, which jumped 94.7% to 2,997 units in 2020.

## Registration Trend of Accumulated EVs in Thailand

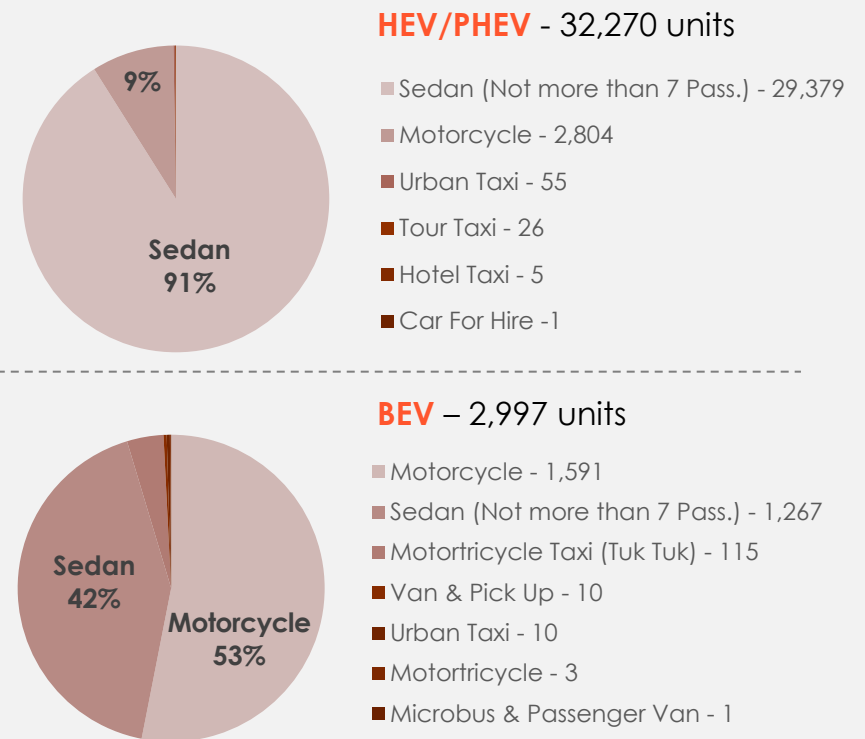


## Newly Registered EVs

	HEV and PHEV	BEV
2019	30,676 units	1,539 units
2020	32,270 units	2,997 units
%Growth (yoy)	5.2%	94.7%

Source: Transport Statistics Sub-Division, Planning Division, Department of Land Transport

## EVs by Types in 2020



Note: The figures above include only the vehicles under Total Vehicle Motor Act.  
 HEV stands for hybrid electric vehicle.  
 PHEV stands for plug-in hybrid electric vehicle.  
 BEV stands for battery electric vehicle.

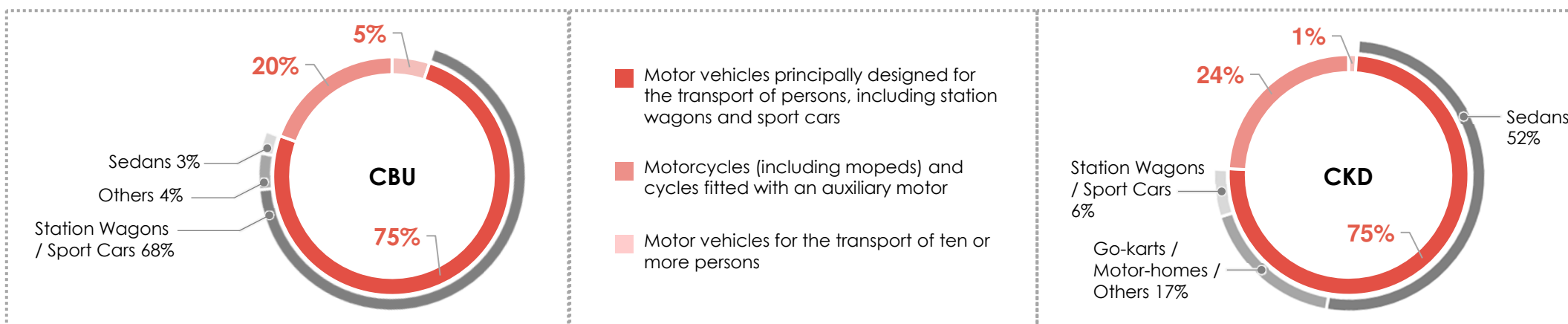
## Electric Vehicles in Thailand (2)

- Battery electric vehicles (BEVs) started to be imported from abroad into Thailand in 2019. China is the major import source, which accounted for more than 75% of total Complete Built Up (CBU) import value in 2019, due to the exemption of import duty by the China-ASEAN FTA and high demand for competitively priced vehicles.

### Thailand's Import Sources of BEVs

#	Country	CBU (Complete Built Up)						CKD (Complete Knocked Down)					
		2018		2019		2020		2018		2019		2020	
		Units	THB, m	Units	THB, m	Units	THB, m	Sets	THB, m	Sets	THB, m	Sets	THB, m
1	CHINA	4,018	36.48	7,390	1,380.47	93,286	237.30	590,335	248.87	471,552	76.76	1,580,492	115.64
2	GERMANY	5	6.68	1	0.14	65	193.03	0	0.00	2,540	2.54	55,935	76.03
3	U.S.A.	5	0.18	23	0.34	46	1.87	47,217	38.80	20,653	16.49	260,348	142.16
4	BELGIUM	0	0.00	0	0.00	67	125.11	0	0.00	0	0.00	0	0.00
5	OTHERS	163	45.87	928	447.23	2,263	95.33	20,832	5.75	63,456	77.82	98,286	53.05
	WORLD	4,191	89.21	8,342	1,828.17	95,727	652.65	658,384	293.41	558,201	173.61	1,995,061	386.88

### BEV Imports by Type, 2020



Source: Ministry of Commerce

Note: The import of BEVs in the table/charts include only products under HS code 870240, 870380, and 871160.

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## Electric Vehicles in Thailand (3)

- Electric vehicles (EVs) by MG, a British brand with a Chinese owner, dominate Thailand's battery electric vehicle (BEV) market with almost 90% market share as a cheaper price alternative from the advantage of the free import duty and brand worthiness when compared to other EV brands. MG recorded total sales of 826 electric vehicles (EP Wagon EV and ZS EV) in 2020.

## Battery Electric Vehicle Models in Thailand (as of 26 April 2021)

Brand	Model Name	Type of car	Domestic Production /Imported	Retail Price	EV Range	Battery Size
<b>Fomm</b>	ONE	Mini City Car	Domestic Production	664,000	160 km	11.8 kWh
<b>TAKANO</b>	TTE 500	Mini Pick-up Truck	Domestic Production	438,000	100 km	11 kWh
<b>LEXUS</b>	UX 300e	Luxury SUV	Imported	3,490,000	360 km	54 kWh
<b>NISSAN</b>	LEAF	Hatchback	Imported	1,490,000	311 km	40 kWh
<b>BYD</b>	e6 M3, T3	MPV (4 seats) MPV (5-7 seats)	Imported	1,400,000 999,000-1,089,000	400 km 300 km	80 kWh 50.3 kWh
<b>MG</b>	EP Wagon EV ZS EV	Station Wagon Compact SUV	Imported	988,000 1,190,000	380 km 337 km	50.3 kWh 44.5 kWh
<b>VOLVO</b>	XC40 Recharge	Compact SUV	Imported	2,590,000	418 km	78 kWh
<b>HYUNDAI</b>	KONA Electric IONIQ Electric	Compact SUV Hatchback	Imported	1,849,000-2,259,000 1,749,000	312-482 km 280 km	39.2-64 kWh 28 kWh
<b>KIA</b>	All-New Soul EV	Crossover SUV	Imported	2,387,000	425 km	64 kWh
<b>Audi</b>	e-tron 55 Quattro	Luxury SUV	Imported	5,099,000	417 km	95 kWh
<b>BMW</b>	BMW i3	Compact SUV	Imported	3,730,000	280 km	33 kWh
<b>PORSCHE</b>	TAYCAN	Super Car	Imported	7,100,000-11,700,000	431-484 km	79.2-93.4 kWh
<b>JAGUAR</b>	I-PACE	Crossover SUV	Imported	5,499,000-6,999,000	470 km	90 kWh
<b>MINI</b>	MINI Cooper SE	Mini Sports Car	Imported	2,290,000	217 km	32.6 kWh
<b>TESLA</b>	Model 3	Sedan	Imported	2,990,000	386 km	62 kWh

Source: Electric Vehicle Association of Thailand

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## Electric Vehicles in Thailand (4)

### Upcoming Automobile Manufacturers in the BEV Market

- The investment promotion policy and the government's ambition to create an EV production hub have attracted automobile manufacturers in the BEV market like the Chinese automaker Great Wall Motors (GWM), which expects to begin producing BEVs in Thailand within 2023. More Chinese brands, namely Changan, Geely and Chery Automobile, as well as a local brand, Energy Absolute (EA), will soon join Thailand's BEV market.
- Meanwhile, Japanese carmakers Toyota and Honda, which currently lead Thailand's automobile market, are also expanding their BEV lineups even though they still have no movement in Thailand's BEV market. Toyota plans to launch 15 new BEV models and Honda has revealed its own EV roadmap.
- Moreover, the giant Taiwanese conglomerate Foxconn, and the Thai state energy group PTT are also setting up a joint venture to develop an EV production platform.

#### Great Wall Motors

##### About Production in Thailand

- ▶ Great Wall Motors (GWM), a Chinese automobile manufacturer, has acquired General Motors' manufacturing plant in Thailand (Rayong province) as the production base for right-hand-drive vehicles in ASEAN, with a planned annual production capacity of at least 80,000 vehicles.
- ▶ In addition to meeting local and ASEAN's needs, GWM will also export BEVs to Australia, South Africa and other markets.
- ▶ The plant is currently making the Haval H6 SUV (HEV).

##### About BEV Products

- ▶ In October 2021, GWM Thailand launched its BEV call "Ora Good Cat", a five-door hatchback.
- ▶ The Ora Good Cat is currently imported Completely Built Up (CBU) from China. There is a possibility that the Good Cat would be locally assembled in Rayong Plant in the future (within 2023).

#### Toyota

- ▶ Toyota, a Japan-based car manufacturer, also plans to launch 15 new BEV models.
- ▶ The first model of Toyota's BEV will be unveiled in Shanghai and be introduced globally by 2025.

#### Honda

- ▶ Honda plans to make BEVs and fuel cell electric vehicles to represent 100% of its vehicle sales by 2040.
- ▶ In Japan, Honda launched its first mass-produced all-battery vehicle call "Honda e" in 2020 and plans to launch "Honda SUV e" in 2022.

Source: Company's website and Public news



# Government Policies to Promote Electric Vehicles in Thailand (1)

- The Thai government revised the excise tax, with the latest version approved in April 2019, to promote investment for companies that produce HEVs, PHEVs, and BEVs. BEVs have a 0% excise tax during the period between 2020 to 2022 if manufacturers apply for BOI incentives, after which the rate increases to 2%. These excise tax rates for EVs are effective until 31 December 2025.
- According to the National Electric Vehicle Policy Committee (set up by the Thai government), on May 13, 2021, there is a three-phase development plan for the EV industry (2021-2030). The primary goal is to achieve 30% EV production within 10 years.

## Government Supporting Policies on EV Production

**Excise Tax Reduction**

➤ **The recent excise tax rates for electric vehicles in Thailand**

Vehicle Type	Engine Size	CO2 (g/km)	Excise Tax	
			General Rates	BOI Incentives
HEV/PHEV	≤ 3,000 cc	≤ 100	8%	4%
		101-150	16%	8%
		151-200	21%	10.50%
		>200	26%	13%
	> 3,000 cc			40%
BEV			8%	0% (Present-Dec 31, 2022) 2% (Jan 1, 2023-Dec 31, 2025)

**Development Plan for EVs**

Phase I : 2021-2022	Phase II : 2023-2025	Phase III: 2026-2030
<p>❑ The government will promote electric motorcycles and support infrastructure nationwide.</p>	<p>❑ The EV industry will be developed to produce 225,000 cars and pick-up trucks, 360,000 motorcycles and 18,000 buses/trucks by 2025, including the production of batteries. This first milestone is designed to deliver cost advantages via economies of scale.</p>	<p>❑ Phase 3 is driven by the “30/30 policy” to produce 725,000 EV cars and pick-up trucks plus 675,000 EV motorcycles. This will account for 30 per cent of all auto production in 2030 and includes the domestic manufacture of batteries.</p>

Source: Thai Board of Investment (BOI), National Electric Vehicle Policy Committee and Thailand Automotive Institute

## Government Policies to Promote Electric Vehicles in Thailand (2)

- Apart from the production of EVs, EV parts manufacturing also receive strong support from the government in order to create a strong supply chain to promote Thailand as the regional production hub of EVs in ASEAN.
- Specifically, for EV batteries, investors will be eligible for BOI investment privileges in corporate income tax exemption plus a 90% reduction of import duty on raw and essential materials not available in Thailand.

### BOI-Investment Privileges for the Manufacture of EV Parts (as of 13 January 2021)

Manufacture of parts for Hybrids, Battery Electric Vehicles (BEV) and Plug-in Hybrid Electric Vehicles (PHEV)	CIT Exemption	
<ul style="list-style-type: none"> <li>▶ Battery               <ul style="list-style-type: none"> <li>▪ Cell Production</li> <li>▪ Module Production</li> <li>▪ Pack Assembly</li> </ul> </li> </ul>	8 Years (No Cap) 8 Years 5 Years	+ 90% reduction of import duties for 2 years on raw and essential materials not available in the country
<ul style="list-style-type: none"> <li>▶ Traction Motor</li> <li>▶ Air-Conditioning System</li> <li>▶ Battery Management Systems (BMS)</li> <li>▶ Drive Control Units (DCU)</li> <li>▶ On-Board Charger</li> <li>▶ EV Connector with Plug and Socket</li> <li>▶ DC/DC Converter</li> <li>▶ Inverter</li> <li>▶ Portable Electric Vehicle Charger</li> <li>▶ Electrical Circuit Breaker</li> <li>▶ EV Smart Charging System Development</li> <li>▶ Front/Rear Axle for Battery Electric Bus</li> </ul>	8 Years	

Source: Thai Board of Investment (BOI)

## Preparations to Support Electric Vehicles (1)

### Charging Station

- Regarding EV charging facilities and services, state enterprises\* have collaborated to pioneer investment in both home-based and public EV charging stations. Meanwhile, the Energy Policy and Planning office (EPPO), Ministry of Energy also provided funding for public organizations and private sectors for investments in EV charging stations.
- The number of charging stations in Thailand has gradually increased to 693 stations and 2,285 charging outlets in September, 2021. EV stations are mostly available in Bangkok and surrounding areas.

Number of EV Charging Stations (as of September 2021)

Charging Service Provider	No. of Stations			No. of Charging Outlets		
	BKK & Vicinity	Other Provinces	Total	Normal Charge (AC) Applies to BEV and PHEV	Fast Charge (DC) Applies to BEV	Total
EA Anywhere	295	122	417	1,062	571	1,633
EV Charging Station	46	22	68	48	32	80
EVOLT	37	12	49	79	23	102
Charge Now	20	22	42	110	1	111
PEA Volta	4	28	32	36	111	147
PTT EV	20	10	30	38	10	48
MEAEV	15	0	15	24	5	29
EGAT EV	2	12	14	16	21	37
SHARGE	11	3	14	65	-	65
Pumpcharge	-	-	6**	18	-	18
EVEN	4	0	4	7	-	7
Onion	2	0	2	8	-	8
<b>Total</b>	<b>462</b>	<b>231</b>	<b>693</b>	<b>1,511</b>	<b>774</b>	<b>2,285</b>

#### EA Anywhere

A brand under Energy Mahanakhon Co., Ltd., which provide charging stations in the Bangkok Metropolitan Area and provinces, as well as compatibility with all vehicle brands.

Products and services:

- Charging station for electric vehicles (only BEV and PHEV)
- Fuel for future energy-efficient vehicles

#### EV Charging Station

The Ministry of Energy and the Electric Vehicle Association of Thailand (EVAT) started a pilot project (EV Charging Station) to install charging stations in 2016.

#### EVOLT

The charging station brand by EVolt Technology Co., Ltd., electric vehicle Infrastructure company which provide services for installation, operation system, application, and maintenance.

Source: Electric Vehicle Association of Thailand

Note: \*Electricity Generating Authority of Thailand (EGAT), the Metropolitan Electricity Authority (MEA) and the Provincial Electricity Authority (PEA)

\*\*Pumpcharge EV stations are currently not in service.

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## Preparations to Support Electric Vehicles (2)

### Battery

- To become a hub of EV production in ASEAN, the EV Policy Committee is also support EV battery manufactures, which are currently invested in EV batteries, as well as partnerships with foreign companies that own battery technology.

### Battery Investment in Thailand

#### PTT GROUP

##### GPSC

Global Power Synergy PCL., the innovative and sustainable power company of PTT Group.

- ▶ Initiating the construction of energy storage units in Rayong Province
- ▶ Unveiled G-Cell, First semi-solid battery cells made in Thailand
- ▶ Launched G-BOX, Battery Energy Storage System (BESS), to increase the efficiency in energy management in EV charging stations
- ▶ Set-up of a subsidiary company to invest in Axxiva, EV battery plants in China.

##### PTT

- ▶ In July 2021, PTT Group introduced a new business "Swap & Go" to serve as a battery swapping platform to support the expanding electric motorcycle user base.
- ▶ PTT partners with the National Science and Technology Development Agency (NSTDA) to develop Wangchan Valley in Rayong as a base for research, development and innovation including research and development of EV battery production.

#### EA

- ▶ Energy Absolute Plc (EA) and Amita Technologies Inc, an energy storage manufacturer in Taiwan, co-developed new battery technology (lithium-ion battery production) in Chachoengsao province, which will start production in 2021.

#### EGAT – RATCH – EGCO

- ▶ The Electricity Generating Authority of Thailand (EGAT), RATCH Group PCL (RATCH) and the Electricity Generating PCL (EGCO) jointly invests in future energy and energy-related R&D and innovations like batteries.

#### BCP

- ▶ Bangchak Corporation (BCP), the energy firm majority-owned by the state, is currently studying investment plans for the construction of lithium-ion battery production facilities.

## Conclusion

- In recent years, Thailand's electric vehicles (EVs) industry has been promoted through several supporting policies by the government as well as investments to scale up the EV infrastructure in order to enhance the country to become a hub of EV production in ASEAN.
- There are major trends of increasing number of automobile manufacturers in BEV market, charging stations, and R&D for more advanced batteries. This will offer a huge growth potential in Thailand's EV Industry, but challenges still remained. Developers and investors, therefore, need to plan cautiously by collecting comprehensive information of the market.

### Government Support

- ▶ 0% excise tax for BEV manufacturers who apply for BOI incentives.
- ▶ Development Plan for EVs with 30% EV production in 10 years.
- ▶ Support investments in EV infrastructure nationwide.
- ▶ Support the production of batteries.

### Key Trends

- ▶ EVs show the highest growth of total registered automobiles.
- ▶ An increase of players in the EV market.
- ▶ Rapid growth of the BEV market in 2020.
- ▶ Imports of EVs expanded rapidly in 2019.
- ▶ Increasing number of automobile manufacturers in the BEV market.
- ▶ Increasing number of charging stations.

### Challenges



#### EV Charging Facilities and Services

- ▶ Limited number of electric charging stations.
- ▶ Limited distance per charge.
- ▶ Electric vehicles take longer to charge, and the charging frequency is higher than engine vehicle.



#### Battery Tax

- ▶ Although import of BEV from China is tax exempt, import of battery alone is incurred tax, which is an incremental cost for EV producers in Thailand.



#### BEVs from China

- ▶ In the future, BEVs imported from China will be cheaper than locally manufactured BEVs of the same type and specifications because of the free import duty (as per the China-ASEAN FTA).

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