FROST & SULLIVAN

BUSWORLD FOUNDATION SOUTHEAST ASIAN F&S MARKET PERSPECTIVES

busworld

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SOUTHEAST ASIAN MARKET OVERVIEW

SNAPSHOT OF GLOBAL BUS MARKET BY REGION IN 2027

THE GLOBAL BUS MARKET IS SET TO GROW AT A STEADY PACE PRIMARILY DRIVEN BY INDIA AND CHINA. GROWING POPULATION AND THE EMINENT NEED FOR EFFICIENT PUBLIC TRANSPORTATION ESPECIALLY IN THE DEVELOPING REGIONS IS THE MAJOR DRIVING FACTOR FOR THE GROWTH OF THIS MARKET.

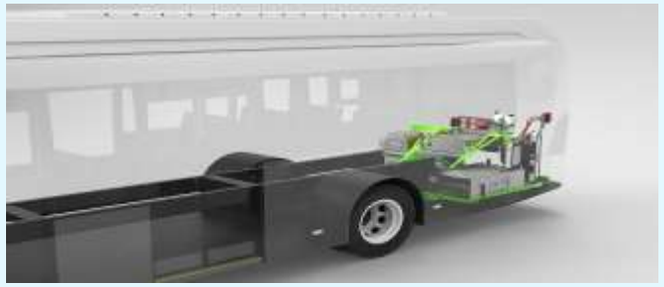
Global Bus Market: Unit Shipment Forecast by Region, Global, 2027

Southeast Asia

- Green energy developments, domestic production opportunities and the goals of governments to accelerate the replacement of diesel-powered public buses with electric buses (eBuses).
- The recovery from the pandemic will further boost tourism, especially for cross-border and international tourists.
- Infrastructure development in Southeast Asia, as well as the relocation of the Indonesia's capital city to further increase the number of buses and coaches in operation.

Note: All figures are rounded. The base year is 2021. Global bus market includes transit buses and private coaches. Source: Frost & Sullivan

TOP COMMERCIAL VEHICLES TRENDS IN 2022



Transformative Mega Trends – More Southeast Asian cities are replacing diesel-powered buses with eBuses or alternative green powertrain solutions, to reduce pollutants and follow the global electric powertrain trend.

Production Strategies, Transformation and Foreign Direct Investment – Southeast Asian countries with domestic production capacities are offering various incentives to encourage investment in the production of EVs, including eBuses and key components.

Urbanization – Continued development of public transport networks and road infrastructure in Southeast Asia, including reducing pollutants and increasing economic productivity through reduced congestion and efficient bus routes.

Disruptive Technologies – Chinese OEMs will intensify the development of battery eBuses. China will export more eBuses; or be assembled by domestic production; as well as conduct green city trials in major Southeast Asian cities.

Competitive Intensity – Japanese OEMs will continue to lead the market. Diesel powertrain solution will continue its dominance. Domestic palm oil has the planting advantage, and the content of palm oil in biodiesel will further increase.

Geopolitical Chaos – The COVID-19 pandemic, public conservatism, work-from-home practice continue to impact bus and coach usage, despite travel easing has increased transport demand.

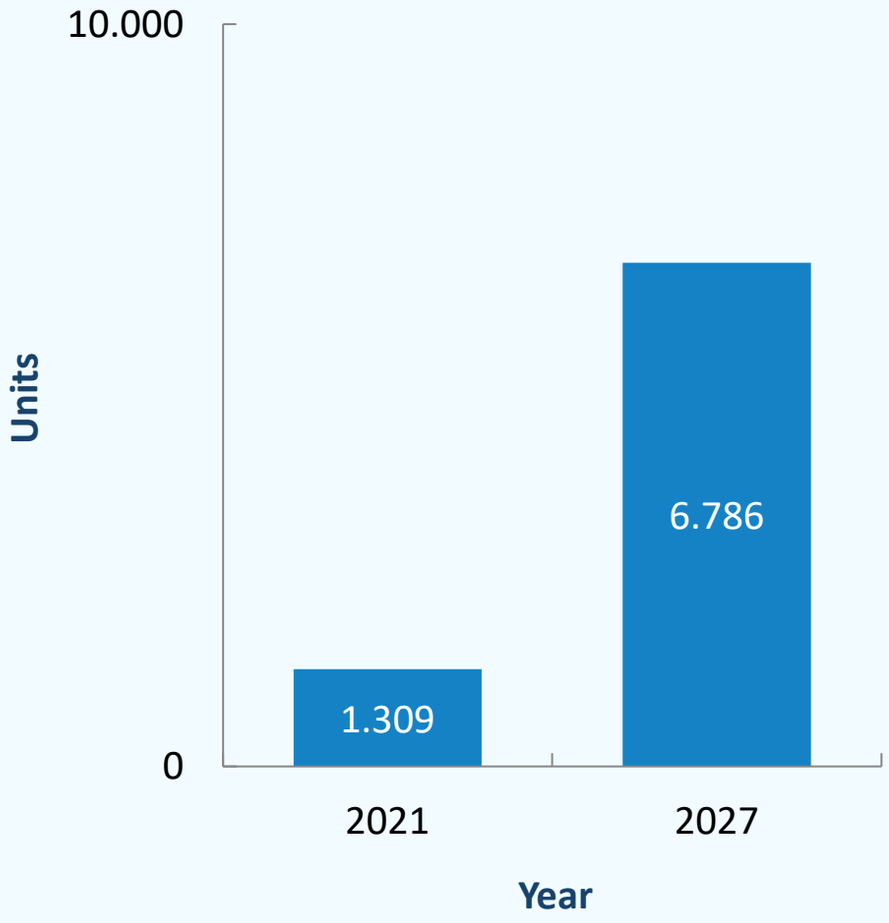
Source: Frost & Sullivan

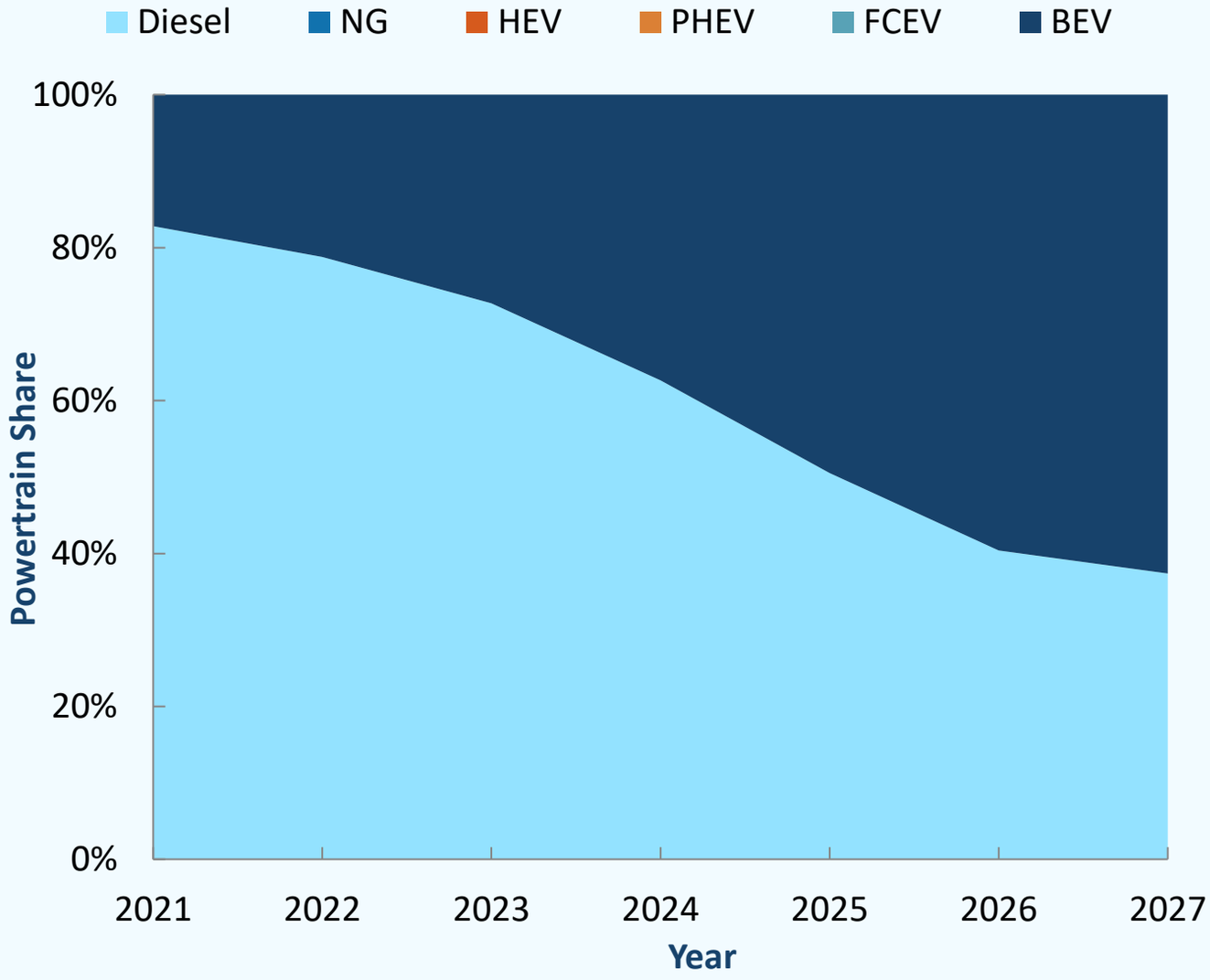
SOUTHEAST ASIA – TRANSIT & INTERCITY BUSES

TRANSIT BUS MARKET—POWERTRAIN FORECAST, SOUTHEAST ASIA

Southeast Asian Bus Market: Transit Bus Forecast of Powertrain Adoption, Southeast Asia, 2021-2027

Transit Bus Forecast of Powertrain Adoption, Southeast Asia, 2021 & 2027

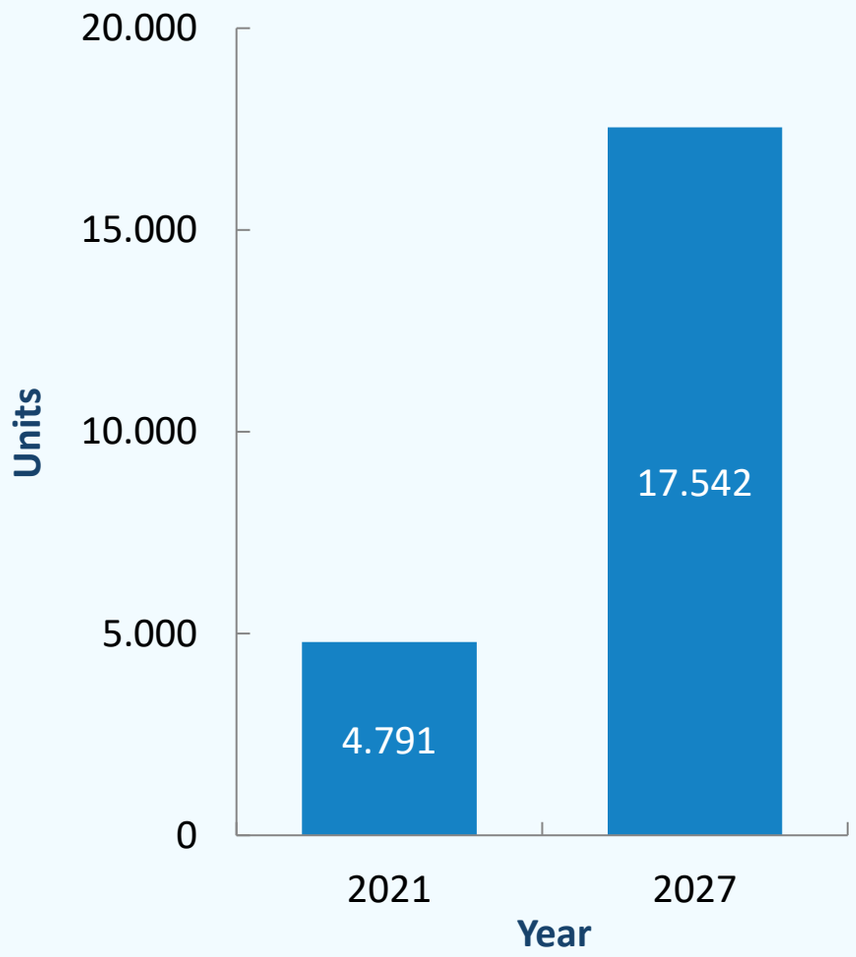


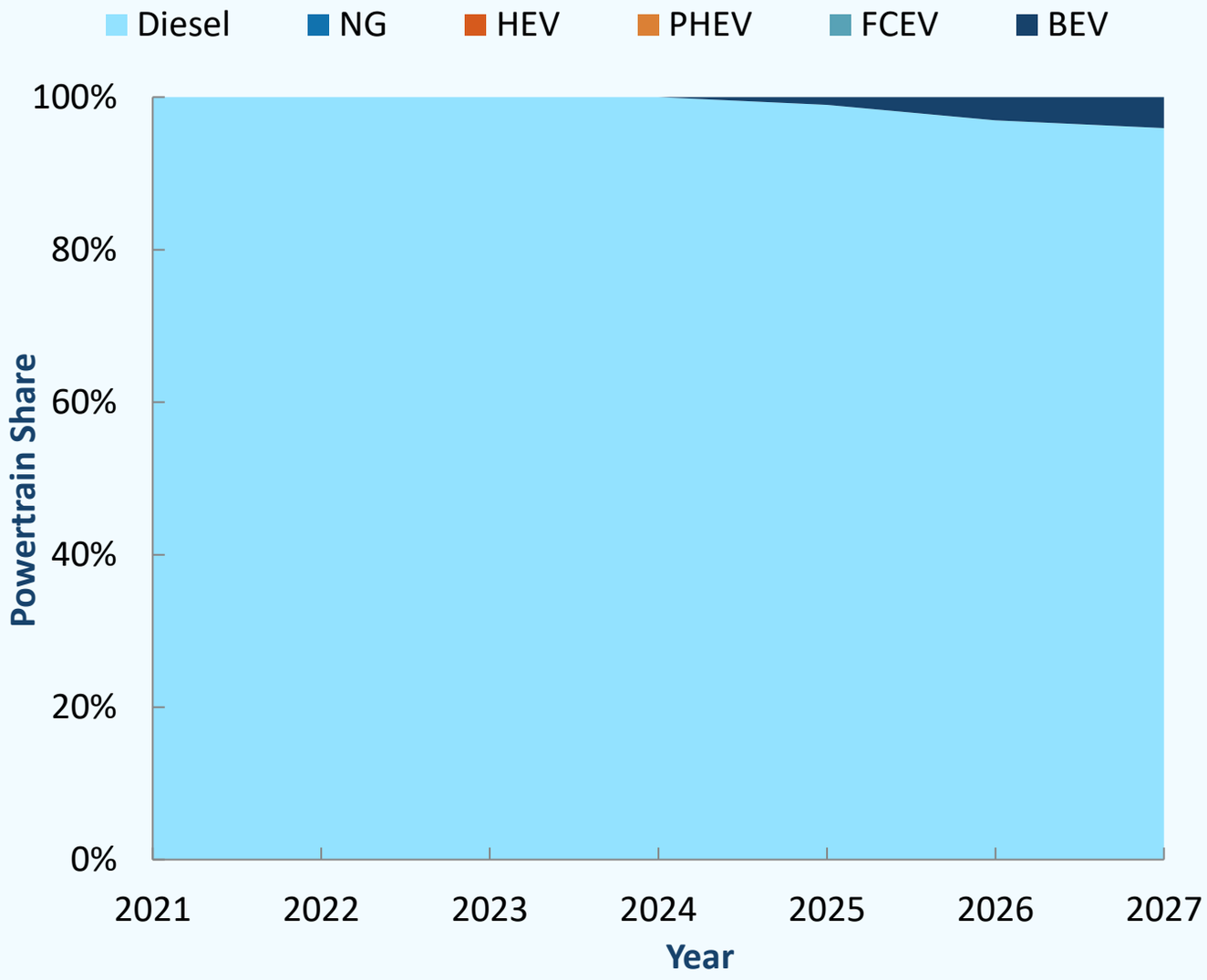


Note: All figures are rounded. The base year is 2021. The data indicates the main 6 Southeast Asian countries. Source: Frost & Sullivan

COACHES MARKET—POWERTRAIN FORECAST, SOUTHEAST ASIA

Southeast Asian Bus Market: Coach Bus Forecast of Powertrain Adoption, Southeast Asia, 2021–2027





Note: All figures are rounded. The base year is 2021. The data indicates the main 6 Southeast Asian countries. Source: Frost & Sullivan

SOUTHEAST ASIA

Vietnam, Thailand and Indonesia are the main markets for buses in Southeast Asia, due to the large population size of these countries in Southeast Asia.
Comparatively, buses are the main mode of transportation in Singapore.

Indonesia plans to replace 90% of urban transit buses with eBuses by 2030.

Malaysia plans to have 2,000 eBuses by 2030.

The Philippines plans to have 21% EVs in total vehicle sales by 2030.

Singapore plans to replace 3,000 of public buses to eBuses by 2030; and phase out ICE vehicles by 2040.

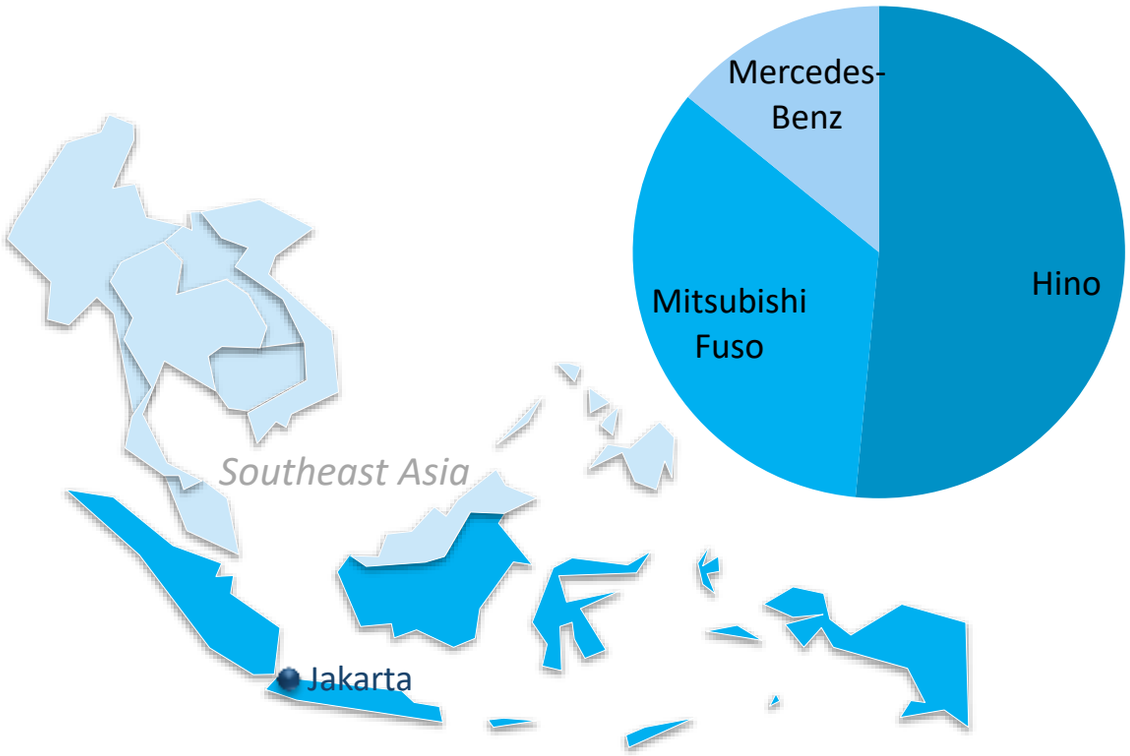
Thailand plans to have 33,000 zero emission vehicle (ZEV) bus sales by 2030.

Vietnam plans to have all new urban transit buses in electric or green energy powertrain solutions from 2025.

INDONESIA—SNAPSHOT

Southeast Asian Bus Market: Market Snapshot, Indonesia, 2022

Market Share by OEM, Indonesia, 2021



Key Targets, Incentives and Subsidies Outlook

- Low Carbon Emission Vehicle (LCEV) Program: Include the use of electric powertrain, biodiesel or bioethanol fuel solutions
- Tax Holiday: Deduction of Corporate Income Tax (CIT) for 5–20 years, investment value > IDR 500 billion, for production of eBus (> 42 passengers) and major parts
- Tax Allowance: Up to 30% of the investment value (5% per year for 6 years), for production of eBus and major parts

Key Cities

- Most eBuses (< 50 units) are operating in Jakarta, and will be penetrated in Bandung and Medan in 2023
- Jakarta is expected to have 10,000 eBuses by 2030
- Indonesia is expected to replace 10% and 90% of urban transit buses with eBuses by 2025 and 2030, respectively

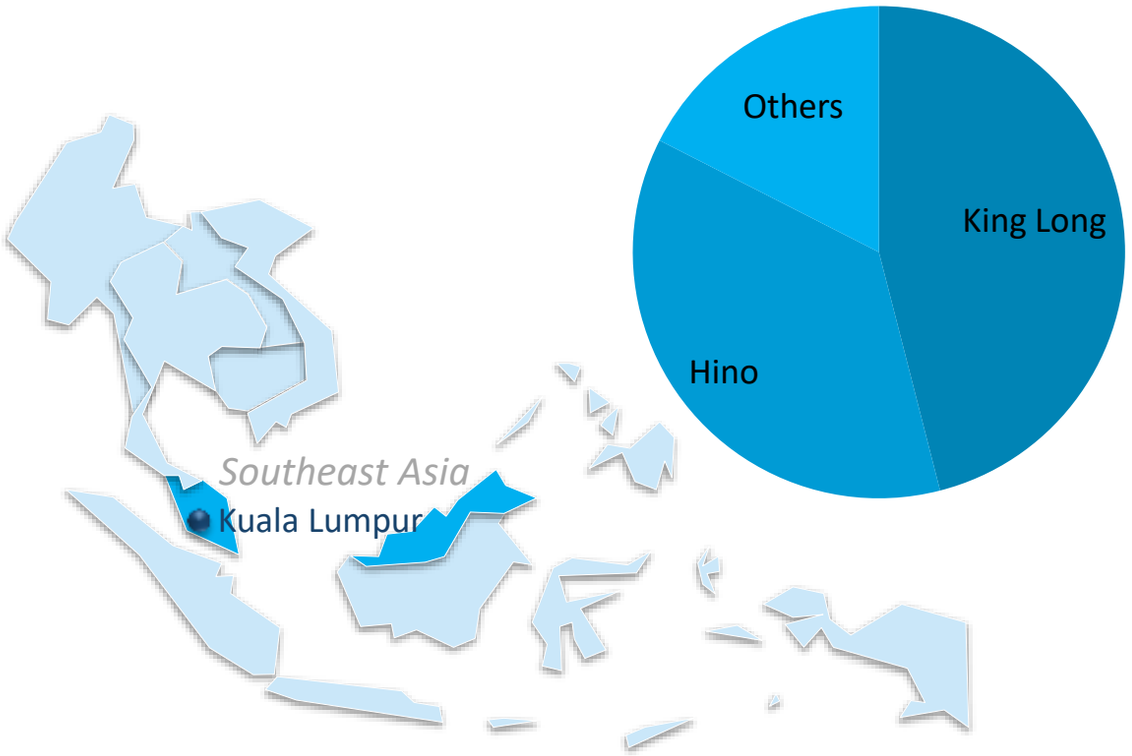
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Euro II												Euro IV			

Note: All figures are rounded. The base year is 2021. The table shows the implementation plan of emission standards (heavy-duty diesel) for new unit shipment. Source: Frost & Sullivan

MALAYSIA—SNAPSHOT

Southeast Asian Bus Market: Market Snapshot, Malaysia, 2022

Market Share by OEM, Malaysia, 2021



Key Targets, Incentives and Subsidies Outlook

- Malaysia aims to be carbon-neutral by 2050
- Malaysia aims to increase palm oil content in biodiesel
- Electric Mobility Blueprint (EMB): Target to have 2,000 eBuses by 2030
- Low Carbon Mobility Blueprint (LCMB): Encourage the adoption of eBuses, including an annual fund of RM100 million, and a revolving fund of RM450 million for competitive leasing of eBuses

Key Cities

- Most eBus fleets are in Kuala Lumpur, with >100 battery electric buses, accumulatively. Key operators aim to replace existing diesel-powered buses and expand the use of battery-electric buses, such as public transport of GoKL bus routes by early 2023; Rapid KL by 2030
- Other trials are in Putra Jaya, Kuching (Sarawak), Melaka and Kota Kinabalu (Sabah)

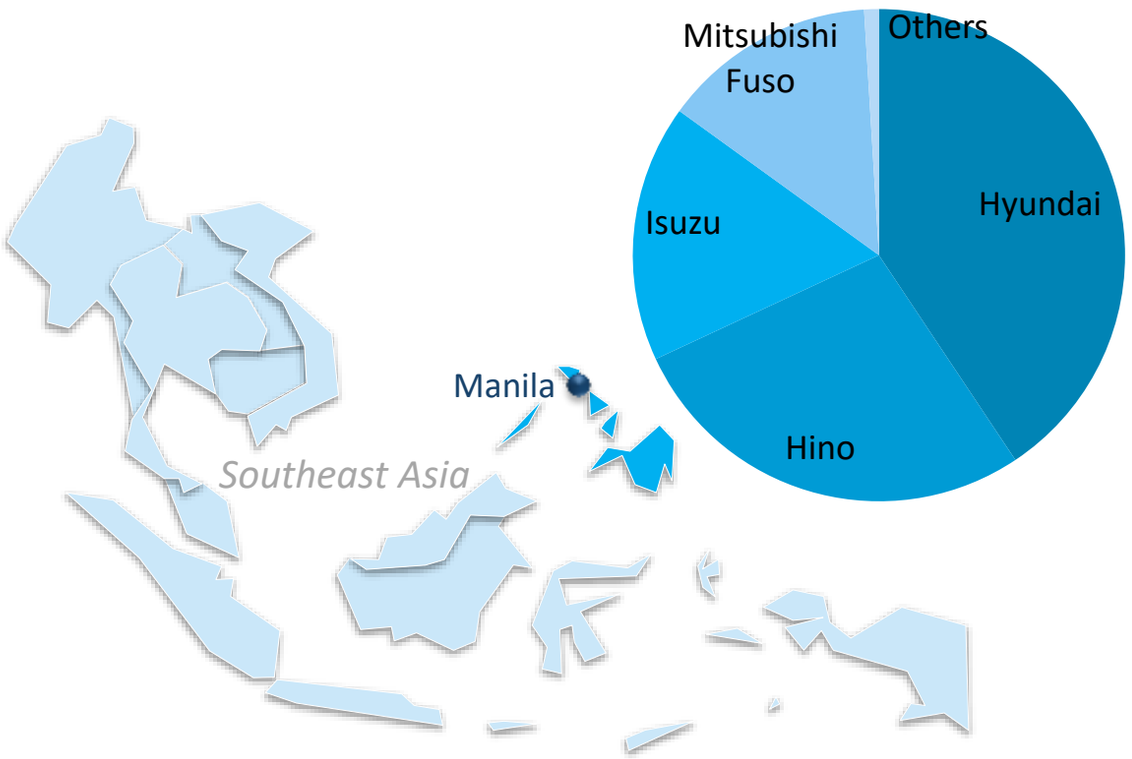
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Euro II											Euro V				

Note: All figures are rounded. The base year is 2021. The table shows the implementation plan of emission standards (heavy-duty diesel) for new unit shipment. Source: Frost & Sullivan

THE PHILIPPINES—SNAPSHOT

Southeast Asian Bus Market: Market Snapshot, The Philippines, 2022

Market Share by OEM, The Philippines, 2021



Key Targets, Incentives and Subsidies Outlook

- The Philippines aims to achieve 21% EVs in total vehicle sales by 2030; and 50% by 2040
- Investment Priorities Plan (IPP) provides Tax Holiday for the manufacturing of EVs and major EV parts

Key Cities

- eBuses operate in Manila and Cebu, and will be penetrated in Makati by 2023

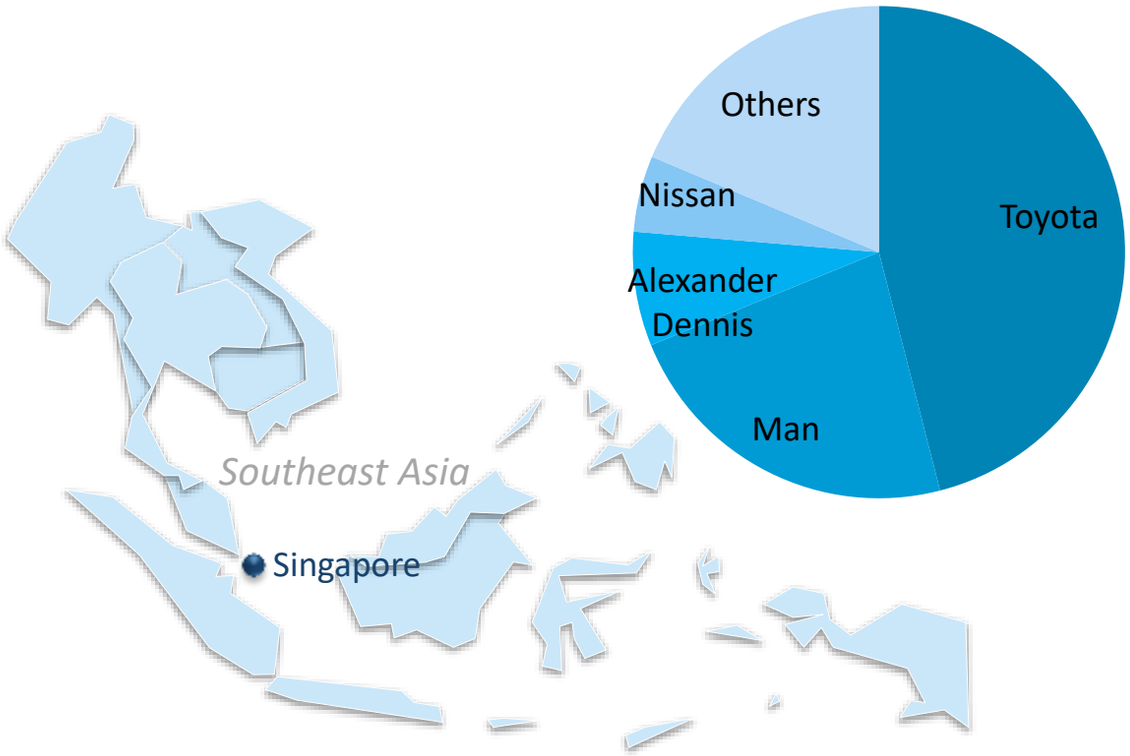
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Euro II						Euro IV									

Note: All figures are rounded. The base year is 2021. The table shows the implementation plan of emission standards (heavy-duty diesel) for new unit shipment. Source: Frost & Sullivan

SINGAPORE—SNAPSHOT

Southeast Asian Bus Market: Market Snapshot, Singapore, 2022

Market Share by OEM, Singapore, 2021



Key Targets, Incentives and Subsidies Outlook

- Singapore aims to phase out internal combustion engine (ICE) vehicles by 2040
- Singapore targets to replace 50% of public buses to eBuses by 2030, or equivalent to 3,000 eBuses. Of these, more than 600 buses will expire between 2024 and 2026
- Singapore aims to have 100% electric and hybrid buses by 2040, or equivalent to 5,800 units

Key Cities

- In 2021, there are 75 eBuses in operation, accumulatively
- Since 2020, all new bus purchases are electric and hybrid powertrain solutions in Singapore

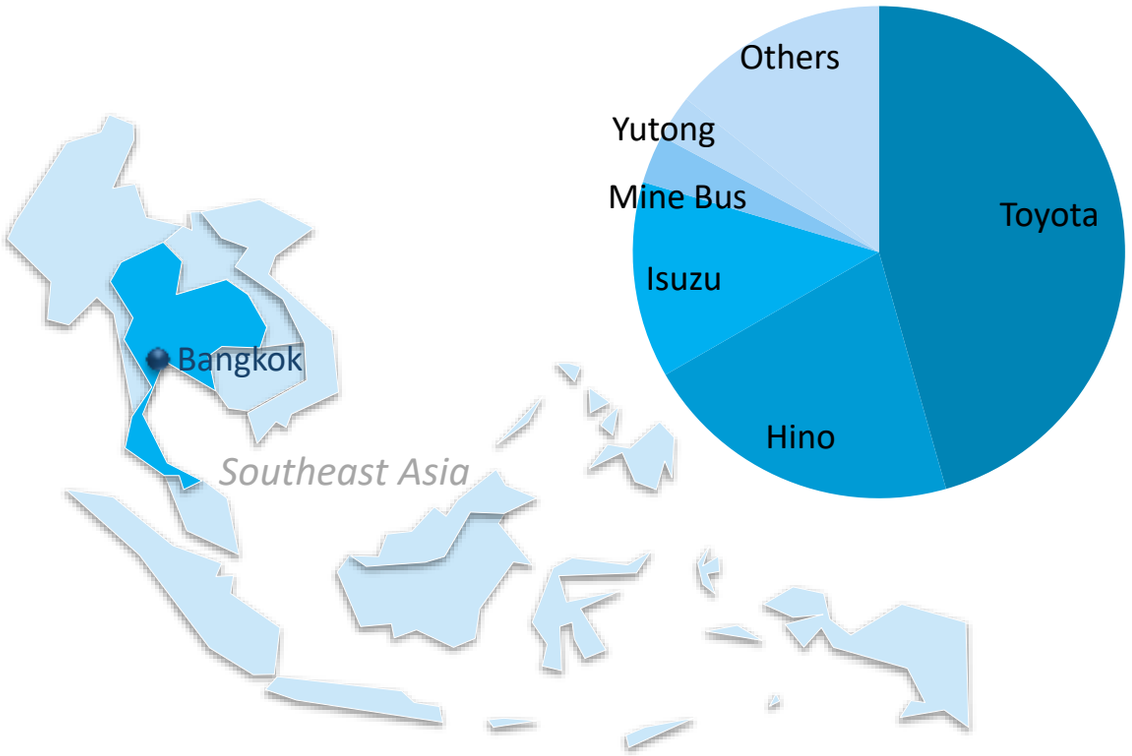
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Euro IV				Euro V				Euro VI							

Note: All figures are rounded. The base year is 2021. The table shows the implementation plan of emission standards (heavy-duty diesel) for new unit shipment. Source: Frost & Sullivan

THAILAND—SNAPSHOT

Southeast Asian Bus Market: Market Snapshot, Thailand, 2022

Market Share by OEM, Thailand, 2021



Key Targets, Incentives and Subsidies Outlook

- Thailand aims to become major EV and EV parts production hub
- Thailand aims to achieve 35% of zero emission vehicle (ZEV) bus sales by 2030, or the equivalent of 33,000 units
- Thailand aims to achieve 100% ZEV sales by 2035
- Board of Investment (BOI) Promotion Package: 3–10 years of Corporate Income Tax (CIT) exemption for the production of eBus, EV parts and battery

Key Cities

- In 2021, most eBus fleets are in Bangkok, with 118 battery-electric buses, accumulatively
- Modification of used buses to eBuses in Bangkok: Ministry of Transport (MOT) aims to replace 4,412 internal combustion engine (ICE) buses with eBuses in 2027

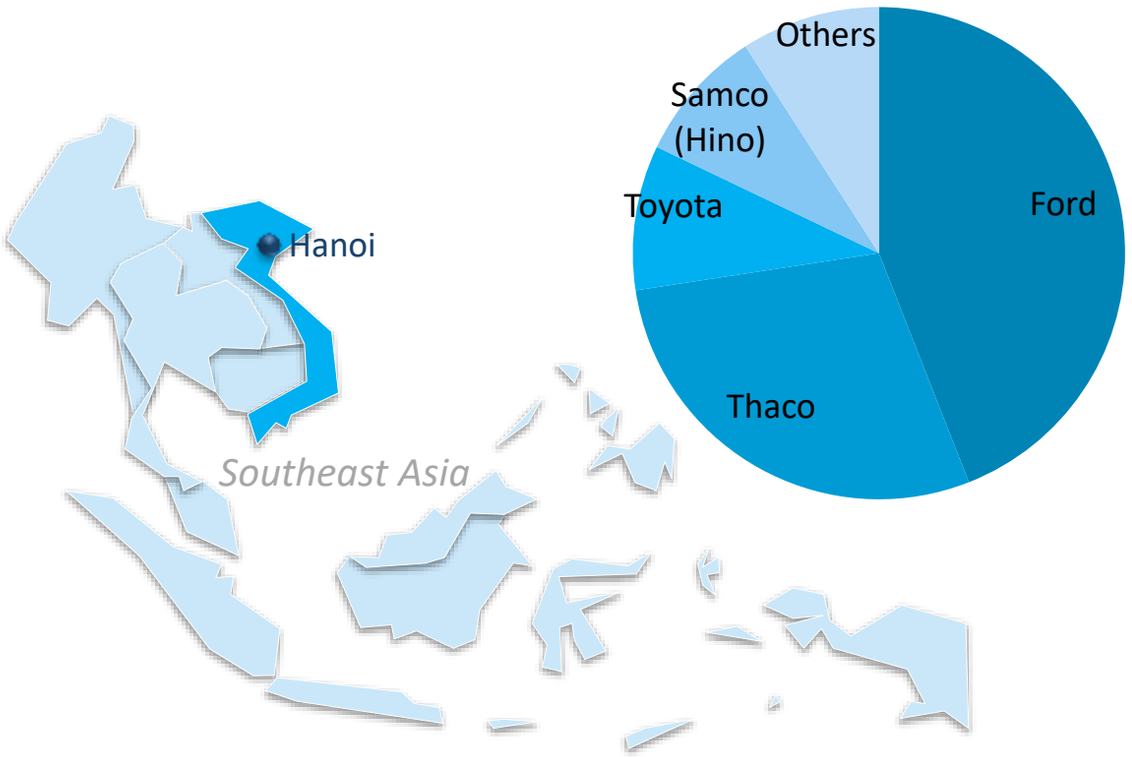
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Euro III														Euro VI	

Note: All figures are rounded. The base year is 2021. The table shows the implementation plan of emission standards (heavy-duty diesel) for new unit shipment. Source: Frost & Sullivan

VIETNAM—SNAPSHOT

Southeast Asian Bus Market: Market Snapshot, Vietnam, 2022

Market Share by OEM, Vietnam, 2021



Key Targets, Incentives and Subsidies Outlook

- Vietnam aims to have electric or green energy powertrain solutions for all new urban transit buses from 2025
- Vietnam aims to develop green transport system towards net zero emissions by 2050
- Hanoi city is expected to replace eBuses, up to VND 21 trillion by 2050
- National Energy Development Strategy: Promote eMobility and energy storage to comply with global trends
- Nha Trang Green Growth Strategy: Develop 200 eBuses in Nha Trang

Key Cities

- Most eBus fleets are operated in Hanoi, Ho Chi Minh City and Phu Quoc
- Hanoi is expected to replace all gasoline and diesel public buses with eBuses by 2050, or equivalent to 1,100 units, including 225 eBuses by 2025

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Euro II								Euro IV							

Note: All figures are rounded. The base year is 2021. The table shows the implementation plan of emission standards (heavy-duty diesel) for new unit shipment. Source: Frost & Sullivan

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