Kenanga Electric Vehicles Day 2026

Fostering EV Adoption

NEUTRAL

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We recently organized a Kenanga Electric Vehicles Day 2026 which offered an on-the-ground experience towards fostering EV adoption. Our EV day focused on the following – outlook on Malaysia automotive & EV market by MyZEVA, insight into integrated EV infrastructure by Yinson GreenTech, shaping a sustainable xEV battery afterlife management in Malaysia by MGTC and with a specific focus on Xpeng EVs (G6 SUV & X9 MPV). Next, in collaboration with Xpeng Malaysia, we provided a EVs test drive to Melaka, for a first-hand long-distance trip experience in a EV. Following that we visited the home of Xpeng localisation plant, EP Manufacturing Bhd (EPMB, Not Rated) at Alor Gajah, Melaka. EPMB is also the CKD home of GWM, BAIC & SAIC brands.

Overall, the phased transition from an import-reliant EV marketplace to a localized EV manufacturing ecosystem is a journey that we must take. By cutting off cheap imports, the government is deliberately creating a protected domestic sandbox to pressure global automakers into building local supply chains. Beneficiaries of ready EV local production would be Perodua from its own smart mobility plant (MBMR and SIME), Proton and Zeeker under Proton's Tanjung Malim Plant (DRBHICOM), BYD from Inokom's Kedah plant (SIME and BAUTO), and Xpeng, GWM, BAIC & SAIC brands under EPMB's Melaka plant (BAUTO and EPMB).

KEY HIGHLIGHTS

- The Malaysian EVs and broader automotive market has reached an unprecedented inflection point as of mid-2026. The nation is now targeting a 20% EV share of the Total Industry Volume (TIV) by 2030, eventually scaling to 80% by 2050. Cumulative BEV registrations since 2011 have surpassed 122,286 units, with the first seven months of 2026 witnessing a staggering 94% YoY growth (non-EVs growth fell 2% which indicates all the TIVs growth of 3% being driven entirely by EV adoption). As of July 2026, EVs constitute 5% of the Total Industry Volume (TIV), against an industry baseline of 855,378 units (based on JPJ data).

  The government has revised its deployment target from 10,000 chargers by 2025 to 30,000 public charging points by 2030. As of July 2026, Malaysia featured 6,904 public charging bays (4,665 AC and 2,239 DC). Selangor heavily dominates the geographical distribution with 2,095 bays, closely followed by the Federal Territories (2,059 bays).

  Malaysia's automotive sector is transitioning swiftly. To sustain this momentum toward the 2030 targets, ecosystem synchronization is paramount specifically in streamlining PBT (local state authority) approvals for charging point operators (CPOs), expanding the independent EV aftersales repair network, and managing the integration of high-density grid charging.

- Global battery demand is projected to increase 4.5x by 2030 and more than 7x by 2035, with EVs accounting for 90% of total demand by 2050 (from the 2023 baseline of 850 GWh). Consequently, battery recycling and afterlife management have transitioned from niche environmental concerns to critical national imperatives. By 2035, end-of-life (EOL) EV and storage batteries will overtake manufacturing scrap to become the primary feedstock for battery recycling worldwide. Effective recycling can reduce demand for critical mineral (such as lithium and nickel) by 25%.

  By rectifying the classification paradox, enforcing Extended Producer Responsibility (EPR) policies, and subsidizing second-life R&D, Malaysia can transcend basic waste mitigation. Leveraging existing automotive manufacturing and logistics networks, Malaysia is well-positioned to become the battery afterlife processing hub for the ASEAN region.

- EP Manufacturing Berhad (EPMB), 11.54% owned by BAUTO, has successfully transitioned from a traditional parts supplier into a centralized, multi-brand EV contract manufacturer. By aggressively expanding its Melaka hub and investing RM200m in an in-house painting facility, EPMB has positioned itself as a turnkey local assembly partner for major Chinese OEMs, including XPeng, BAIC, SAIC Motor, and Great Wall Motor (GWM). This strategic pivot is validated by EPMB's explosive 2QFY26 financial turnaround, marked by surging revenues and a +1,760% jump in net profit. By diversifying its portfolio across multiple competing brands, EPMB has secured a scalable, foundational role in Malaysia's ambition to become Southeast Asia's premier EV manufacturing hub.

- EVs offer lower lifecycle GHG emissions than ICE vehicles, with reported reductions of 45.31% for two-wheelers, 12.3% for passenger cars and 18.68% for buses. However, the wider sustainability benefits depend on effective battery afterlife management, including reuse, repurposing and recycling, as well as efficient charging infrastructure. Malaysia's battery circularity ecosystem continues to face regulatory, technical and commercial barriers. For investors, assessing EV sustainability requires looking beyond adoption growth to lifecycle emissions, battery circularity and charging-system performance.

PART 1 – Malaysia automotive & EV market by MyZEVA (Malaysia Zero Emission Vehicle Association).

The Malaysian Electric Vehicle (EV) and broader automotive market has reached an unprecedented inflection point as of mid-2026. Driven by revised governmental policies with most notably the National Energy Transition Roadmap (NETR) and extended tax exemptions, Battery Electric Vehicle (BEV) adoption has accelerated dramatically. The nation is now targeting a 20% EV share of the Total Industry Volume (TIV) by 2030, eventually scaling to 80% by 2050. Cumulative BEV registrations since 2011 have surpassed 122,286 units, with the first seven months of 2026 witnessing a staggering 94% year-on-year growth (38,675 units vs 19,935 units in 7M2025, with non-EVs growth fell 2% which indicates all the TIVs growth of 3% by MAAs being driven entirely by EV adoption). As of July 2026, EVs constitute 5% of the Total Industry Volume (TIV), against an industry baseline of 855,378 units (based on JPJ data). This surge introduces structural shifts across the automotive ecosystem. One the key consideration for new car buyers is the Total Cost of Ownership (TCO) (see exhibit 1 & 2) which is proving highly favorable for consumers (for home charging, more so if solar-powered home) in relation to the fuel and maintenance, though elevated tyre wear rates present new operational dynamics.

Market performance & adoption trends

The industry trajectory indicates a robust shift from early adopters to mainstream consumer acceptance. Current forecasts project approximately 750,000 EVs on Malaysian roads by 2030. The brand landscape is heavily dominated by national (Proton and Perodua) and established international marques (i.e BYD, Xpeng) capitalizing on localized manufacturing and aggressive pricing strategies. Proton leads the manufacturer volume by a significant margin, propelled primarily by its e.MAS 5 and e.MAS 7 models. BYD remains a strong secondary force, supported by its Atto 3 and Sealion lineup.

Consumer economics & ownership profile

The economic transition from Internal Combustion Engine (ICE) vehicles to BEVs presents a compelling financial case for Malaysian drivers, balanced against unique behavioral requirements such as home charging reliance and specialized maintenance profiles. Approximately 80% of EV owners prefer home charging due to convenience and drastic cost savings (more so if solar-powered home). Based on a standard 60.22 kWh battery size yielding a 410 km rated range (averaging 14.7 kWh/100km), the cost disparities per 100km of travel are substantial (see exhibit 1).

Charging Infrastructure Utility

Contrary to common perception, daily charging is largely unnecessary. For an average 40-60km daily commute, a standard 40 kWh to 82 kWh battery requires charging only every 4 to 8 days. Furthermore, regarding AC charging hardware, 95% of BEV models in Malaysia are equipped with a 7kW or 11kW On-Board Charger (OBC). Consequently, investing in 22kW home chargers yields no benefit for the vast majority of current EV owners. User experience at public stations is also maturing. The industry has consolidated fragmented charging networks, reducing the average driver's app dependency from six applications down to roughly four. Over 60% of chargers have now integrated "Tap-and-Go" credit card payment facilities, bypassing complex app interactions (see exhibit 3).

Infrastructure ecosystem & supply chain.

While vehicle adoption is scaling exponentially, the supporting physical and human infrastructure faces integration bottlenecks. The national ratio currently stands at roughly 1 EV Charger for every 18 BEVs**. Revised National Target:** The Malaysian government has aggressively revised its deployment target from 10,000 chargers by 2025 to 30,000 public charging points by 2030. As of July 2026 (see exhibit 4), Malaysia features 6,904 public charging bays (4,665 AC and 2,239 DC). Selangor heavily dominates the geographical distribution with 2,095 bays, closely followed by the Federal Territories (2,059 bays).

The TVET & aftersales skills gap

The aftersales ecosystem remains structurally OEM-led (e.g., BYD operating 21 service centers), with only 10 to 20 independent specialized EV workshops nationwide. While Malaysia boasts 1,398 Technical and Vocational Education and Training (TVET) institutions, only an estimated 60 to 80 institutions currently incorporate EV/Hybrid elements into their curriculums. Forecasting through 2030 indicates that these institutes will produce roughly 1,800 EV-trained graduates annually. With 765,982 EVs projected on the road by 2030, the ratio equates to approximately 71 EVs requiring service per individual trained technician annually, highlighting a critical need for rapid workforce upskilling.

Policy backing & future horizons

Governmental policy continues to act as the primary catalyst for the EV sector. Through the National Energy Transition Roadmap (NETR), Malaysia has enshrined its commitment to net-zero emissions. To support this, comprehensive incentives have been implemented: Import/Excise full duty exemptions for CBU units (ceased in 2025), and CKD units until 2027 (including zero sales tax). Other intiatives includes, road tax exemptions (ceased in 2025), income tax deductions (up to RM 2,500) for home charger installations, a 3-year tax rebate for EV leasing and 100% investment tax allowances for manufacturers and 10-year income tax exemptions for charging equipment manufacturers.

Moreover, under Second-Life Batteries initiatives, and by 2045, the retiring battery packs from the projected 2030 fleet (750,000 BEVs averaging 69 kWh) will yield roughly 0.05 TWh of grid storage capacity. This is sufficient to power 1.7m Malaysian households for a full day, offering a critical bridge for intermittent renewable energy sources like solar. Following with the Solid-State battery advancements, the current liquid-electrolyte batteries (e.g., 80kWh weighing 500kg) are being phased-out. The Solid-State battery advancements could offer potential improvements, subject to commercialization and performance validation.These promise vastly higher energy density and lower thermal runaway risks, potentially reducing an 80kWh pack to 350-400kg or expanding capacity to 150kWh at the same weight footprint.

BEV vs. FCEV (Hydrogen) dynamics

While Hydrogen Fuel Cell Electric Vehicles (FCEV) present an alternative zero-emission pathway, BEVs currently maintain a drastic efficiency advantage. Comparing a Hydrogen FCEV (Toyota Mirai) against a BEV (BYD Atto 3) over a 420 km range reveals structural market realities: Producing 1kg of Hydrogen (50 kWh energy) requires roughly 50kWh of grid energy and 9kg of water. Consequently, fueling a Mirai consumes approximately three times the grid energy of directly charging a BEV, cementing BEVs as the dominant passenger vehicle format for the medium term, while Hydrogen is likely relegated to heavy-duty trucking.

Conclusion: Malaysia's automotive sector is transitioning swiftly. To sustain this momentum toward the 2030 targets, ecosystem synchronization is paramount specifically in streamlining PBT (local state authority) approvals for CPOs, expanding the independent EV aftersales repair network, and managing the integration of high-density grid charging

Exhibit 1: Total cost of charging/fueling per 100km – Based on Proton eMas 7 EV battery size

Item	Fuel Powered Vehicle	Electric Vehicle (Public Charging)[1]	Electric Vehicle (Home Charging)
Location to Energize	Petrol Station	Public charger 20% EV owners's preferred method	Home Charger 80% EV owners's preferred method
Duration to Energize	5 min fuelling	Based on charger and EV battery capacity	Night-time charging
Cost of Energy	RM 1.99/L (RON95)	RM 1.50/kWh	RM 0.454/kWh
Tank/Battery Size	60 L	60.22 kWh	60.22 kWh
Average Fuel/Energy Consumption	10L/100km	14.7kWh/100km	14.7kWh/100km
Rated Range	600km	410km	410km
Cost of Charging/Fuelling (100km)	**RM 19.90**	**RM 22.05**	**RM 6.67**

Source : MyZEVA, Kenanga Research

Exhibit 2: Maintance cost – EVs only once a year.

71% Cheaper for 100,000 km interval service maintenance cost

Longer warranty 6 to 8 years for e.MAS7 compared to 5 years for X70

e.MAS 7 Service Intervals

Items & Interval	Qty	×1000km	5	25	45	65	85	105	125	145	165	185	205
		months	3	15	27	39	51	63	75	87	99	111	123
Labor	-		54.00	36.00	81.00	36.00	261.00	36.00	126.00	198.00	81.00	36.00	261.00
Cabin Filter	1			52.99	52.99	52.99	52.99	52.99	52.99	52.99	52.99	52.99	52.99
Reduction Gear (1L)	1		99.60		99.60		99.60			99.60		99.60	99.60
Brake Fluid (1L)	1			95.00		95.00			95.00			95.00	95.00
Motor Coolant (1.5L)	3						127.41			127.41			127.41
Drain Plug In & Out	2		46.80		46.80		46.80		46.80		46.80		46.80
Drain Plug Washer In & Out	2		7.48		7.48		7.48		7.48		7.48		7.48
SST	8%		4.32	2.88	6.48	2.88	20.88	2.88	10.08	15.84	6.48	2.88	20.88
TOTAL			212.20	91.87	389.35	91.87	711.16	91.87	437.95	394.24	389.35	91.87	711.16

Only once a year

e.MAS 7 indicative ~RM1,497

2022 Proton X70 | 1.5 TGDI 2WD

Service Item	1,000 km/ 1 month	10,000 km/ 6 months	20,000 km/ 12 months	30,000 km/ 18 months	40,000 km/ 24 months	50,000 km/ 30 months	60,000 km/ 36 months	70,000 km/ 42 months	80,000 km/ 48 months	90,000 km/ 54 months	100,000 km/ 60 months
Engine oil	RM189.00	RM189.00	RM189.00	RM189.00	RM189.00	RM189.00	RM189.00	RM189.00	RM189.00	RM189.00	RM189.00
Engine oil filter	RM50.25	RM50.25	RM50.25	RM50.25	RM50.25	RM50.25	RM50.25	RM50.25	RM50.25	RM50.25	RM50.25
Engine drain plug gasket	RM5.26	RM5.26	RM5.26	RM5.26	RM5.26	RM5.26	RM5.26	RM5.26	RM5.26	RM5.26	RM5.26
Air filter	-	RM71.64	-	RM71.64	-	RM71.64	-	RM71.64	-	RM71.64	-
Fuel filter	-	-	RM28.18	-	RM28.18	-	RM28.18	-	RM28.18	-	RM28.18
Cabin filter	-	-	RM179.00	-	RM79.00	-	RM79.00	-	RM79.00	-	RM79.00
Spark plugs	-	-	-	-	RM96.84	-	-	-	RM96.84	-	-
Brake fluid	-	-	-	-	RM19.81	-	-	-	RM19.81	-	-
Engine coolant	-	-	-	-	-	-	RM135.45	-	-	-	-
Transmission oil	-	-	-	-	-	-	-	-	-	RM237.36	-
BSG drive belt	-	-	-	-	-	-	-	-	-	-	-
Labour	-	-	-	RM78.00	RM162.00	RM78.00	RM150.00	RM78.00	RM162.00	RM120.00	RM90.00
Service tax	-	-	-	RM4.68	RM9.72	RM4.68	RM9.00	RM4.68	RM9.72	RM7.20	RM5.40
Total	RM244.51	RM316.15	RM351.69	RM398.83	RM640.06	RM398.83	RM646.14	RM398.83	RM640.06	RM680.71	RM447.09

X70 total / 100,000 km RM5,162.90

Source : MyZEVA, Kenanga Research

Exhibit 3: Reduction in numbers of charging app.

Beginning 2025, the use of charging apps have been reduced

Challenges	Solution	Overall
Too many apps	3 CPOs are roaming with each other	31%
	1 CPO is in discussion to roam. Challenge: barrier 	21%
Apps are too difficult to use; credit card tap n go is a better solution	Transitioning to credit card tap n go	7%
	Card info is built in the vehicle	4%

Actual Customer Experience

Previously, EV drivers had to use up to 6 different apps just to charge.

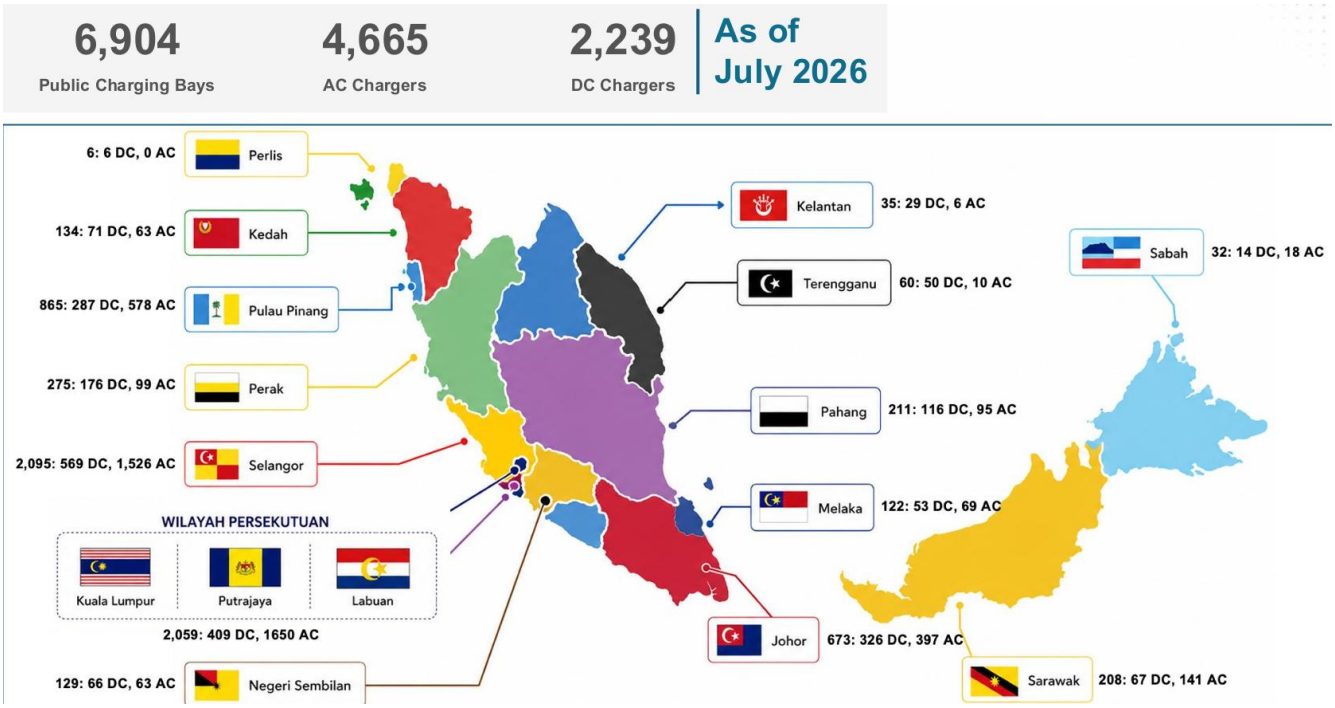




Today, with industry improvements, most only need around 4, showing clear progress in improving user convenience across the EV industry.

Source : MyZEVA, Kenanga Research

Exhibit 4: Current charging points as of July 2026



Source : MyZEVA, st.gov.my, Kenanga Research

PART 2 – Insight on integrated EV infrastructure by Yinson GreenTech – complement the presentation by myZEVA as both its under one assocation.

Market Momentum & Outlook

- EV adoption in Malaysia is accelerating, which is driving a rapid scale in demand for charging infrastructure and fleet electrification.
- Since 2021, Malaysia has seen a 10X growth in EV registrations.
- There are currently over 6,000 public charging points operating nationwide.
- Projections indicate there will be 150,000 EVs on the road by 2030

EV Charger Distribution & Growth (see exhibit 4)

- As of July 2026, there is a nationwide total of 6,904 EV chargers (combining both DC and AC units).
- The central region leads the distribution, with Selangor housing 2,095 chargers (569 DC, 1,526 AC) and Kuala Lumpur hosting 2,059 chargers (409 DC, 1,650 AC).
- Penang follows with 865 chargers, and Johor operates 673 chargers.
- Putrajaya features a uniquely DC-heavy infrastructure, operating 409 DC chargers and 0 AC chargers.
- Between Q1 2023 and Q2 2026, total charger deployment experienced strong and steady growth, increasing 6.5x overall.
- DC chargers grew by +409% (from 839 to 4,271 units), while AC chargers saw massive percentage growth of +1,464% (from 137 to 2,145 units)

Comprehensive Charging Solutions – see exhibit 5

- Destination Charging: Designed for convenient, daily charging at retail and lifestyle destinations, such as shopping malls, mixed developments, hotels, and resorts.
- Charging On-The-Go: Geared toward intercity mobility corridors and highway travel, providing ultra-fast commercial charging for high-turnover environments.
- Commercial Charging: Focused on fleet and workplace infrastructure, supporting commercial fleet operations, offices, and long-dwell environments.

- Charging Hubs: Provides high-power charging hubs with cross-border roaming capabilities for seamless access across Malaysia and Singapore. Key existing hub locations include Berjaya Times Square (KL), Starling Mall (Selangor), and Eco Galleria (Johor).

Technological Innovation: Dynamic Load Balancing (DLB) – see exhibit 6

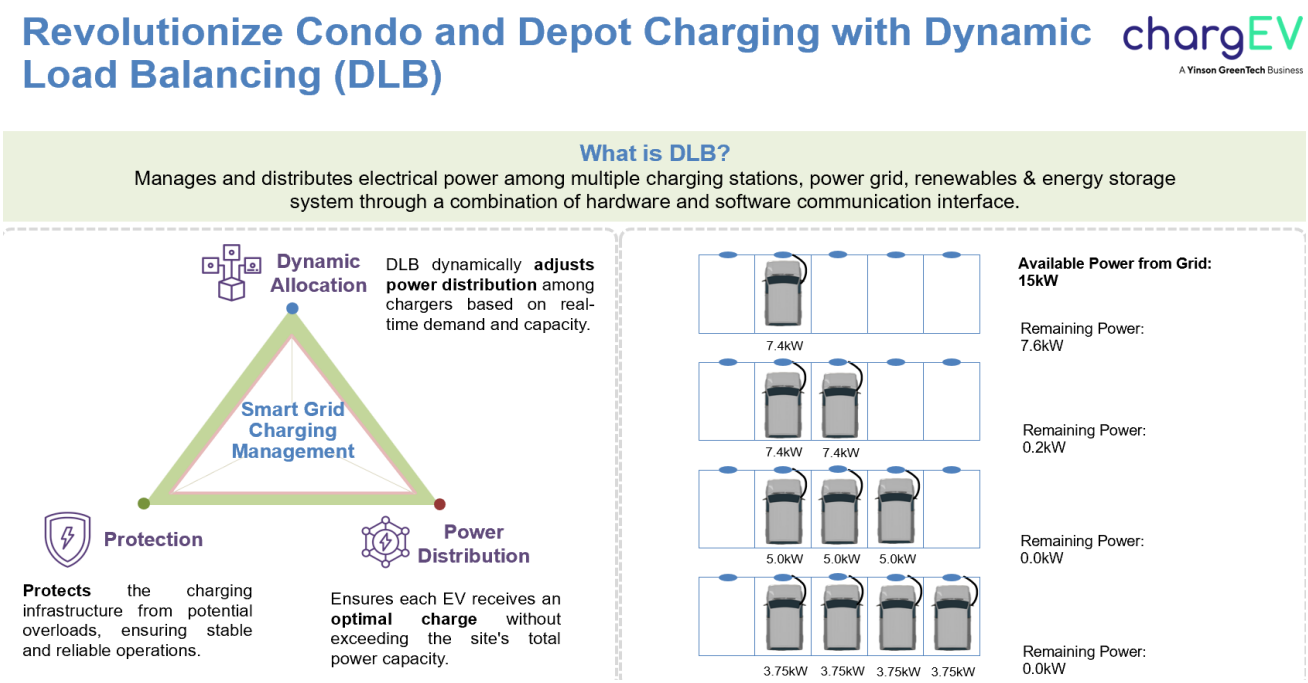
- DLB is being used to help allocate available electrical capacity at condos and fleet depots by intelligently managing and distributing electrical power among multiple charging stations, the power grid, renewables, and energy storage systems.
- Relying on a combination of hardware and software communication, DLB dynamically adjusts power distribution based on real-time demand and capacity.
- For example, a 15kW grid capacity can actively divide its output (e.g., from 7.4kW down to 3.75kW per vehicle) as more vehicles plug in simultaneously.
- This smart grid management ensures every EV receives an optimal charge without exceeding the site's total power capacity and can help prevent site overloads.
- Importantly, it protects the underlying charging infrastructure from potential power overloads, ensuring stable and reliable operations.

Exhibit 5: Flexible charging solutions for different site environments



Source : ChargeEV under Yinson, Kenanga Research

Exhibit 6: Dynamic Load Balancing (DLB)



Source : ChargeEV under Yinson, Kenanga Research

PART 3 – Shaping a sustainable xEV battery afterlife management in Malaysia by MGTC (Malaysian Green Technology and Climate Change Corporation)

The EV boom and environmental risks of improper management

Malaysia is currently experiencing a rapid acceleration in the adoption of electrified vehicles (xEVs). Concurrently, based on the baseline total battery demand in 2023 at 850 GWh (source : Energy Agency's (IEA) Global EV Outlook 2024), global battery demand is projected to increase four-and-a-half times by 2030 and more than seven times by 2035, with EVs accounting for 90% of total demand by 2050. Consequently, battery recycling and afterlife management have transitioned from niche environmental concerns to critical national imperatives. By 2035, end-of-life (EOL) EV and storage batteries will overtake manufacturing scrap to become the primary feedstock for battery recycling worldwide. Effective recycling can reduce demand for critical mineral (such as lithium and nickel) by 25%. Addressing this lifecycle proactively is essential to mitigating environmental hazards and positioning Malaysia as a regional leader in the circular economy.

Without a structured afterlife management ecosystem, xEV batteries pose severe threats to environmental sustainability and public safety:

- Landfill Disposal Hazards: Damaged or punctured lithium-ion batteries risk thermal runaway, leading to self-ignition and massive, difficult-to-extinguish fires that release hazardous toxic fumes.
- Improper Recycling Emissions: Informal, high-temperature smelting releases excessive CO2, SO2,and heavy metal dust into the atmosphere.
- Soil and Water Contamination: Toxic solvents from electrolytes can seep into groundwater. Lithium, cobalt, and nickel can leach into ecosystems, while cadmium and lead bioaccumulate in food chains. Acidic leakage severely alters soil pH, rendering land infertile.
- Material Depletion: Failure to recycle necessitates highly destructive mining to replace critical materials, directly correlating with higher CO2 emissions, deforestation, and water depletion

Current landscape & systemic challenges

Through extensive methodology involving over 100 stakeholders, technical meetings, and site visits alongside key international partners (e.g., MOEJ, KECO, UK ReLib), MGTC has identified significant gaps in Malaysia's current xEV afterlife ecosystem:

- Legislative vacuum: A lack of legislative mandate and long-term strategic direction for end-to-end End-of-Life Vehicle (ELV) and battery strategy.

- Absence of EPR: There is no dedicated regulatory framework or enforceable Extended Producer Responsibility (EPR) to support battery circularity, such as clear provisions for battery grading, second-life applications, and resource classification.
- Underdeveloped domestic ecosystem: Limited infrastructure, technical capability, economic scale, and investment in repurposing and recycling facilities hinder local progress.
- Market opacity: Ambiguities regarding battery ownership post-accident or post-warranty, uncertainty around end-destinations, and the lack of a structured marketplace for used batteries.

Regulatory bottlenecks: classification of used vs. waste.

Currently, Malaysia manages end-of-life xEV batteries primarily under Scheduled Waste SW103 (waste batteries containing cadmium, nickel, mercury, or lithium), aligning with the Basel Convention. While necessary for damaged or unsafe units, this classification creates friction for the circular economy. This creates the "Waste vs. Resource" paradox. SW103 designation does not adequately reflect the technical reality that many retired EV batteries retain substantial usable capacity (State of Health > 70-80%) and can be safely redeployed following proper testing. Treating functional batteries identically to hazardous waste artificially inflates logistics costs and restricts repurposing supply chains. Furthermore, the Department of Environment (DOE) Guidelines for the Transboundary Movement of Used Electrical and Electronic Equipment (UEEE) applies an age-based threshold of five years to distinguish used equipment from waste. This provision is ill-suited for xEV batteries: Age is not a scientifically appropriate determinant of an EV battery's functionality or safety. Classification should instead be anchored to battery-specific indicators, specifically State of Health (SOH), operational safety diagnostics, and verifiable historical documentation (e.g., Battery Passports).

The 3R Pathway: Technical Assessment.

MGTC's Life Cycle Analysis (LCA) utilized a gate-to-grave boundary beginning at the point of EOL battery collection. Analyzing the carbon emissions of the three fundamental pathways such as Reuse, Repurpose, and Recycle which demonstrates clear environmental priorities. While recycling prevents massive virgin mining burdens, the higher energy intensity of hydrometallurgical processing and balance-of-plant requirements mean that extending a battery's life through Reuse or Repurposing yields significantly better immediate carbon economics.

Emission Potential (per tonne of EOL LFP batteries treated) through (i)Reuse (Refurbishment): ≈ 0.23 kg CO_2e (Lowest additional climate burden), (ii); Repurpose (Stationary Integration): ≈ 23.4 kg CO_2e;, and (iii)Recycling Process (Hydrometallurgical/Black Mass): ≈ 27.7 kg CO_2e; compared to Baseline (New Battery from Virgin Material): ≈ 68.0 kg CO_2e.

The strategic opportunity of repurposing (Second-Life)

The Strategic Opportunity of Repurposing (Second-Life) offers immense potential to support rural electrification, micro-grids, and low-to medium power needs in Malaysia. Current prototypes demonstrate viability: a 10 kWh Battery Energy Storage System (BESS) combined with Solar PV using crashed Tesla Model S modules operates at an Elmina show house, and a 1.2 kWh BESS from Nissan Leaf modules is being tested by UMPEDAC. Key Challenges to Repurposing: Screening & Sorting: Cells from varying sources suffer inconsistent degradation histories, requiring rigorous and expensive testing to match modules. BMS Adaptation: Second-life systems require highly customized Battery Management Systems (BMS) to handle diverse cell aging, maintain balance, and accurately estimate State of Charge/Health. Techno-Economic Viability: The combined costs of dismantling, safe transport, SW103 storage compliance, and systems integration currently strain margins compared to the plummeting costs of new LFP batteries

Malaysia's emerging recycling ecosystem.

Malaysia currently hosts four (4) licensed treatment facilities capable of recycling xEV batteries up to the "black mass" (early refinery) stage. Movements are tracked via the Department of Environment's Electronic Scheduled Waste Information System (eSWIS), ensuring transparency across the Waste Generator, Transporter, and Receiver chain. However, scaling this ecosystem faces several operational hurdles i.e(i) Feedstock Shortages: Local adoption volumes are still ramping up, and the Basel Convention restricts the importation of waste batteries, starving local recyclers of economies of scale, (ii)Evolving Chemistries: The shift across **LFP** (Lithium Iron Phosphate (*LiFePO4*)), **NMC (**Lithium Nickel Manganese Cobalt Oxide (*LiNiMnCoO2*)), **NCA (**Lithium Nickel Cobalt Aluminum Oxide (*LiNiCoAlO2*)), and emerging sodium-ion chemistries complicates recovery lines, requiring diverse technical protocols, (iii)Hazardous Disassembly: The lack of standardized battery pack designs across OEMs makes automated disassembly impossible, and (iv) Manual dismantling remains slow, dangerous (fire/shock risks), and highly labor-intensive.

Conclusion: By rectifying the classification paradox, enforcing EPR policies, and subsidizing second-life R&D, Malaysia can transcend basic waste mitigation. Leveraging existing automotive manufacturing bases and logistics networks, Malaysia is well-positioned to become a premier circular economy and battery afterlife processing hub for the ASEAN region.

PART 4 – EP Manufacturing Berhad (EPMB, Not Rated) - multi-brand Electric Vehicle (EV) and Energy-Efficient Vehicle (EEV) manufacturer.

EP Manufacturing Berhad (EPMB) has significantly accelerated its transition into a central contract manufacturer for the ASEAN electric and energy-efficient vehicle market at its automotive manufacturing plant under Peps-JV (Melaka) Sdn Bhd, HICOM Pegoh Industrial Park in Alor Gajah, Melaka. Recent developments highlighted a major capacity expansion and the successful onboarding of several heavyweight Chinese OEMs which includes Xpeng, GWM, BAIC & SAIC brands.

- **Capacity Quintupled:** In December 2025, EPMB officially launched "Phase 2" of its Melaka assembly plant. This expansion increased the facility's annual production capacity from its initial 6,000 units up to 30,000 units.
- **In-House Painting Facility:** To support full completely knocked down (CKD) assembly, EPMB broke ground on an RM200m vehicle painting facility in June 2026. Built on an adjacent eight-acre plot, this allows the plant to handle more complex manufacturing processes entirely in-house.

Expanded Multi-Brand OEM Portfolio

EPMB's contract manufacturing strategy has evolved beyond its initial agreements, successfully launching production lines for multiple competing brands under one roof.

- **BAIC:** Following the completion of pilot production in November 2025, EPMB commenced full production for BAIC in January 2026. The initial rollout focuses on the BAIC X55 (a C-segment SUV) and the rugged BJ40 Plus, supporting BAIC's Q1 2026 launch window in Malaysia.
- **XPeng:** In a major strategic win, EPMB partnered with XPeng in December 2025 to locally assemble models like the G6 and X9. The CKD XPeng G6 officially opened for booking in Malaysia in July 2026 and XPeng X9 will follows soon.
- **SAIC Motor (MG):** Expanding its footprint further, EPMB secured an agreement with SAIC Motor to assemble MG vehicles. Operations for this partnership commenced in the first half of 2026.
- **Great Wall Motor (GWM):** EPMB's foundational partnership with GWM has matured significantly. In late 2026, EPMB successfully rolled the first GWM Wey G9-PHEV MPV off its assembly line. This milestone marks EPMB's entry into assembling premium, technologically complex, and larger-format vehicles.

Capital Expenditure (CapEx)

The expansion of the Melaka hub involves significant investments to transition from basic assembly to full completely knocked down (CKD) manufacturing capabilities:

- **Painting Facility:** The core of the current CapEx is the RM200m investment for the new in-house vehicle painting facility in Pegoh, Melaka, which broke ground in June 2026 and is slated for completion by June 2027.
- **Land Acquisition:** To support this expanded footprint, EPMB invested RM35m to acquire additional land in Melaka specifically for the vehicle assembly plant expansion.

Funding Mechanisms

- **Equity Offering:** EPMB successfully completed a follow-on equity offering (private placement), raising RM39.65m in fresh capital.
- **Bank Borrowings & Cash:** The remainder of the expansion costs are being bridged through established bank credit facilities and internally generated funds.
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Metric	Reported Value	Context
Annual Revenue	RM554.7m (FY25)	While FY 2025 saw a temporary 6.7% dip, based on estimated FY26 revenue (extrapolated based on 1HFY26 reported numbers), it has aggressively rebounded to RM674.3m (+22%).
Quarterly Revenue	RM212.7m (2QFY26)	2QFY26 revenue surged 66.6% YoY from RM127.70m in 2QFY25. This marks the company's highest quarterly revenue level since at least 2016.

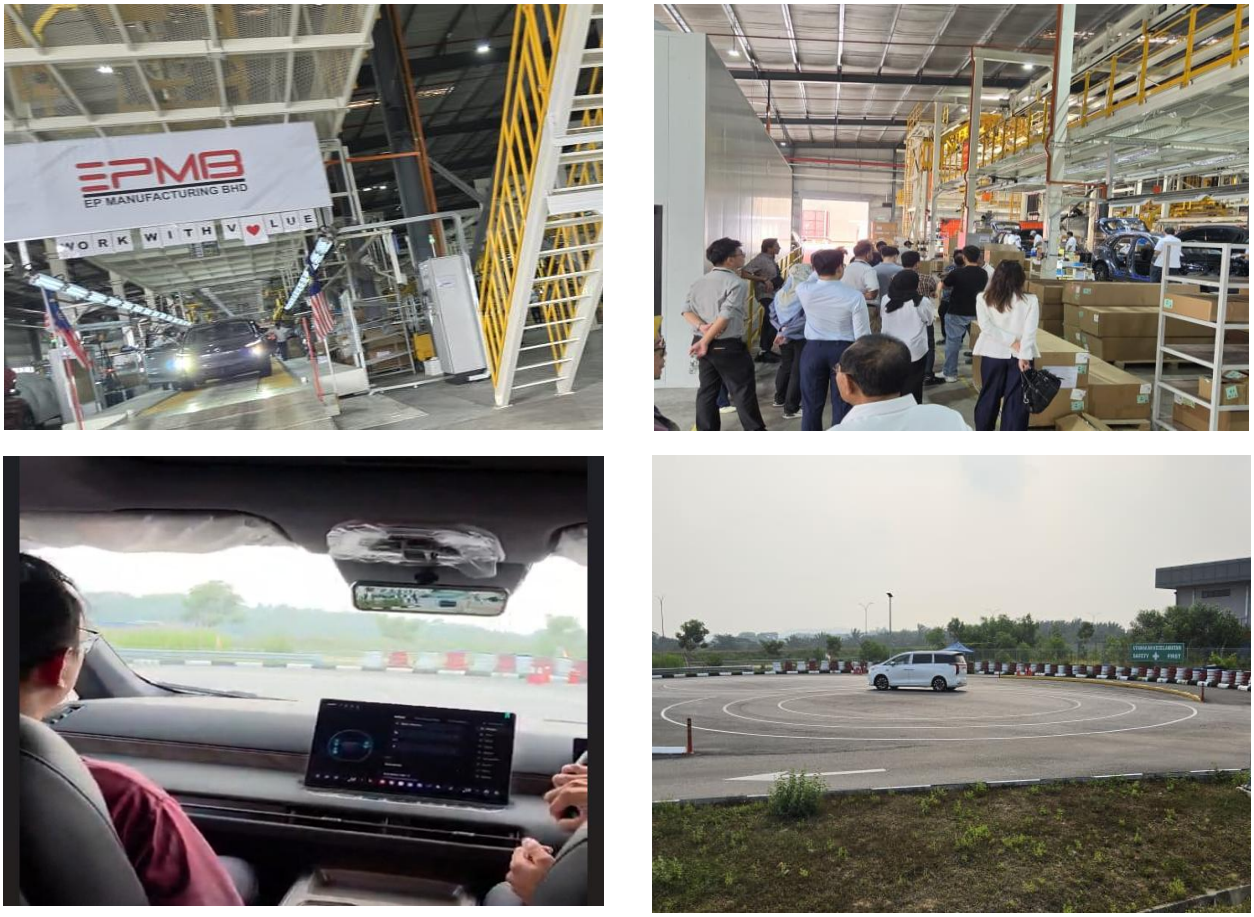
Profit Growth	+1,760% YoY (2QFY26)	EPMB recorded a nearly 19-fold jump in 2QFY26 net profit, hitting RM5.2m compared to RM277,000 in 2QFY25. This explosive growth is directly attributed to the ramp-up of localization partnerships with Chinese carmakers.
Profit Margins	2.4%	Net profit margins remain tight but are improving, expanding from 0.2% in 2QFY25to 2.4% in 2QFY26, reflecting the high initial operating costs balancing against scaled production volumes.
Cash Reserves	RM69.5m	Cash position as of the end of 2025, maintained to support heavy upfront capital expenditures for Phase 2.
Debt Load	RM169.3	Comprised RM112.2m in short-term borrowings and RM57.1m in long-term borrowings (as of late 2025).
Debt-to-Equity Ratio	57.0%	Indicates moderate gearing, leaving headroom for the ongoing RM200m vehicle painting facility investment.

Source: EPMB, Bursa Malaysia, Kenanga

Conclusion : EP Manufacturing Berhad (EPMB) has successfully transitioned from a traditional parts supplier into a centralized, multi-brand EV contract manufacturer. By aggressively expanding its Melaka hub and investing RM200m in an in-house painting facility, EPMB has positioned itself as a turnkey local assembly partner for major Chinese OEMs, including XPeng, BAIC, SAIC Motor, and Great Wall Motor.

This strategic pivot is validated by EPMB's explosive 2QFY26 financial turnaround, marked by surging revenues and a +1,760% jump in net profit. By diversifying its portfolio across multiple competing brands, EPMB has secured a scalable, foundational role in Malaysia's ambition to become Southeast Asia's premier EV manufacturing hub.

Exhibit 7: EPMB Melaka plant visit



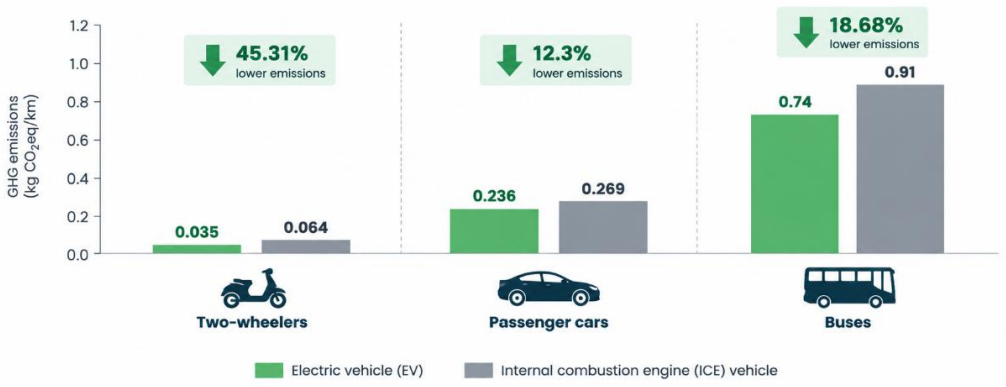
Source : EPMB, Kenanga Research

PART 5 – Sustainability & Decarbonisation Dynamics in Electric Mobility

Vehicle Lifecycle Emissions: The Decarbonisation Case

Electric vehicles offer a potential emissions advantage over internal combustion engine (ICE) vehicles, although the extent varies by vehicle category. The Malaysian lifecycle assessment presented by MyZEVA indicates lower greenhouse gas (GHG) emissions per kilometre for electric vehicles across two-wheelers, passenger cars and buses.

Exhibit 8: GHG Emissions Comparison for Malaysian Vehicles



Source : MyZEVA MDPI Sustainability (2022)

The reported results indicate that the emissions advantage is not uniform across vehicle types. The passenger-car comparison shows a more modest reduction than that for two-wheelers, underscoring the importance of evaluating EV decarbonization using lifecycle evidence rather than assuming that all vehicle categories deliver the same emissions benefit.

For investors, the key consideration is whether EV adoption translates into measurable environmental improvements over the vehicle lifecycle. The comparison provides supporting evidence for the decarbonisation rationale, but should not be interpreted as a universal emissions factor for all vehicles or operating conditions.

ESG Considerations Beyond Vehicle Electrification

Vehicle electrification is only one part of the sustainability equation. Battery end-of-life management and charging-system efficiency also influence the environmental performance of the wider EV ecosystem.

- **Battery circularity:** Reuse, repurposing and recycling can support resource recovery and reduce reliance on virgin materials. Malaysia's regulatory and operational challenges, including battery classification, producer responsibility and processing capacity, are discussed in Part 3.
- **Charging efficiency:** Dynamic Load Balancing can help manage available electrical capacity across multiple charging points and reduce the risk of site overloads. The technology and its operating example are covered in Part 2, Exhibit 6; no quantified emissions reduction is provided in the material reviewed.

These considerations should complement—not duplicate—the report's existing analysis of battery afterlife management and charging infrastructure.

Investor Takeaways

The sustainability case for electric mobility should be assessed across three connected dimensions:

- **Vehicle emissions:** Evaluate the reported lifecycle emissions advantage by vehicle category, rather than relying solely on tailpipe emissions.
- **Battery end-of-life management:** Monitor progress in establishing practical pathways for battery reuse, repurposing and recycling, alongside the regulatory and infrastructure developments discussed in Part 3.
- **Charging-system performance:** Consider whether charging infrastructure can manage electrical demand efficiently as utilisation grows, as illustrated by the DLB discussion in Part 2.

Overall, the evidence supports a potential decarbonisation benefit from electric mobility, but the wider sustainability outcome also depends on battery management and charging-system performance.

Peer Table Comparison

Name	Rating	Last Price (RM)	Target Price (RM)	Upside	Market Cap (RM m)	Shariah Compliant	Current FYE	Core EPS (sen)		Core EPS Growth		PER (x) - Core Earnings		PBV (x)	ROE	Net. Div. (sen)	Net Div Yld
								1-Yr. Fwd.	2-Yr. Fwd.	1-Yr. Fwd.	2-Yr. Fwd.	1-Yr. Fwd.	2-Yr. Fwd.	1-Yr. Fwd.	1-Yr. Fwd.	1-Yr. Fwd.	1-Yr. Fwd.
Stocks Under Coverage																	
BERMAZ AUTO BHD	OP	0.900	1.30	44.4%	1,044.9	Y	04/2026	12.2	15.4	35.3%	25.9%	7.4	5.9	1.5	19.4%	9.8	10.8%
DRB-HICOM BHD	UP	0.815	0.770	-5.5%	1,575.4	Y	12/2026	7.2	7.7	119.9%	6.0%	11.3	10.6	0.1	1.3%	3.0	3.7%
HIL INDUSTRIES BHD	OP	0.650	0.850	30.8%	215.7	Y	12/2026	11.2	11.4	2.8%	2.3%	5.8	5.7	0.4	7.2%	2.0	3.1%
HONG LEONG INDUSTRIES BHD	OP	16.42	21.00	27.9%	5,384.1	Y	06/2026	176.2	183.4	0.6%	4.1%	9.3	9.0	1.7	19.5%	100.0	6.1%
MBM RESOURCES BHD	MP	4.77	5.00	4.8%	1,864.6	Y	12/2026	81.6	82.2	-5.9%	0.7%	5.8	5.8	0.7	11.5%	48.0	10.1%
SIME DARBY BHD	OP	2.38	3.00	26.1%	16,186.4	Y	06/2026	23.7	24.6	4.3%	3.7%	10.0	9.7	0.8	8.2%	14.0	5.9%
TAN CHONG MOTOR HOLDINGS BHD	UP	0.440	0.390	-11.4%	295.7	Y	12/2026	(15.9)	(13.3)	-152.2%	-183.6%	N.A.	N.A.	0.1	-4.2%	1.0	2.3%
SECTOR AGGREGATE					**26,566.8**					**10.6%**	**5.5%**	**9.8**	**9.3**	**0.7**	**6.7%**		**6.0%**

Source: Kenanga Research

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Stock Ratings are defined as follows:

Stock Recommendations

OUTPERFORM : A particular stock's Expected Total Return is MORE than 10%
MARKET PERFORM : A particular stock's Expected Total Return is WITHIN the range of -5% to 10%
UNDERPERFORM : A particular stock's Expected Total Return is LESS than -5%

Sector Recommendations***

OVERWEIGHT : A particular sector's Expected Total Return is MORE than 10%
NEUTRAL : A particular sector's Expected Total Return is WITHIN the range of -5% to 10%
UNDERWEIGHT : A particular sector's Expected Total Return is LESS than -5%

******Sector recommendations are defined based on market capitalisation weighted average expected total return for stocks under our coverage.***

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