

EV Market in ASEAN: Policies, Current Status & Framework of Possible Outlook

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Why Does ASEAN Need Electric Vehicles?

The answers are well known but we need to see the reality

The different motivations:

- Mitigate climate change
- Improve air quality (environment)
- Improve energy trade balance
- Boost automotive industry sectors
- Reap wider economic impacts



One of the first battery EV chargers in Jakarta
Source: photo by A.J. Purwanto (2019)

ASEAN's Automotive Industry Strength

Local demand (mainly internal combustion engine), internal & export markets

ASEAN's unique demand
(mainly ICEs)

Sales have almost doubled in 10 years^{*1}
driven by local models such as...

Pickup truck



Multi-purpose
vehicles (MPVs)

Subcompact
& Mini car



Appx. **60%** of light vehicle sales

Broad concentration of
ICE supply chains

ASEAN has successfully established
a **wide supply chain**, for example...

Assembler
appx. **20** companies

Tier1 Auto parts Producers
appx. **700** companies

Tier2,3 Auto parts Producers
appx. **1,700** companies



Structure of Automotive Industry^{*2}
(Thailand)

Export to outside ASEAN
with similar demand

Exporting to more than
120 countries^{*3} such as...

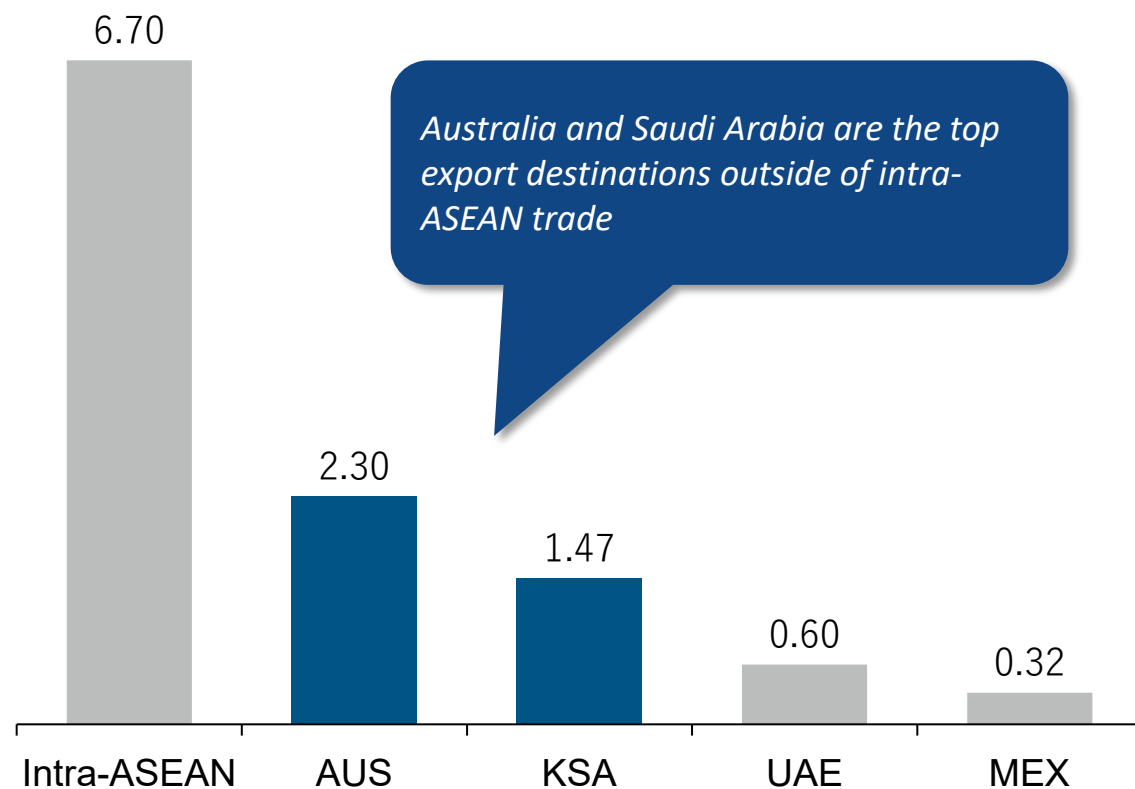


Note: 1) Yearly sales volume in ASEAN6. Data compared with 2009 and 2019. 2019 data is used to avoid the impact of COVID19. Light vehicles include light vehicle cars and light commercial vehicles with gross weight of <6t. 2) Includes both 2&4 wheelers 3) Countries outside ASEAN with over \$100K in annual imports from ASEAN in the past 5 years. Source: ASEAN Automotive Federation, Global Data, ERIA(2020) "Assessing the Readiness of Industry 4.0 and the Circular Economy", Trade Map.

ASEAN's Automotive Export Destination

Intra- (ASEAN) regional trade accounts for most of exports

Top 5 export volume by destination (2022, USD billion)



Percentage of export destinations*

■ Key destinations**

	Vol. (USD)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)
TH	10.8B	Australia (41)	Viet Nam (21)	Philippines (16)	KSA (12)	UAE (11)
ID	6.38B	Philippines (46)	Viet Nam (21)	KSA (17)	Thailand (9)	Mexico (7)
MY	524M	Thailand (55)	Viet Nam (18)	Philippines (13)	Pakistan (8)	Indonesia (6)
VN	262M	US (87)	Spain (5)	UK (3)	Germany (1.75)	Canada (1.6)
SG	238M	Malaysia (27)	Brunei (25)	India (17.5)	Cambodia (17)	Indonesia (13)
PH	38.3M	China (49)	Pakistan (39)	UAE (6.4)	HK (3.1)	US (1.7)
CA	3.33M	US (57)	Viet Nam (16)	Germany (16)	Japan (8)	Canada (8)
BR	3.1M	Australia (36)	Singapore (34)	Indonesia (11)	Viet Nam (10)	Malaysia (10)
MA	300K	China (55)	Thailand (20)	Germany (10)	Japan (9)	US (7)
LA	31K	Thailand (43)	China (36)	Viet Nam (13)	Australia (5)	US (5)

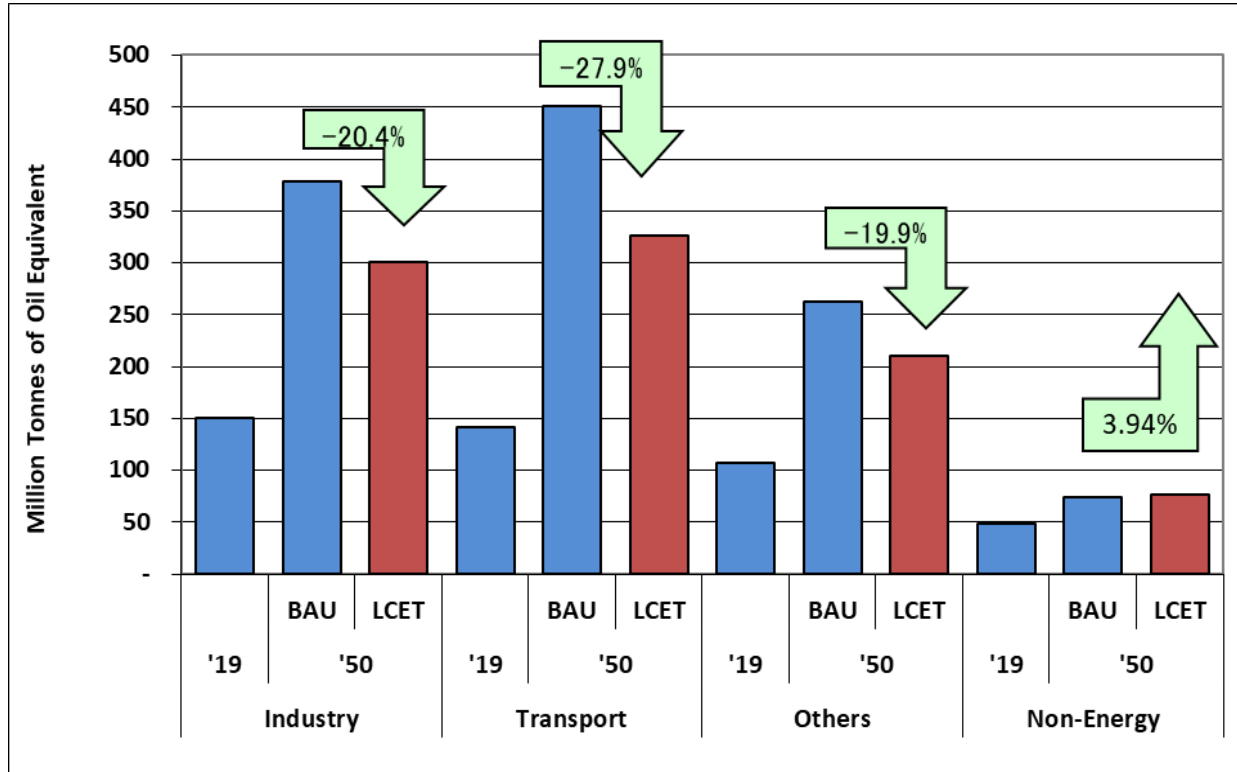
Notes: Percentages are rounded. * Based on top 5 export destinations. ** Refers to Australia and Saudi Arabia, the two largest export destinations outside of ASEAN.

Source: OEC, Monitor Deloitte Analysis

Automotive & Decarbonisation Objective (1/2)

The automotive industry: forefront of the decarbonisation with crucial roles of the next-generation vehicles

Total ASEAN Final Energy Demand by Sector, Business-As-Usual (BAU) and Low Carbon Energy Transition (LCET) Scenarios, 2019 and 2050

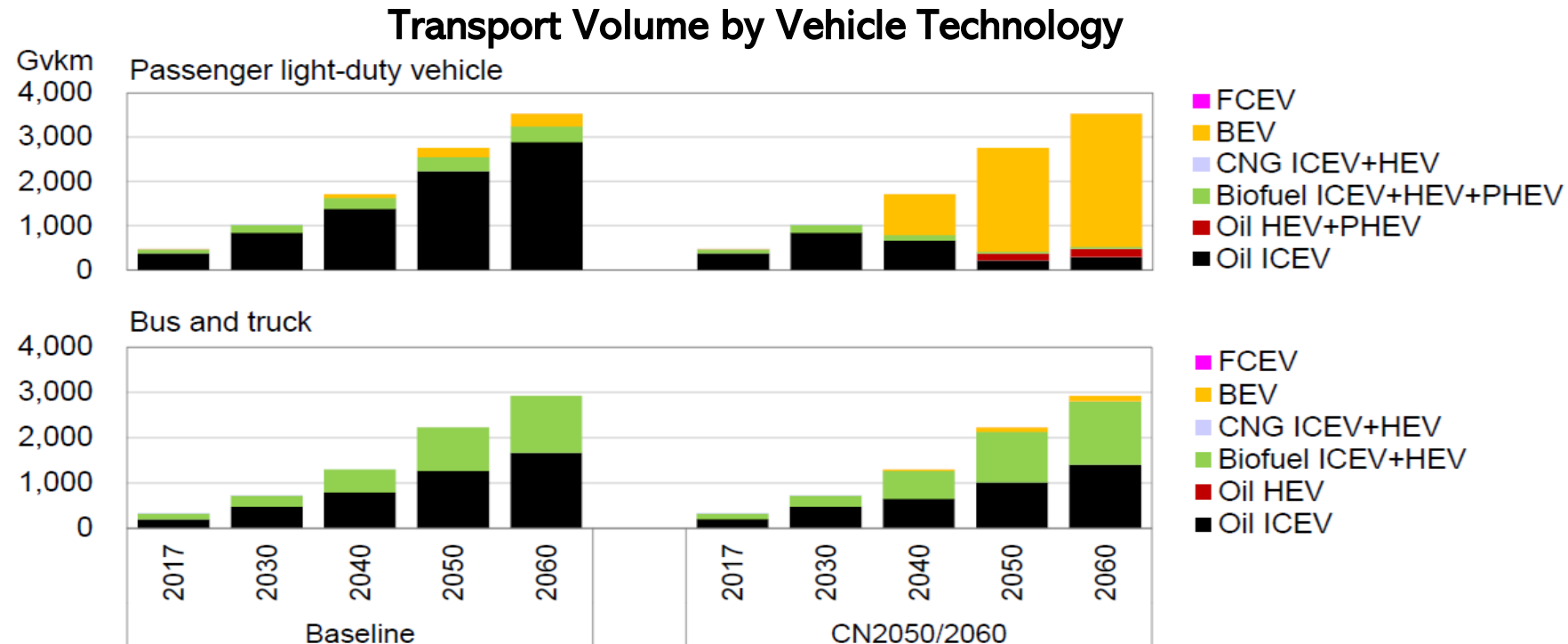


- Road transport modes consume one-fourth of energy in ASEAN
- Reaching carbon neutrality: by 2050, ASEAN's transport sector must reduce energy use by 27.9% relative to business-as-usual
- Shifting to low-emission vehicles as one of the main measures
- Reaching an intermediate target (2035) is critical

Automotive & Decarbonization Objective (2/2)

Electrification as the key in light-duty vehicle mobility

- 2050: major share of passenger vehicles are electrified
- Persistent use of oil persists in short- and long-distance transport
- Expansion of biofuels use in internal combustion engines and hybrid vehicles



BEV = battery electric vehicle, CNG = compressed natural gas, FCEV = fuel cell electric vehicle, HEV = hybrid electric vehicle, ICEV = internal combustion engine vehicle, Gvkm = 10^9 vehicle-km, PHEV = plug-in hybrid electric vehicle.

Note: Biofuel includes bioethanol and biodiesel mixed with petroleum fuel.








ASEAN Countries' Policies on Electric Vehicles

Packages of incentives to accelerate EV penetration in ASEAN

Economic incentives	Indonesia	Malaysia (National Low Carbon Mobility Blueprint 2021–2030)	Thailand	Viet Nam
For EV owners	<ul style="list-style-type: none"> Significant reduction luxury sale tax and VAT Electricity tariff discount USD 500/unit subsidy for E-motorbike purchase 	<ul style="list-style-type: none"> BEV & PHEV excise duty & import tax exemption 	<ul style="list-style-type: none"> Various purchase price subsidy schemes BEV tax exemption period and reduction for others Compulsory insurance 	<ul style="list-style-type: none"> Indirect tax incentive schemes for e-bus operators Indirect import duty exemption of e-bus
For Charging Manufacturers	<ul style="list-style-type: none"> A special business permit application scheme 	<ul style="list-style-type: none"> Tax incentive for private charger business Charger infrastructure installation funds 	<ul style="list-style-type: none"> Tax exemption schemes Compliance to safety regulations 	<ul style="list-style-type: none"> Included in tax incentives and import duty exemption for e-bus operators
For Manufacturers	<ul style="list-style-type: none"> Corporate tax reduction Income tax incentives Import tax exemption 	<ul style="list-style-type: none"> Support to R&D New tax incentive for green industries 	<ul style="list-style-type: none"> Investment incentive schemes Tax incentive schemes 	<ul style="list-style-type: none"> Preferential import tax rate Tax incentive schemes

Main Factors Influencing BEV & PHEV Adoption

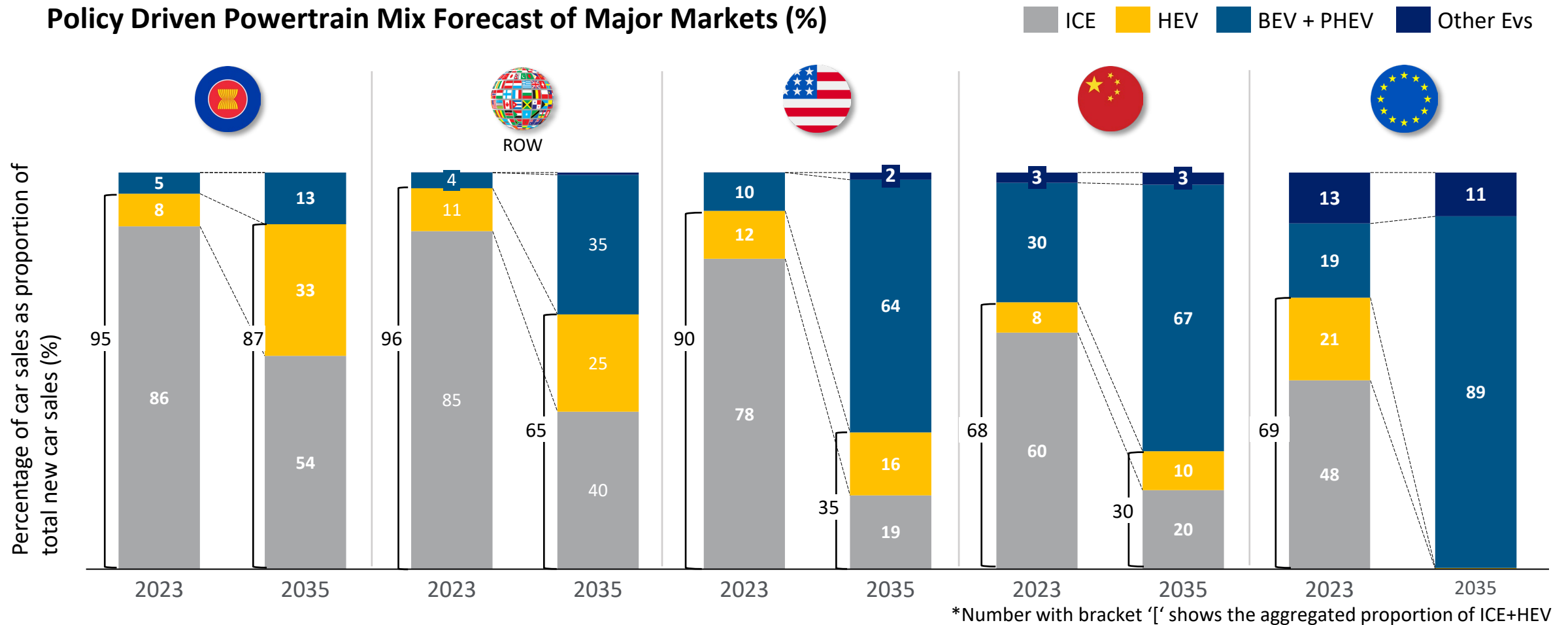
Beyond policy, demand & market factors play also crucial roles

Major Policy Targets		Main Factors Influencing BEV & PHEV Adoption Expansion	
	30% of annual local production by 2030 (by NEVPC* ¹)	 Infrastructure / ecosystems	<ul style="list-style-type: none"> • Extensive charging station covering suburban and island areas • Supporting ecosystem of BEV and PHEV, such as maintenance and disposal
	20% of all car sales by 2025 (by President Joko Widodo)	 Product Varieties	<ul style="list-style-type: none"> • Available models in the market that meet the regional vehicle demand*³ • Consumer preferences on vehicles*⁴
	20% of annual new car sales by 2030* ² (by MITI)	 Total cost of ownership against purchasing power	<ul style="list-style-type: none"> • Price competitiveness through private investment in BEV-PHEV production • Fuel prices for ICE and HEV • Subsidy on BEVs production for OEMs/ purchase for consumers • Regulation on ICE production and consumption
	Stop sales of new ICE cars and to make them 100% EVs by 2040 (by DOE)		

Note: *1: National Electric Vehicle Policy Committee. *2: Malaysia also has targets for 2040 and 2050, which are 50% and 80% respectively *3: Current BEV and PHEV models are primarily designed for urban use, with smaller passenger capacity, less durability, lower payload capacities, etc. *4: ASEAN consumers still largely question the reliability and sustainability of BEVs) Source: Government Websites, EMIS, Deloitte SEA Automotive Survey.

Various Powertrain Mix Trends in Global Market

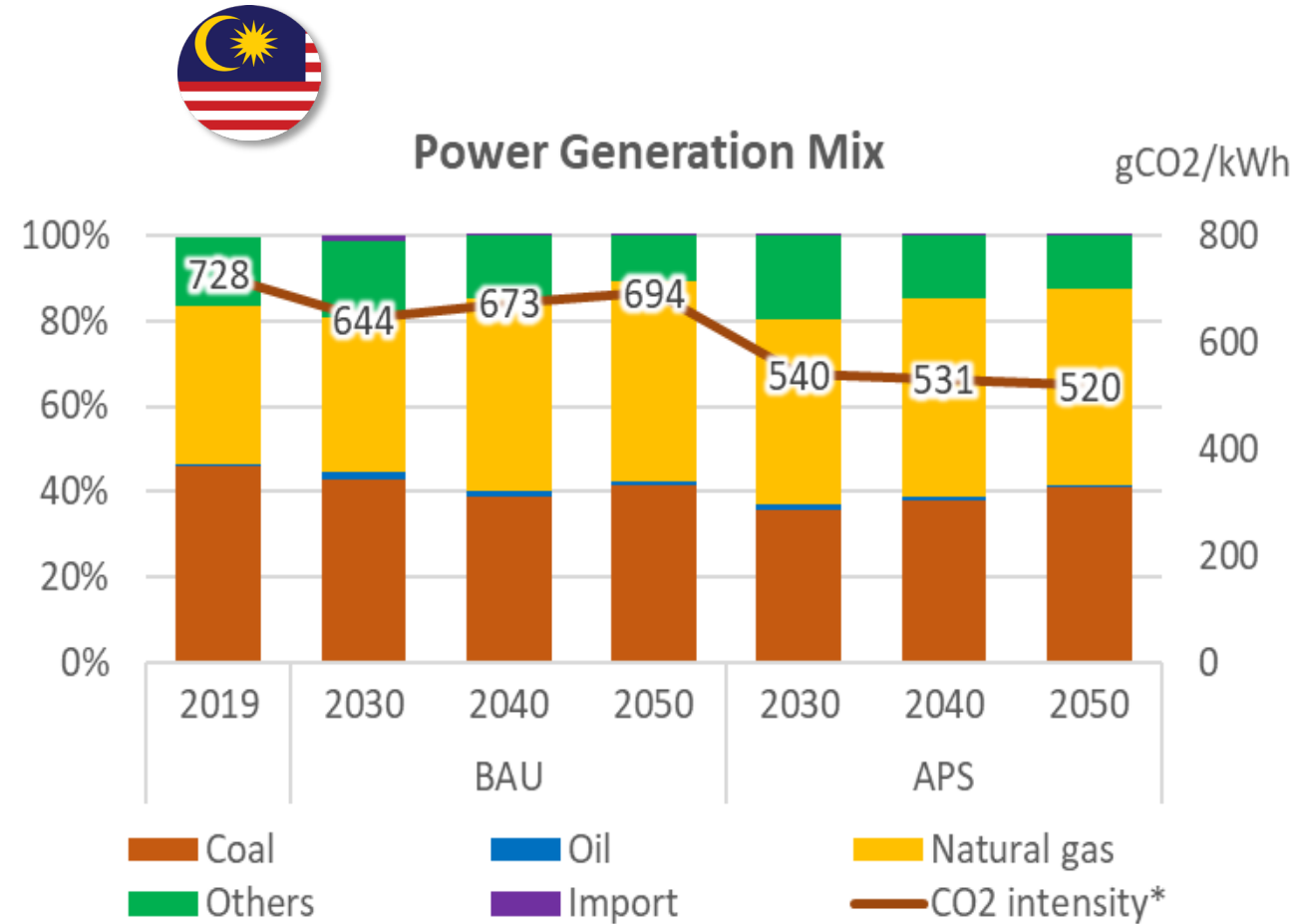
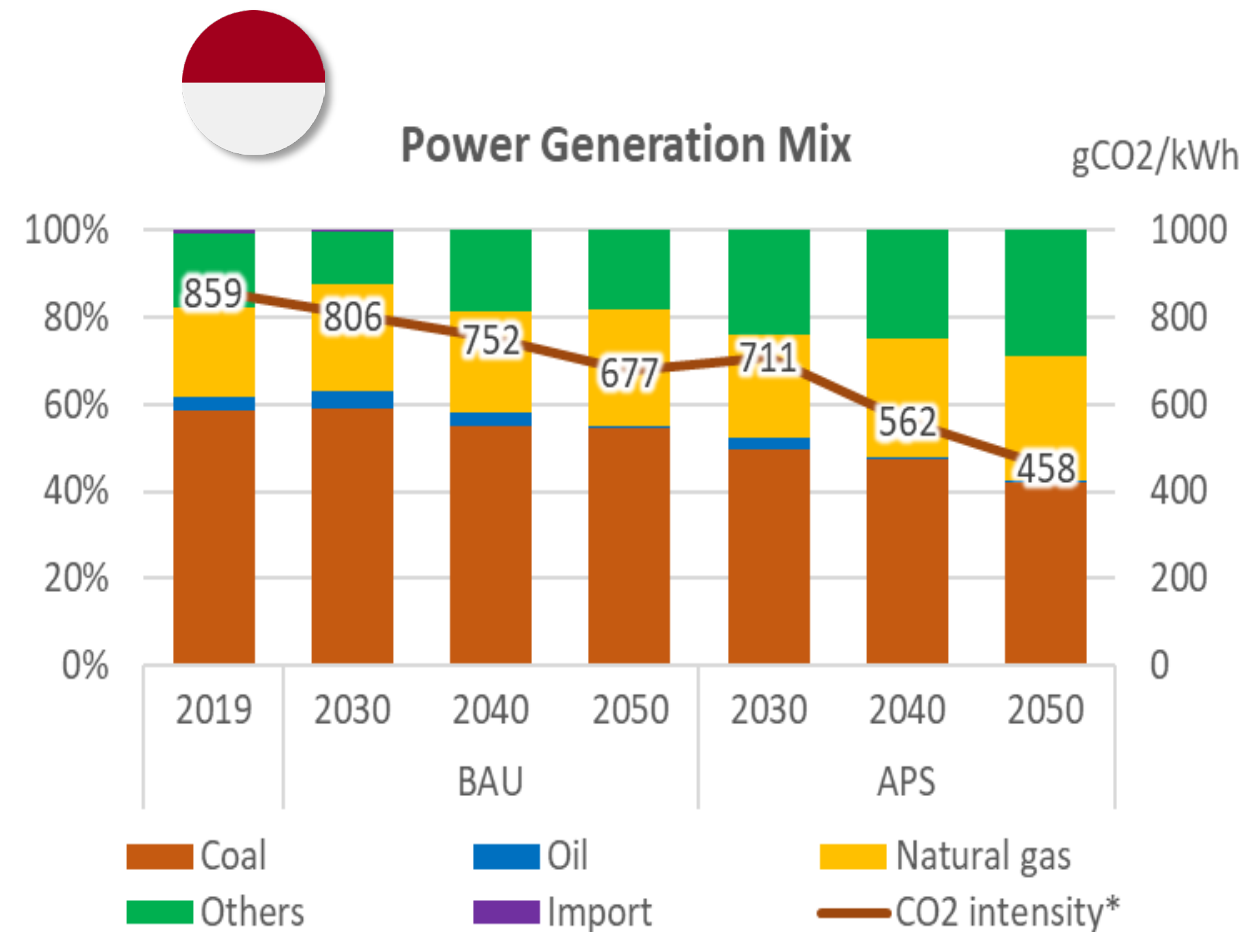
Amidst uncertainty, trends follow a variety of market demands



Note: ROW includes all countries where data is available except ASEAN, the US, China, and the EU. BEV: battery electric vehicle, HEV: hybrid electric vehicle, PHEV: plug-in hybrid electric vehicle. Other Evs: EREV (extended range EV), FCEV (hydrogen fuel cell EV), PFCEV (hydrogen plug-in fuel cell EV). Source: GlobalData

Sustainability Consideration: Climate (1/3)

Essential and crucial role of energy mix in power generation sector



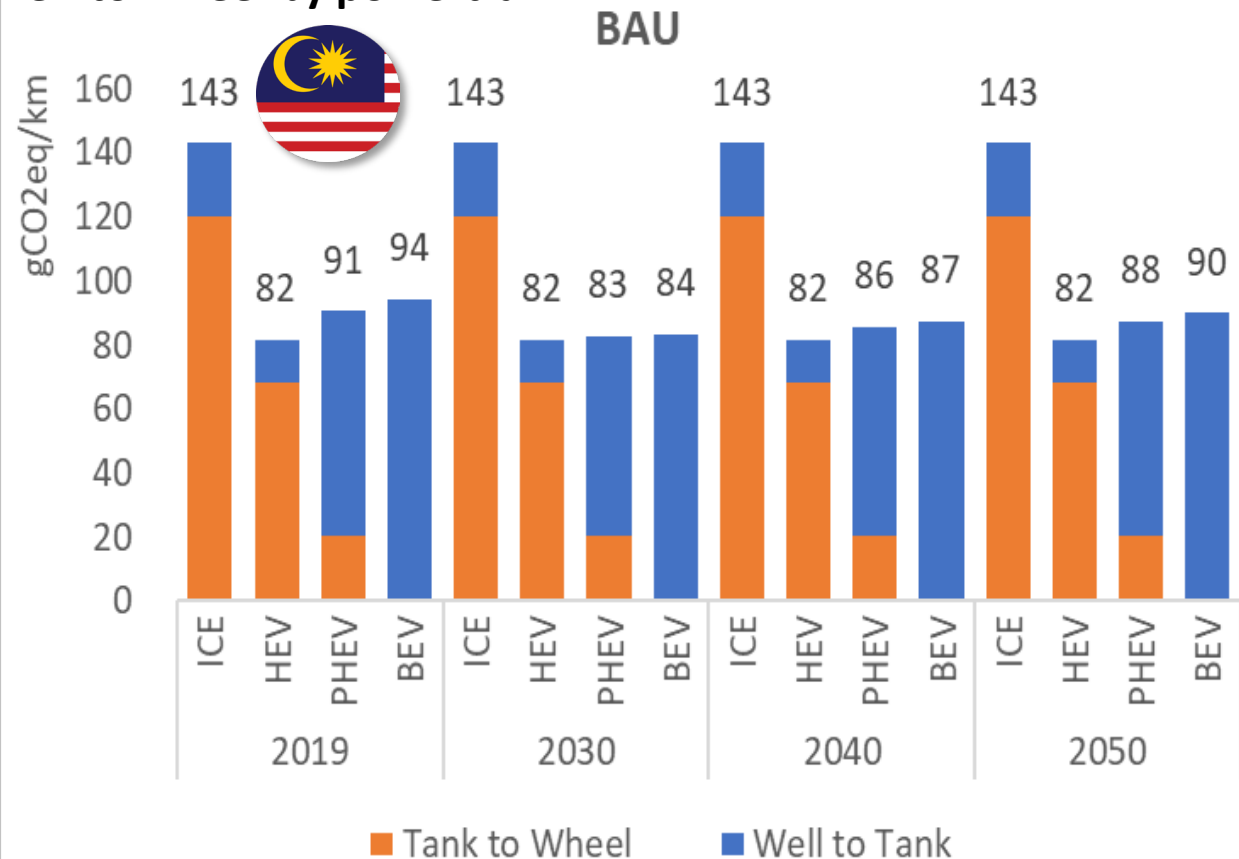
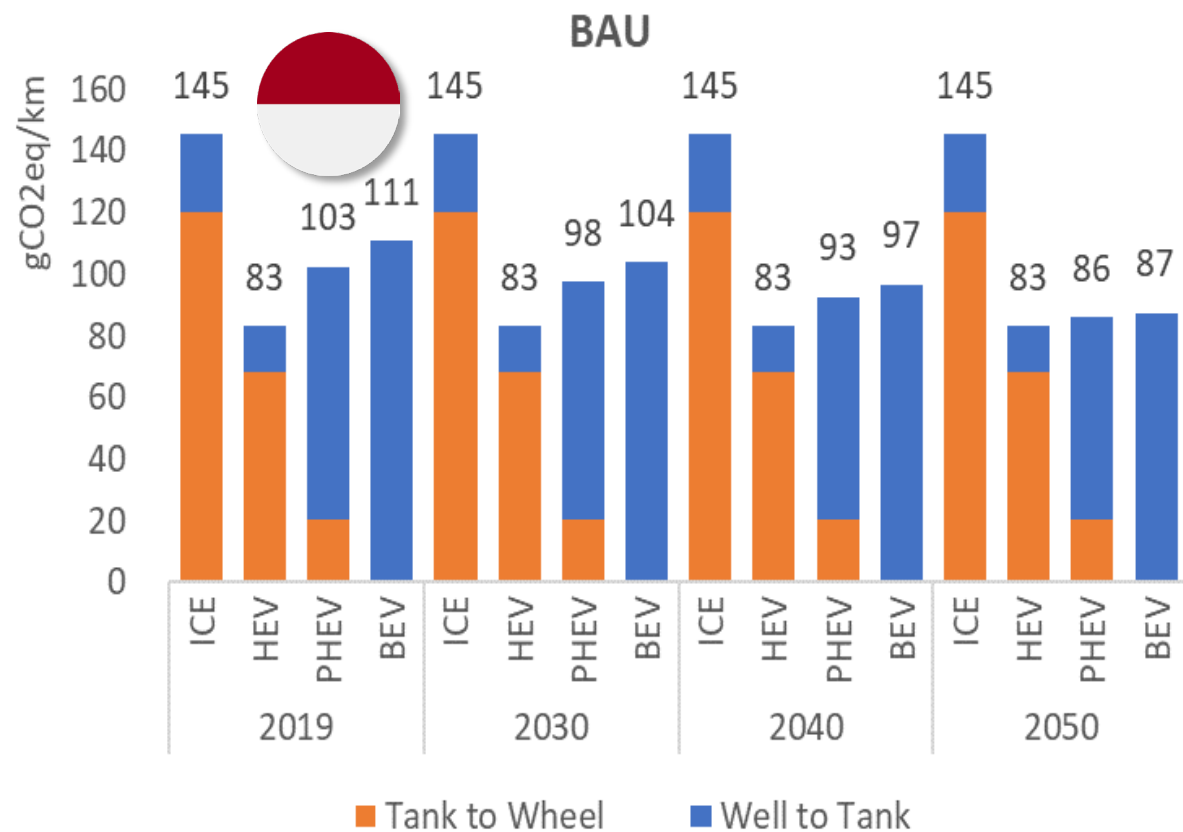
Note: CO2 intensity is based on receiving end., BAU = business-as-usual, APS = advanced policy scenario.

Source: Doi, N., et al.(2022)

Sustainability Consideration: Climate (2/3)

When power generation remains in its status quo (BAU), then EV might not be the 'cleanest' powertrain types

GHG emissions based on Well-to-wheel by powertrain



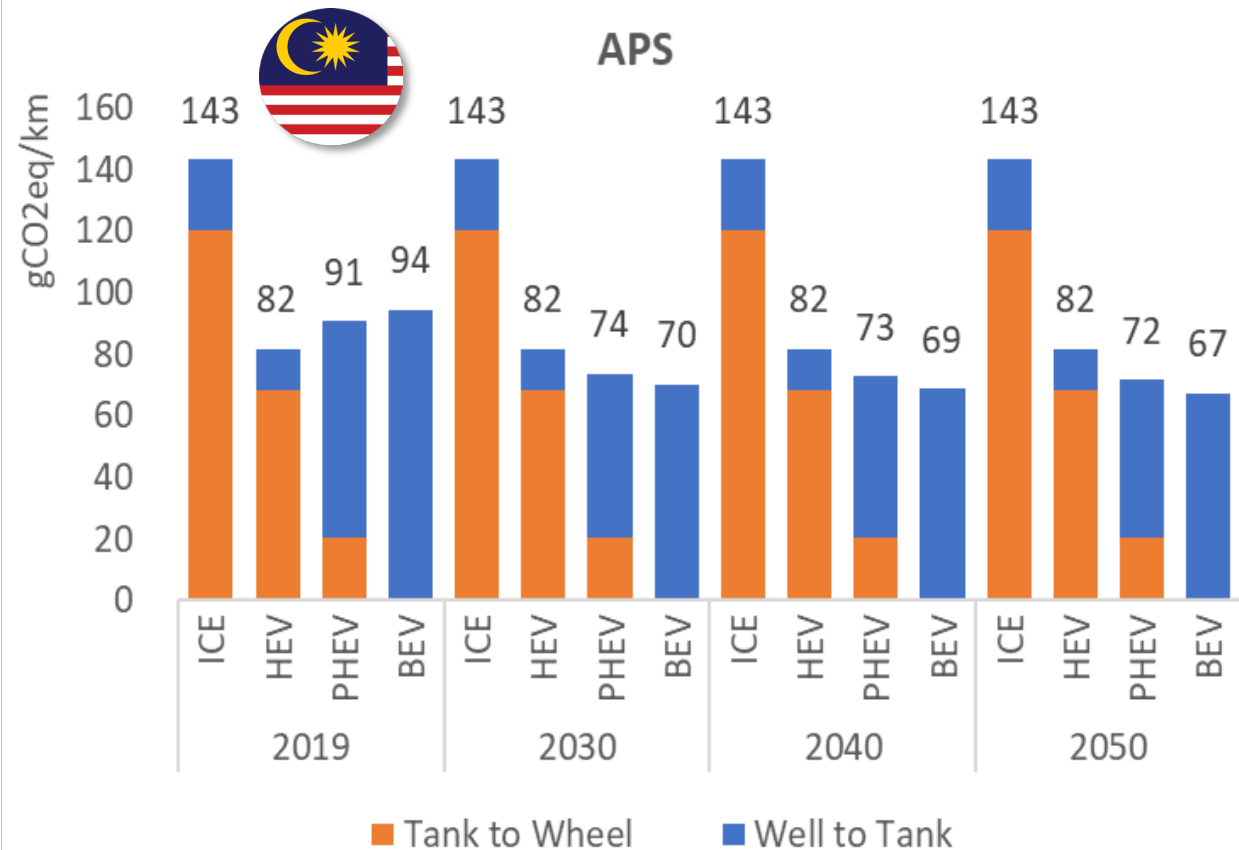
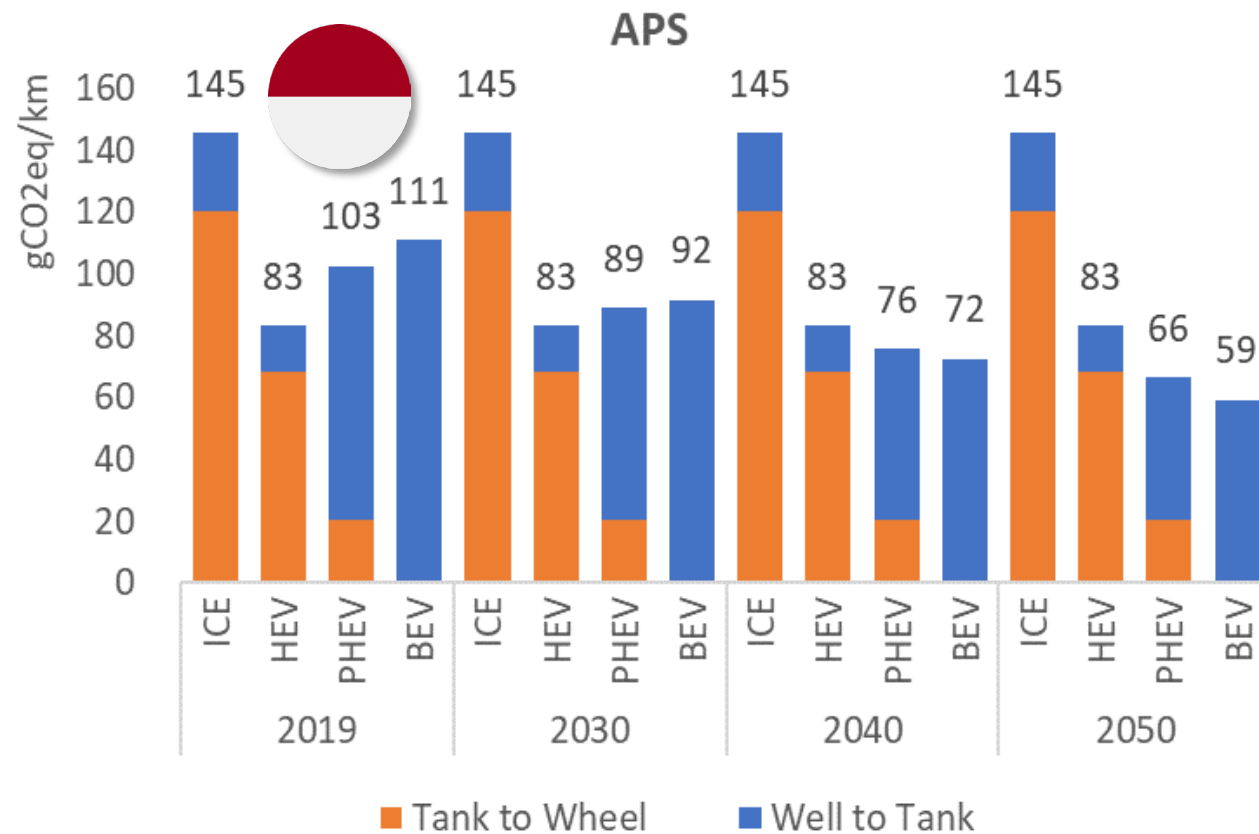
BAU: business-as-usual, ICE: internal combustion engine, HEV: hybrid electric vehicle, PHEV: plug-in hybrid electric vehicle, BEV: battery electric vehicle

Source: Doi, N., et al.(2022)

Sustainability Consideration: Climate (3/3)

Lowering carbon intensity in the power sector determines EV's role in climate change mitigation

GHG emissions based on Well-to-wheel by powertrain

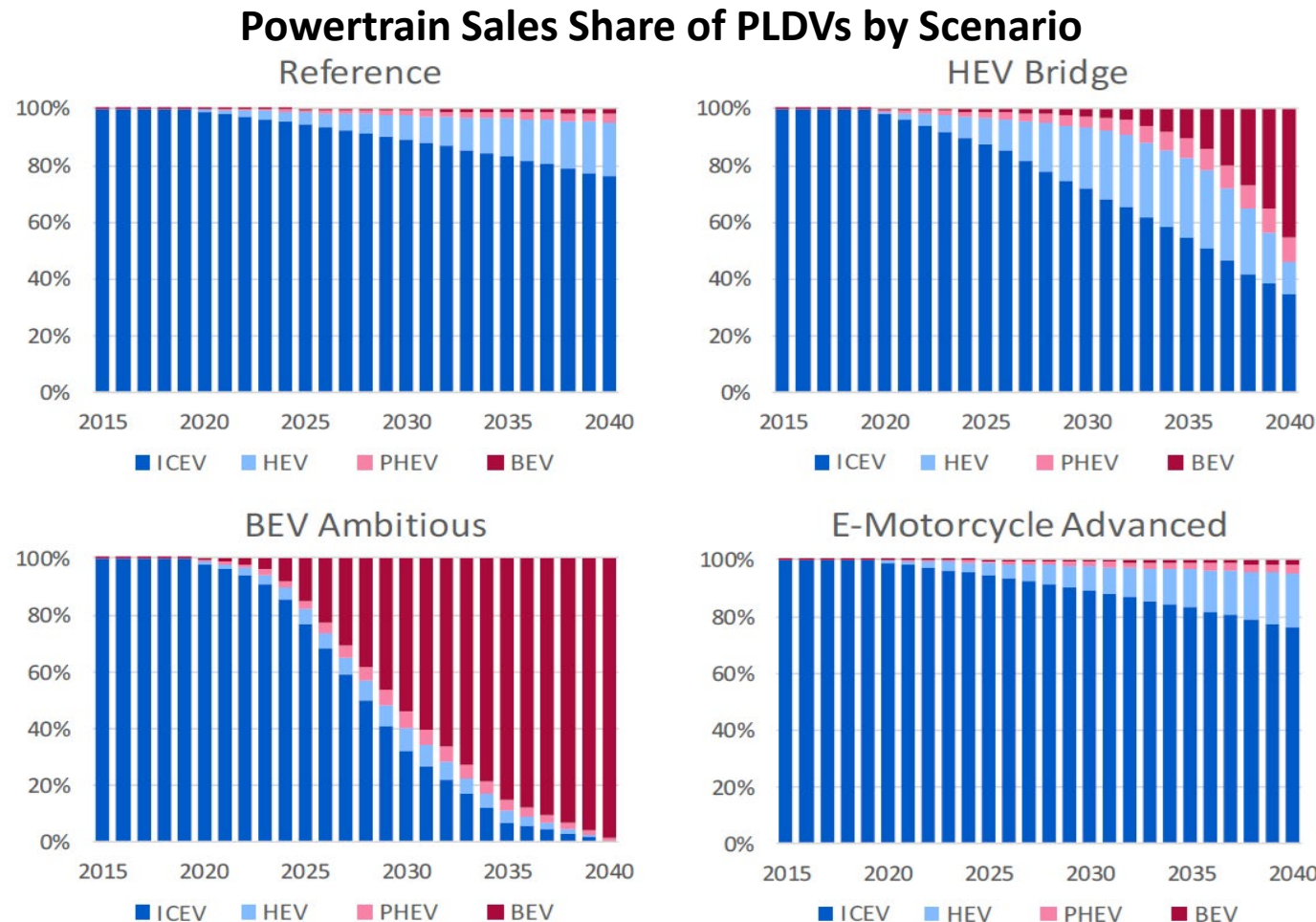


BAU: business-as-usual, ICE: internal combustion engine, HEV: hybrid electric vehicle, PHEV: plug-in hybrid electric vehicle, BEV: battery electric vehicle

Source: Doi, N., et al.(2022)

Sustainability Consideration: Economic Impacts (1/2)

EV penetration rate and pattern affect the indirect impacts on the economy

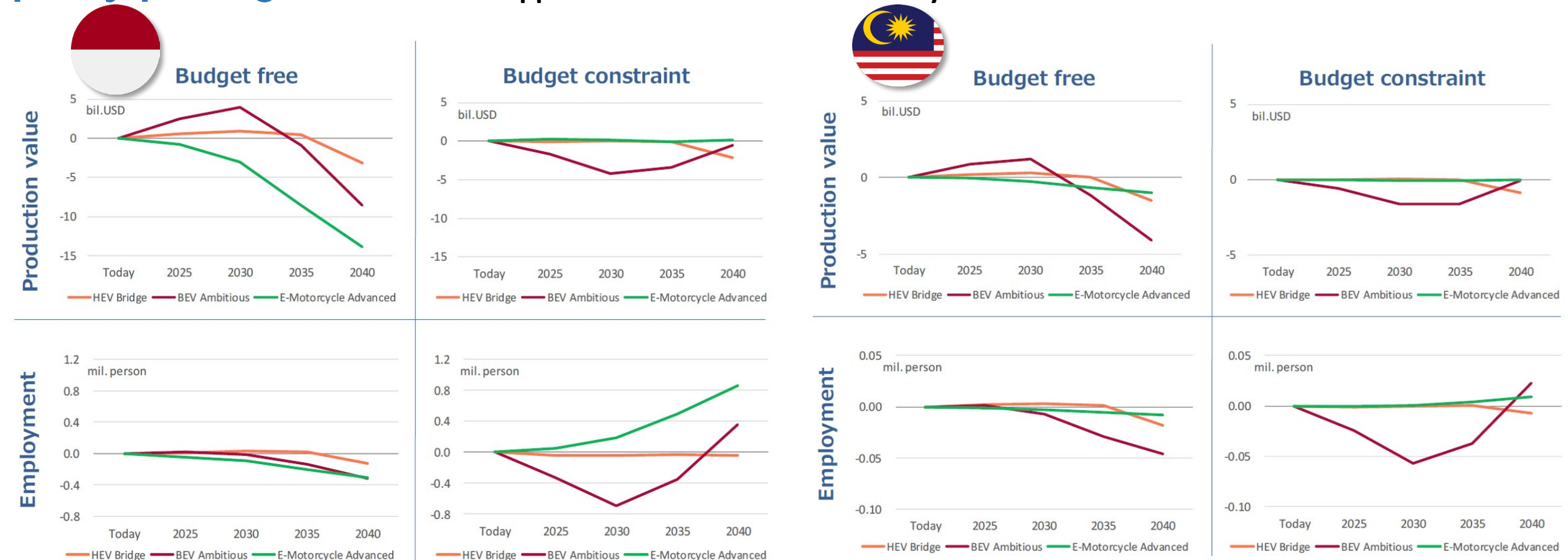


BEV = battery electric vehicle, HEV = hybrid electric vehicle, ICEV = internal combustion engine vehicle, PHEV = plug-in hybrid vehicle, PLDV = passenger light duty vehicle. Source: Suehiro, S. & Purwanto, A. J. (Eds.). (2020).

Sustainability Consideration: Economic Impacts (2/2)

Positive effects on production values & employment happen with the correct policy packages

Ripple effects of EV on the economy 2020 - 2040



bil.US\$ =billions of US dollars, BEV = battery electric vehicle, HEV = hybrid electric vehicle. Note: Effects comparing with the reference scenario.

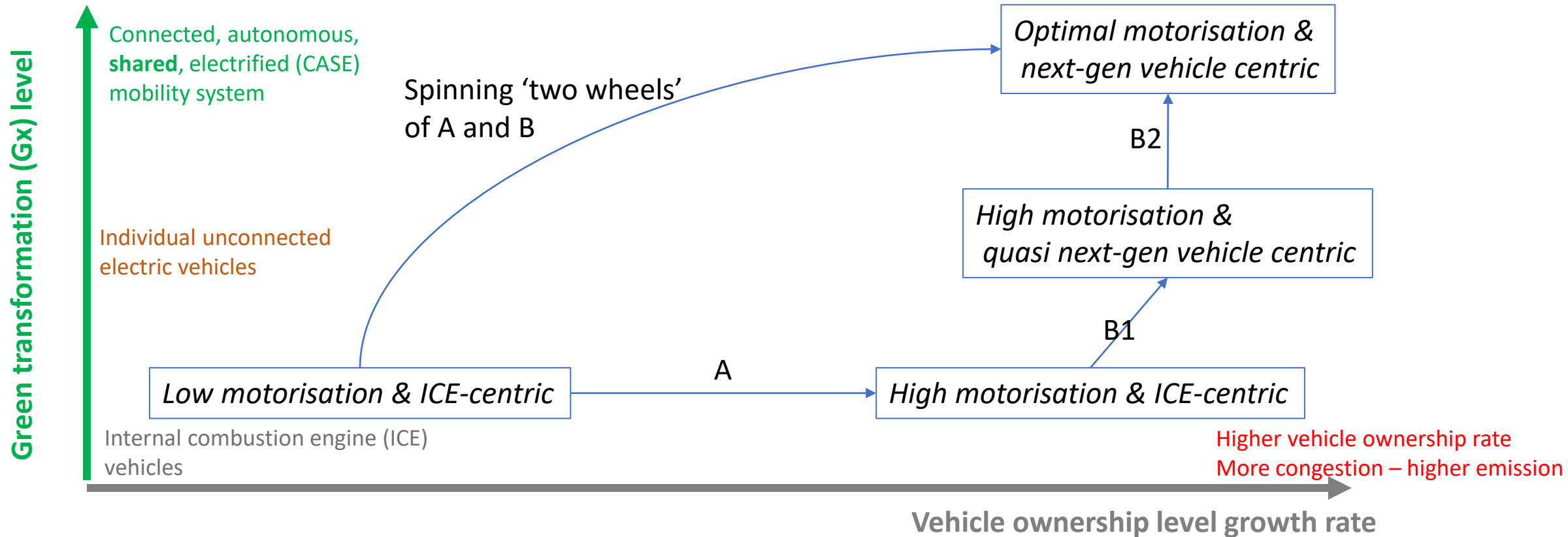
Source: Suehiro, S. & Purwanto, A. J. (Eds.). (2020).

Electric Vehicle as Part of Sustainable Transport

We must put electric vehicles in its place...

Higher vehicle utilisation rate
Less congestion – lower emission

Optimal Motorization Rate Composed by Next Generation Vehicles



B1: Decarbonisation trends drive powertrain transition and supply chain transformation resulting in faster adoption of next-gen vehicles

B2: Decarbonization trends (optimized utilization instead of units of vehicles) also drive more measures to restrict the development of motorization level, i.e., deceleration of motorisation growth

Thank you!

For further discussion, please contact me:

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