

Thailand's Automotive Industry and Current EV Status

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EVAT Establishment



During the beginning of 2015, The Thai government had shown an attention to promote the electric vehicle (EV) technology and policy to support EV production, R&D and usage in Thailand.

This support motivated individuals from academia and private sector in Thailand to discuss and establish the Electric Vehicle Association of Thailand (EVAT) on September 14, 2015 at Knowledge Exchange (KX) building, which later had been officially registered on November 6, 2015. The present president, Dr. Yossapong Laonual, and committee were firstly elected on June 24, 2016 (officially approved on August 23, 2016). Dr. Yossapong was re-elected as the President on 9 June 2018 for another two-year term.



**Present EVAT
Committee
2018 – 2020**

EVAT Goals



EVAT promotes the usage of EV in Thailand which leads to a reduction of road pollution especially in the major cities. In addition, the EV deployment also improves the energy efficiency in transport sector. The EVAT support includes the industrial manufacturing, research and development on EV technologies in Thailand; this strengthens and increases the competitiveness of entrepreneurs in Thailand into the global market.

EVAT Membership



Corporate Member

117
Members

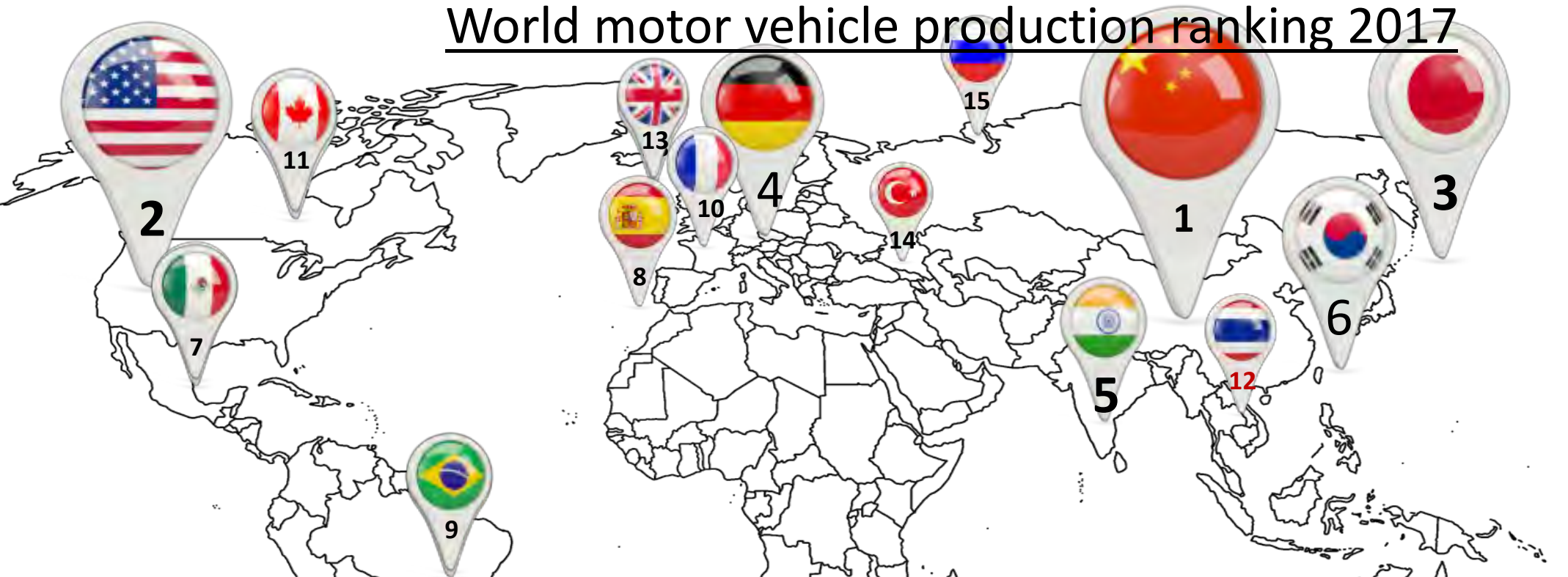
Individual Member

48
Members



Current Status for Automotive Industry in Thailand

World motor vehicle production ranking 2017

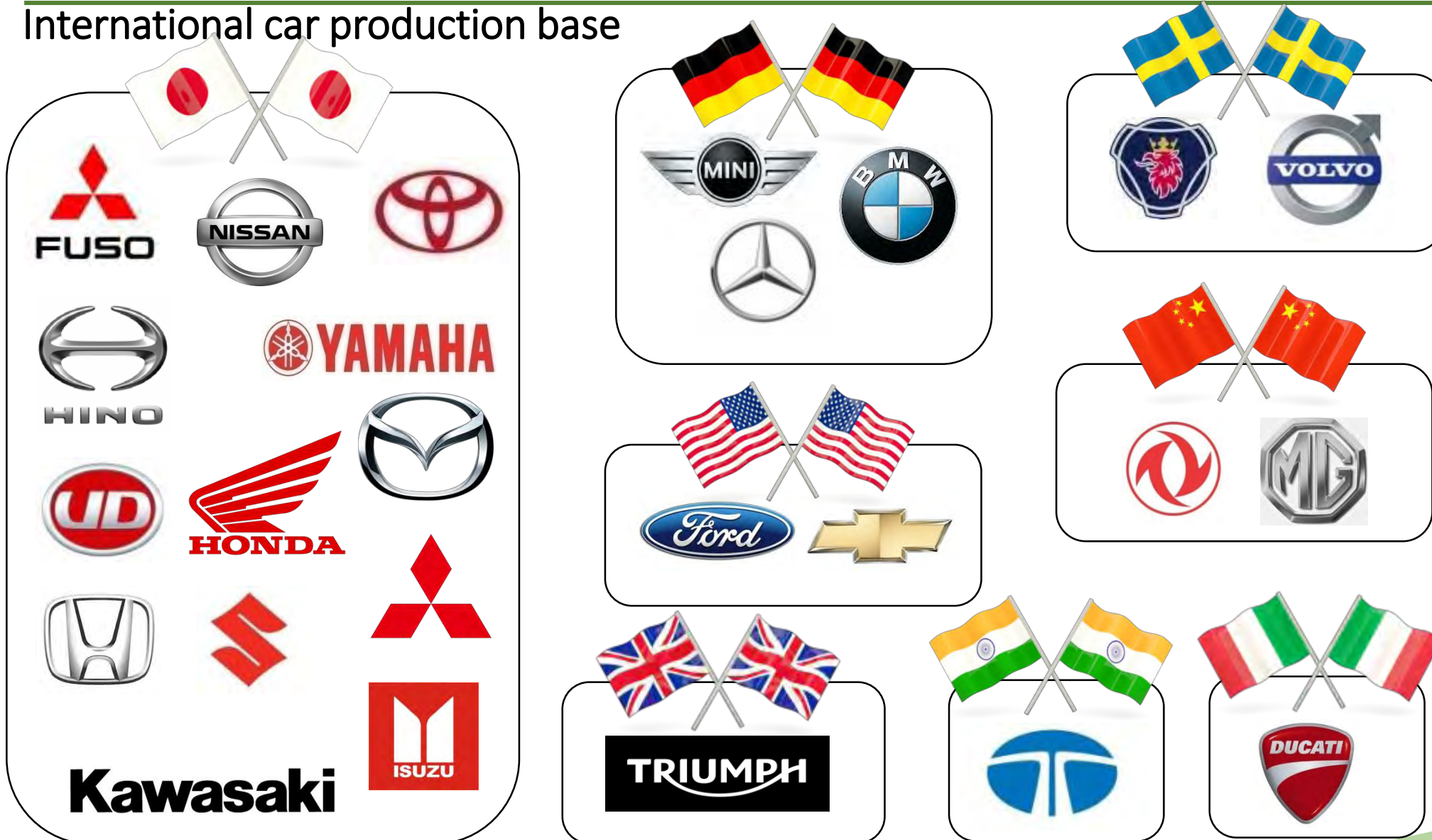


Production 2017 (x1,000,000 units)

1. China	29.02	6. South Korea	4.11	11. Canada	2.20
2. USA	11.19	7. Mexico	4.07	12. Thailand	1.99
3. Japan	9.69	8. Spain	2.85	13. UK	1.75
4. Germany	5.65	9. Brazil	2.70	14. Turkey	1.70
5. India	4.78	10. France	2.23	15. Russia	1.55

Current Status for Automotive Industry in Thailand

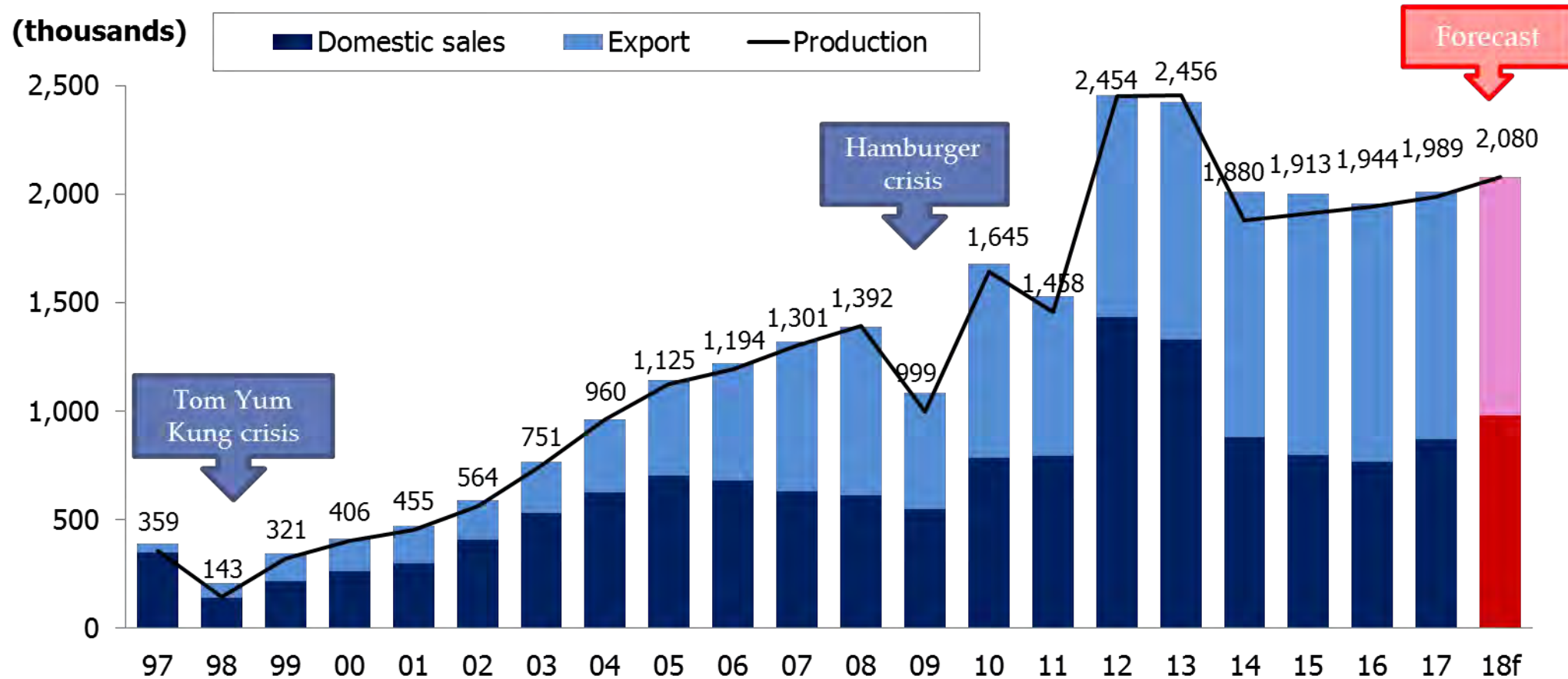
International car production base



Current Status for Automotive Industry in Thailand



Thailand motor vehicle production, sales and export



Source: Thailand Automotive Institute (TAI) (update 19/10/2018)
 Note: Including passenger car, pick up 1 ton, van, bus, truck .

Current Status for Automotive Industry in Thailand

ยานยนต์สมัยใหม่ (Next Generation Mobility)

รถยนต์ไฟฟ้าแบตเตอรี่
(Battery Electric Vehicle)

รถยนต์ขับเคลื่อนอัตโนมัติ
(Autonomous Vehicle)

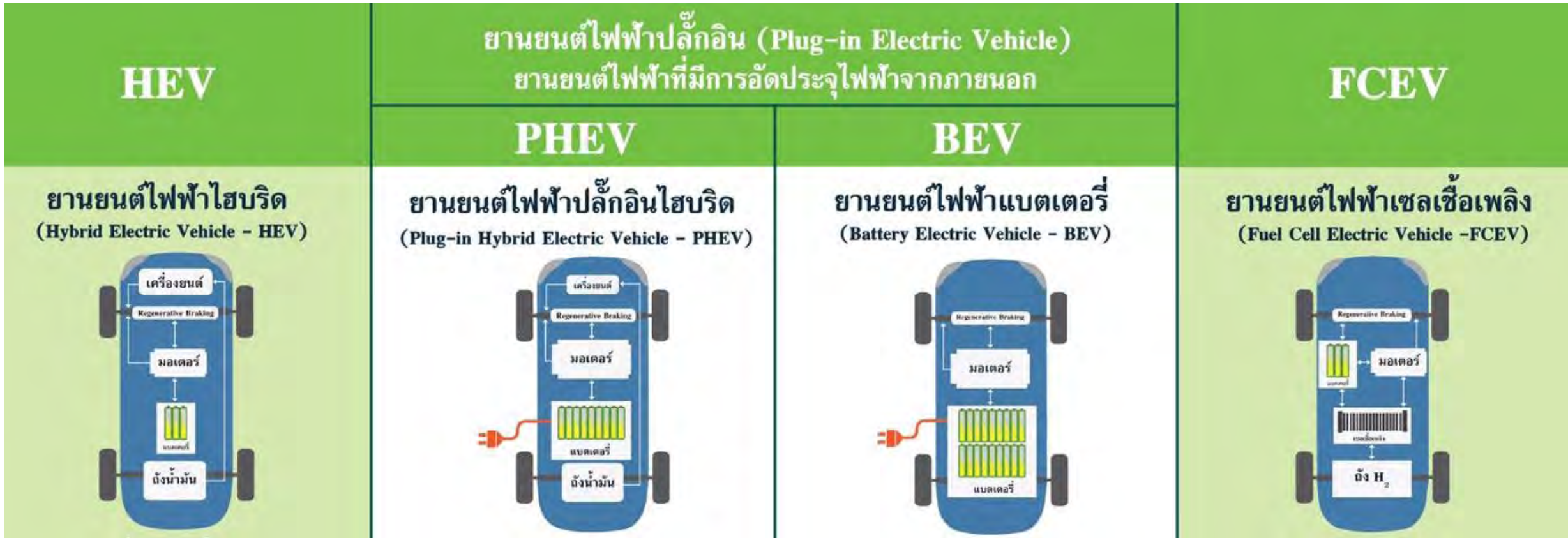
รถยนต์เชื่อมต่อกับภายนอก
(Connected Vehicle)

การแบ่งปันการใช้รถยนต์
(Car Sharing)



EV Current Status in Thailand

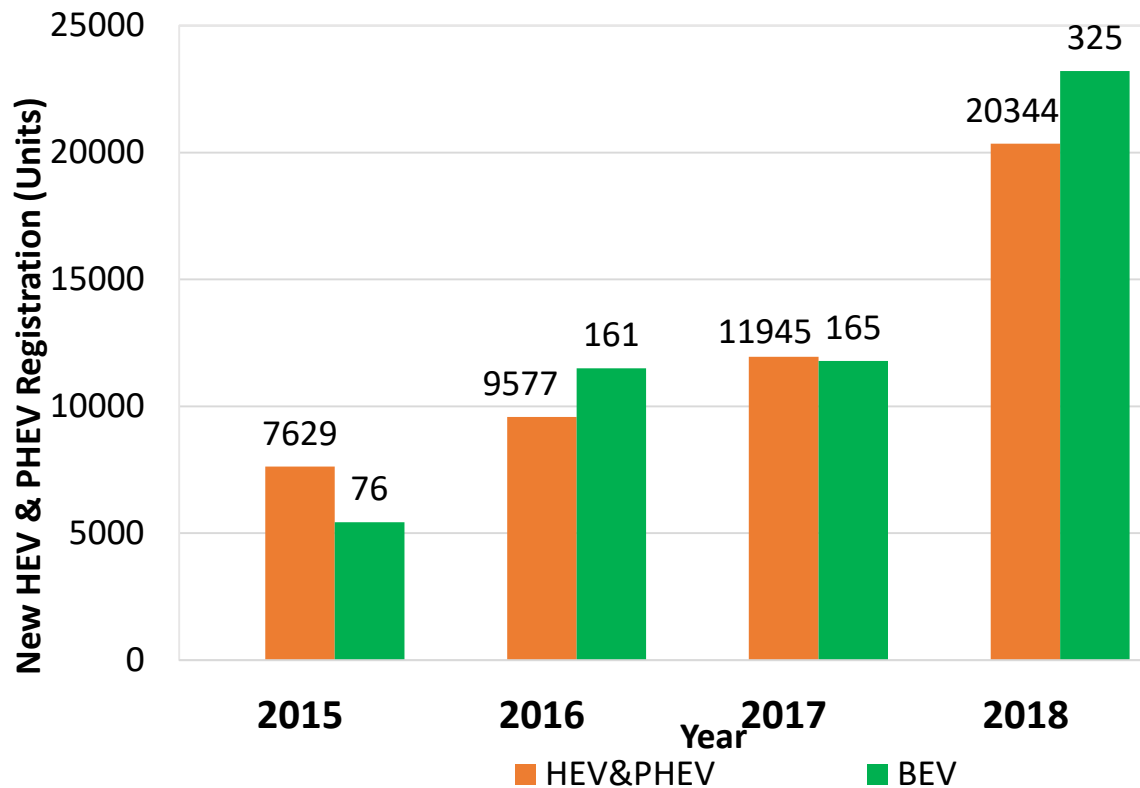
Electric Vehicles (xEV)



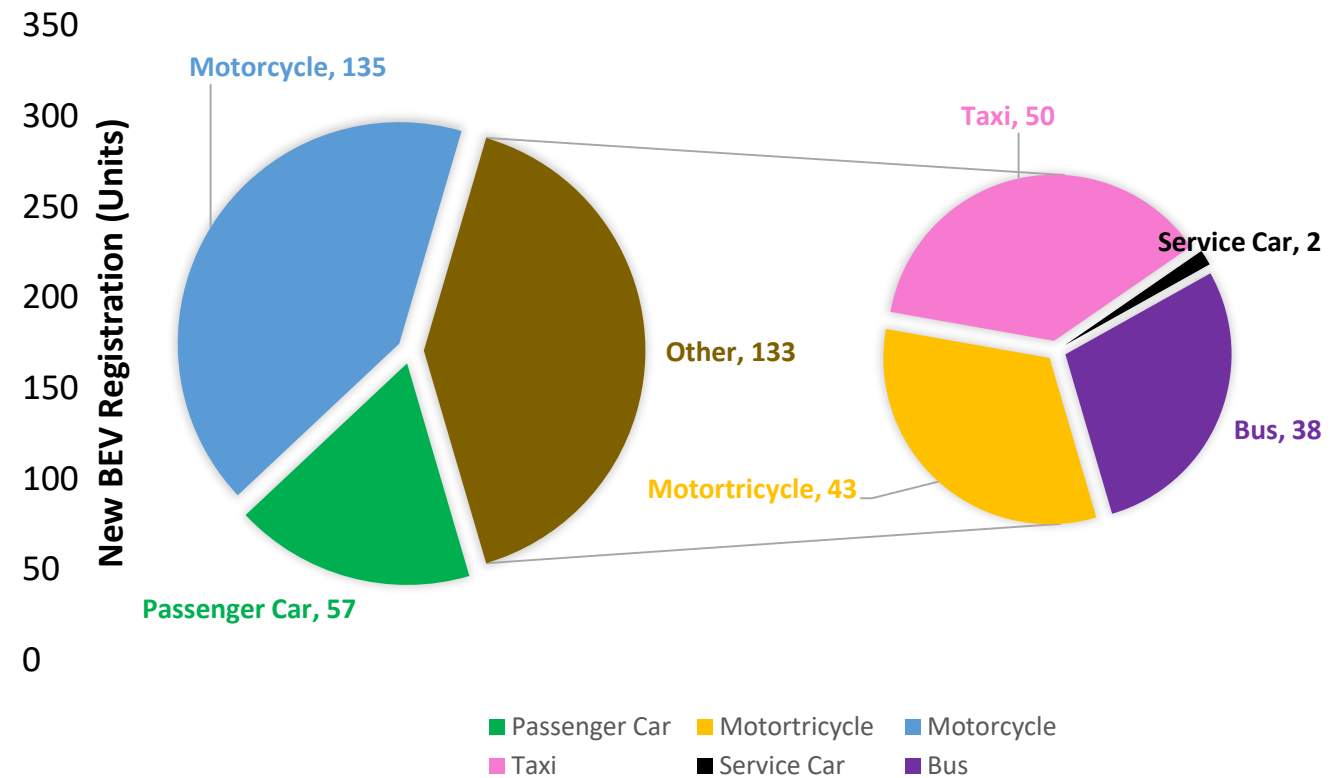
EV Current Status in Thailand



Number of New xEV Registration (as of 31st Dec 2018)



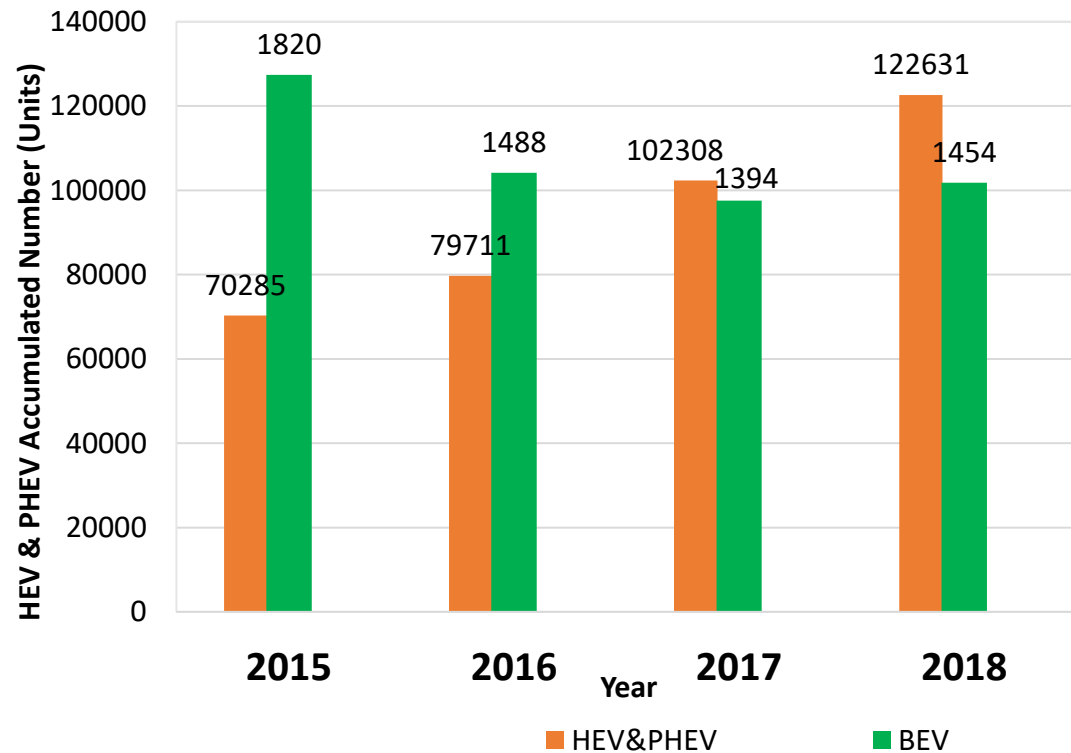
New BEV Registration by Vehicle Types (as of 31st Dec 2018)



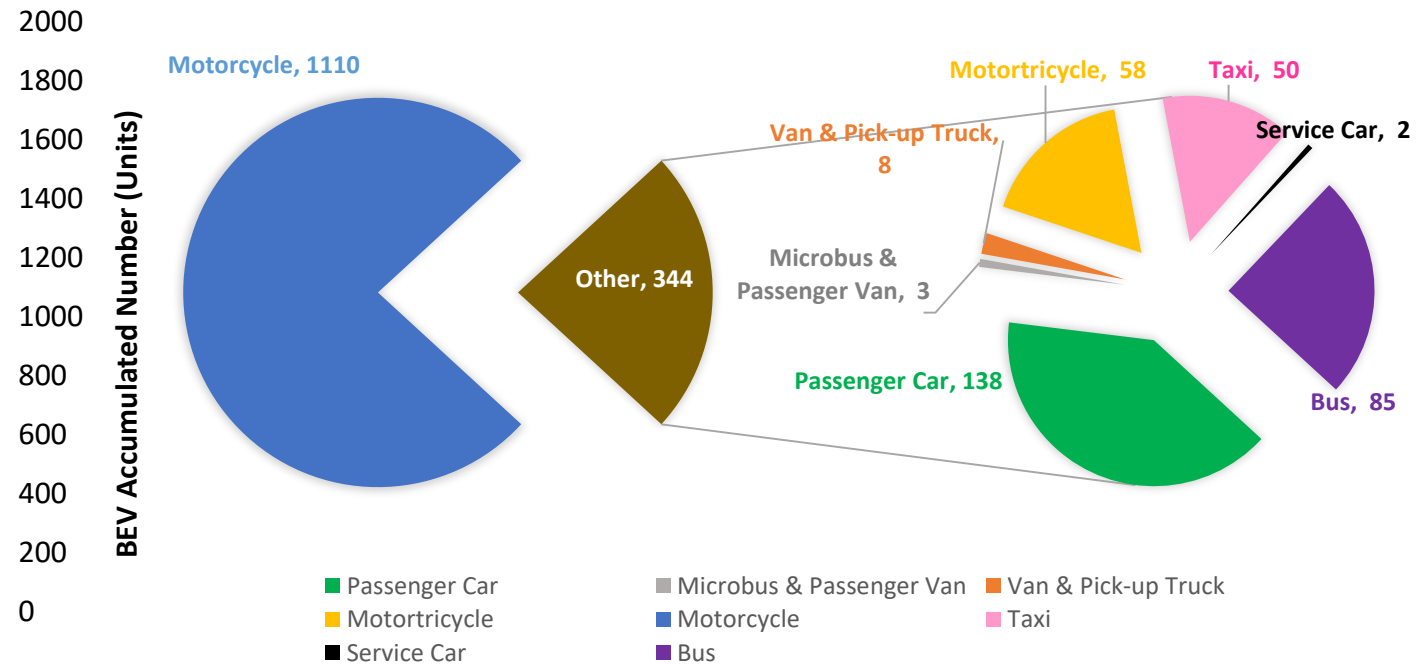
EV Current Status in Thailand



Accumulated Number of xEV Registration (as of 31st Dec 2018)



BEV Registration by Vehicle Types (as of 31st Dec 2018)



EV Current Status in Thailand

Plug-in Hybrid Electric Vehicles (PHEV)



BMW x5 xDrive40e



Volvo XC90 Drive-E



Mercedes Benz C350e



BMW 330e


















Porsche Cayenne S E-Hybrid



Mercedes Benz S500

EV Current Status in Thailand

Battery Electric Vehicles (BEV)

maker	BEV	Charging Socket Type	EV Range (km/charger)	Battery Size (kWh)	Production Country	Import tax	Excise Tax	Retail Price (Baht)
 e6		AC Type 2	400	80		0%	8%	1,890,000
 LEAF		AC Type 1 & CHAdeMO	311	40		20%	8%	1,990,000
 Soul EV		AC Type 1 & CHAdeMO	250	30		40%	8%	2,297,000
 IONIQ Electric		AC Type 2 & CCS2	280	28		40%	8%	1,749,000
 ONE		AC Type 2	160	11.8		-	2%	644,000



BMW
i3



Tesla
Model X



MPV EV



MINE
City EV

EV Current Status in Thailand

Public Charging Stations in Thailand



Paragon Department Store



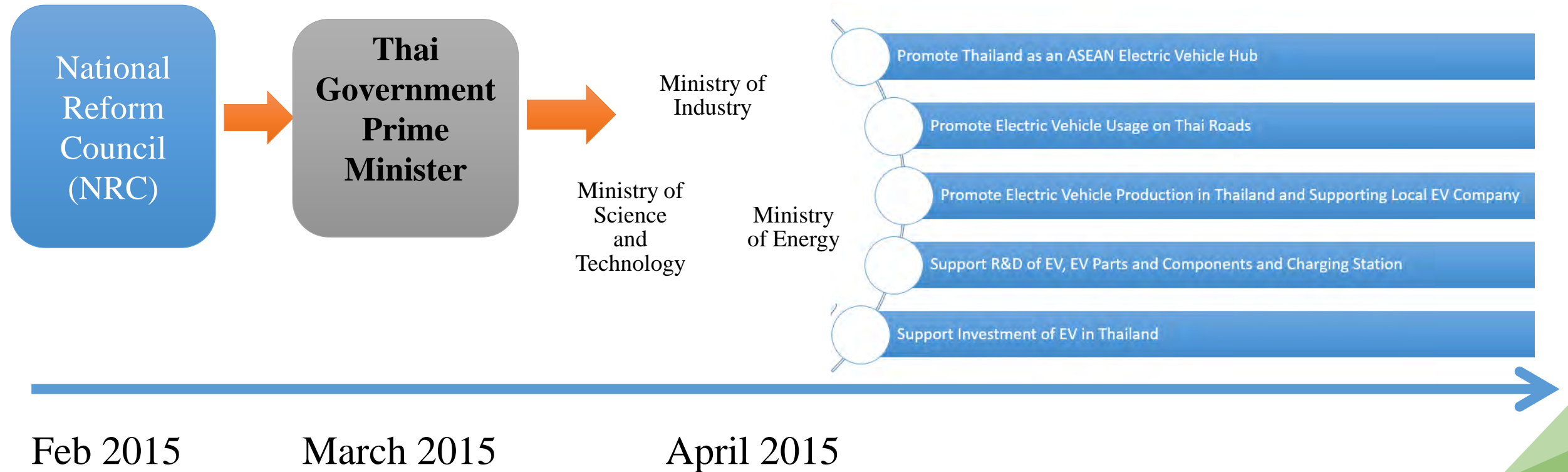
Pollution Control Department

Electric Vehicle Policy & Promotion in Thailand



Development of EV Policy in Thailand

NRC proposed the National EV promotion project to Thai government.



Electric Vehicle Policy & Promotion in Thailand



1

Foreign Direct Investment Support

- BOI EV Package (Import Tax & CIT exemption and Excise Tax reduction).
- Collaboration between Ministry of Foreign Affairs, Ministry of Commerce, Ministry of Finance and Ministry of Industry to discuss with China to set appropriate Import Tax for BEV under ASEAN-China FTA.

2

Domestic Market Stimulation

- Set the target that 20% of government budget for vehicle fleet to be used for BEV procurement.
- Urge Airport of Thailand Public Company Limited (AOT) to use more PHEV & BEV limousine.
- Industrial Estate Authority of Thailand & MoST to use BEV at EEC.
- EPPO to convert conventional taxi to BEV.
- The Fine Arts Department to use BEV at large national heritage sites

3

Infrastructure Preparation

- Ministry of Energy and Ministry of Transport to plan EV charging station location.
- TISI to proceed on the National Automotive and Tire Testing Facility and prepare human resources.

4

EV Standards

- TISI to proceed on standards of EV charging system, electromagnetic compatibility, battery for EV and DC meter for billing system.

5

End-of-life Management for EV Battery

- Department of Industrial Works to prepare EV battery end-of-life management plan.
- Pollution Control Department to enact Acts for EV battery end-of-life management.

6

Other Measures

- Thailand Automotive Institute to proceed on productivity improvement project focusing on human development to support next-generation automobile industry.

Electric Vehicle Policy & Promotion in Thailand

According to **Energy Blueprint**, in 2036

Target

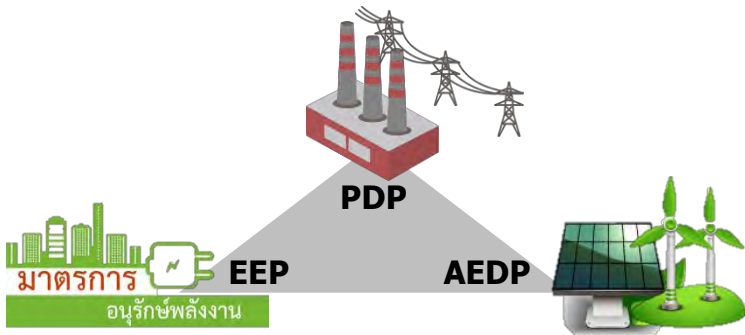
Reduce Energy intensity by 30%
Focusing on transportation sector which is
the highest energy consumption



1.2 Million EV (PHEV&BEV)



690 Charging stations



Energy demand deduction = **1,123 ktoe**
(transportation sector)

Electric Vehicle Policy & Promotion in Thailand



Thailand Vehicle Excise Tax Structure

Car Type	Engine (CC)	CO2 Emission (g/km)	E10/E20	E85/NGV	Hybrid	Hybrid BOI
Passenger Car	≤3,000	≤100	25*	20*	8*	4*
		101-150	25*	20*	16	8
		151-200	30	25	21	10.5
		>200	35	30	26	13
	>3,000	40				
BEV/FCV	8					
BEV (BOI)	2					

Car Type	Engine (CC)	CO2 Emission (g/km)	GE/DE	E85/B10
Eco Car 1	GE ≤1,300 CC DE ≤1,400 CC	≤120	14	-
Eco Car 2	GE ≤1,300 CC DE ≤1,500 CC	≤100	12*	10*

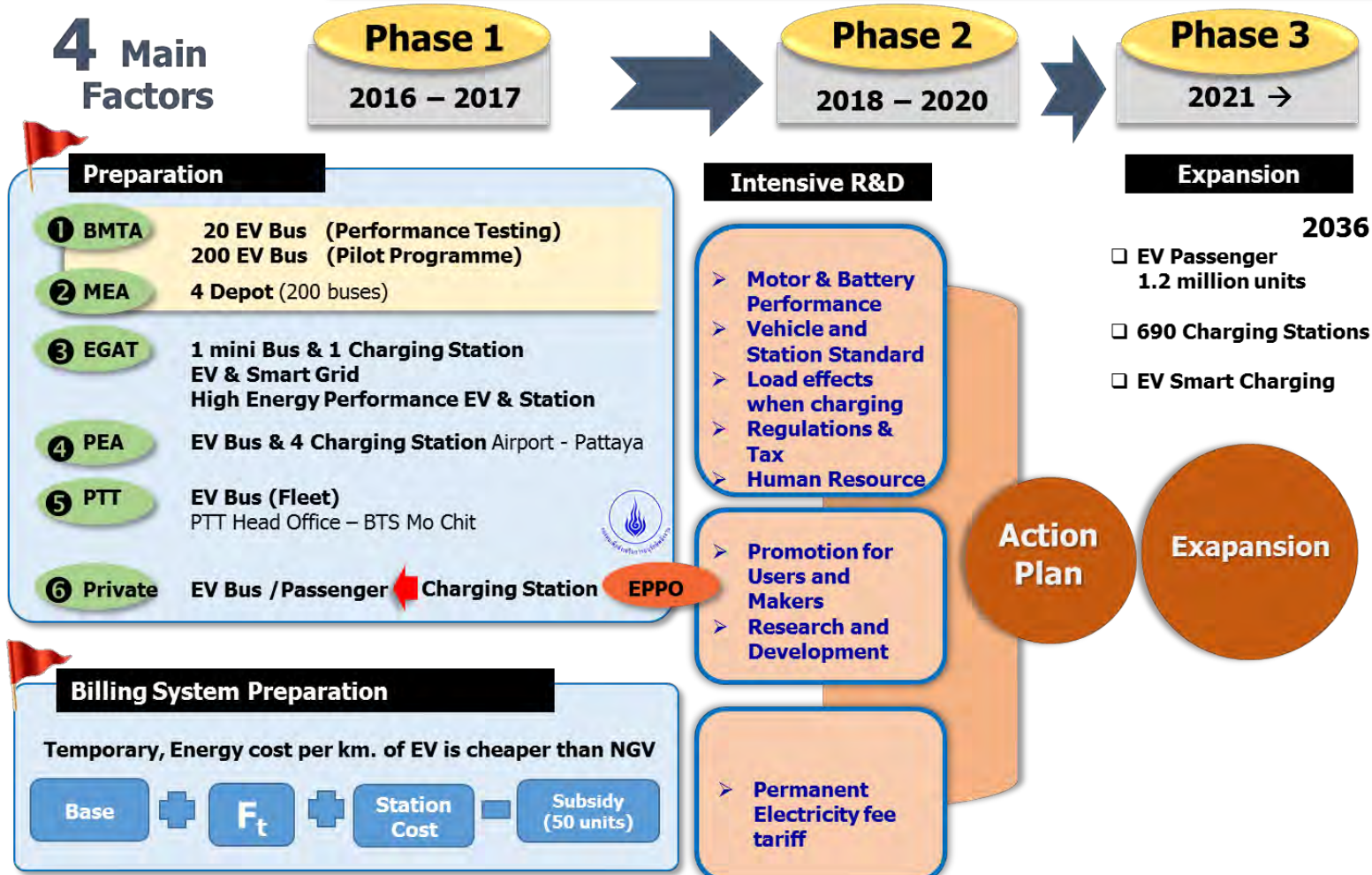
Car Type	Engine (CC)	CO2 Emission (g/km)	No Cab	Space Cab	Double Cab	Double Cab HEV	PPV	PPV HEV
Pick up /PPV	≤3,250	≤200	2.5	4	10	8*	20*	18*
		>200	4	6	13	-	25	-
	>3,250	40						
Pick up EV	10							

* With Active Safety (UN R13H) : ABS/ESC

Electric Vehicle Policy & Promotion in Thailand



EV Action Plan (2016 – 2036)



Electric Vehicle Policy & Promotion in Thailand



Energy Policy and Planning Office
MINISTRY OF ENERGY



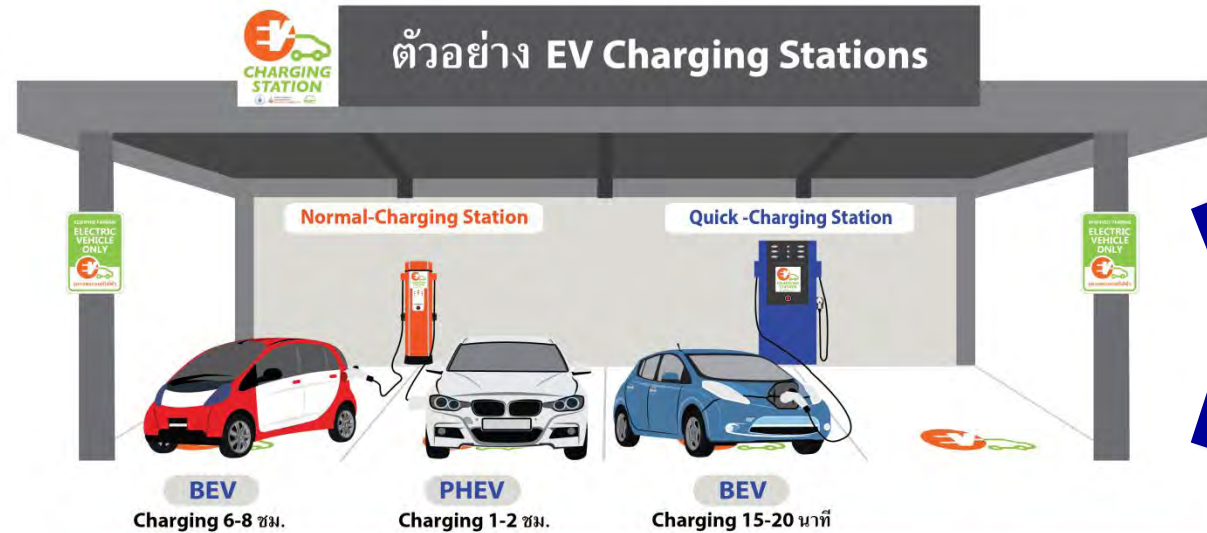
100 EV Charging Station Project Supported by EPPO

Objective

Targets

1. Hotel & Resort
2. Department Store
3. Offices
4. House estate/ Condo
5. Public service
6. Tourism service

Supporting Public & Private sectors to buy EV



Subsidy for Public sectors
Round 1-5 → 100%

Subsidy for Private sectors
Round 1 → 70%
Round 2 → 50%
Round 3-6 → 30%

*หมายเหตุ เวลาในการอัดประจุไฟฟ้า(Charging) จะเพิ่มขึ้นอยู่กับปริมาณไฟฟ้าที่มีอยู่เดิม ขนาดของแบตเตอรี่และกำลังของตัวอัดประจุภายในรถยนต์ (on-board charger) ของรถยนต์แต่ละยี่ห้อ และรุ่น BEV : Battery Electric Vehicle PHEV : Plug-in Hybrid Electric Vehicle

Electric Vehicle Policy & Promotion in Thailand



ผู้ให้บริการการอัดประจุไฟฟ้า (Charging Operator & Service Provider)



บริษัทรถยนต์ (EV Company)



บริษัทเครื่องอัดประจุไฟฟ้า (EV Supply Equipment Company)


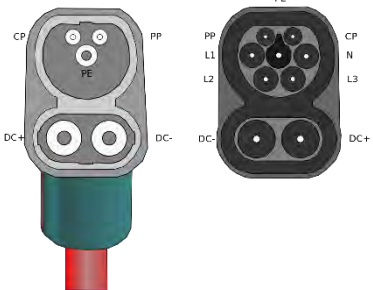


























Electric Vehicle Policy & Promotion in Thailand



Thailand Industrial Standards Institute

Sockets and Inlets Standard

Vehicles	AC Charger	DC Charger	Vehicles																									
Electric Bus	<p>IEC 62196-2 Configuration Type 2</p>  <p>Type 2 Female Plug Pinout</p> <p>Type 2 Male Plug Pinout</p>	<p>IEC 62196-3 Configuration FF</p>  <p>Rated Current: Up to 200 A Rated Voltage: ≥ 500 V DC Communication Protocol: PLC</p>	Electric Bus																									
Electric Passenger Car	<p>Phase: Single / Three Rated Current: 70A (Single phase) / 63A (Three phase) Rated Voltage: 480 V Capacity: Up to 22 kW (Mode 2) Up to 43 kW (maximum)</p>	<table border="1"> <thead> <tr> <th></th> <th>System A CHAdeMO (Japan)</th> <th>System B GB/T (PRC)</th> <th colspan="2">System C</th> </tr> <tr> <th></th> <th></th> <th></th> <th>COMBO1 (US)</th> <th>COMBO2 (DE)</th> </tr> </thead> <tbody> <tr> <td>Connector</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Vehicle Inlet</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Communication Protocol</td> <td colspan="2">CAN</td> <td colspan="2">PLC</td> </tr> </tbody> </table>		System A CHAdeMO (Japan)	System B GB/T (PRC)	System C					COMBO1 (US)	COMBO2 (DE)	Connector					Vehicle Inlet					Communication Protocol	CAN		PLC		Electric Passenger Car
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Vehicle Inlet																												
Communication Protocol	CAN		PLC																									

Electric Vehicle Policy & Promotion in Thailand



The First 100 e-Tuk Tuk Promotion Project



①

Commercial

- Old city Bangkok
- Old city Chiang Mai
- BTS-airport link
- Tuk Tuk Tour e.g. Smiling Tuk Tuk

②

Personal

New E-Tuk Tuk



Old Engine Tuk Tuk



Replacement
100 units
350,000 Baht

Converted
100 units
200,000 Baht

100 Units



Converted
E-Tuk Tuk

E-Tuk Tuk Conversion by EVAT



Showing the EVAT e-Tuk Tuk Conversion to Minister of Energy and Director General of Energy Planning & Policy Office (EPPO)

ความเร็วสูงสุด (Max speed)	ระยะทาง (Travel mileage)	เวลาในการชาร์จ (Charging time)	กำลังมอเตอร์ (Motor power)	แบตเตอรี่ (Battery)	ชาร์จเจอร์ (Charger)
65 km/h	120 km	6-8 hr.	5 kW	LiFePo ₄ 11.2kWh (72V /156AH)	Input 220VAC, Output 72VDC 3.3 kW

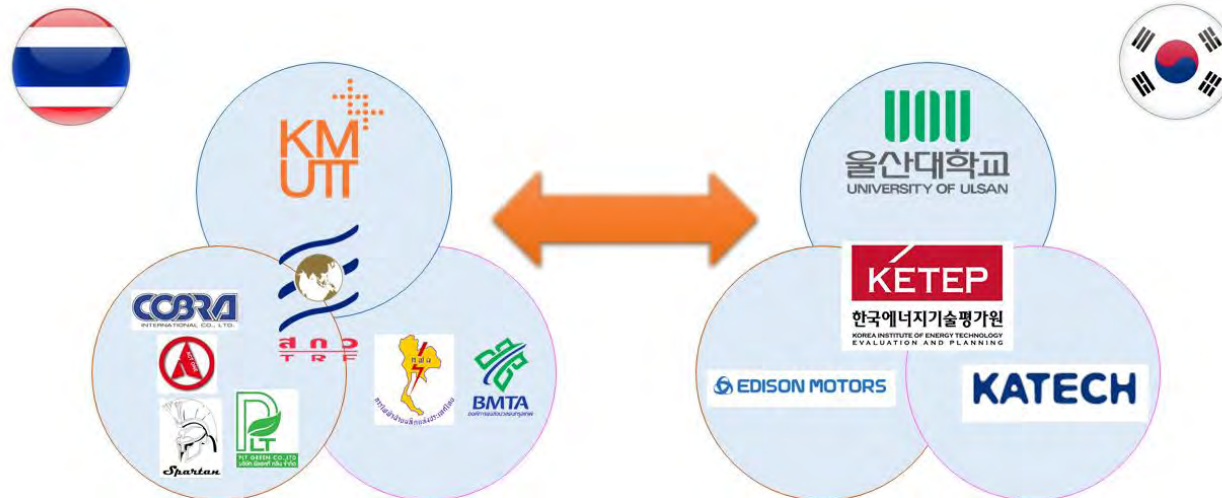
Korea-Thailand Collaboration Projects

Development and Promotion of Electric Bus in Thailand



- Collaboration on the study of operation of electric bus on Thai road condition.
- Collaboration with Korean government and bus manufacturer as well as Thai bus builder, material manufacturer and charger company.

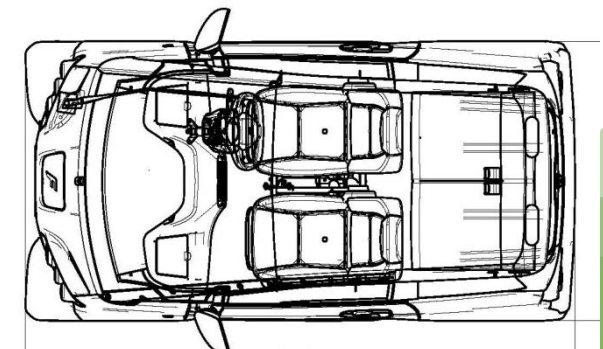
Project Period: June 2016 – May 2019



FOMM- The world's smallest class 4-seater EV

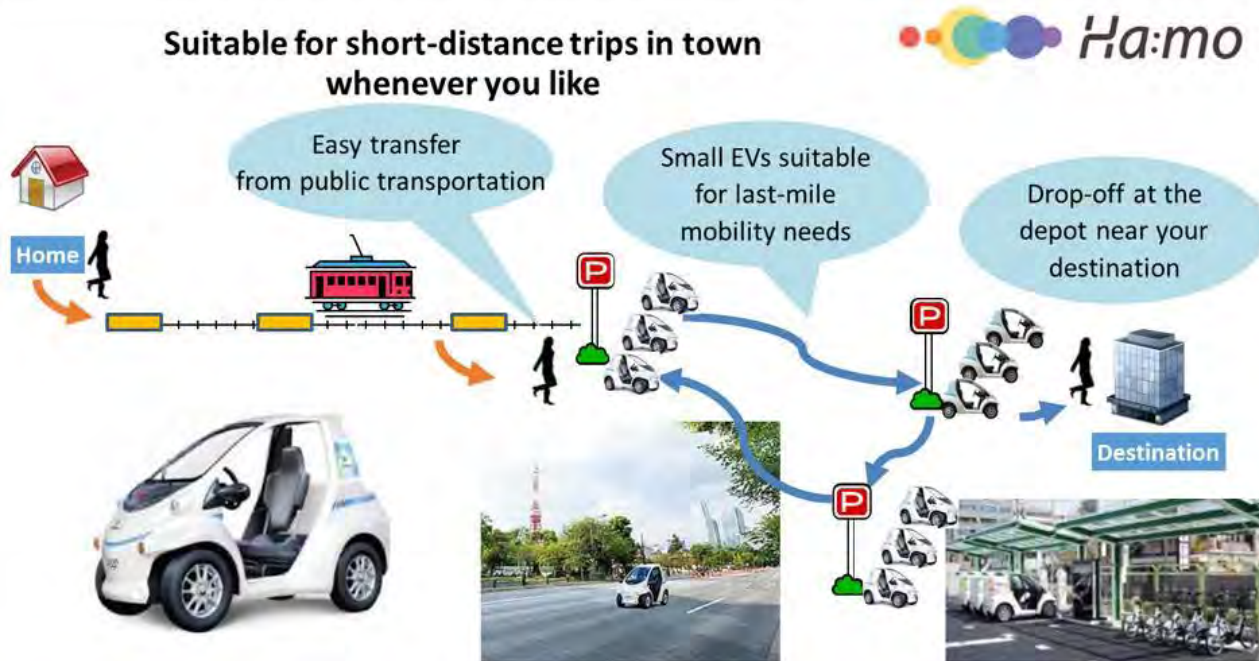


“FOMM” stands for “First One Mile Mobility”. Our vehicles are developed as “Mobility” of close-range such as from your home to a station, from a car sharing spot to your home, or from your home to the first one mile. Then, we would like to propose you new style of moving.



Ha:mo Car Sharing Service in Bangkok

What is Ha:mo ?



Ha:mo is an ultra-compact EV sharing network which complements public transportation to enhance urban mobility.

- Support short distance trip within the city, improved convenience effective use of land
 - Improve access and movement in the city
 - Reduce transportation problems
 - Complement public transportation for first/last mile.

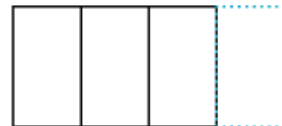


Service from: Dec 2017

Haupcar is the first service provider of “carshare” mobility platform (including electric vehicle) in Thailand to enable individuals to travel seamlessly without the hassle that comes with car-ownership.



Access to variety of cars 24/7



Reduce parking congestion



Slow down car-ownership

EV Taxi Service at Suwannabhuiairport



Grab เปิดตัวบริการใหม่ “Electric VIP Taxi”

*Introducing Electric VIP Taxi,
the newest service from Grab.*

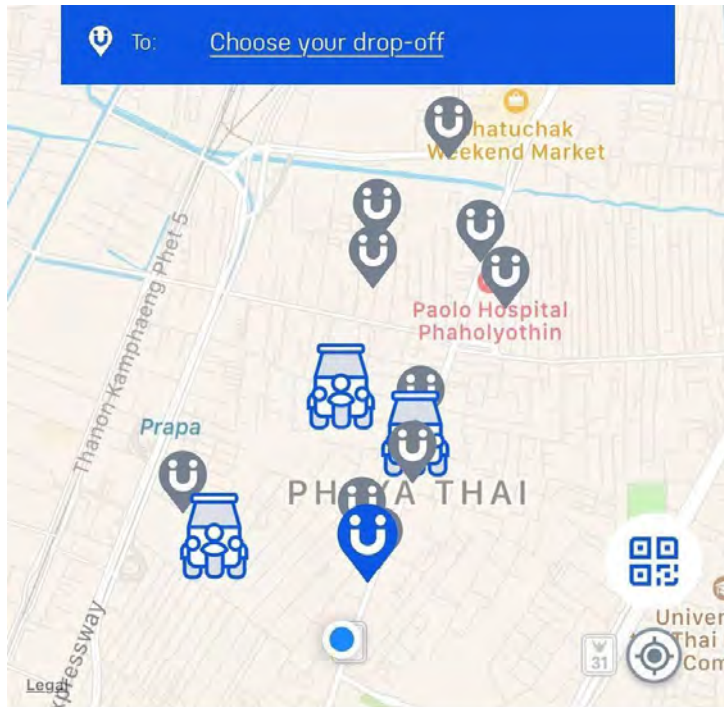


Taxi VIP by BYD E6 is available at Suwannabhumi airport.
The starting price is 150 Baht (\$4.6) for the first 2 km and then 12-16 Baht (\$0.4-\$0.5) per km.

müvmi e-Tuk Tuk on Demand



MÜVMI is the first ride hailing of “electric tuk tuk” in Bangkok and Thailand. The first service area is located at Chulalongkon University which now expand to Ari BTS station area.



Source: <http://www.facebook.com/muvmi>

Thank You



Electric Vehicle Association of Thailand (EVAT)

สมาคมยานยนต์ไฟฟ้าไทย

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