

An aerial night photograph of a large, multi-lane roundabout in a city. In the center of the roundabout is a large, circular fountain with numerous water jets illuminated with blue and white lights. The surrounding roads are filled with cars, their lights creating long, vibrant green and white streaks that curve around the fountain, suggesting a long-exposure shot. The surrounding urban landscape includes buildings and trees, some of which are also illuminated.

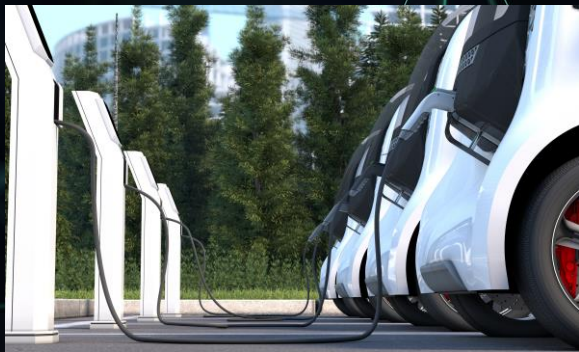
# Transitioning from ICE to EV

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# The Automotive industry is undergoing a profound transformation



## Acceleration of EV

Global EV sales grew by 62% in 2022 with 14% share of total new passenger vehicle sold. Expected to reach approx. 30% by 2026 and Sustainability commitments of Automakers



## Increased Regulation

Stringent carbon emission regulation, Incentives for production and sales, ICE phase-out in Europe, Tax rebates, IRA, European Green Deal, Circular Economy, Raw Material sourcing



## Reshaping of the Ecosystem

2x increase in use of Semiconductor in EV (vs ICE), Big data and analytics in Automotive, EV charging infrastructure, EV Battery manufacturers, New entrants

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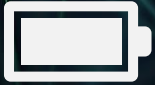


# Such transformation comes along with certain challenges



## Power Demand

5x increase in electricity demand by EV in 2030 (vs 2022)



## Electric Vehicle Batteries

Demand surge 9x in 2030 (vs 2021); cost of production, chemistry evolution



## Energy Crisis

Record high energy price, significant impact on manufacturing output and cost of production



## Range Anxiety

While autonomy of battery is improving, Public charging infrastructure is still a concern



## Raw Materials

Increase in price, geo-political landscape and demand shift leading to disrupted supply-chain and shortages



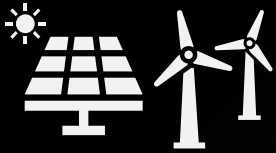
## Affordability

EV price is higher than that of ICE

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# The automotive industry has already started addressing those challenges



- Energy Efficiency
- Integration of renewable
- Purchase Power Agreement
- Prosumer

## Green & Resilient Energy Sourcing



- Lower production cost
- End-to-end data traceability
- Remote monitoring

## Digitization for better efficiency



- Rapid growth of Fast charging
- Multiple players are investing
- V2X
- Load management optimization

## EV Charging infrastructure



- Solid State Battery
- New business models
- Megawatt Charging System
- Battery swapping / Induction


## Innovation

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# In the ASEAN region, Thailand is leading that transition to EV

## Market insights

**27**  Auto Manufacturers


**62%** | Picks-up  
**35%** | Passenger cars

**[2022]** Production

**1.88 M**  
[2023] +3.5%

Exports  
Domestic Sales

**1 M**  
**0.8 M**

 **+413%** BEV registration

**+32k BEV**  
**+42k PHEV**  
Cumulative Eo2022

**1,239** Charging Stations  
**3,799** Chargers  
Cumulative Eo2022

## Thailand EV's Vision



"To be one of the most important EV production bases and component parts in 2035"

 **+2.9 M** Production

 **+2 M** Domestic Use

 **12,000** Public Charging Station

Source: The Plan of the National Electric Vehicle Policy Committee

## Policy & Investment

Thailand as a Regional EV Hub with 30@30 policy (30% of ZEV / automobiles produced in Thailand to be EV)

### Government Incentives

- o CIT exemptions for domestic manufacturing (up to 13 years)
- o Excise tax cut from 8 percent to 2 percent for imported EVs
- o 20~40% reduction in import duty for completely built-up (CBU) of battery EVs
- o Up to 70K~150K subsidy for CKD and CBU units

### Investment

- o Automotive 2<sup>nd</sup> largest FDI sector (50% being EV in FY2022)
- o BOI's approval of total 26 EV production projects valuing 86.8MB, additional 2 large FDI investments from China in H1 (BOI PR 20 Apr 2023)

## Charging Ecosystem

Dynamic and rapidly developing ecosystem, diverse contribution by Public & Private sectors

### Top 5 EVC Service Providers (excl. car brand-exclusive chargers)

Number of Locations จำนวนแห่ง		DC	DC	AC	ALL	
		DC CSS 2	DC CHAdeMO	AC TYPE 2	TOTAL	
406		576	-	579	1,155	
252		390	78	320	788	
189		45	13	421	479	
184		56	1	489	546	
164		272	215	112	599	
TOTAL		1,482	1,471	324	2,833	4,628

Source: EVAT 'Current Status' 22<sup>nd</sup> of May 2023

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