การเปลี่ยนผ่านของอุตสาหกรรมยานยนต์ไทยกับการทวีความสำคัญของยานยนต์ไฟฟ้า

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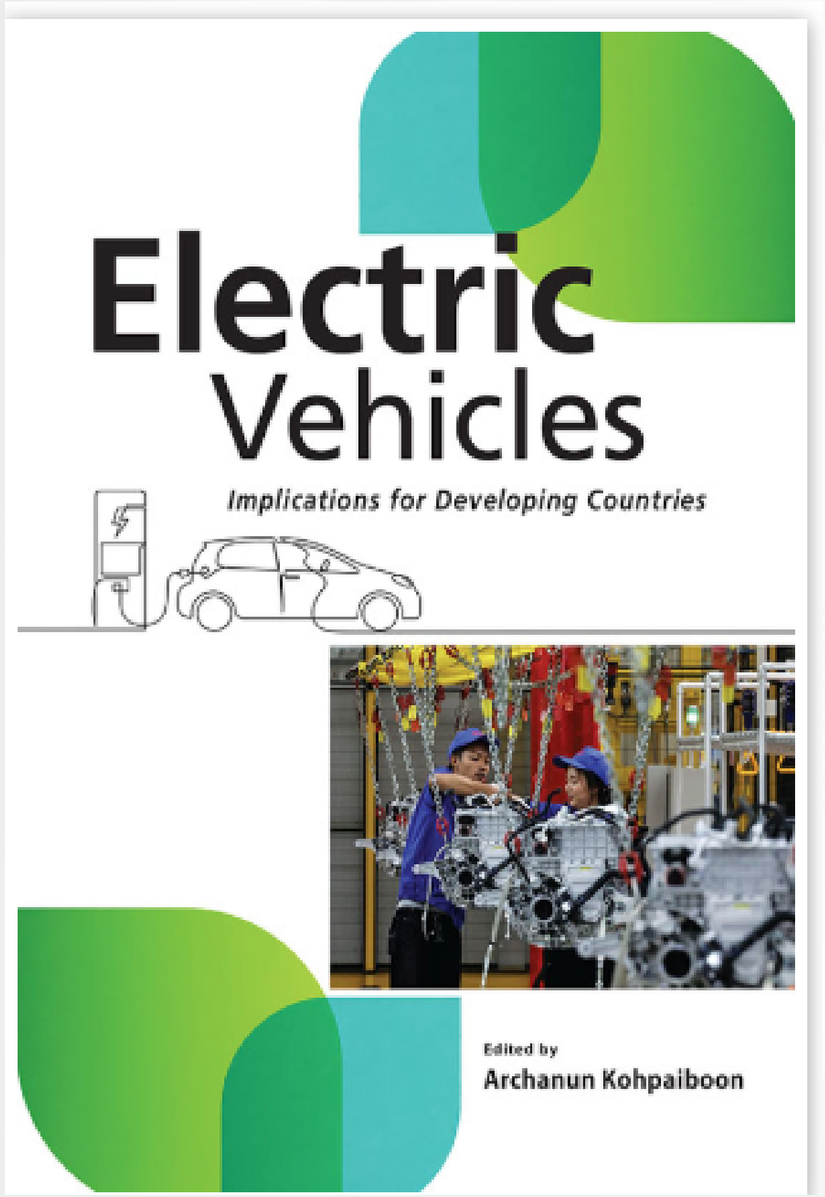
20 กรกฎาคม 2569

Book Talk



About the publication

EVs are playing a significant role in the major global energy transition currently underway. The dynamic Southeast Asian region is a major participant in this transition. Professor Archanun has assembled a group of leading regional scholars to assess progress, highlight the policy challenges and chart the way forward. This highly informative volume will be of great interest to anyone interested in this fascinating region and the global processes of industrialization and energy transition.

—Hal Hill
H.W. Arndt Professor Emeritus of Southeast Asian Economies
Arndt-Corden Department of Economics
Australian National University

Electric Vehicles: Implications for Developing Countries offers a seminal and timely analysis of the EV transition in the global automobile industry. It examines policies to promote EV uptake and their implications for industrial development through finely crafted case studies of Thailand, Malaysia, Indonesia and Vietnam, well informed by the emerging global policy discourse. An essential resource for policymakers and development scholars.

—Prema-chandra Athukorala
Professor Emeritus of Economics
Arndt-Corden Department of Economics
Australian National University

In ASEAN, EV promotion has been advanced not only for addressing environmental concerns but also for contributing to development strategies. Can the EV industry meet people's expectations as a new growth engine with technological leapfrogging, inflows of foreign direct investment and the formation of EV global value chains? Professor Archanun and other leading economists in ASEAN examine the developmental impact of EV industry promotion and critically assess the related government policies, considering opportunity costs. The book demystifies a naive belief in EVs and encourages policymakers to stand with a balanced, holistic view on EV promotion for economic development.

—Fukunari Kimura
Professor Emeritus and Senior Professor, Keio University
President, Institute of Developing Economies, Japan External Trade Organization (IDE-JETRO)

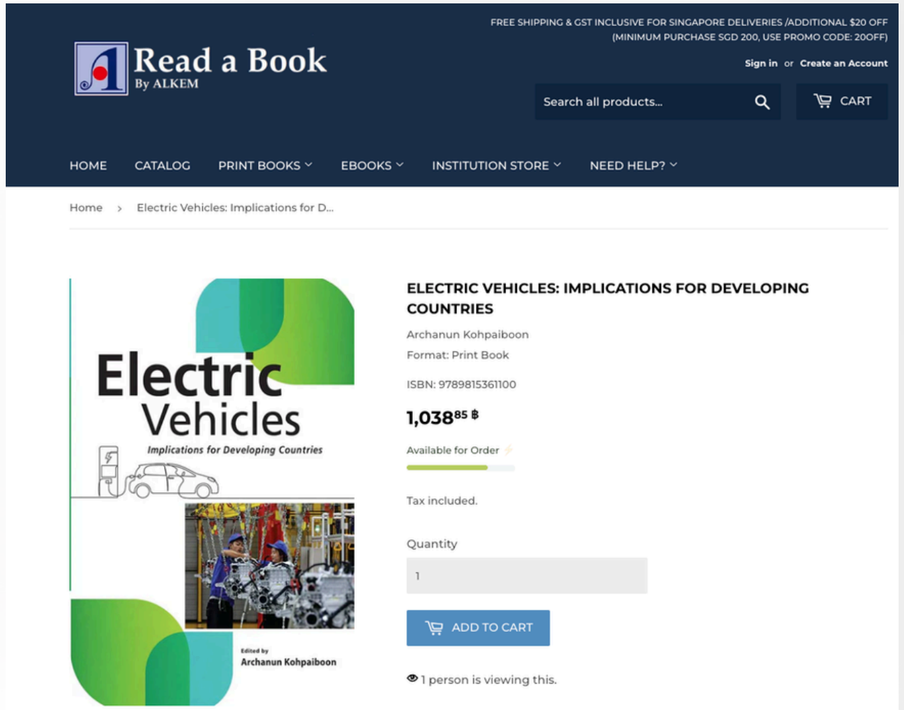
This edited volume is a must-read for those interested in the potential developmental impact of the shift from internal combustion engine vehicles (ICEVs) to electric vehicles (EVs), especially battery electric vehicles (BEVs). In addition to exploring the emergence of EVs in historical perspective, the volume has the great virtue of comparative analyses: besides reviewing the challenges and potential benefits of ICEV vs. EV localization, the volume's Southeast Asia case studies allow for cross-national comparisons, all within the promises and pitfalls of industrial policy navigating multinational strategies and value chains.

—Richard Doner
Goodrich C. White Professor Emeritus
Department of Political Science
Adjunct Professor, Rollins School of Public Health
Emory University

Book’s Chapters

ISEAS YUSOF ISHAK INSTITUTE

Contents



Outline of the talk

1. BEVs in the context of developing countries
2. Thai automotive industry: First Look
3. Policies toward the rise of BEVs
4. The rise of BEVs and the remaining challenges
5. Conclusions and policy lessons

BEVs in the context of developing countries

Re-emergence of BEVs (e.g., Tesla+ Government incentives)

BEVs as a systematic sustainable product innovation (spillover)

In the context of developing countries, two additional agendas of promoting BEVs (collectively referred to as First Move Advatange)

1. Technological leapfrogging

2. Seek to attract BEV makers

Debatable issues

The (net) environmental benefit is conditioned by the carbon intensity in the electricity generation system (Renewable energy transition, Fixed cost).

Disruptive effect of the technological changes**?** - 4IR debate

BEVs and ICEVs: Different technologies, close market substitutes (hence subsidizing one means taxing the other).

Are their BEV makers ready to set up affiliates abroad? -Vernon's Product-life Cycle Theory

Nature of BEV's global value chains /global production sharing

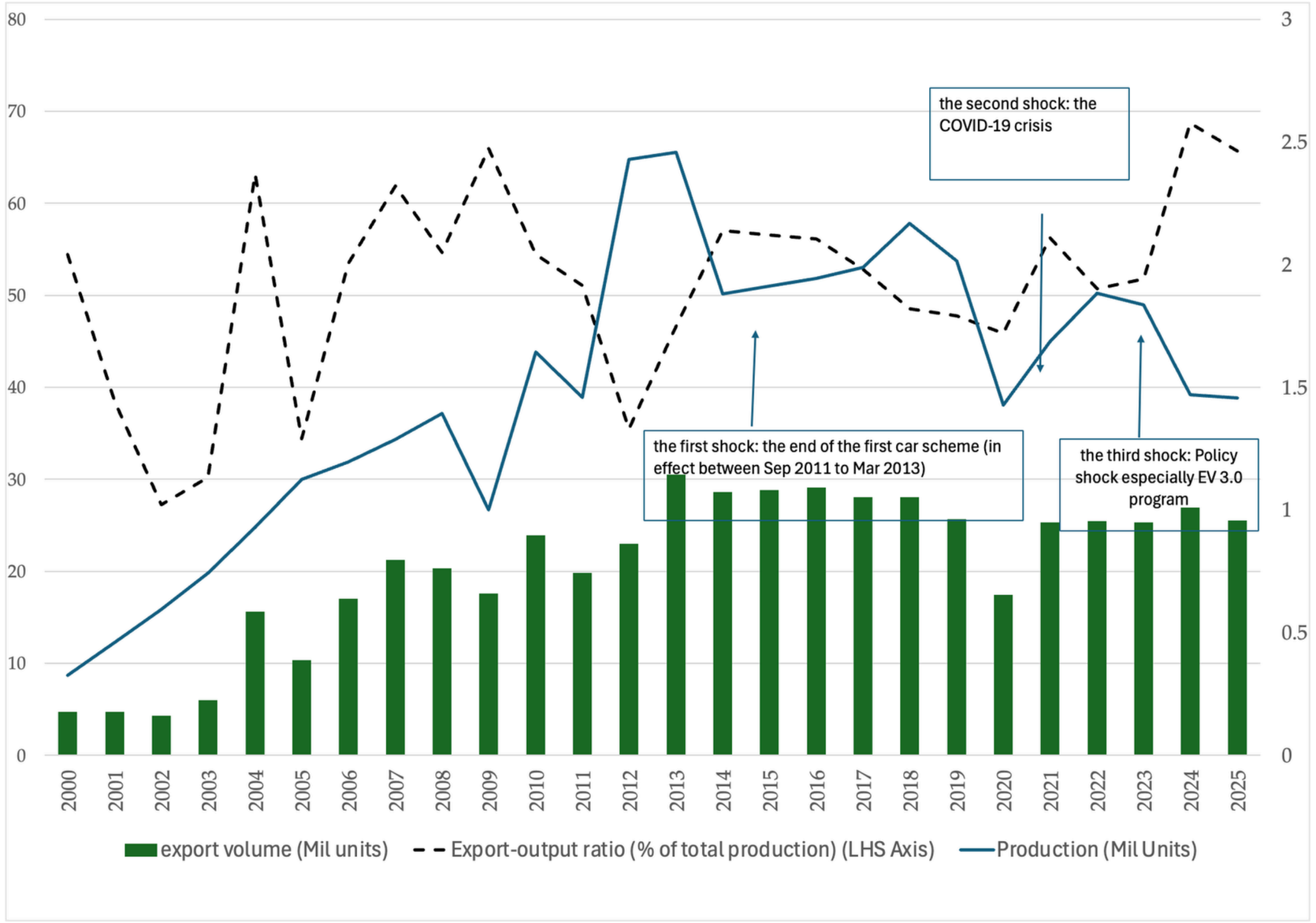
Thai Automotive: First Look

The Thai automotive industry (vehicles and auto parts) plays a significant role in the Thai economy, accounting for 11% of manufacturing value added and 10% of total exports, while employing more than 300,000 workers.

Thailand ranks 11th in world vehicle production (2025) and is the largest producer in Southeast Asia.

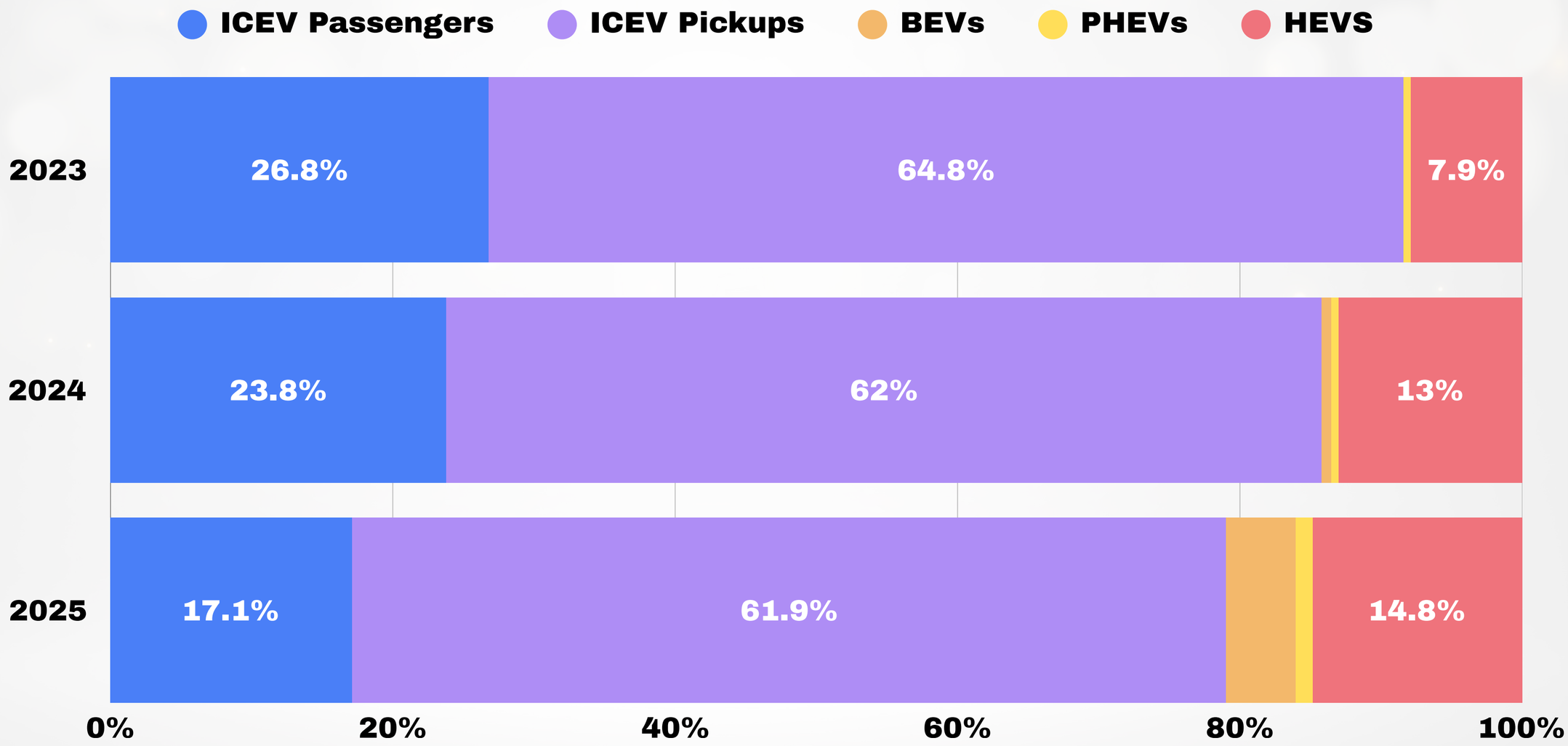
Vehicle production in Thailand is dominated by internal combustion engine vehicles (ICEVs) at 80%, followed by hybrid, plug-in hybrid, and battery electric vehicles (HEVs, PHEVs, and BEVs), respectively.

A Decade of Challenges for the Thai Automotive Industry

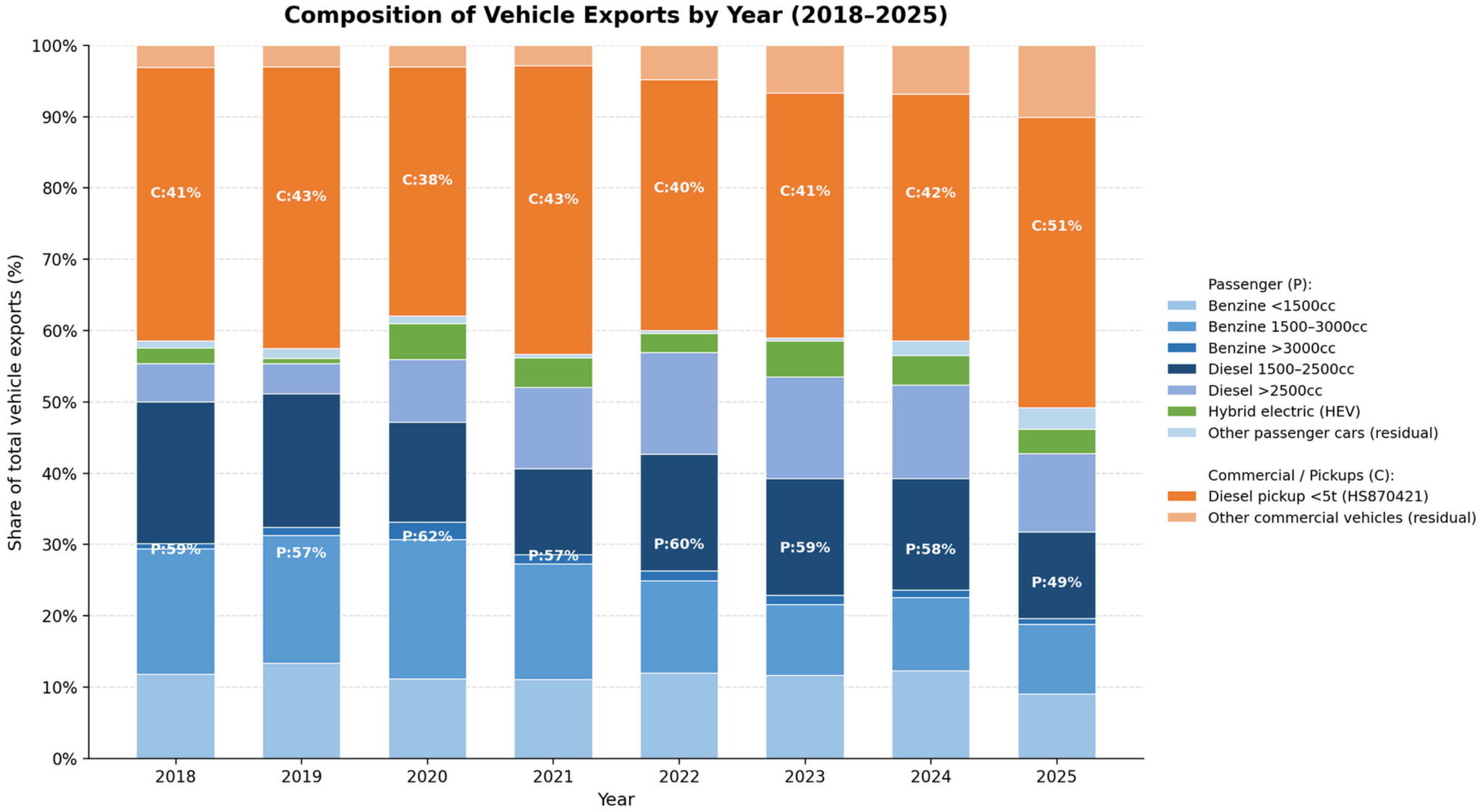


Structure of Vehicle Production

(% of total vehicle production)

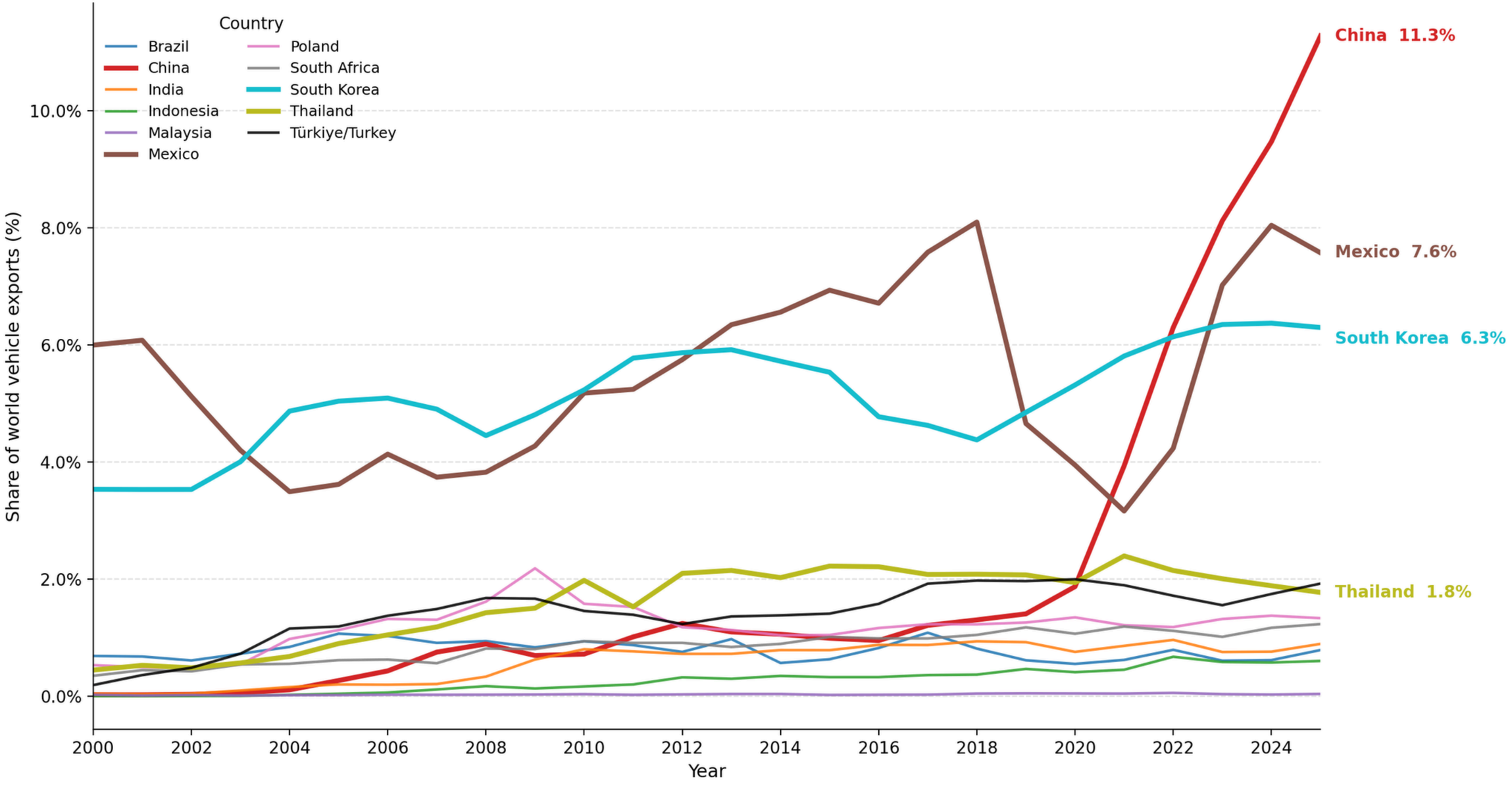


Thailand's Export Mix (% of Total Exports)



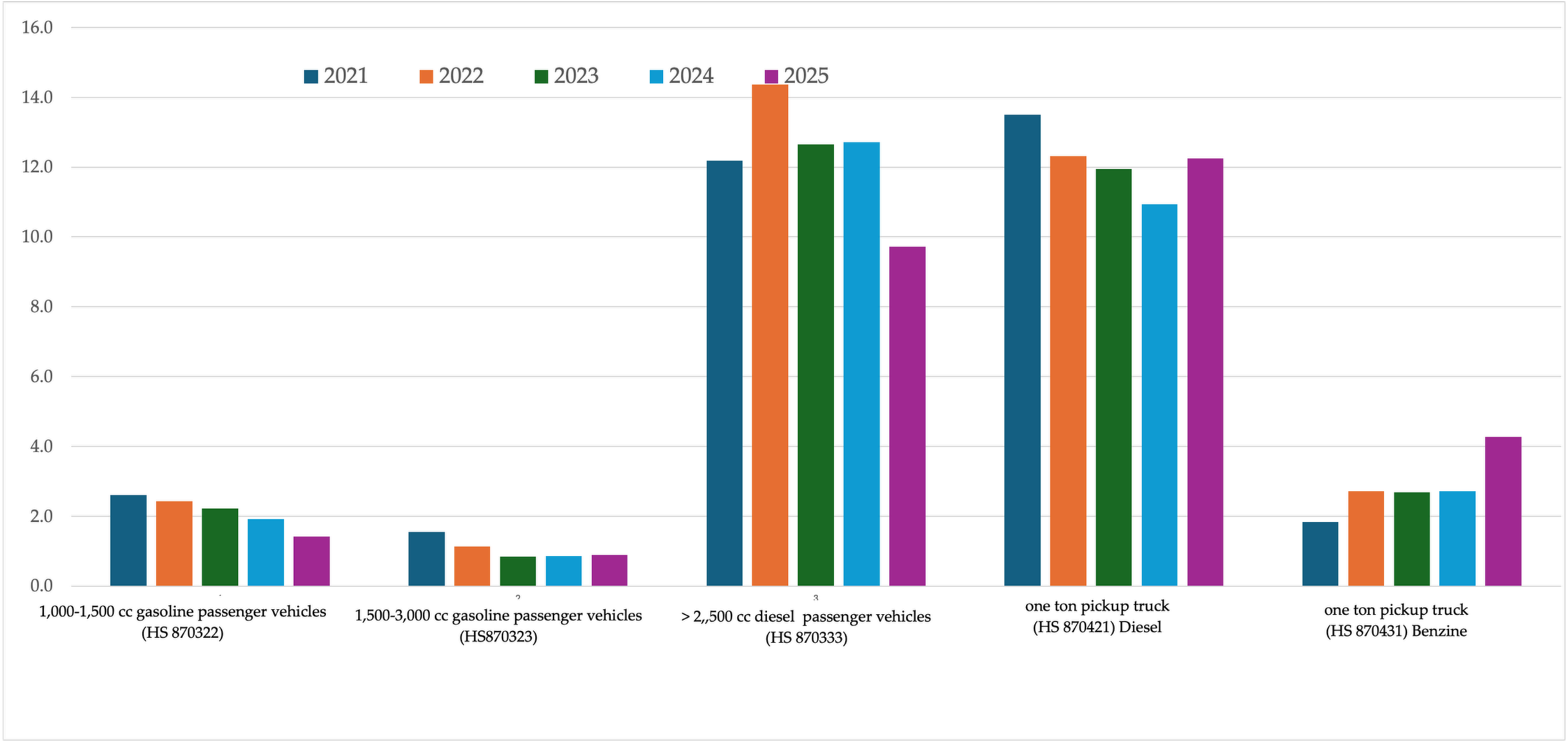
Note: residuals = category total − named subcategories; cover HS codes not separately broken out in the source data.

World Market Share of Vehicle Exports, by Country (2000–2025)



Note: bolder lines highlight China, Mexico, South Korea, and Thailand. Values are each country's share of world vehicle exports.

Shifts in Thailand's Export Composition (% of Global Exports)



Export Destinations of Passenger and Commercial Vehicles

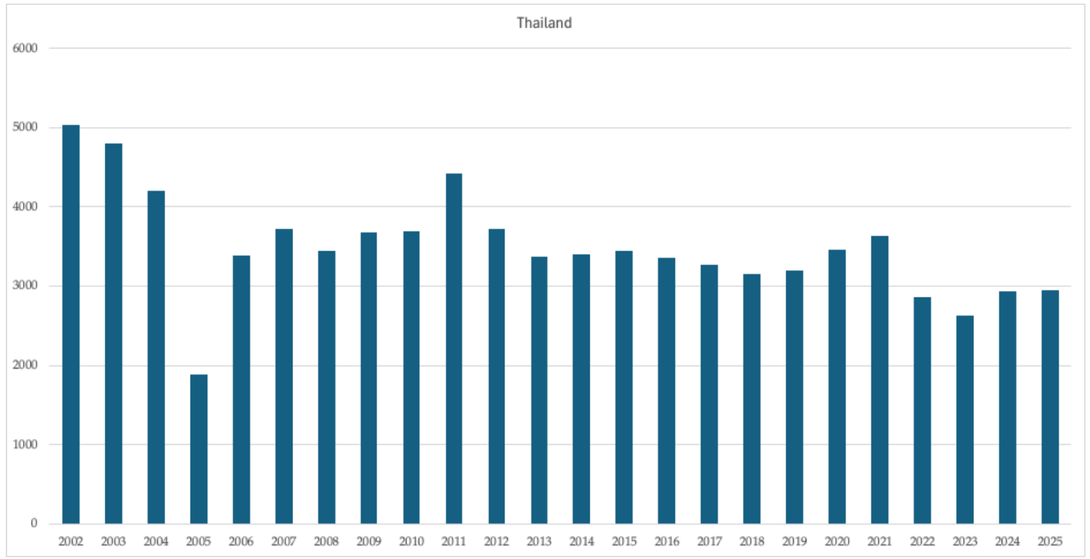
(% of Total Exports, Average 2024–2025)

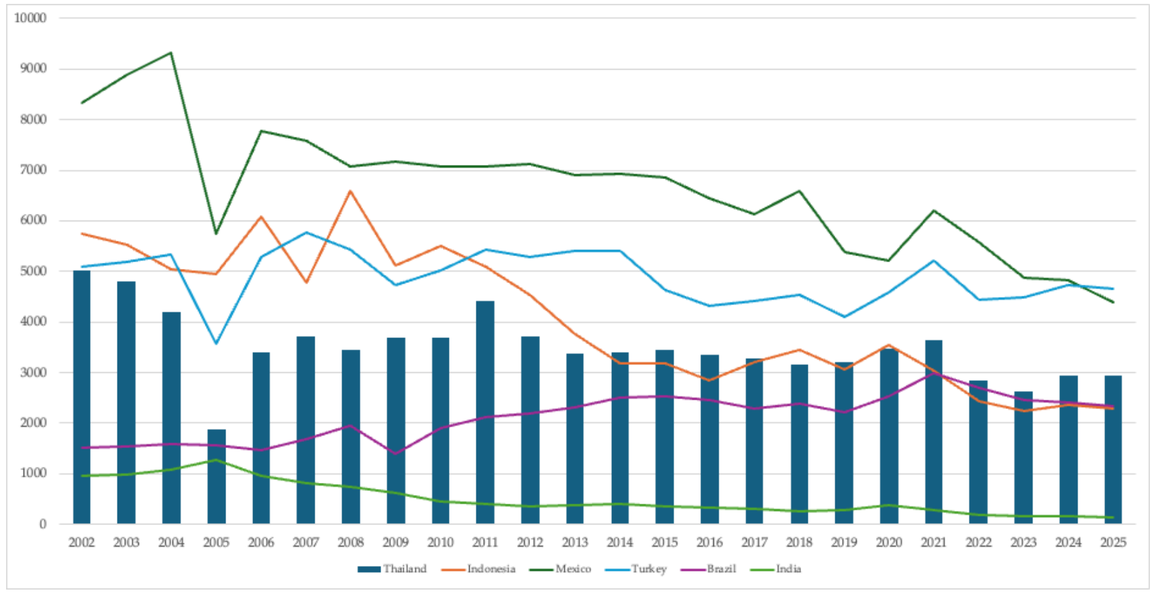
Reporter	North America	Latin America	EU	Other Europe	Middle East	Africa	ASEAN	Northeast Asia	South & Central Asia	Oceania	Other
Mexico	94.70%	2.20%	2.00%	0.00%	0.30%	0.00%	0.00%	0.50%	0.00%	0.30%	0.00%
China	3.20%	15.30%	15.70%	20.80%	13.50%	6.30%	8.90%	3.90%	8.30%	4.30%	0.00%
Turkey	0.10%	0.50%	73.50%	18.20%	2.40%	2.60%	0.00%	0.20%	1.30%	1.20%	0.00%
Thailand	1.20%	12.20%	3.20%	2.40%	17.00%	3.30%	23.60%	3.60%	0.80%	32.70%	0.00%
India	0.30%	22.70%	2.40%	1.70%	26.20%	27.10%	3.90%	8.70%	4.50%	2.40%	0.00%
South Africa	9.70%	1.70%	58.20%	10.20%	2.30%	11.40%	0.20%	2.40%	0.00%	3.90%	0.00%
Poland	0.00%	0.90%	76.00%	19.50%	0.90%	0.90%	0.00%	1.20%	0.40%	0.30%	0.00%
Indonesia	0.00%	21.20%	0.10%	0.00%	21.40%	1.80%	51.20%	2.20%	0.70%	1.40%	0.00%
Brazil	3.10%	95.40%	0.30%	0.10%	0.30%	0.50%	0.20%	0.10%	0.00%	0.10%	0.00%
Vietnam	37.60%	0.70%	4.30%	0.80%	1.80%	0.00%	53.40%	0.80%	0.30%	0.20%	0.00%
Malaysia	0.40%	2.90%	1.00%	0.40%	0.40%	2.50%	77.40%	9.60%	3.70%	1.80%	0.00%

Source: UNComtrade database

Backward Linkages of ICEVs

(Real Imported Parts Value per Vehicle, USD)





Key Takeaways

The Thai automotive industry, one of the most important sectors of Thai manufacturing, is facing declining domestic demand.

The industry has established solid export competitiveness. Amid the global automotive consolidation, Thailand’s specialization is on diesel-engine vehicles. Note that hybrid vehicles have gained her importance in the auto export basket.

The industry is transitioning away from ICEVs toward HEVs, while BEV production in Thailand remains in its infancy.

Policies toward the rise of BEVs

Until 2020, the Thai government moderately promoted EV uptake, prioritizing environmentally friendly vehicles rather than a specific powertrain technology.

EVs were treated as the same as other more environmentally friendly vehicles (hybrid, plug-in hybrid, bio-diesel, ethanal fuel mixtures) under the first term of Gen. Prayuth Chan-ocha Administration (May 2014-July 2019).

From 2020, the Thai government **picked up BEVs as a technology winner over the other two EVs** (HEVs and PHEVs) and other environmentally friendly vehicles (eco-cars).

Excise taxes according to vehicle types from 2013 to 2022

Vehicle Type	Engine Displacement (cc)	Engine Type	Fuel Type	Investment promotion from BOI	CO2 Emission Rate (g/km)	Excise tax rate in 2013 (%)	Excise tax rate in 2016 (%)	Excise tax rate in 2022 (%)
HVs (Passenger Cars)	≤ 3000 cc	Hybrid		BOI	≤100	10	10	8 (4)*
				BOI	100-150	20	20	16 (8)*
				BOI	151-200	25	25	21 (10.5)*
				BOI	>200	30	30	26 (13)*
	>3000cc					50		40
ECO Car 1	≤1300	Gasoline	E85		≤120	17	17	14
	≤1400	Diesel						14
ECO Car 2	≤1500	Diesel	B5		≤100		14	12
			B10					10
		Gasoline	E85				12	
BEVs				BOI		10		8 (2)*
ICEVs (Passenger Cars)	≤ 3000 cc	Gasoline Diesel NGV	E10/E20/Diesel		≤150	30		25
			E85/NGV	BOI				20
			E10/E20/Diesel		150-200	35		30
			E85/NGV	BOI				25
			E10/E20/Diesel		>200	40		35
			E85/NGV	BOI				30
	>3000cc	Gasoline Diesel NGV				50		40

Kohpaiboon, A. (2024), 'Policies to promote EV uptakes in Thailand', *Journal of Southeast Asian Economies*, 41(3): 221-244

the National Electric Vehicle Policy Committee (henceforth referred to as the EV Board) was established on 11 March 2020 to accelerate the BEV industry.

Despite rumors about the ICEV production ban 100%@2035, the policy target was set at 30 % of all domestically manufactured vehicles being EVs in 2030, i.e. 30@30.

The key turning point was on 14 January 2022 known as EV 3.0 (the second term of Gen. Prayuth Chan-ocha Administration (July 2019- Sep 2023).

ที่มา**:** อาชนัน เกาะไพบูลย์ ยานยนต์ไฟฟ้า **ZEV 100%** ในปี **2035** เป้าหมายยังคลุมเคลือ **Way Magazine 4** พฤษภาคม **https://waymagazine.org/zero-emission-vehicle-2035/**

Carrot and Stick Approach in EV 3.0

Carrot

The government provided a direct subsidy to consumers for the purchase of new battery electric vehicles (BEVs) during 2022–2023.

The subsidy was complemented by excise tax cuts (from 8% to 2%) and import duty reductions.

TABLE 3
Policy Packages to Promote EV Industry in Thailand in the Fifth EV Board Meeting 14 January 2022

	EV Passenger Cars with a Battery Size from 10kWh to 30 kWh (Retail Price below THB2 million)	*EV Passenger Cars with a Battery Size of over 30 kWh (Retail Price between THB2 million and THB7 million)*	*EV Pickup Trucks (Retail Price less than THB2 million)*	*EV Motorcycles (Retail Price less than THB0.15 million)*
Tariff Cuts	• For those not imported under an FTA, the import duty rate will be reduced from 80% to 40%. • For those imported under an FTA at a duty rate of less than 40%, import duty will be exempted. • For those imported under an FTA at a duty rate of over 40%, import duty will be further reduced by 40%.	• For those not imported under an FTA, the import duty rate will be reduced from 80% to 60%. • For those imported under an FTA at a duty rate of less than 20%, import duty will be exempted. • For those imported under an FTA at a duty rate of 20% or more, the import duty will be further reduced by 20%.	Local manufactured only	None
Excise Taxes	Excise tax is cut from 8% to 2% for passenger EVs and 0% for truck EVs, all conditioned by further conditions.			Excise tax is cut from 8% to 1%, all subject to further conditions.
Amount of Subsidy	THB70,000	THB150,000	THB150,000	THB18,000

SOURCE: Meeting note of National Electric Vehicle Committee of 3rd/2021 and 1st/2565.

Kohpaiboon, A. (2024), 'Policies to promote EV uptakes in Thailand', *Journal of Southeast Asian Economies*, 41(3): 221-244

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	>3000cc	Gasoline Diesel NGV				50		40

Kohpaiboon, A. (2024), 'Policies to promote EV uptakes in Thailand', *Journal of Southeast Asian Economies*, 41(3): 221-244

Stick

BEV localization: Subsidies were offered for domestically produced vehicles.

Transition: Companies without ready local manufacturing facilities in 2022 were allowed to import vehicles during 2022–2023, subject to a requirement to offset imports with domestic production — at a ratio of 1:1 by end-2024 and 1:1.5 by end-2025.

EV Parts Localization Requirements:
Option 1: Procure locally produced batteries at the cell level by 1 January 2026.
Option 2: Procure locally produced batteries at the module level by 1 January 2026, and then procure locally produced power control unit (PCU) inverters by 1 January 2030; and source at least one of the following locally produced components: (1) Traction motors; (2) Reduction gears; (3) Compressors for battery electric vehicles; (4) Battery management systems (BMS); and (5) Drive control units (DCU)

Policy developments after EV 3.0

The similar incentive package continued in PM Srettha Thavisin Administration (August 2023 – August 2024) known as the EV 3.5 package — a more stringent set of requirements

Proposed solutions for companies participating in EV 3.0 and EV 3.5 in cases where they were not yet able to comply with the conditions, or were unable to comply with them, under the Paetongtarn Shinawatra administration (August 2024–July 2025) and the Anutin Charnvirakul administration (August–December 2025).

Restore green vehicles policy by extending incentives to HEVs and MHEVs during the Paetongtarn Shinawatra administration (August 2024–July 2025)

Percentage Price Difference of Vehicles over EVs Promoted under EV 3.0

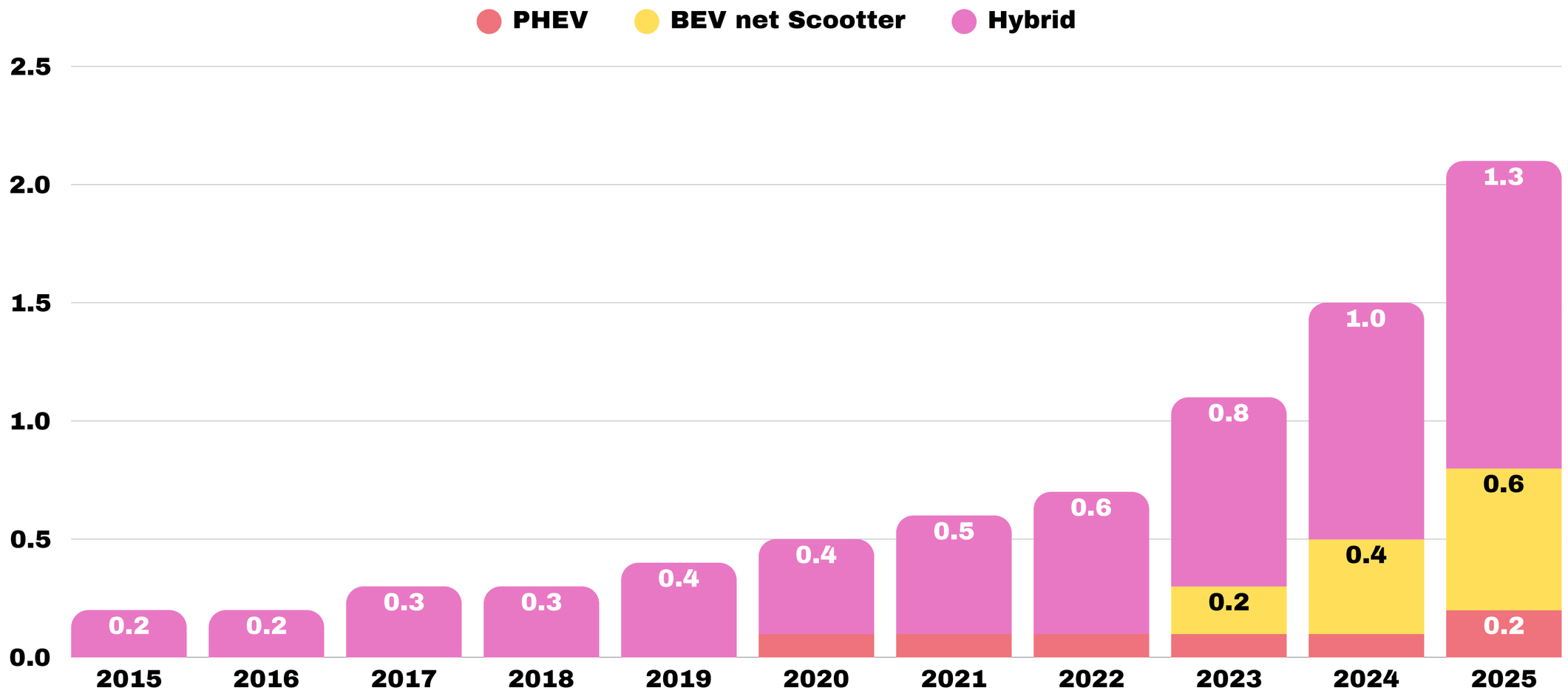
Excise Tax	*Tariffs*			
	Local produced (0%)	*JTEPA (20%)*	*AKFTA (40%)*	*No FTA (80%)*
EVs makers not joining EV 3.0 (i.e., 8%)	7.2	28.7	50.1	93.0
Eco-car makers (i.e., 12%)	12.7	35.2	57.7	102.8
Standard ICEVs (i.e., 30%)	46.0	75.2	104.4	162.7

NOTE: the calculation is based on the assumptions: (1) vehicle prices before the tax and tariff are THB1 million; (2) no markup is included.
SOURCE: Author's calculation.

Kohpaiboon, A. (2024), 'Time to Rebalance the Wheels in Thailand's Green Automotive Policy', *Fulcrum*, 26 July available at https://fulcrum.sg/time-to-rebalance-the-wheels-in-thailands-green-automotive-policy/

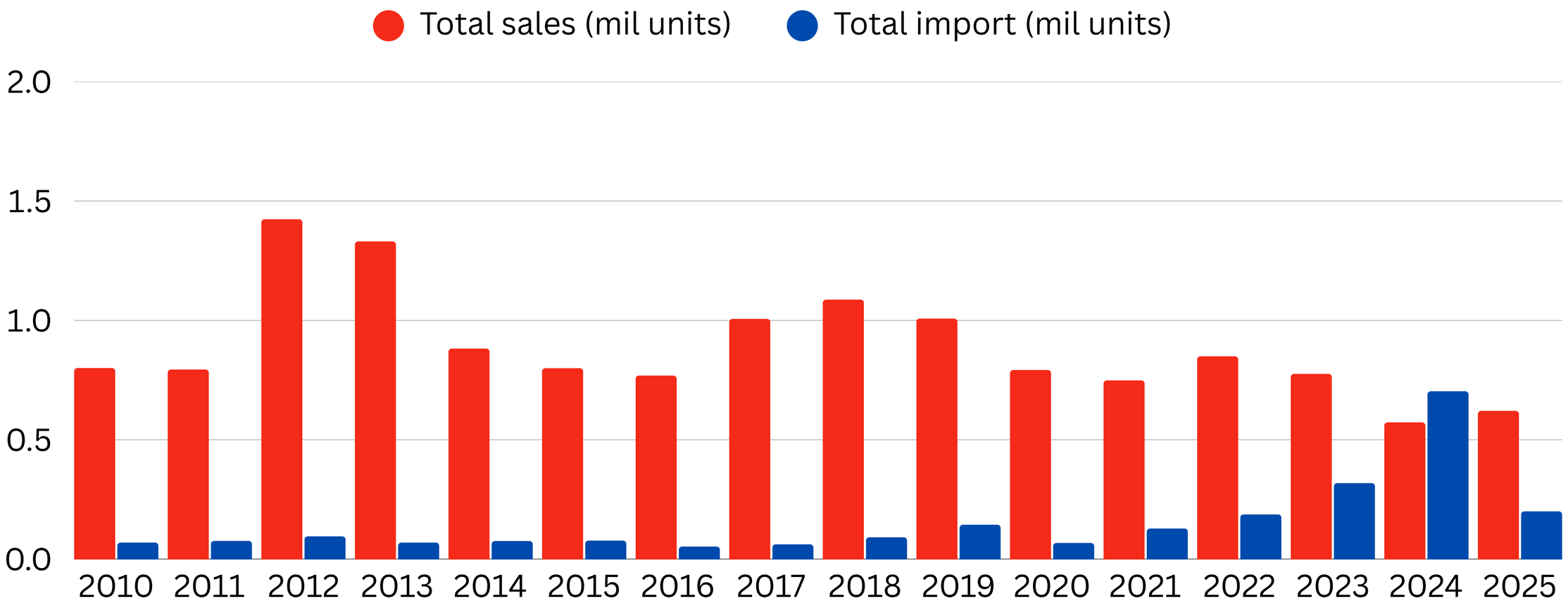
The Rise of BEVs and the remaining challenges

Registered vehicles in Thailand from 2013 to 2025 (Mil Units)

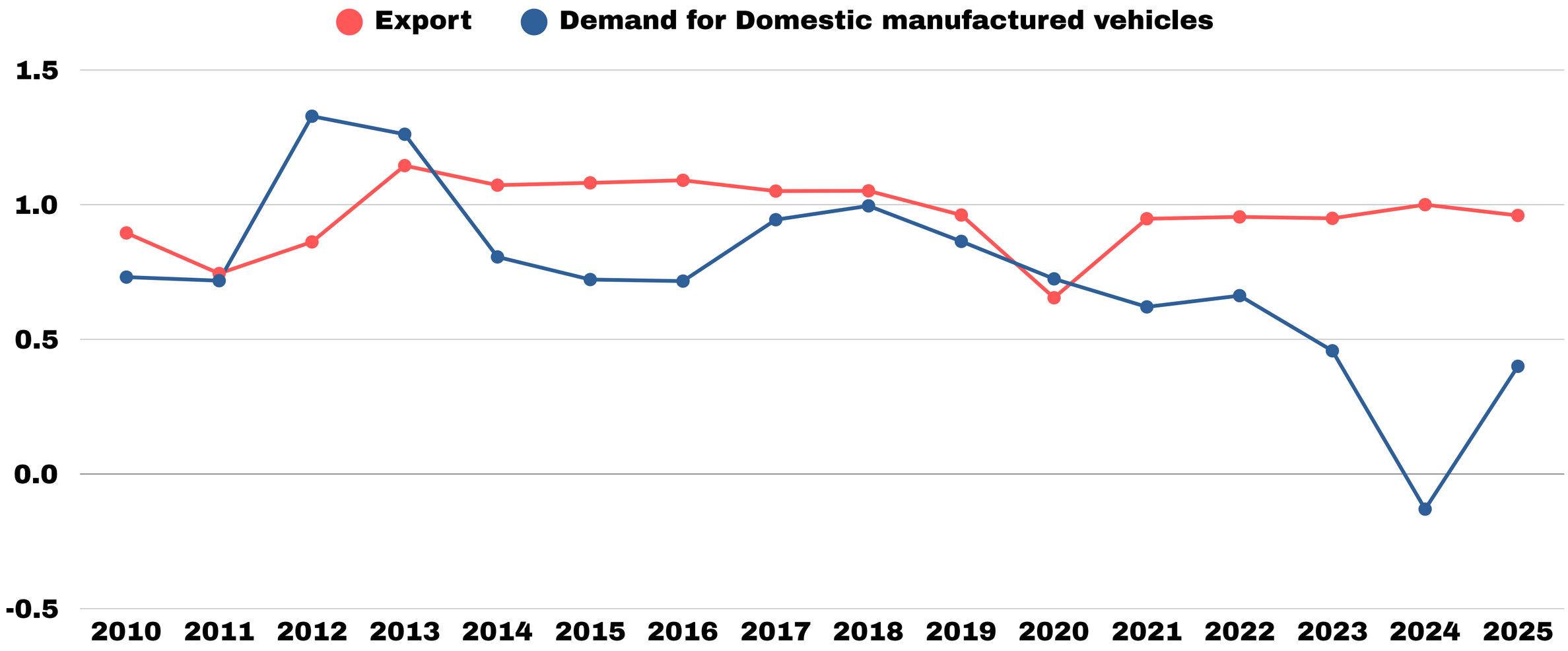


Source: Author’s Compilation based on official data from Department of Land Transports, Ministry of Transport

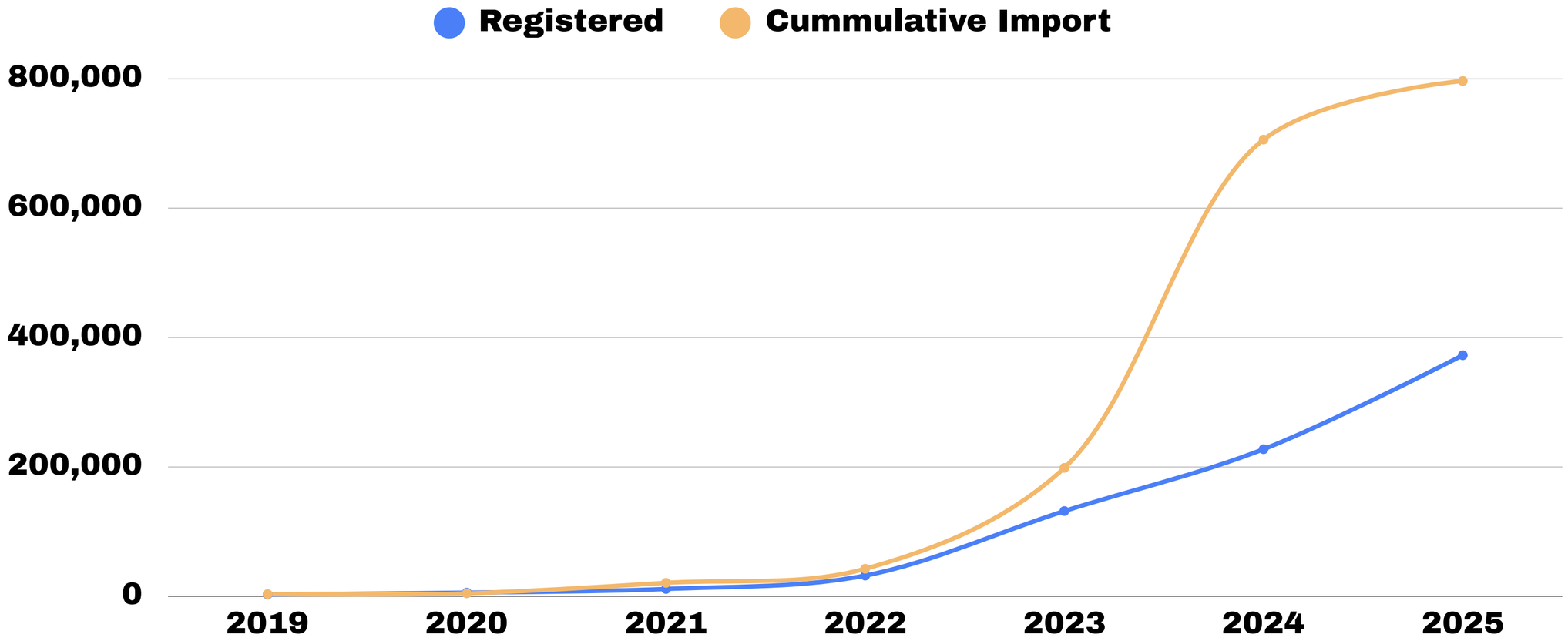
Rise of imported CBU vehicles and the shrinking demand



Estimates of Domestic Demand for locally-manufactured vehicles (mil units)



Most of EVs have been imported in CBU form (units)



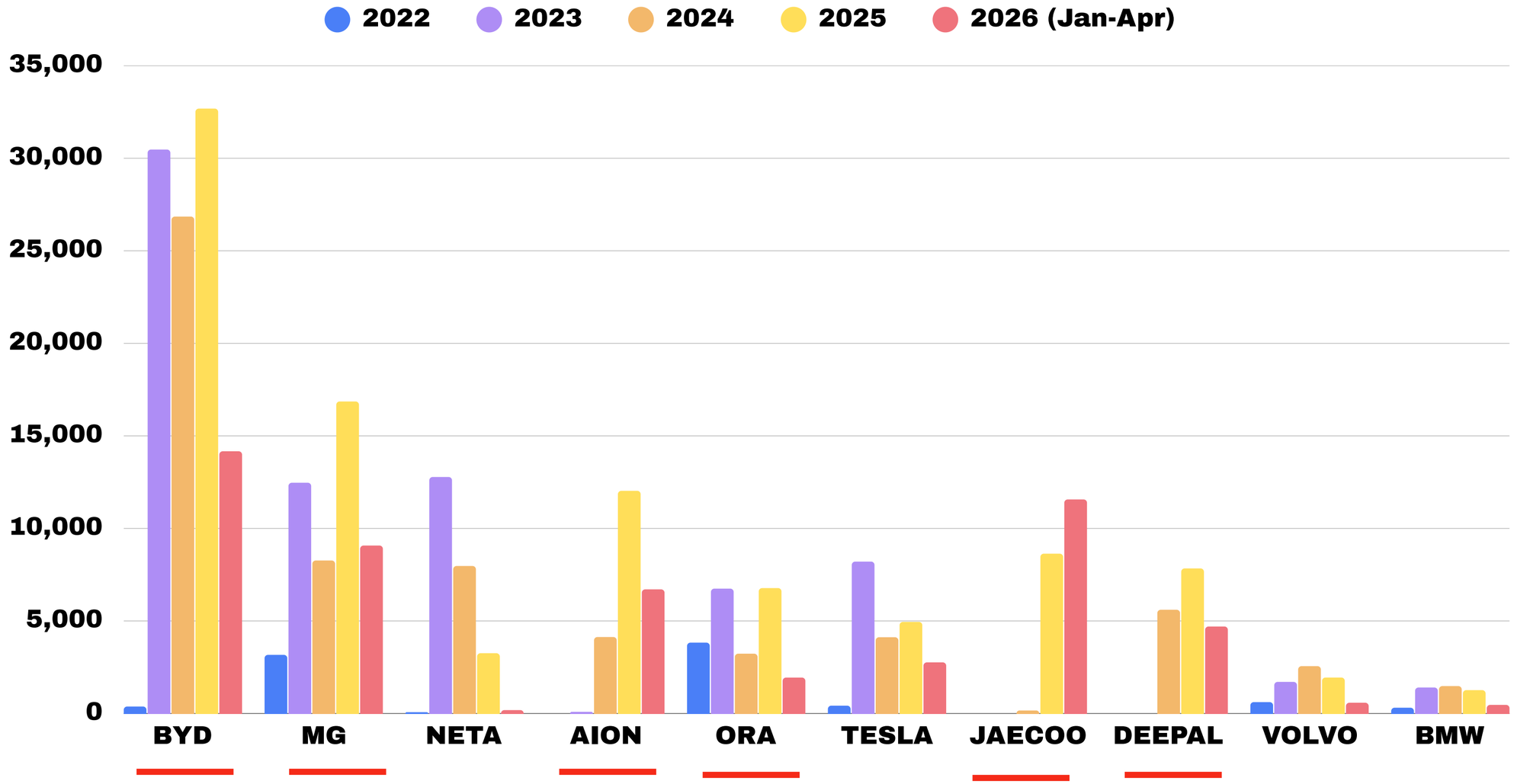
Note: EVs are under HS 870380
Source: Trade data are from UNComtrade and Registered data are from Department of Land Transport, Ministry of Transports, Thailand

EV Chain Investment (BOI Investment pipelines by 3 July 2026)

Activities	Value($mil) (1)	# project (2)	Value/projects (1)/(2)	Position in supply chain
BEVs	1,180	18	65.5	Total annual domestic production capacites of over 370,000 vehicles
HEVs + PHEVs	1,180	14	84.3	Capitalizing on Japanese automakers' legacy hybrid technologies
Battery and energy storage system (ESS)	1,000	57	17.5	Securing localized battery cell and pack manufacturing
Critical components	373	49	7.6	Targeting high-value parts such as drive motors , battery management systems (BMS) and power control units
Charging Infrastructure	292	42	6.9	funding over 22,900 charging stations including DC fast charging

Source: BOI (2026), 'Thailand secures $4.1 billion in EV chain investments as Southeast Asia auto hub pivots to next-gen tech', BOI Press Release No. 101/2569, 3 July, available at https://www.boi.go.th/index.php?page=press_releases_detail&topic_id=138252&_module=news&from_page=press_releases2&language=en

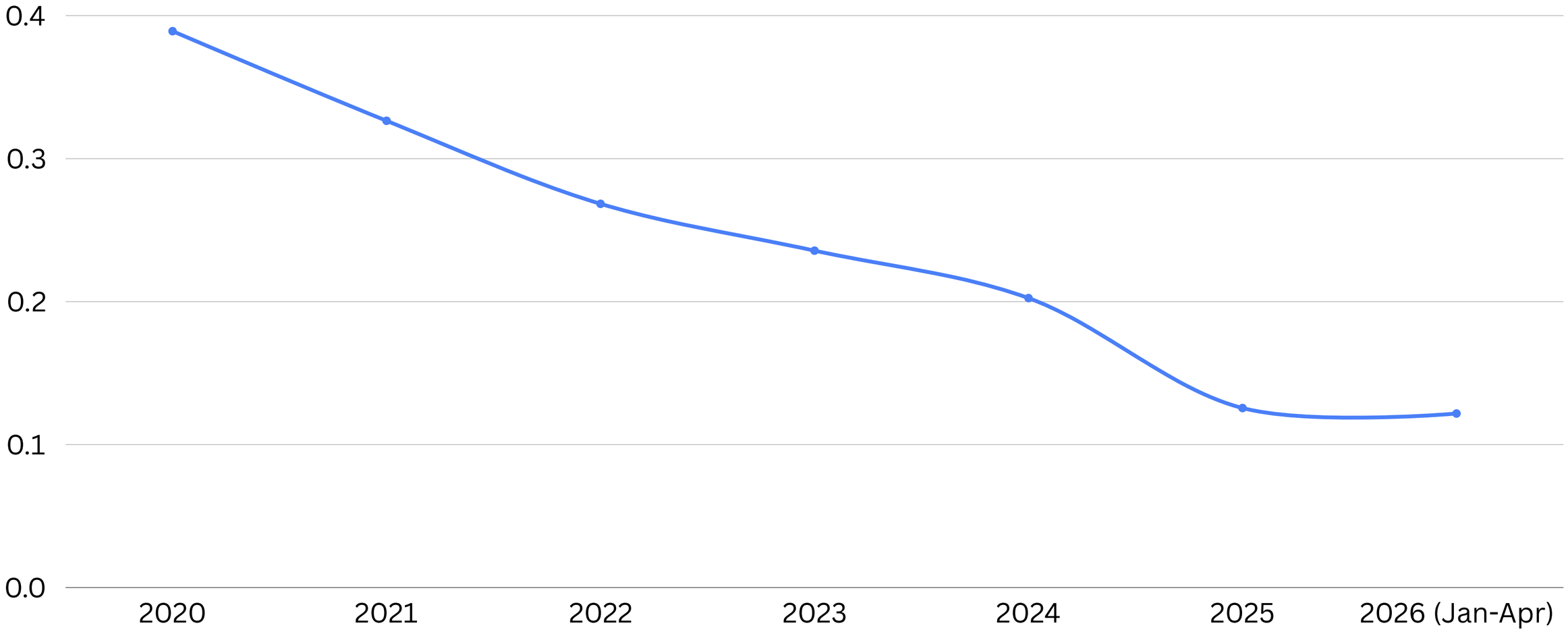
Brand competition (# Newly registered BEVs)



Note: ——— indicates those setting up manufacturing factories in Thailand

Source: Author compilation based on official data from Department of Land Transport, Ministry of Transports, Thailand

HHI (Sale concentration of BEVs)



Source: Author calculation from the official data from the Department of Land Transport, Ministry of Transports, Thailand

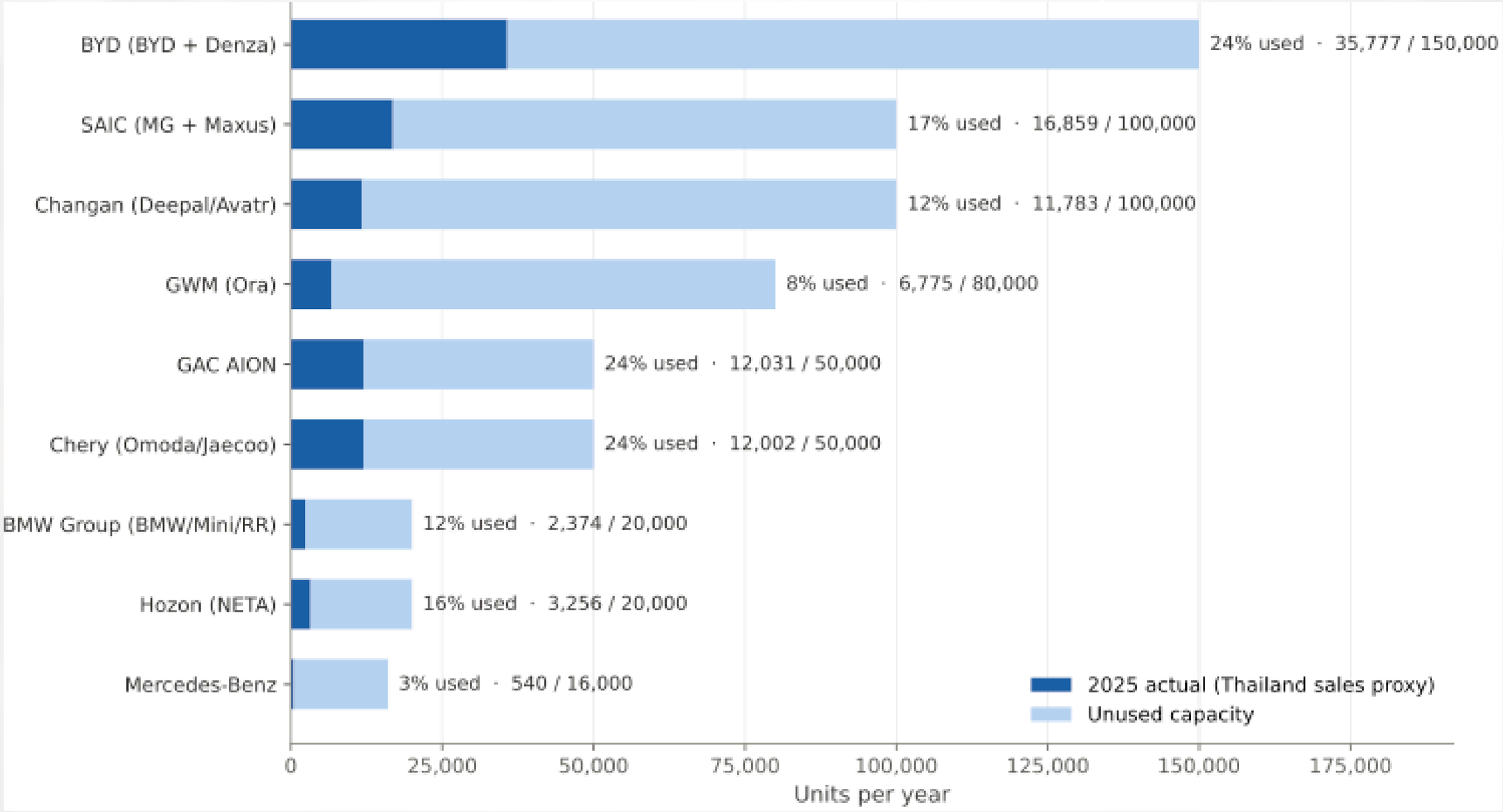
Number of vehicles in EV 3.0 and EV 3.5 by BEV makers

	Units			% of total vehicles in both EV.30 and EV3.5
	2022-3	2024	2025	
BYD+Denza	39030	22259	11900	35.4
MG	16323	6150	5675	13.6
JAECOO+OMODA+Chery	0	1678	28876	14.8
AION	848	8950	10395	9.8
Neta	16337	2289	7	9.0
ORA+GWM	9645	1574	0	5.4
Changan (Deepal+Avatr)	250	12,492	6021	9.1
The others	2007	646	3162	2.8
Total	84440	56038	66036	100

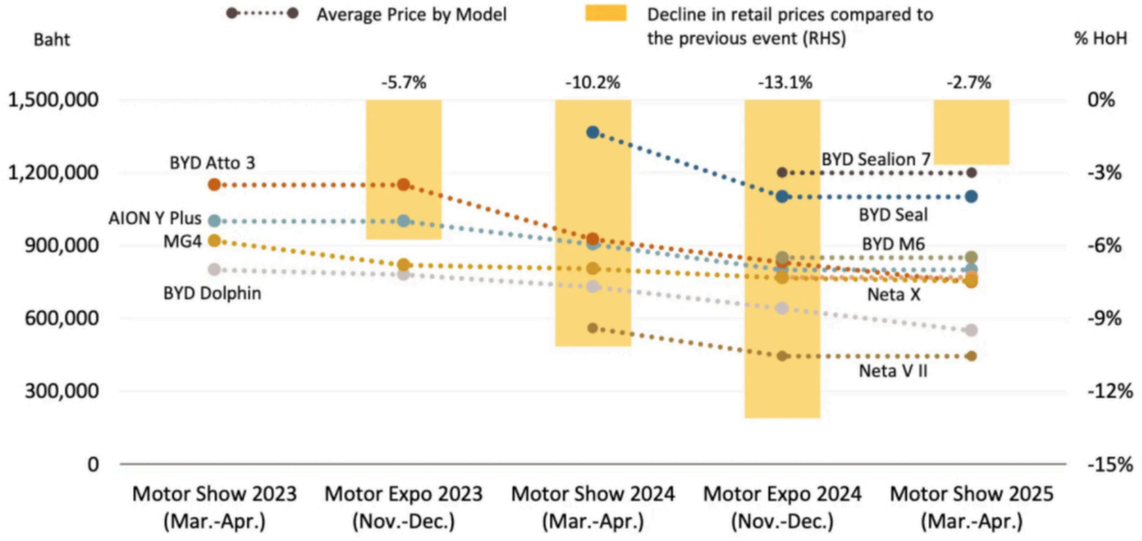
The total production target of BEVs (both EV 3.0 and EV 3.5) is 370,808 units.

The total actual by 2025 was 86,622 units or 23.3% of the target.

Capacity utilization challenges



Price war of BEVs and their spillover



ที่มา: Autolifethailand (18 ต.ค. 66, 12 พ.ย. 66, 26 มี.ค. 67, 24 มี.ค. 68, 25 มี.ค. 68), Autospinn (8 ธ.ค. 66, 4 เม.ย. 68), DroidSans (28 พ.ย. 67, 25 มี.ค. 68), Motor Expo (3 ธ.ค. 2567), PPTV (23 มี.ค. 67, 28 มี.ค. 67), Techoffside (28 พ.ย. 67), Trueid (22 มี.ค. 66), รวบรวมโดย Krungsri Research

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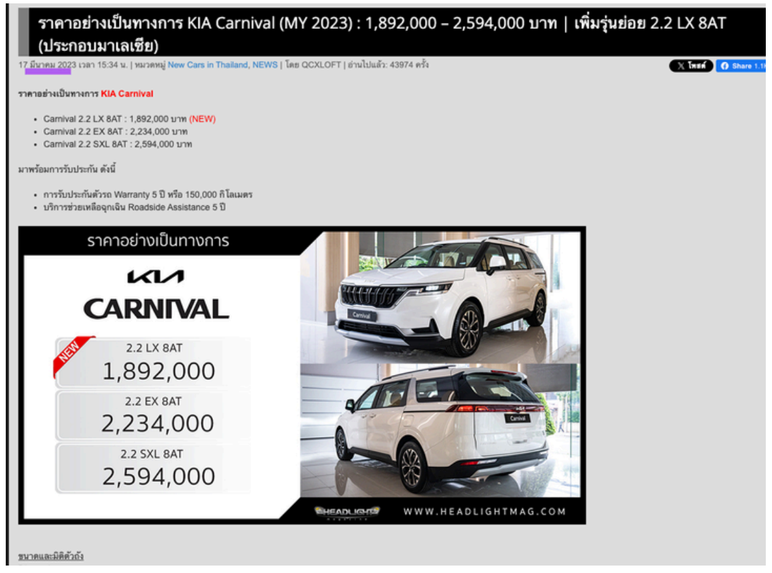
2023



2025

Key Takeaways from the rise of BEVs

- The policy package, especially EV 3.0, successfully encouraged consumers to purchase imported BEVs but yet promote substantial BEV localization.
- The rise of BEVs has come at the expense of locally manufactured vehicles, as BEVs and domestically produced ICEVs are distinct yet substitutable product categories competing in the same market.
- These adverse effects have rippled through the domestic automotive supply chain due to extensive backward linkages, posing significant challenges for local parts manufacturers and suppliers.
- How these policy obligations — particularly production offset requirements and parts localization — will be fulfilled remains to be seen.

- Intensifying competition among carmakers, particularly from Chinese BEV manufacturers, could undermine these policy objectives.

- BEV exports appear to be the most viable route for manufacturers to meet their domestic production offset requirements.

- While rising oil prices and the gradual resolution of uncertainties surrounding BEV adoption are expected to stimulate demand in both domestic and export markets, many challenges remain.

- They include :
  - Sluggish economic growth and tightening credit conditions in Thailand
  - The resurgence of protectionist industrial policies worldwide
  - Lingering consumer concerns about BEVs (e.g., after-sales services and spare parts availability)
  - Anti-Dumping and Countervailing Duty (AD-CVD) risks, particularly from the European Union

- A further challenge concerns how BEV parts localization obligations will be enforced. As BEV production technologies are not yet fully mature, it may be premature to expect foreign BEV manufacturers to establish local parts manufacturing operations.

Conclusions and Policy Lessons

- Thailand moved swiftly to embrace the rise of BEVs, largely driven by the disruptive impact on its established ICEV manufacturing base and a desire to secure a first-mover advantage.

- The policy was also premised on the implicit assumption that BEV production processes are largely similar to those of ICEVs, implying that transitioning from ICEV to BEV production would require only minimal process adjustments. In reality, this assumption proves to be overly simplistic.

- While the Thai government has recognized and sought to correct this policy miscalculation, as evidenced by post-EV3.0 policy adjustments, these corrections have come sufficiently early to make a meaningful difference remains an open question.