

# Piloting Electric Vehicle Systems and Developing a Green Transportation Investment Roadmap for Bali, Indonesia:

Market and Policy Assessment of Investment Needs, Barriers, and Opportunities





# ACRONYMS

<b>AC/DC</b>	Alternating current/direct current electricity
<b>ACC</b>	Advanced Chemistry Cell
<b>ADB</b>	Asian Development Bank
<b>ATLAS</b>	Advancing Transport and Logistics Accessibility Services Project
<b>Ah</b>	Ampere hour
<b>ATMR</b>	Aset Tertimbang Menurut Resiko refers to credit risk weight
<b>BBNKB</b>	Bea Balik Nama Kendaraan Bermotor refers to vehicle title transfer fees
<b>B2B</b>	Business to Business
<b>B2C</b>	Business-to-Consumer (B2C)
<b>Batteries</b>	Sources of electricity used to supply electrical energy to electric motors
<b>BEVs</b>	Battery-Based Electric Motorized Vehicles: Vehicles driven by electric motors, powered by batteries either onboard or externally
<b>BNI</b>	Bank Negara Indonesia
<b>BPPT</b>	Badan Pengkajian dan Penerapan Teknologi refers to Agency for the Assessment and Application of Technology Indonesia
<b>BRI</b>	Bank Rakyat Indonesia
<b>BUMN</b>	Badan Usaha Milik Negara refers to State-Owned Enterprises
<b>CAGR</b>	Compounded annual growth rate
<b>CAPEX</b>	Capital expenditure
<b>CBU</b>	Completely Built-up
<b>CIT</b>	Corporate Income Tax
<b>CKD</b>	Completely Knocked Down
<b>CPOs</b>	Charging Point Operators
<b>CSS</b>	Combined Charging System
<b>DKI</b>	Daerah Khusus Ibukota refers to Special Capital Region specifically for Jakarta
<b>E2W</b>	Electric Two Wheelers
<b>E4W</b>	Electric Four Wheelers
<b>ENTREV</b>	Transition to Electric Vehicles
<b>ESDM</b>	Energi dan Sumber Daya Mineral refers to Energy and Mineral Resources
<b>Electric motors</b>	Electromechanical devices that convert electrical power to mechanical energy for propulsion
<b>EPR</b>	Extended Producer Responsibility
<b>EV</b>	Electric Vehicle
<b>FIs</b>	Financial Institutions
<b>G20 Summit</b>	Group of Twenty intergovernmental forum for international economic cooperation
<b>GB/T</b>	Guobiao/T
<b>GDP</b>	Gross Domestic Product

# ACRONYMS

<b>GEF</b>	Global Environment Facility
<b>GESI</b>	Gender Equality and Social Inclusion
<b>Gg CO2e</b>	Gigagrams of carbon dioxide-equivalent
<b>GGGI</b>	Global Green Growth Institute
<b>GHG</b>	Greenhouse Gas Emissions
<b>GII</b>	Green Infrastructure Initiative
<b>Himbara</b>	Himpunan Bank Negara refers to Association of State Banks
<b>HPAL</b>	High-pressure acid leaching
<b>IBC</b>	Indonesia Battery Corporation
<b>ICAT</b>	International Centre for Automotive Technology
<b>ICE</b>	Internal Combustion Engine
<b>ICLEI</b>	International Council for Local Environmental Initiatives
<b>IDR</b>	Indonesian Rupiah
<b>IKD</b>	Incompetely Knocked Down
<b>Inpres</b>	Instruksi Presiden refers to Presidential Instruction
<b>ITDC</b>	Indonesia Tourism Development Corporation
<b>JVs</b>	Joint Ventures
<b>KBLBB</b>	Kendaraan Bermotor Listrik Berbasis Baterai refers to Battery-Based Electric Vehicle
<b>KIAT</b>	Kemitraan Indonesia Australia untuk Infrastruktur refers to Indonesia - Australia Indonesia Partnership for Infrastructure
<b>kM</b>	Kilo Meter
<b>kWh</b>	Kilo Watt hour
<b>kW</b>	Kilo Watt
<b>LCEV</b>	Low Carbon Emission Vehicle
<b>MCC</b>	Millennium Challenge Corporation
<b>MIND ID</b>	Holding Mining Industry Indonesia
<b>MSMEs</b>	Micro, small, and medium-sized enterprises
<b>MtCO2e</b>	Metric tons of carbon dioxide-equivalent
<b>OEM's</b>	Original Equipment Manufacturer's
<b>OJK</b>	Otoritas Jasa Keuangan refers to Financial Services Authority
<b>PDRB</b>	Produk Domestik Regional Bruto refers to Gross Regional Domestic Product
<b>PERMEN</b>	Peraturan Menteri refers to Ministerial Regulation
<b>PERPRES</b>	Peraturan Presiden refers to Presidential Regulation
<b>PKB</b>	Pajak Kendaraan Bermotor refers to motor vehicle tax

# ACRONYMS

<b>PLI</b>	Production Linked Incentive
<b>PLN</b>	Perusahaan Listrik Negara refers to National Electricity Company of Indonesia
<b>PT</b>	Perseroan terbatas (PT) refers to Limited Liability Company
<b>R&amp;D</b>	Research and Development
<b>RAD</b>	Regional Action Plan (Rencana Aksi Daerah)
<b>SAIC-MG</b>	Shanghai Automobile Industry Corporation- Morris Garages
<b>SARBAGITA</b>	Abbreviations for Denpasar City, Badung Regency, Gianyar Regency, and Tabanan Regency
<b>SPBKLU</b>	Stasiun Penukaran Baterai Kendaraan Listrik Umum (refers to Public Electric Vehicle Battery Swap Station)
<b>SPKLU</b>	Stasiun Pengisian Kendaraan Listrik Umum (refers to Public Electric Vehicle Charging Station)
<b>SUT</b>	Sertifikat Uji Tipe refers to Type Test Certificate
<b>TCO</b>	Total Cost of Ownership
<b>TKDN</b>	Tingkat Komponen Dalam Negeri refers to Domestic Component Level
<b>UNDP</b>	United Nations Development Program
<b>V</b>	Volt
<b>V2X</b>	Vehicle-to-Everything (V2X)
<b>WRI</b>	World Resource Institute

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# 1. INTRODUCTION

Indonesia, holding the status of a G20 nation and ranked as the fourth most populous country globally, is home to 275,773.80 thousand people<sup>1</sup>. This large population base positions it as a significant emerging market, brimming with substantial economic potential. However, this potential is not without its challenges, particularly in the realm of environmental sustainability.

According to the Indonesia Third Biennial Update Report in 2019, the transportation sector contributed 157.8 MtCO<sub>2</sub>e to greenhouse gas (GHG) emissions. Furthermore, projections indicate that GHG emissions from the transport sector are expected to rise to 53 percent above 2015 levels by 2030, and nearly double from 2030 to 2050<sup>2</sup>.

## Greenhouse Gas Emissions and Meeting Net-Zero Targets

The automotive sector is a significant contributor to Indonesia's economy, accounting for 19% of its manufacturing output and 4% of its GDP<sup>3</sup>. Indonesia is also the second-largest vehicle manufacturer in Southeast Asia. However, according to recent data, the transport sector is the second-biggest contributor of GHG, accounting for 27% of the country's emissions.

In the transport sector, road transportation is the largest contributor with over 90% share. Decarbonization of road transportation requires both changes in traveling behavior to reduce demand and transition to clean energy. In response to these alarming trends, Indonesia has committed to addressing climate change by transitioning its energy landscape towards more sustainable sources. The ambitious target of achieving net zero emissions by 2060, or earlier, if possible, necessitates a strategic focus on decarbonizing the most significant emitting industries, including transportation.

In response to the rising GHG levels and to meet its net-zero target, Indonesia submitted an enhanced nationally determined contribution to the UN Framework Convention on Climate Change. This involves plans

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1 Handbook of energy & economic statistics of Indonesia, 2022, [Ref](#)

2 Climate Transparency Report, 2020, [Ref](#)

3 Arthur D Little, Unleashing Indonesia's Electric Mobility Potential, 2023, [Ref](#)

to reduce emissions by 31.89% (unconditional) and 43.20% (conditional) by 2030, highlighting the vital role of EVs in achieving these targets.

## Reducing Reliance on Oil Imports

The increase in GHG emissions from the transport sector is mainly due to increased consumption of fossil fuels. High reliance on imported fuels and crude oil has posed risks to Indonesia's energy security as they are global commodities with fluctuating price.

The growth of EVs offers an opportunity to reduce Indonesia's reliance on imported oil, thus decreasing its dependence on external oil reserves. In 2022, imported oil comprised 58% of Indonesia's oil demand.

These imports amounted to US \$29 billion in 2022, accounting for 1.7% of the GDP. The expansion of the EV sector presents an opportunity to lessen this dependence, thereby improving economic stability and alleviating the burden on financial resources.

## Electrification of Transport

The shift towards e-mobility is a critical component in Indonesia's strategy to combat carbon emissions and to achieve the broader goal of net zero emissions. Additionally, the increased electricity demand EVs presents an opportunity to accelerate the deployment of renewable energy (RE).

EVs have a higher upfront cost than their ICE vehicle counterparts. However, the price of batteries, a key component of EVs, has been decreasing recently, making EVs more affordable. Despite the higher initial costs, EVs boast a lower Total Cost of Ownership (TCO) compared to ICEVs. This reduced TCO is primarily due to significantly lower fuel costs. Additionally, various government incentives, such as reductions or exemptions in vehicle title transfer fees (BBNKB) and vehicle taxes, further contribute to lowering the TCO of EVs.

## Tapping Abundant Nickel Reserves

Indonesia, possessing some of the world's largest nickel reserves, has a significant opportunity to focus on the upstream aspect of cell manufacturing, positioning itself as a major player in the electric vehicle (EV) value chain. The country's abundant nickel reserves give it a strategic advantage to start local production of cells and batteries, potentially reducing the cost of vehicles and making them more affordable.

## Government Initiatives

Since 2013, the Indonesian government has been introducing incentives to support through the Low Carbon Emission Vehicle (LCEV) program. In line with these objectives, Indonesia's state-owned enterprises are implementing various strategic efforts under the directives of President decree, as outlined in Perpres no.55/2019, Inpres no.7/2022, and Permen ESDM no.1/2023. These initiatives aim to build an end-to-end, integrated EV ecosystem.

## EV Adoption Goals and Targets<sup>4</sup>

The Indonesian government, through various departments including Ministry of Energy and Mineral Resources, Ministry of Transportation, and the Cabinet Secretariat, has also set forth ambitious EV targets. These include:

- Targeting E2W production to reach over 7 million by 2025 (Ministry of Industry)
- Striving for a cumulative count of 13 million EV motorcycles and 2 million electric cars by 2030 (Ministry of Energy & Mineral Resources)
- Targeting 20% of annual vehicle production to be Low Carbon Emission Vehicles (LCEVs) by 2025, increasing to 30% by 2035 (Ministry of Industry)

## Need of Transition to EVs in Bali Province

In Bali, the transportation sector ranks as the second-largest emitter of greenhouse gases, following the energy industry. As of 2018, emissions from transportation in Bali amounted to approximately 4,000 Gg CO<sub>2</sub>e and have been on an upward trend annually. Two-wheeled vehicles, constituting 87% of the total vehicle population in Bali, significantly contribute to these emissions. With a population of around 4.37 million in 2023 and 3.92 million registered motorcycles, the population-to-motorcycle ratio in Bali is approximately 0.89.

Recently, Bali has witnessed a remarkable surge in the acquisition of electric two-wheel vehicles (BEVs), with an increase of 8,700%<sup>5</sup> in 2020 compared to 2016. Although this represents a substantial growth percentage, the overall count of electric vehicles is still considerably lower than that of vehicles powered by fossil fuels. Nonetheless, the shift towards EVs is being actively supported through various regulations and initiatives at both the national and provincial government levels, aimed at accelerating the adoption of electric vehicles.

The Regional Action Plan (RAD) for Accelerating the Use of Electric Battery-Based Motor Vehicles (KBLBB) in Bali for 2022-2026 highlights the importance of transitioning from conventional to electric vehicles, particularly focusing on two-wheel vehicles. 51% of motor vehicles are concentrated in the urban and tourism centers of Badung Regency and Denpasar City. The tourism sector, being the highest contributor to Bali's Gross Regional Domestic Product (PDRB), is seen as a key area for initiating this transition through adoption to electric vehicles.

Indonesia's journey towards a sustainable future involves transforming its transportation sector to combat environmental and health challenges. The nation's comprehensive approach, encompassing ambitious EV adoption targets and the establishment of a sustainable electric mobility industry, is pivotal in achieving its net zero emissions goal. This transformation is dependent not only on a shift in mobility options but also on collaborative efforts, strategic planning, and supportive regulations to ensure a successful and sustainable transition.

### 1.1 GGGI Initiative- Piloting Electric Vehicle Systems and Developing a Green Transportation Investment Roadmap for Bali, Indonesia

The Global Green Growth Institute (GGGI) is actively contributing to Indonesia's sustainable transportation shift by implementing electric vehicles (EVs) initiative in Bali. In collaboration with Bappenas and the Bali

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4 Indonesia transport electrification strategy, ICCT, 2021

5 Regional Action Plan Acceleration of the Use of Battery-Based Electric Vehicles in Bali Province, 2022-2026

Provincial Government, GGGI is working towards establishing a more sustainable transportation system on the island by providing technical support to enhance policy framework on e-mobility and pilot program to establish e-mobility ecosystem in the province.

A Regional Action Plan for EV implementation (2022-2026) across the entire island has been published to address technical, institutional, and financial aspects together with a Sustainable Urban Mobility Plan (SUMP) offering guidance for this transition specifically for the Sarbagita Metropolitan area. GGGI's project, titled "Piloting Electric Vehicle Systems and Developing a Green Transportation Investment Roadmap for Bali, Indonesia," provides technical assistance to support the goals outlined in these plans. The project encompasses planning, investment mobilization, pilot program, and capacity building to actualize an inclusive EV system in the province.

This specific assignment entails a thorough review of all available information concerning EV development in the nation and Bali. It includes examining institutional structures, technical aspects, commercial considerations, regulatory frameworks, and policies. As part of this initiative, a comprehensive market and policy assessment is conducted to identify investment needs, barriers, and opportunities.

### 1.1.1 Assignment Objective

This assignment involves conducting an assessment of the market, policy, and regulatory landscape in the EV sector at both national and sub-national levels. To carry out this study, the following tasks will be executed:

- Comprehensive analysis of the current status of EV implementation at the national level and in the provincial level of Bali.
- In-depth examination of the regulatory landscape and market trends in the EV sector.
- Engagement with national and subnational stakeholders in Bali to conduct a gap assessment and align the objectives of the Pilot Project accordingly, with a specific focus on the selection of potential routes/bus corridors and charging infrastructure.
- Detailed analysis of capacity-building needs among relevant national and subnational stakeholders in the EV sector.
- Facilitation of stakeholder consultations with the Government of Indonesia, including local government agencies, public and private sector energy companies, technology providers, multilateral and bilateral financing institutions, international investors, industry representatives, etc.
- Provision of analysis for the development of a gender action plan and stakeholder engagement plan to identify policy and regulatory gaps.
- Preparation of draft recommendations based on the assessments conducted.

### 1.1.2 Scope of Work

The scope of work for this report is multifaceted, aiming to provide a comprehensive overview of the current state of electric vehicles (EVs) in Indonesia with focus of the Bali province. The primary goal is to offer an in-depth assessment of the EV sector, focusing on market dynamics, policy frameworks, and regulatory landscapes

at both national and sub-national levels. This analysis aims to deliver a thorough understanding of the current state of EV implementation, including its challenges and opportunities, within Indonesia's unique context.

In essence, this report aspires to be a holistic and informative resource, contributing valuable data and analyses to further the understanding of EV dynamics in Indonesia. Through a comprehensive exploration of policy landscapes, market dynamics, penetration levels, and barriers, our aim is to facilitate informed decision-making for all stakeholders involved in the advancement of the electric vehicle sector in Indonesia.

### **EV Ecosystem in Indonesia**

This section offers a comprehensive market assessment of the EV landscape in Indonesia. It analyzes statistical data and trends to present a clear picture of adoption rates, prevalent types of EVs in the market, and their geographical distribution. The section also explores the existing infrastructure for EV charging by examining the availability, distribution, and capacity of charging stations, thereby evaluating Indonesia's readiness to support a growing EV market. Through this assessment, valuable insights into the dynamics of EV adoption, market potential, and growth areas within Indonesia's socio-economic context are provided.

### **Stakeholder Mapping and Policy & Regulatory Analysis**

Additionally, the report provides stakeholders mapping, identifying key players in the EV sector, ranging from government bodies to private companies, and have analyzed their roles and influences. This critical component of the report includes an evaluation of current policies and a detailed exploration of the intricate web of regulatory frameworks governing the EV landscape within the country.

### **Market Assessment**

This section includes a detailed exploration of market trends and overall sentiment towards electric vehicles. Identifying barriers and financial gaps is another pivotal aspect of the report's objectives. By dissecting challenges hindering the widespread adoption of EVs, the report aims to provide actionable insights for policymakers and industry players. The section examines infrastructure gaps, consumer perceptions, and any financial impediments that may be inhibiting the growth of the EV market, engaging with a diverse range of stakeholders.

A Need-Gap Assessment is conducted, analyzing existing gaps in the market, and identifying potential opportunities in the EV segment. Scrutinizing existing policies helps identify strengths, weaknesses, and gaps in the regulatory landscape, shedding light on key drivers and challenges faced by the EV sector.

### **Development of a Gender Action Plan**

This section is dedicated to identifying gender-based challenges in EV adoption, such as higher financing costs or limited access to information. It will suggest interventions and propose targeted strategies to enhance EV adoption among women and promote gender inclusivity in the EV sector.

### **Recommendations**

Based on the comprehensive assessments and stakeholder interviews conducted, the report will propose incentives and recommend strategies to accelerate consumer uptake of EVs through financial incentives and subsidies. It will also suggest enabling regulations needed to support EV adoption and the deployment of charging infrastructure, as well as recommend policies to encourage the development of EV charging infrastructure and boost EV/battery manufacturing.



## 2. EV MARKET PROFILE

As of December 2023, Indonesia has a total of 108,000 electric vehicles. The majority are two-wheeled, with 85,913 units, followed by four-wheeled vehicles at 21,720 units. Additionally, there are 316 three-wheeled vehicles, 80 buses, and 10 goods vehicles.<sup>6</sup>

To meet the needs of EV users, PLN continues to add charging stations, as of December 2023, 1,117 SPKLUs<sup>6</sup> are operational nationwide, with 624 units owned by PLN. In Bali there are a total of 88 SPKLUs out of which 74 are owned by PLN. Furthermore, there are 1,400 battery swapping/exchange stations (SPBKLU) installed across Indonesia.

The adoption of EVs has seen a significant increase in recent years. In 2023, the number of E2W and E4W vehicles on the road grew by almost 3.5 times and 3 times, respectively, compared to 2022. However, despite this considerable growth, the EV adoption rate in Indonesia is still below the targets set by government. The main barriers to wider EV adoption include inadequate charging infrastructure, high upfront costs, and lack of direct incentives.

### 2.1 EV Penetration in Indonesia

#### 2.1.1 Two-Wheel Vehicle (E2W) Market

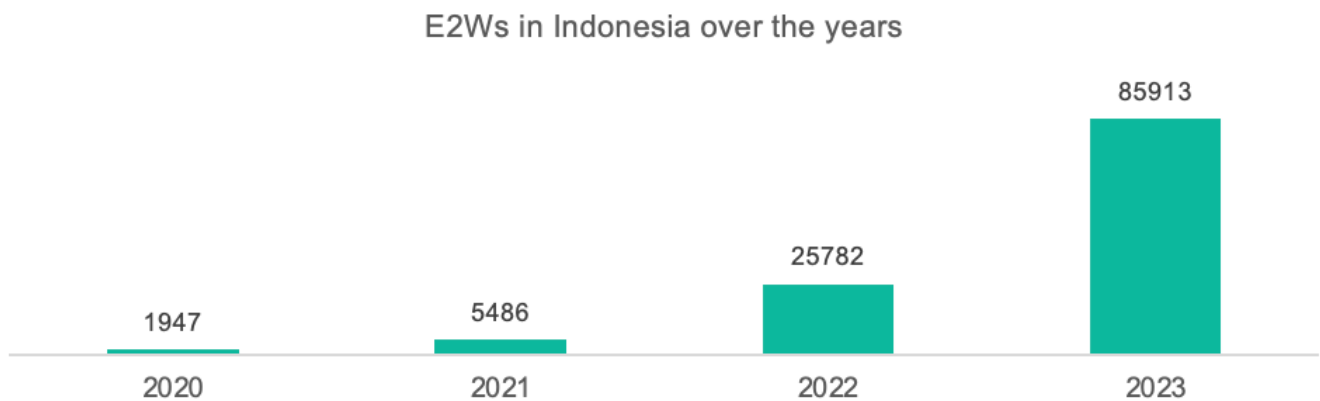
**Growth and Current Status:** In 2020, 1,947 E2Ws were registered, escalating to 26,000 by the end of 2022 and further to 85,913 by December 2023<sup>7</sup>, indicating a CAGR of approximately 250%. The E2W adoption saw a 3.5 folds increase from 2022 to 2023.

<sup>6</sup> Construction of Public Electric Vehicle Charging Stations (SPKLU) to Accelerate Electric Vehicle Adoption in Bali, PLN, January 2024 - Slide 11

<sup>7</sup> Construction of Public Electric Vehicle Charging Stations (SPKLU) to Accelerate Electric Vehicle Adoption in Bali, PLN, January 2024 - Slide 11

In Indonesia, motorbikes are the preferred mode of transportation. The suitability of E2Ws for intra-city travel, combined with their lower total cost of ownership (TCO) compared to ICE vehicles, presents a compelling argument for their adoption. This trend is further encouraged by the recent introduction of an IDR 7 million subsidy for E2Ws.

**Figure 1-** E2W Penetration in Indonesia Over the Years



**Market Penetration:** EV penetration for 2-wheelers was just 0.001% in 2020, increasing to 0.004% in 2021, and reaching 0.02% in 2022.

**B2B Partnerships:** A significant portion of E2W sales is to businesses, with Grab Indonesia operating 14,000 EVs, PLN using 264 Gesits Electric Motors, and SiCepat Ekspres purchasing 10,000 Volta electric motorbikes. However, most E2Ws have a range of 50-60 km per charge, which is insufficient for ride-hailing drivers' daily needs.

**Grab's investment in EVs** is stimulating demand and fostering partnerships among ride-hailing services, manufacturers, and other stakeholders in the E2W ecosystem. This collaboration is driving market growth, spurring innovation, and leading to technological advancements, improved infrastructure, and higher industry standards.

Moreover, the extensive use of Grab's EV fleet provides valuable data on E2W performance and operational challenges, offering insights essential for enhancing future electric vehicle models. Grab's commitment to electric mobility aligns with Indonesia's objectives for sustainable and eco-friendly transportation.

**Conversion Program Challenges:** The motorcycle conversion program aimed to reduce upfront costs and increase market flexibility but registered only 194 conversions by November 2023, well below the 1000 unit's target. High costs and short warranties hindered its market entry.

**E2W Adoption and Industry Outlook:** Indonesia aims to sell 7 million EV 2-wheelers by 2025, with 20% of annual vehicle production being Low Carbon Emission Vehicles.

- **Subsidy Impact:** An IDR 7 million subsidy for 2W EV purchases is expected to boost adoption, especially with some E2W models priced competitively with ICEVs.
- **Industry Growth:** With growing domestic production, costs are expected to decrease, reducing the Total Cost of Ownership (TCO) significantly from 2023 onwards.

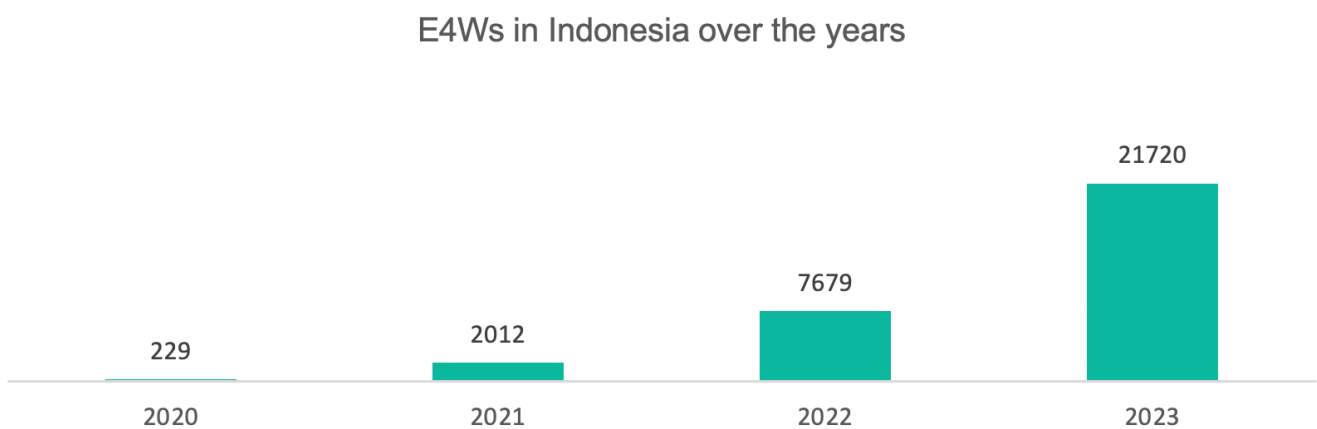
## 2.1.2 Four-Wheel Vehicle (E4W) Market

**Growth and Current Status:** The number of registered E4Ws increased from 230 to 7,679 from 2020 to 2022 and further to 21,720 by December 2023<sup>8</sup>, showing a CAGR of approximately 356%.

EV penetration for 4-wheelers was 0.012% in 2021 and 0.04% in 2022. Despite the dominance of two-wheelers in Indonesia's vehicle mix, EV penetration is comparatively higher in the four-wheeler segment.

**Sales Drivers:** The growth is driven by affordable Chinese manufacturers, such as Wuling Motors, Chery Automobile, and SAIC-MG, which began their entry into the Indonesian market with EV launches in 2022. This growth is also supported by investments from high-end brands like Hyundai and Nissan.

Figure 2- E4W Penetration in Indonesia Over the Years



**Market Potential:** Despite the growth, the sales goal of 400,000 units by 2025 indicates significant untapped market potential. The high upfront costs and range anxiety are major barriers to higher EV adoption in the four-wheeler segment.

**Conclusion:** While the E2W segment dominates Indonesia's EV market, E4Ws show a higher penetration rate of EVs. Indonesia's EV market is witnessing rapid growth, driven by both B2B and direct consumer purchases, with notable contributions from foreign manufacturers. However, challenges like range limitation, high upfront costs, and consumer range anxiety continue to hinder wider EV adoption.

## 2.2 EV Penetration in Bali

**Implementation of EV Policy** - Bali has distinguished itself in Indonesia by actively implementing its own EV policy as per Presidential Regulation No. 55/2019, via Bali Governor Regulation No. 48/2019. This decisive action has significantly accelerated the adoption of electric vehicles (EVs) in the province.

### Growth in EV Adoption

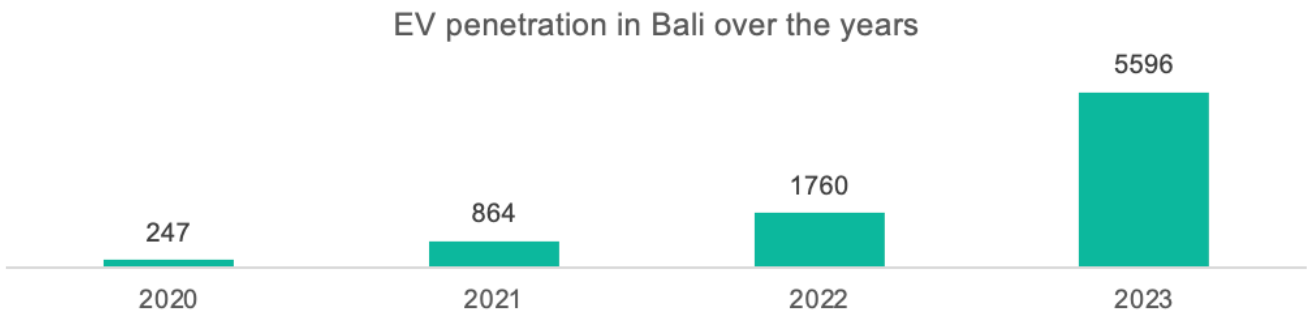
- Significant Increase in EVs: The number of EVs in Bali surged from just 247 in the initial stages to 5,596

8 Construction of Public Electric Vehicle Charging Stations (SPKLU) to Accelerate Electric Vehicle Adoption in Bali, PLN, January 2024- Slide 11

by 2023<sup>9</sup>, accounting for about 5.2% of Indonesia’s national EV adoption.

- **Boost from G20 Events:** The G20 events hosted in Bali played a crucial role in increasing EV awareness, with around 300 vehicles officially registered during the events as reported by the Department of Transportation Bali in 2022.

**Figure 3- EV Penetration in Bali Over The Years**



- **Conversion Workshops:** Bali is home to 2 of the 13 licensed electric two-wheeler (E2W) conversion workshops in Indonesia. Plans are underway to deploy these converted E2Ws in tourist areas in 2023.
- **Community Support:** EV community clubs in Bali are pivotal in promoting EV conversion, with some enthusiasts willing to pay significantly more for conversions, up to five times the standard price.

### **Regional Action Plan for EVs**

- **RAD Implementation:** In 2023, Bali is set to implement the Regional Action Plan (RAD) for EVs, a comprehensive strategy to further bolster EV usage.
- **Establishing EV Zones:** The plan includes the creation of 7 EV Zones equipped with necessary hard and soft infrastructure. As part of the plan, Bali has created Bali Low Emission Zones Initiative (BLEZI) in the province’s major tourist attractions, including Kuta, Nusa Dua, Sanur, Denpasar, Ubud, Nusa Penida, and Besakih. These zones prioritize battery-based electric vehicles, such as electric motorcycles and cars, at these popular destinations starting from 2023.
- **Develop hard infrastructure** involving setting up SPKLU/SPBKLU (charging stations) and create soft infrastructure aiming to enhance public awareness and acceptance of EVs.

Bali’s proactive approach in embracing EV technology, supported by specific regulations, community enthusiasm, and cultural values, has positioned it as a leader in EV adoption in Indonesia. The region’s continued focus on infrastructure development and public awareness is setting a precedent for other provinces and is instrumental in shaping a sustainable transportation future in Bali.

## **2.3 Charging Landscape in Indonesia and Bali**

The EV charging landscape in Indonesia is rapidly evolving, led by PLN’s extensive investment in infrastructure. As the primary energy provider for EV charging, PLN (Perusahaan Listrik Negara), State-Owned Electricity Provider, plays a crucial role in Indonesia. In 2022, PLN allocated around USD8 billion for constructing EV

<sup>9</sup> Construction of Public Electric Vehicle Charging Stations (SPKLU) to Accelerate Electric Vehicle Adoption in Bali, PLN, January 2024- Slide 12

charging infrastructure, aiming to bolster the EV ecosystem.

### Current Status of EV Charging Stations in Indonesia<sup>10</sup>

- Indonesia currently has 1,117 EV charging stations, out of which 624 are owned by PLN. It is projected that by 2030, the number of charging stations will increase to 22,000 units.

**Table 1-** Current status of EV Charging Stations in Indonesia and Bali

Charging Players	Indonesia	Bali
PLN	624	74
Hyundai	152	4
Voltron	280	0
Others	61	10
<b>Total</b>	<b>1117</b>	<b>88</b>

### EV Charging Stations in Bali<sup>10</sup>

- SPKLU (Public EV Charging Station): Bali has 74 SPKLU units by PLN, comprising 18 units of Ultra-Fast Charging (UFC) (60 kW and 200 kW), 9 units of medium charging (25kW-50kW), 9 units of medium charging (22kW), and 28 units of slow charging (7.4 kW).
- SPLU (General Electric Charging Station): There are 166 SPLU units in Bali, with the rollout of SPLU 2.0 Fast Charging planned for 2023.

These stations are strategically placed in locations such as places of worship, malls, markets, hotels, residential areas, offices, etc.

**Table 2-** Location-wise EV Charging Stations in Bali<sup>11</sup>

City/Kota	SPKLU Existing	Target 2026
Denpasar	21	71
Badung	32	52
Gianyar	2	16
Tabanan	4	2
Klungkung	2	2
Karangasem	2	0
Bangli	4	0
Buleleng	3	2
Jembrana	4	0
<b>Total</b>	<b>74</b>	<b>145</b>

10 Construction of Public Electric Vehicle Charging Stations (SPKLU) to Accelerate Electric Vehicle Adoption in Bali, PLN, January 2024- Slide 11

11 Construction of Public Electric Vehicle Charging Stations (SPKLU) to Accelerate Electric Vehicle Adoption in Bali, PLN, January 2024- Slide 9

### Battery Swapping Stations (SPBKLU)

- Indonesia: As of 2023, Indonesia has 1,400 battery swap stations, significantly below the targets of 14,000 by 2025, and 52,000 by 2030.
- Bali: There are currently 70 battery swap stations with plans to expand to 250 units by 2024.

**Table 3- Current status of EV Battery Swapping Stations in Indonesia<sup>12</sup>**

Swapping Player	Nation-wide Numbers
PLN-VIAR	20
PLN-GESIT	50
VOLT	0
SMOOT	1030
VOLTA	199
Others	102
<b>TOTAL</b>	<b>1401</b>

### Current Status and Opportunities

- Industry Requirements: The current and planned infrastructure by PLN falls short of the industry's estimated need for 31,000 chargers, presenting opportunities for other businesses.
- Private Sector Involvement: Companies like Astra Group and PT Starvo Global Energi are entering the charging infrastructure market, with PT Starvo aiming to introduce 5,000 new stations by 2025.
- Oil and Gas Companies: Firms like Shell, Pertamina, and Medco Energi have ventured into this sector, though their impact remains limited.

### Charging Equipment Providers

- Market Players: ABB and Schneider Electric are notable providers in Indonesia.
- ABB's Contributions: ABB has installed fast chargers and home charging AC wall boxes in various locations, including fast chargers at Shell stations.

### Battery Swap Stations

- Swap Energy's Initiatives: Swap Energy has established 800 swap centers and plans further expansion, collaborating with major companies to enhance EV adoption.
- Challenges: The variety of battery types and requirements poses challenges, highlighting the need for a more unified infrastructure compatible with multiple brands.

<sup>12</sup> Construction of Public Electric Vehicle Charging Stations (SPKLU) to Accelerate Electric Vehicle Adoption in Bali, PLN, January 2024- Slide 11

## Policy and Subsidy Concerns

- **Subsidized Charging Rates:** Currently, there is a regulatory cap on charging rates at IDR 2,466 per kW. However, the cost charged by PLN is around IDR 1,600, leaving a small margin for charging station operators.
- **As per the Ministry of Energy and Mineral Resources decree no 182.K/TL.04/MEM.S/2023** the maximum cost for Fast Charging at SPKLU is set at IDR 25,000, while Ultrafast Charging is capped at IDR 57,000.
- **Lack of Focus on Charging Point Operators:** There's no specific direct incentive/ subsidies for EV charging station operators, which may slow initial expansion.
- **Government Incentives Needed:** To boost involvement, the government should introduce incentives for charging infrastructure equipment providers and operators.

The EV charging landscape in Indonesia is rapidly evolving, led by PLN's extensive investment in infrastructure. However, the current efforts are insufficient to meet the industry's demands, offering ample opportunities for private and international players.

Battery swapping stations, albeit growing, face challenges due to the diversity of battery types. The involvement of equipment providers like ABB and Schneider Electric demonstrates the market's potential, but more focused government policies and incentives are essential to accelerate the development of a comprehensive EV charging network in Indonesia.

## 2.4 EV Technology Options

### 2.4.1 E2W Manufacturers

In Indonesia, E2W or electric motorbikes are predominantly produced by domestic companies like Gesits Motors, Viar Motor Indonesia, and SELIS, which collectively hold 65% - 70% of the market share. Alongside these companies, other local startups, such as Volta Indonesia, Ilectra Motor Group, and Charged Indonesia, have introduced a variety of EV models. Japanese OEMs, like Honda, plan to launch electric motorcycles and are exploring battery swapping with Panasonic.

**Table 4-** Current Status of E2W Sales Value by \*PLN



Category	Brand	User	Sales Volume
<b>Individual Users</b>			
1	Viar	Individual	4,648
2	Gesits	Individual	3,098
3	Rakata	Individual	232
4	United	Individual	2,324
5	Winfly	Individual	7,746
6	Selis	Individual	4,648
7	Alva	Individual	775

Category	Brand	User	Sales Volume
<b>Individual Users</b>			
8	Oyika	Individual	775
9	Smoot	Individual	4,000
<b>Fleet Management</b>			
1	Viar	Grab	4,648
2	Smoot	Grab & Gojek	6,197
3	Volta	SiCepat	7,746
4	Gogoro	Gojek	387

\*The data is available until December 2023<sup>13</sup>

## E2W Models and Manufacturer:

Table 5- Summary of E2W Manufacturers in Indonesia

E2W Manufacturer	Models
<p>GESITS</p> <p>Background: Joint venture between PT Indonesia Battery Corporation (IBC) and PT Wijaya Karya Industri dan Konstruksi (WIKON), established in 2018.</p> <p>Industry Focus: Engaged in automotive industry and automotive assembly.</p>	<div style="display: flex; flex-direction: column; align-items: center;">   </div> <p>EV 2-Wheelers: Sells under the brand name GESITS.</p> <p>GESITS G1 - lithium-ion 72 volt/20 Ah battery, Range 50 km. Cost - 28,970,000 IDR</p> <p>GESITS RAYA G - lithium-ion 72 volt/20 Ah battery, Range 60 km and with a 3-4 hour charging time Cost - 27,990,000 IDR</p>

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E2W Manufacturer	Models
<p>PT Volta Indonesia</p> <p>Background: Founded in 2017, focusing on electric vehicle technology. Opened its first electric vehicle factory in Semarang City in November 2021.</p> <p>Industry Focus: Specializes in eco-friendly 2W &amp; 3W electric vehicles.</p>	<div data-bbox="598 248 871 465" data-label="Image"> </div> <p><b>Volta Regular:</b></p> <ul style="list-style-type: none"> <li>• Two battery slots, 120 km maximum distance.</li> <li>• Heat-resistant lithium battery, 64V 21Ah.</li> <li>• 55 km/h maximum speed, 1000W motor power.</li> </ul> <p><b>Volta Lite:</b></p> <ul style="list-style-type: none"> <li>• Two battery slots, 180 km maximum distance.</li> <li>• SLA Battery (plus additional slots for SGB), 60V 23Ah.</li> <li>• 60 km/h maximum speed, 1500W motor power.</li> </ul> <p><b>Volta S:</b></p> <div data-bbox="598 1037 876 1290" data-label="Image"> </div> <ul style="list-style-type: none"> <li>• Range of 120 km, upgradeable to 180 km.</li> <li>• SLA 60V 20 Ah, LifePO4 64V 21 Ah.</li> <li>• 55 km/h maximum speed, 1000W motor power.</li> </ul>

**Table 6- Summary of E2W Models and Specifications<sup>14</sup>**

Name of Manufacturer	Model	Range	Battery size	Price (IDR)
Gesits <sup>15</sup>	Gesits G1	50 Km	72 V 20 Ah	28,970,000
Gesits <sup>14</sup>	Gesits Raya G	60 Km	72 V 20 Ah	27,990,000
PT Volta Indonesia <sup>16</sup>	Volta 401 Lite	60 Km	60 V 23 Ah	12,800,000
PT Volta Indonesia <sup>15</sup>	Volta Virgo Regular	120 Km	64 V 21 Ah	18,100,000
PT Volta Indonesia <sup>15</sup>	Volta Virgo S	120 Km	64V 21 Ah	19,350,000

### EV 4-wheeler Manufacturers (Including E-buses)

E4W manufacturing in Indonesia is predominantly shaped by foreign OEMs, bringing a mix of innovation and diversity to the sector. Their investments and technology introductions are crucial in shaping the country's EV market, leveraging Indonesia's natural resources and meeting its goals for increased EV adoption. Indonesia's own PT Solo Manufaktur Kreasi (Esemka) is seeking international partnerships to develop EV platforms.

**Hyundai**, a major player from South Korea, has emphasized its commitment to electric vehicles by launching the IONIQ 5 and establishing a production plant in Cikarang, Indonesia. This facility, boasting an annual capacity of 250,000 EVs, marks a significant step in Hyundai's electric journey.

Hyundai Motor Company has established a partnership with PT Energi Makmur Buana (INVI), a subsidiary of PT Indika Energy Tbk, to introduce e-buses and charging infrastructure under the new brand, INVI. This collaboration underscores the joint effort to enhance Indonesia's EV sector. The focus will be on introducing Hyundai's Elec City (large-sized bus) and Hyundai County EV (medium-sized bus) to the Indonesian market by 2024<sup>17</sup>.

The current annual production capacity is **20,000 units** and this will be emphasized next year.

**Chinese OEMs** have made significant inroads, with Wuling Motor launching the Wuling Air EV in Q2 2022, a notable entry into the Indonesian market. Additionally, SAIC introduced its MG4 EV crossover at the Indonesia International Motor Show, starting with a limited pre-booking offer. BYD has also strengthened its presence by delivering electric buses to Indonesia's prominent transit systems, TransJakarta and Mayasari Bakti.

Wuling current annual production capacity is as follows:

1. EV : 5.626 units / 23%
2. ICE : 18.830 units / 77%

Their two EV models, the Air EV and Binguo, comprise 40.04% and 47.5% of local content, respectively, in their total manufacturing production.

**DFSK:** The Gelora E, imported through Completely Built-Up (CBU) from China, was initially priced at IDR 484 million when it debuted in April 2021. But now DFSK has a domestic production facility in Serang, Banten and is producing the vehicle locally. The current starting price is IDR 350 million, reflecting a reduction of IDR 134 million from the initial cost of CBU import units.

<sup>14</sup> Company websites

<sup>15</sup> <https://gesitsmotors.com/en/#>

<sup>16</sup> <https://voltaindonesia.com/>

<sup>17</sup> <https://indonesiabusinesspost.com/risks-opportunities/hyundai-and-invi-forge-partnership-to-propel-electric-bus-market-in-indonesia/>

**Japanese OEMs** such as Toyota and Honda, haven't solidified EV plans, while Nissan and Mitsubishi already have EV products or plans. Mitsubishi is gearing up to introduce its Minicab-MiEV microvan xEV in 2024, and Nissan has already made its mark with the launch of the Leaf in 2021, further planning to introduce the Sakura, a mini electric multipurpose vehicle, by late 2023.

**European and American OEMs** are not far behind in this race. BMW has made its electric SUV, the BMW iX, available in the Indonesian market, and Daimler is set to launch an electric bus in the second quarter of 2023. Volkswagen, meanwhile, is eyeing a partnership with Vale,

From the **United States**, Tesla is in discussions to establish a significant EV manufacturing site in Indonesia, aiming for a capacity of 1 million units.

**Table 7- Summary of E4W models in Indonesia**

E4W manufacturer	EV Initiatives
Hyundai Motor Group	<div data-bbox="379 757 839 1122" data-label="Image"> </div> <p data-bbox="379 1160 754 1193"><b>Market Leadership in EV Sales:</b></p> <p data-bbox="379 1223 1426 1294">Hyundai has achieved a 56.5 percent market share in Indonesia's EV sector as of July 2023, with 3,913 EVs sold, largely due to the success of the locally produced Ioniq 5.</p> <p data-bbox="379 1323 1449 1395">The company also showcased the Ioniq 6 and plans to enhance its EV supply chain with a joint battery cell manufacturing plant with LG Energy Solution.</p> <p data-bbox="379 1424 1153 1458">Ioniq 5 (Prime STD) - Range 384 Km and battery capacity - 58 kWh</p> <p data-bbox="379 1487 1153 1520">Ioniq 6 (Signature) - Range 614 Km and battery capacity - 77.4 kWh</p> <p data-bbox="379 1550 1023 1583">The current annual production capacity is <b>20,000 units</b>.</p> <p data-bbox="379 1612 1465 1684">Additionally, Hyundai is expanding its EV charging infrastructure by installing charging stations in 52 shopping malls nationwide through a partnership with Lippo Malls Indonesia.</p>

**E4W manufacturer EV Initiatives**

Wuling Motors



**Air EV:** Launched in August 2022, the Air EV became the best-selling electric vehicle in Indonesia, with sales exceeding 12,000 units by October 2023.

Wuling also recently launched the Binguo EV with different battery capacities and ranges, boasting IP67 certification for water and dust resistance.

Wuling current annual production capacity is as follows:

- EV : 5.626 units / 23%
- ICE : 18.830 units / 77%

Their 2 EV models Air EV and Binguo have **40.04%** and **47.5%** local content in the production.

**The lineup comprises of three variants: one with a range of up to 333 km powered by a 31.9 kWh battery but only AC feature another with the same specifications but with both AC&DC features, and another with a range of up to 410 km powered by a 37.9 kWh battery.**

Honda



Honda SUV e: Prototype: Revealed at the Gaikindo Indonesia International Auto Show in August 2023, this electric SUV concept features advanced technologies, dynamic driving experience, and efficient battery technology.

**The lithium-ion battery with a 35.5 kWh capacity provides a range of up to 220 km on a full charge.** Despite a shorter range compared to rivals, the Honda e boasts impressive charging capabilities, reaching 80 percent charge in about 30 minutes with a 50/100 kW DC Charger system.

E4W manufacturer	EV Initiatives
Mitsubishi Motors	<p>The Indonesian industry ministry announced in August 2023 that Mitsubishi Motors, a Japanese automaker, intends to invest IDR 5.7 trillion (USD 375.25 million) in 2024 for the expansion of its production capacity in the country.</p> <p>The company aims to boost its production capacity to a maximum of 250,000 units annually by 2024. Additionally, Mitsubishi plans to commence production of the Minicab-MiEV battery electric vehicle at its Indonesian plant by the end of this year, as stated by the ministry.</p>

**Table 8- Summary of E4W Models and Specifications<sup>18</sup>**

Name of Manufacturer	Model	Range	Battery size	Price (IDR)
Hyundai <sup>19</sup>	Ioniq 5 (Prime STD)	384 Km	58 kWh	706,000,000
Hyundai	Ioniq 6 (Signature)	614 Km	77.4 kWh	1,197,000,000
Hyundai	Kona		64 kWh	750,000,000
Wuling Motors <sup>20</sup>	Binguo EV(AC)	333 Km	31.9 kWh	317,000,000
Wuling Motors	Binguo EV(AC/DC)	333 Km	37.9 kWh	326,000,000
Wuling Motors	Binguo EV(AC/DC)	410 Km	17.3 kWh	372,000,000
Wuling Motors	Air EV(Lite)	200 Km	17.3 kWh	206,000,000

Out of these only the Ioniq 5 and the Wuling Air EV & Wuling Binguo qualify for the government subsidy as they are made with 40% local content.

## 2.5 EV Charging Operators and Equipment Providers

The charging infrastructure landscape in Indonesia is evolving, with various players contributing to the development of this crucial aspect of the EV ecosystem. Here's a detailed overview of the key companies and their initiatives in the Indonesian EV charging and battery swapping infrastructure:

### PT Starvo Global Energi:

- An Indonesian EV charging company planning to introduce 5,000 new privately owned EV charging stations by 2025.
- Starvo has a 5-year plan (2023-2027) approved by the Ministry of Mineral and Energy for 268 units of 120 kW fast charging across 100 locations.
- Starvo uses chargers ranging from 7 kW to 120 kW but does not manufacture them.
- Collaborated with real estate developer Jababeka to construct public EV charging stations in Cikarang, Indonesia.

### PT Energi Makmur Buana (INVI):

- Hyundai Motor Company has partnered with PT Energi Makmur Buana (INVI), a subsidiary of PT Indika

<sup>18</sup> Company websites

<sup>19</sup> <https://www.hyundai.com/id/en>

<sup>20</sup> <https://wuling.id/en>

Energy Tbk. Together, they aim to introduce electric buses, featuring the KG Mobility brand, along with associated charging stations. This collaboration represents a significant move in promoting the adoption of electric vehicles in Indonesia. The emphasis will be on launching Hyundai's Elec City (large-sized bus) and Hyundai County EV (medium-sized bus) in the Indonesian market by 2024.

- PT Energi Makmur Buana also launched the INVI bus in 2023. The bus can travel more than 350 km and has a capacity of up to 320 kW.

#### **Astra Group:**

- Astra Otoparts Tbk (Astra Otoparts), a subsidiary of PT Astra International Tbk (Astra) specializing in the vehicle components sector, unveiled its latest addition to the portfolio, Astra Otopower. The Battery-Based Electric Motor Vehicle (KBLBB) charging network was formally introduced in July 2022 and is now spread across 13 points.
- Astra offers 3 EV models (four-wheelers) and 6 hybrid models.
- EVs are priced 20%-30% higher than traditional vehicles (four-wheelers), and 30% higher for two-wheelers.
- They have entered into collaborations with Honda and Toyota to develop EV models suitable for the Indonesian market.

#### **Swap Energy:**

- Established 800 swap centers across Indonesia.
- Recently raised USD7.2 million for business expansion.
- Aims to be a significant player in battery infrastructure by setting up more swap centers and partnering with large enterprises like Lazada Logistics, Pos Indonesia, Alfamart, and Circle K.

#### **Gogoro and Gojek Partnership:**

- Taiwan-based unicorn Gogoro is collaborating with Gojek to deploy battery-swapping stations (GoStations). It plans to expand this network nationwide.

#### **Charging Equipment Providers:**

ABB and Schneider Electric are key players in the Indonesian market.

ABB's contributions:

- Installed DC fast chargers for BPPT in West Java and at a PLN distribution unit in Jakarta.
- Installed ABB's home charging AC wall box at Verde Two Apartment in South Jakarta.
- Provided Terra 54 DC fast chargers to three Shell stations in North Jakarta, South Jakarta, and Bogor

## 2.6 Battery Manufacturers (Cell, Battery, and Pack Assembly)

Indonesia, with its abundant nickel reserves, has strong potential to produce nickel manganese cobalt (NMC) batteries to support Electric Vehicles (EVs). The country is advancing in the commercialization of local cell components, and cell and pack production, through various partnerships and joint ventures (JVs), particularly in processing raw materials like nickel:

### Indonesia Battery Corporation (IBC) Initiatives:

- IBC is spearheading efforts to become a global Lithium-Ion Battery (LIB) cell supplier, with technological support from CATL and LG, and a cumulative investment of about USD16.8 billion.
- IBC signed a memorandum of understanding (MoU) with Malaysia's Citaglobal Bhd to produce EV battery cells and battery energy storage systems (BESS).

### Development of Cell Components by Non-traditional Players:

- Chinese companies are actively involved in securing positions in Indonesia's upstream activities, particularly for cathodes.
- In February 2023, Chinese chemical company Jiangsu Lopal Tech invested USD 290 million in Central Java province, Indonesia, to construct an EV battery cathode material production project.
- BASF plans to invest in Indonesia's burgeoning car battery sector, aligning with the country's ambition to utilize its nickel reserves and diversify the number of OEMs.

### Partnerships and JVs for Raw Materials:

- Multiple companies have entered into partnerships and JVs in Indonesia for building new cell components and enhancing manufacturing capabilities.
- PT Vale Indonesia collaborated with China's Zhejiang Huayou Cobalt and the US's Ford Motor Company for nickel-processing projects.
- Indonesia's Harita Group and China's Ningbo Lygend Mining established a JV to build a high-pressure acid leaching (HPAL) plant, including an eight-year supply agreement for nickel and cobalt with China's GEM Co.

### EV OEMs and Pack Assembly:

- Indonesia primarily depends on foreign companies for Battery Management Systems (BMS).
- PT VKTR Teknologi Mobilitas Tbk (VKTR) stands out as a significant BMS vendor and is the only local option in Indonesia.

These developments indicate a strong push in Indonesia towards building a robust local ecosystem for EV battery production, ranging from raw material processing to the manufacturing of key battery components. The involvement of both domestic and international players, including significant investments and technology transfers, underlines Indonesia's ambition to be a significant player in the global EV battery market.



Photo Credit: Putu Rani Hapsari


## 3. POLICY & REGULATORY LANDSCAPE

In 2019, Indonesia initiated a major policy shift through the issuance of a Presidential Regulation to accelerate the adoption of Battery Electric Vehicles (BEVs). Since then, various supporting policies and regulations have been issued by the government to further this initiative. The following sections provide details on the features of various EV policies and regulations in Indonesia.


### 3.1 Policy and Regulations


Since the pivotal Presidential Regulation in 2019, Indonesia has taken a multi-faceted approach to promote BEV adoption, combining fiscal incentives with regulatory measures. The government's strategy includes financial subsidies, tax exemptions, standardization of EV infrastructure, encouragement of government use of EVs, and support for local manufacturing.


**Table 9-** Key features of EV Policies & Regulations in Indonesia


National Level Regulation	Main Features
 Overall Roadmap	
<p><b>Presidential Decree Reg. No. 55/2019</b></p> <ul style="list-style-type: none"> <li>• Inception Year- August 8, 2019</li> <li>• Relevant Ministry- The President of Republic of Indonesia</li> <li>• End Beneficiary- Entire EV value chain</li> </ul>	<p>Presidential Decree No. 55 of 2019, often referenced in the context of Indonesia, is a significant regulation that addresses the acceleration of the battery electric vehicle (BEV) program for road transportation. This decree is a part of Indonesia’s broader strategy to become a regional hub for electric vehicle production and to reduce greenhouse gas emissions. Here are the main features of the decree:</p> <ul style="list-style-type: none"> <li>• <b>Promotion of Electric Vehicles (EVs):</b> The decree aims to accelerate the adoption and production of electric vehicles, including both battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs).</li> <li>• <b>Incentives for EV Manufacturing:</b> It includes incentives for manufacturers to produce electric vehicles. This could involve tax incentives, ease of licensing procedures, and other supportive measures to stimulate the domestic EV industry.</li> <li>• <b>Import Duty Exemption:</b> The decree provides an exemption from import duties for completely built units (CBU), completely knocked down (CKD), and semi knocked down (SKD) of electric vehicles, to encourage the use of EVs in Indonesia.</li> <li>• <b>Local Content Requirements:</b> There are stipulations for local content requirements to boost the domestic automotive and supporting industries. This aims to develop local manufacturing capabilities for EV components.</li> <li>• <b>Development of Infrastructure:</b> The decree emphasizes the development of necessary infrastructure for EVs, such as charging stations, to support growth.</li> <li>• <b>Research and Development (R&amp;D):</b> It encourages research and development activities in the field of electric vehicle technology, and advancements in this sector.</li> <li>• <b>Government Support:</b> The decree involves various government bodies to facilitate the implementation of these policies, ensuring a coordinated approach.</li> <li>• <b>Tax Incentives for Users:</b> There are also provisions for tax incentives (luxury good tax) for users of EVs, to make EVs more financially attractive to consumers.</li> <li>• <b>Standards and Safety Regulations:</b> The decree sets safety regulations for electric vehicles to ensure quality and safety in the adoption of this new technology.</li> </ul>


National Level Regulation	Main Features
<p><b>Presidential Decree Reg. No. 79/2023</b></p> <p>Inception Year- 2023</p> <ul style="list-style-type: none"> <li>• Relevant Ministry- The President of Republic of Indonesia</li> <li>• End Beneficiary- Entire EV value chain</li> </ul>	<ul style="list-style-type: none"> <li>• Policy Direction and Strategy: <ul style="list-style-type: none"> <li>• Focuses on preserving Bali’s environment and supporting energy efficiency and pollution reduction in transportation.</li> <li>• Mandates BEV usage in government agencies and transportation companies.</li> <li>• Encourages local content in the BEV industry.</li> </ul> </li> <li>• Action Plan for BEV Usage: <ul style="list-style-type: none"> <li>• Implement a regional action plan for transitioning public transport to BEVs.</li> <li>• Provides incentives for BEV owners and controls for fossil fuel vehicles.</li> <li>• Sets an implementation period starting from the regulation’s promulgation date.</li> </ul> </li> <li>• Strengthening the BEV Industry: <ul style="list-style-type: none"> <li>• Supports BEV industry development with an emphasis on local goods, services, and workforce.</li> </ul> </li> <li>• Electric Charging Infrastructure Development: <ul style="list-style-type: none"> <li>• Eases infrastructure setup for electric charging.</li> <li>• Specifies location criteria, safety standards, and public-private partnership involvement.</li> <li>• Addresses grid readiness for supporting the charging infrastructure.</li> </ul> </li> <li>• Incentive Provision: <ul style="list-style-type: none"> <li>• Offers fiscal and non-fiscal incentives from provincial and local governments.</li> <li>• Targets individuals, institutions, companies using BEVs, and related service providers.</li> </ul> </li> <li>• BEV Types and Requirements: <ul style="list-style-type: none"> <li>• Specifies allowed BEV types, including two, three, and four-wheeled vehicles.</li> <li>• Ensures compliance with technical and roadworthiness standards.</li> </ul> </li> <li>• Restrictions on Fossil Fuel Vehicles- Limits fossil fuel vehicle usage in certain areas to promote BEVs.</li> <li>• Environmental Protection- Mandates the recycling and management of BEV battery waste.</li> <li>• Cooperation for BEV Usage- Encourages collaboration among stakeholders to accelerate BEV adoption.</li> <li>• Committee for BEV Usage- Establishes a committee for planning and implementing the BEV action plan.</li> <li>• Community Involvement- Invites community participation in providing feedback and monitoring implementation.</li> <li>• Governance and Supervision- Details the Governor’s role in overseeing BEV usage acceleration.</li> <li>• Sanctions for Non-Compliance- Outlines penalties for not adhering to the regulation’s provisions.</li> <li>• Funding Sources- Specifies funding sources for BEV usage acceleration.</li> <li>• Transitional Provisions- Addresses the status and compliance requirements of existing BEVs.</li> <li>• Effective Date of Regulation- States when the regulation comes into effect.</li> </ul> <p>This policy represents Bali’s commitment to environmentally friendly transportation and the advancement of the electric vehicle sector.</p>


National Level Regulation	Main Features
 <b>Charging Infrastructure</b>	
<p><b>Ministry of Energy and Mineral Resources Reg. No. 13/2020</b></p> <ul style="list-style-type: none"> <li>Inception Year-4 August 2020</li> <li>Relevant Ministry - Ministry of Energy and Mineral Resources</li> <li>End Beneficiary- Charging infrastructure manufacturers &amp; operators</li> </ul>	<p>Scope: Covers policy framework, charging fees, and safety installation requirements for BEV charging infrastructure.</p> <ul style="list-style-type: none"> <li>Charging Facilities: Allows BEVs to be charged at both private and public charging stations. Battery replacements are designated for public electric vehicle battery replacement stations.</li> <li>Types of Charging Stations: <ul style="list-style-type: none"> <li>Private Electrical Installation: For captive use, not for resale.</li> <li>General EV Charging Station (SPKLU): Public facilities requiring a business license (IUPTL) and operating in more than one province.</li> <li>General EV Battery Exchange Station (SPBKLU): Public battery exchange facilities, also requiring IUPTL.</li> </ul> </li> <li>Licensing: Private installations and SPBKLU operators are not required to obtain IUPTL.</li> <li>PLN's Role: responsible for deploying charging infrastructure, creating a roadmap for infrastructure development, including locations, capacities, and business schemes.</li> <li>Charging Technologies: Includes normal charging, fast charging, and ultra-fast charging at public stations.</li> <li>Electricity Pricing: Governed by the electricity rate plans provided by PLN</li> </ul>
<p><b>Ministry of Energy and Mineral Resources Reg. No. 1/2023</b></p> <ul style="list-style-type: none"> <li>Inception Year-2023</li> <li>Relevant Ministry Ministry of Energy and Mineral Resources</li> <li>End Beneficiary- Charging infrastructure manufacturers &amp; operators</li> </ul>	<ul style="list-style-type: none"> <li>This regulation outlines mandates for electric charging infrastructure for battery-based electric motor vehicles.</li> <li>It defines the technology and scope of the infrastructure, including charging facilities for both private and public transportation.</li> <li>The regulation includes battery exchange facilities and designates PT Perusahaan Listrik Negara (PLN) for certain roles.</li> <li>It also specifies the electricity tariff for battery-based electric vehicles.</li> <li>The rule addresses charging infrastructure safety, guidance and monitoring, and reporting and evaluation.</li> <li>It details administrative sanctions and transitional provisions.</li> <li>This regulation supersedes the earlier Minister of Energy and Mineral Resources (ESDM) No. 13 of 2020.</li> </ul>


National Level Regulation	Main Features
 <b>Equipment Safety &amp; Operating standards</b>	
<p><b>Ministry of Transportation Reg. No. 4/2020</b></p> <ul style="list-style-type: none"> <li>Inception Year-, 2020</li> <li>Relevant Ministry - Ministry of Transportation</li> <li>End Beneficiary- Manufacturers</li> </ul>	<ul style="list-style-type: none"> <li>Purpose: To ensure safety for users of electric motor vehicles, supplementing Regulation PM 33 of 2018. Focus Area: EV equipment safety within the EV value chain. Scope: Stipulates testing for physical types of motor vehicles with electric engines in Indonesia. Requirement: All electric vehicles sold in Indonesia must undergo government testing and certification.</li> <li>Types of Tests: <ul style="list-style-type: none"> <li>Performance of the electric accumulator.</li> <li>Electric energy recharging devices.</li> <li>Protection capability against electrical contact.</li> <li>Functional safety.</li> <li>Hydrogen emissions.</li> </ul> </li> </ul>
<p><b>Ministry of Transportation Reg. No. 45/2020</b></p> <ul style="list-style-type: none"> <li>Inception Year-, 2020</li> <li>Relevant Ministry- Ministry of Transportation</li> <li>End Beneficiary- Manufacturers</li> </ul>	<p>Ministry of Transportation Reg. No. 45-2020, Indonesian policy on regulation of vehicles using electric engines.</p> <ul style="list-style-type: none"> <li>Types of Electric Vehicles (Article 2): <ul style="list-style-type: none"> <li>Covers Electric Scooters, Bikes, Hoverboards, Unicycles, and Kick Scooters.</li> <li>Requires batteries and engines to be firmly integrated during operations.</li> </ul> </li> <li>Safety Requirements (Articles 3): <ul style="list-style-type: none"> <li>Mandates safety features like main lamp, brake system, reflectors, and speed limits for each electric vehicle type.</li> </ul> </li> <li>Usage Provisions (Article 4): <ul style="list-style-type: none"> <li>Sets rules for users: helmet use, minimum age requirements, passenger restrictions (except for Electric Bikes with seats).</li> <li>Includes traffic compliance like maintaining safe distance and prioritizing pedestrians.</li> </ul> </li> <li>Operational Areas (Article 5): <ul style="list-style-type: none"> <li>Specifies allowed areas for operation: special lanes, settlements, car-free roads, tourism and office areas.</li> <li>Permits pavement operation under certain conditions.</li> </ul> </li> <li>Government Responsibilities (Article 6)- Requires government to install road equipment like signs in designated areas.</li> <li>Local Authority Regulation (Article 7) - Delegates authority to local officials for specifying operational areas.</li> <li>Rental Provisions (Article 8)- Establishes guidelines for renting these vehicles, including rental location restrictions and user safety.</li> <li>Effectiveness and Enforcement (Article 9) - States the regulation is effective from the date of promulgation.</li> </ul>

National Level Regulation	Main Features
 <b>ICE to EV conversion</b>	
<p><b>Ministry of Transportation Reg. No. 65/2020</b></p> <ul style="list-style-type: none"> <li>• Inception Year-, 2020</li> <li>• Relevant Ministry- Ministry of Transportation</li> <li>• End Beneficiary- Conversion workshops &amp; manufacturers</li> </ul>	<p>Ministry of Transportation Reg. No. 65-2020, Indonesian policy on converting combustion engine motorcycles to battery electric motorcycles.</p> <ul style="list-style-type: none"> <li>• Conversion Implementation (Chapter II): <ul style="list-style-type: none"> <li>• Permits conversion of registered motorcycles with combustion engines to battery electric motorcycles.</li> <li>• Details components involved in the conversion, like the battery, battery management system, electric motors.</li> <li>• Requires conversions to be performed only by approved general workshops.</li> </ul> </li> <li>• Conversion Workshops (Chapter III): <ul style="list-style-type: none"> <li>• Sets requirements for general workshops to become approved Conversion Workshops, including technical and safety equipment, and skilled technicians.</li> <li>• Describes the approval and certification process for Conversion Workshops.</li> </ul> </li> <li>• Conversion Certification (Chapter IV): <ul style="list-style-type: none"> <li>• Mandates that converted motorcycles meet technical and roadworthiness standards.</li> <li>• Outlines the testing process, including inspections of the electric motor drive system and physical type testing.</li> <li>• Explains the issuance process for test resumes and conversion type test certificates.</li> </ul> </li> <li>• Guidance and Supervision (Chapter V): <ul style="list-style-type: none"> <li>• Assigns the Minister and the Director General the roles of providing guidance and supervision over motorcycle conversions.</li> <li>• Includes criteria for Conversion Workshops, dissemination of information, technical education, training, and assistance for conversion-related issues.</li> </ul> </li> <li>• Closing Provisions (Chapter VI): <ul style="list-style-type: none"> <li>• States that the regulation is effective from the date of its promulgation.</li> <li>• Aims to regulate and facilitate the conversion of combustion engine motorcycles to electric, aligning with Indonesia’s environmental sustainability and technological advancement goals in transportation.</li> </ul> </li> </ul>
<p><b>Ministry of Transportation Reg. No. 15/2022</b></p> <ul style="list-style-type: none"> <li>• Inception Year- 2022</li> <li>• Relevant Ministry- Ministry of Transportation</li> <li>• End Beneficiary- Consumer</li> </ul>	<p>Indonesia’s Minister of Transport Regulation No. 15 of 2022 is a pivotal regulation, which supports the broader BEV industry acceleration program in Indonesia, as outlined in Presidential Regulation No. 55 of 2019.</p> <ul style="list-style-type: none"> <li>• It focused on the conversion of motor vehicles, other than motorcycles, from combustion engines to Battery Electric Vehicles (BEVs).</li> <li>• The regulation specifies the components that can be converted, which include Electric Motors, Batteries, BMS, DC to DC converters, Electric Motor Driver Controller Systems, Battery Charging Inlets, and supporting electrical systems.</li> <li>• A critical aspect of the regulation is the emphasis on safety and standards.</li> </ul> <p>This comprehensive regulatory framework is designed to ensure that the conversion to BEVs is safe, efficient, and aligns with Indonesia’s goals for a sustainable transportation</p>

National Level Regulation	Main Features
<p><b>Ministry of Industry Reg. No. 6/2022</b></p> <ul style="list-style-type: none"> <li>Inception Year- 2022</li> <li>Relevant Ministry- Ministry of Industry</li> <li>End Beneficiary- Consumer</li> </ul>	<p>The Indonesian Ministry of Industry Regulation No. 6 of 2022 is aimed at advancing the domestic electric vehicle (EV) industry. Key aspects include:</p> <ul style="list-style-type: none"> <li>Establishing specifications and a roadmap for the development of domestic battery-powered electric vehicles (BEVs).</li> <li>Setting ambitious production targets of 12 million units for two-and-three-wheeled BEVs and 1 million units for four-wheeled BEVs by 2035.</li> <li>Specifying minimum targets for the Domestic Component Level in the manufacture and assembly of EVs</li> <li>Implementing calculation methods for the Domestic Component Level (TKDN) for manufacturing and assembly of EVs.</li> </ul>
 <b>Financial Incentives (Tax and Subsidies)</b>	
<p><b>Ministry of Finance Reg. No. 138-PMK.02/2021</b></p> <ul style="list-style-type: none"> <li>Inception Year- Sep 2022</li> <li>Relevant Ministry- Ministry of Finance</li> <li>End Beneficiary- Consumer</li> </ul>	<ul style="list-style-type: none"> <li>This regulation details the regulation of the business activities of financing companies in Indonesia.</li> <li>The regulation reduces the Type Test cost for Battery Electric Vehicles (BEVs), making it now more affordable than Internal Combustion Engine Vehicles (ICEVs): <ul style="list-style-type: none"> <li>IDR 4.5 million for Electric Two-Wheelers (E2W).</li> <li>IDR 13.2 million for Electric Four-Wheelers (E4W) and E-bus</li> </ul> </li> <li>The Type Test Certification (Sertifikat Uji Tipe/SUT) for E2W is 25 times more cost-effective, and for E4W and E-bus, it is 6 times more cost-effective compared to ICEVs.</li> <li><b>Ministry of Finance Order 38/2023</b></li> <li>In 2023, the Ministry of Finance enabled a Value Added Tax (VAT) reduction on battery electric vehicles until the end of the fiscal year. The incentive is part of Indonesia's commitment to accelerate the sale of Electric Vehicles (EVs) as well as to boost investments in EVs ecosystem. The VAT reduction includes: <ul style="list-style-type: none"> <li>10% cut for cars and buses with a minimum 40% of local content.</li> <li>5% tax reduction for cars and buses with less than 40% and minimum of 20% local content.</li> </ul> </li> </ul>
<p><b>Ministry of Home Affairs Reg. No 1/2021</b></p> <ul style="list-style-type: none"> <li>Inception Year- Jan 2021</li> <li>Relevant Ministry- Ministry of Home Affairs</li> <li>End Beneficiary- Consumer</li> </ul>	<p>Regulation 1/2021 sets the calculation of the motor vehicle tax (PKB) &amp; the motor vehicle title transfer fee (BBNKB).</p> <ul style="list-style-type: none"> <li><b>Adjustments to Sales Tax on Luxury Goods:</b> It recognizes the need to adjust the provisions related to the Sales Tax on Luxury Goods, particularly for Plug-in Hybrid Electric Vehicles (PHEVs) and Hybrid Electric Vehicles (HEVs). This adjustment is in line with the objectives of promoting more environmentally sustainable transportation options.</li> <li><b>Motor vehicle tax for battery electric vehicles:</b> The motor vehicle tax for battery electric vehicles irrespective of whether they are passenger vehicles or public passenger vehicles has been stipulated at not more than 10%.</li> </ul>

National Level Regulation	Main Features
<p><b>Ministry of Industry Reg. No. 6/2023 / 21/2023</b></p> <ul style="list-style-type: none"> <li>• Inception Year- 2023</li> <li>• Relevant Ministry- Ministry of Industry</li> <li>• End Beneficiary- Consumer</li> </ul>	<p>Minister of Industry Regulation Number 6/2023 JO 21/2023:</p> <ul style="list-style-type: none"> <li>• Guidelines for Provision of Government Assistance for the Purchase of Two-Wheel Battery-Based Electric Motorized Vehicles.</li> <li>• For E2W, 7 million rupiahs are provided as purchase subsidies and has allocated subsidies for 200,000 motorcycles in 2023.</li> </ul>
<p><b>Ministry of Home Affairs Reg. No 6/2023</b></p> <ul style="list-style-type: none"> <li>• Inception Year- Jun 2023</li> <li>• Relevant Ministry- Ministry of Home Affairs</li> <li>• End Beneficiary- Consumer</li> </ul>	<p>Home Affairs Ministerial Regulation (Permendagri) No 6/2023</p> <ul style="list-style-type: none"> <li>• Through this, the Indonesian government has made the decision to grant <b>exemptions on two local taxes, namely the vehicle tax (PKB) and vehicle ownership transfer fee (BBNKB) for electric vehicles (EV).</b></li> <li>• However, these incentives are only valid for battery-based EVs, not for EVs converted from fossil-fuel vehicles.</li> </ul>
 <p><b>Mandated Regulation and Protocols</b></p>	
<p><b>OJK (Otoritas Jasa Keuangan) Circulation Inception Year- 2022</b></p> <ul style="list-style-type: none"> <li>• Relevant Ministry- OJK (Financial Services Authority)</li> <li>• End Beneficiary- End Consumer</li> </ul>	<p>This regulation details the regulation of the business activities of financing companies in Indonesia.</p> <p><b>Relaxation of Financial Regulations:</b></p> <p>OJK has eased the calculation of Risk Weighted Assets (RWA) by lowering the credit risk weight (ATMR) from 75% to 50% for EV purchase loans.</p> <p><b>Facilitative regulations for EV Purchases:</b> A 2022 circular from OJK allow the purchase of EVs on credit without a down payment (0%). The incentives offered vary,</p> <ul style="list-style-type: none"> <li>• Such as 0% interest for the first two years,</li> <li>• 0% interest for the initial year with a down payment of only 10% and</li> <li>• An extended repayment term of up to 7 years, and</li> <li>• Reduced interest rates for E4W credit purchases in certain areas.</li> </ul> <p>This policy has generated considerable interest among finance institutions.</p>

National Level Regulation	Main Features
<p><b>Presidential Instruction Reg. No. 7/2022</b></p> <ul style="list-style-type: none"> <li>Inception Year-13 September 2022</li> <li>Relevant Ministry- The president of republic of Indonesia</li> <li>End Beneficiary- EV manufacturers</li> </ul>	<p>Presidential Instruction No. 7 of 2022 in Indonesia, focusing on the adoption of battery-based electric vehicles (BEVs) by government institutions, includes several key features:</p> <ul style="list-style-type: none"> <li><b>Mandate for BEV Usage:</b> The instruction specifically mandates the use of BEVs as both official operational and personal vehicles within central government institutions and regional governments.</li> <li><b>Government Agency Applicability:</b> This directive is applicable to a wide array of government agencies, including all ministries and local governments.</li> <li>It encompasses the use of BEVs for both operational service vehicles and individual vehicles utilized by personnel within these entities.</li> </ul>
 <b>Environmental Safeguards</b>	
<p><b>Ministry of Environment and Forest Reg. No. 22/2021</b></p> <p><b>Ministry of Environment and Forest Reg. No. 6/2021</b></p> <p><b>Ministry of Environment and Forest Reg. No. 18/2020</b></p>	<ul style="list-style-type: none"> <li>Batteries are classified as B3 (hazardous) waste in Indonesia. This classification is based on Government Regulation No. 22 of 2021.</li> <li>Regulations include detailed storage requirements for B3 waste: locations, methods, and duration.</li> <li>Compliance with these storage requirements is mandatory for all parties involved in B3 waste activities.</li> <li>Regulation of the Minister of Environment and Forestry No. 18 of 2020 details the utilization of B3 waste and requirements for B3 waste generators.</li> </ul>

National Level Regulation	Main Features
 <b>Sub-National Level Initiatives</b>	
<p><b>Bali Government Reg. No. 48/2019</b></p> <ul style="list-style-type: none"> <li>• Inception Year- 2019</li> <li>• Relevant Ministry- Governor of Bali</li> <li>• End Beneficiary- All stakeholders</li> </ul>	<p>Policy Direction and Strategy:</p> <ul style="list-style-type: none"> <li>• Focuses on preserving Bali’s environment and supporting energy efficiency and pollution reduction in transportation.</li> <li>• Mandates BEV usage in government agencies and transportation companies.</li> <li>• Encourages local content in the BEV industry.</li> </ul> <p>Action Plan for BEV Usage:</p> <ul style="list-style-type: none"> <li>• Implement a regional action plan for transitioning public transport to BEVs.</li> <li>• Provides incentives for BEV owners and controls for fossil fuel vehicles.</li> <li>• Sets an implementation period starting from the regulation’s promulgation date.</li> </ul> <p>Strengthening the BEV Industry:</p> <ul style="list-style-type: none"> <li>• Supports BEV industry development with an emphasis on local goods, services, and workforce.</li> </ul> <p>Electric Charging Infrastructure Development:</p> <ul style="list-style-type: none"> <li>• Eases infrastructure setup for electric charging.</li> <li>• Specifies location criteria, safety standards, and public-private partnership involvement.</li> <li>• Addresses grid readiness for supporting the charging infrastructure.</li> </ul> <p>Incentive Provision:</p> <ul style="list-style-type: none"> <li>• Offers fiscal and non-fiscal incentives from provincial and local governments.</li> <li>• Targets individuals, institutions, companies using BEVs, and related service providers.</li> </ul> <p>BEV Types and Requirements:</p> <ul style="list-style-type: none"> <li>• Specifies allowed BEV types, including two, three, and four-wheeled vehicles.</li> <li>• Ensures compliance with technical and roadworthiness standards.</li> </ul> <p>Restrictions on Fossil Fuel Vehicles- Limits fossil fuel vehicle usage in certain areas to promote BEVs.</p> <p>Environmental Protection- Mandates the recycling and management of BEV battery waste.</p> <p>Cooperation for BEV Usage- Encourages collaboration among stakeholders to accelerate BEV adoption.</p> <p>Committee for BEV Usage- Establishes a committee for planning and implementing the BEV action plan.</p> <p>Community Involvement- Invites community participation in providing feedback and monitoring implementation.</p> <p>Governance and Supervision- Details the Governor’s role in overseeing BEV usage acceleration.</p> <p>Sanctions for Non-Compliance- Outlines penalties for not adhering to the regulation’s provisions.</p> <p>Funding Sources- Specifies funding sources for BEV usage acceleration.</p> <p>Transitional Provisions- Addresses the status and compliance requirements of existing BEVs.</p> <p>Effective Date of Regulation- States when the regulation comes into effect.</p> <p>This policy represents Bali’s commitment to environmentally friendly transportation and the advancement of the electric vehicle sector.</p>

## 3.2 Fiscal and Non-Fiscal Incentives

The overall sentiment toward Electric Vehicles (EVs) in the country is positive, yet further support from regulators is necessary to develop a unified plan. The government provides financial / non-fiscal incentives to both EV consumers and EV manufacturers.

**Table 10-** Key Fiscal & Non-fiscal Incentives for EV's in Indonesia

Type of incentives	Main Features
<b>Demand Side</b>	
Sales Price Incentives	<p><b>Electric Two-Wheelers (e2Ws):</b></p> <p>A subsidy of IDR 7 million is available for e2Ws that are locally manufactured using at least 40% local materials.</p> <p><b>Ref: Ministry of Industry Reg. No. 6-2023 / 21-2023</b></p>
End-user Tax Incentives	<p><b>Luxury Tax Exemption:</b></p> <p>EVs are exempt from luxury tax (from earlier 10%), which is a significant incentive considering that ICE vehicles are taxed between 15%-40%.</p> <p><b>Exemption on Transfer and Circulation Tax:</b> Exemptions on two local taxes, Transfer fees and circulation taxes on EVs are set at 0%</p> <p><b>Ref: Ministry of Home Affairs Reg. No. 1/2021 and 6-2023</b></p> <p><b>Reduction in VAT-</b> Value Added Tax reduction on battery electric vehicles:</p> <ul style="list-style-type: none"> <li>• 10% reduction for cars and buses with a minimum 40% of local content;</li> <li>• 5% tax reduction for cars and buses with a minimum of 20% local content</li> </ul> <p><b>Ref: Ministry of Finance Order 38/2023</b></p>
Preferential Access	<ul style="list-style-type: none"> <li>• Exemption from road restrictions <ul style="list-style-type: none"> <li>• EVs are not restricted by the odd-even number plate traffic restriction (only in Jakarta)</li> </ul> </li> <li>• Parking fee discount in locations designated by the Local Government <b>(Presidential Decree no. 79 Year 2023)</b></li> </ul>

Financial Accessibility	<p><b>Relaxation of Financial Regulations:</b></p> <p>OJK has eased the calculation of Risk Weighted Assets (RWA) by lowering the credit risk weight (ATMR) from 75% to 50% for EV purchase loans.</p> <p><b>Facilitative regulations for EV Purchases:</b></p> <p>A 2022 circular from OJK allows the purchase of EVs on credit without a down payment (0%). This policy has generated considerable interest among multi-finance institutions.</p> <ul style="list-style-type: none"> <li>• 0% interest for the first two years,</li> <li>• 0% interest rate for the first year with just a 10% down payment,</li> <li>• Longer loan terms (up to 7 years),</li> <li>• Lower interest rates for E4Ws in specific regions</li> </ul> <p>All these resulting into reduced payments compared to internal combustion engine vehicles.</p>
<b>Supply Side</b>	
Manufacturer Tax Incentives	<p><b>Corporate Income Tax (CIT) Holidays:</b></p> <ul style="list-style-type: none"> <li>• Investments of IDR 10 trillion (USD 647 million) or more are eligible for a five-year corporate income tax holiday.</li> <li>• Smaller investments can also benefit from mini-tax holidays.</li> </ul> <p><b>Extended CIT Exemption:</b> Depending on investment value, ranging from USD7.2 million-USD 2.1 billion,</p> <ul style="list-style-type: none"> <li>• Government offers CIT exemptions for periods between 5 and 20 years,</li> <li>• Along with an additional two years of tax reduction.</li> </ul>
Import Duty on Machinery	<ul style="list-style-type: none"> <li>• Exemption of import duty on imported capital goods (machines) for 2 years during construction period.</li> <li>• Exemption of import duty on imported goods and material for production for 2 years during initial production (or 4 years if locally produced machines min. 30% from total value).</li> </ul>
Capacity Building	<ul style="list-style-type: none"> <li>• Gross income tax deduction of up to: <ul style="list-style-type: none"> <li>• 300% of costs incurred in R&amp;D;</li> <li>• 200% of funds spent for vocational training program;</li> <li>• 60% of invested capital for fixed assets in labor-intensive industries</li> </ul> </li> <li>• Professional certification for battery industry.</li> <li>• Government grants free access to government owned BEV-related technology to EV players.</li> </ul>

Financial Incentives	<ul style="list-style-type: none"> <li>• Lower risk weight of 75% for loans for EV value chain activities (compared to standard 100%) and,</li> <li>• Exemption from maximum credit limit if guaranteed by BUMN.</li> </ul>
<b>EV Charging Ecosystem</b>	
Subsidized Tariff <sup>21</sup>	<ul style="list-style-type: none"> <li>• Discounted rate for home power capacity upgrade.</li> <li>• Special electric price- 30% discounts for home charging during 10 PM to 5 AM.</li> <li>• A ceiling rate of IDR 2,475/kWh of service costs for charging, with planned similar ceiling rates for fast and ultra-fast charging.</li> </ul>
Charging Network Support	<ul style="list-style-type: none"> <li>• Setting up product certification &amp; technical standards for EV industry (standards for EV charging infra. in place).</li> <li>• Ease of SPKLU licensing (simplified process steps).</li> </ul>

### 3.3 Regional Action Plan for Electric Vehicles (EVs) in Bali

In 2023, Bali began implementing the Regional Action Plan (RAD) for EVs. This comprehensive strategy is designed to further boost EV usage in the region. It includes several key initiatives aimed at promoting and facilitating the adoption of EVs.

1. **Establishing EV Zones:** As part of the plan, Bali has created Bali Low Emission Zones Initiative (BLEZI) in the province's major tourist attractions - Nusa Dua, Kuta, Sanur, Denpasar City, Ubud, Nusa Penida, and Besakih. These zones prioritize battery-based electric vehicles, such as electric motorcycles and cars, at these popular destinations starting from 2023.
2. **Development of the EV Ecosystem:** The regulation mandates the establishment of a special committee for vehicle electrification. This committee is responsible for coordinating stakeholders and producing a regional action plan for e-vehicle implementation. This action plan, launched in 26 January 2023, plays a crucial role in developing Bali's EV ecosystem.
3. **Electric Motorcycle Growth Targets:** The Bali provincial government aims to increase the number of electric motorcycles to 140,000 units by 2026. This target, set to support the acceleration of battery-based electric motorized vehicles, is part of a broader effort to reduce carbon emissions and transition to electric vehicles.
4. **Carbon Emission Reduction Goals:** Alongside increasing the number of electric motorcycles, there is a target to reduce carbon emissions by 41,000 tons by 2026. This goal highlights the environmental benefits and sustainability focus of the Regional Action Plan.

<sup>21</sup> <https://jakartaglobe.id/business/indonesia-drafts-new-incentives-for-ev-charging-stations>

### 3.4 Programs by Sub-National Governments

There are multiple programs promoted by provincial governments in the country. A brief summary is given below:

**Table 11-** Summary of Programs for EV Promotion in Indonesia

Province	Bus Electrification	Odd-Even Tariff Exemption	EV zones/sites	EV Charging obligation for buildings	Use of EVs in Government
DKI Jakarta	Yes	Yes	No	Proposed	Proposed
Bali	Yes	N/A	Proposed	No	No

E-bus program:

DKI Jakarta government has undertaken an ambitious program to convert all TransJakarta buses with E-buses (around 10,047 buses by 2030 and at least 50% by 2027). By end of 2022, there were around 100 buses running in the fleet.<sup>22</sup>

In Surabaya and Bandung, electric buses from the G20 Summit 2022 in Bali were redistributed, with about 17 units going to Surabaya (Trans Semanggi Suroboyo) and 8 units to Bandung (Trans Metro Pasundan). These buses, part of urban bus transportation service systems managed by the Transportation Ministry, began operations on 18 December 2022. Official launches took place in Surabaya on 20 December and in Bandung on 24 December. However, both services ceased operations on 31 December 2022.

Other initiative by Government of DKI Jakarta:

DKI Jakarta has exempted electric vehicles (EVs) from the odd-even traffic rule and has mandated public buildings to install charging stations.

### 3.5 Stakeholder Mapping

This section gives a brief of all the public and private stakeholders across the value chain of EV's and explains their roles and relevance.

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22 Transjakarta Bus Diesel Engines Converted to Electric Buses Starting in 2024 - Kompas.id

### 3.5.1 Public Sector Stakeholders

**Table 12-** Summary of Public Sector Stakeholders & their Role in the EV Ecosystem in Indonesia

Stakeholders	Roles and responsibilities
<b>Government Entities (National)</b>	
Coordinating Ministry of Maritime Affairs & Investment	<p>Focuses on: Coordinating maritime affairs and investment policies.</p> <p>Role in EV Adoption:</p> <ul style="list-style-type: none"> <li>Attracts investments in the EV sector by improving the investment climate, addressing regulatory hurdles, and supporting strategic EV projects.</li> <li>The Minister is also the head of the Coordination Team responsible for expediting the Electric Vehicle (EV) Program, in accordance with Article 34 of Presidential Regulation 55/2019.</li> </ul>
Ministry of Transportation	<p>General Role: Develops and regulates transportation policies.</p> <p>Role in EV Adoption:</p> <ul style="list-style-type: none"> <li>Directorate General of Land Transportation: Implements policies related to traffic organization, transportation infrastructure, and road systems for EVs.</li> <li>Directorate of Land Vehicle: Oversees Road transportation facilities, including EV safety and standards (MoT Reg. No. 65/2020 and 44/2020).</li> <li>Directorate of Road Transportation (Direktorat Angkutan Jalan): Develops Road transportation infrastructure policies (Ministry of Transportation Reg. No. 45/2020).</li> </ul>
Ministry of Energy and Mineral Resources	<p>Function: Formulates policies for energy and mineral resources.</p> <p>Role in EV Adoption: Regulates energy resources crucial for EV charging. Oversees the Director of Electricity Business Development, focusing on electricity sector policies, including EV charging standards (Ministry of Energy and Mineral Resources Reg. No. 13/2020). They also formulate regulations regarding the conversion of ICE vehicles to BEV's.</p>
Ministry of Finance	<p>Function: Manages fiscal and financial policies.</p> <p>Role in EV Adoption: Implements policies to financially support EV adoption, such as reducing vehicle type test costs for BEVs (Ministry of Finance Reg. 138/PMK.02/2021).</p>
Ministry of Industry	<p>Function: Oversees industrial development policies and regulations.</p> <p>Role in EV Adoption: Sets technical requirements for EVs (Ministry of Industry Reg. No. 6/2022) and set targets to increase domestic production of BEVs</p>
Ministry of National Development Planning/Bappenas	<p>Function: Formulates and coordinates national development policies.</p> <p>Role in EV Adoption:</p> <ul style="list-style-type: none"> <li>Director of Transportation: Coordinates national development planning policies for transportation, integrating EV themes and policies.</li> <li>Directorate of Electricity, Telecommunications, and Informatics: Focuses on national development planning for electricity infrastructure crucial for EVs.</li> </ul>

Ministry of Environment and Forestry	<p>Ministry of Environment and Forestry (Kementerian Lingkungan Hidup dan Kehutanan):</p> <p>This government ministry in Indonesia is responsible for environmental protection, addressing climate change, and managing forests. It plays a crucial role in regulating battery recycling, being the nodal ministry for this purpose.</p>
Ministry of Home Affairs	<p>Overview:</p> <p>The Ministry of Home Affairs (Kementerian Dalam Negeri or Kemendagri) in Indonesia is a government agency responsible for overseeing domestic governance, local administration, and regional autonomy. Ministry plays a crucial role in formulating and implementing policies related to local governments, public services, and community development.</p> <p>As Ministry of Home Affairs Regulation (Permendagri) No 6/2023, Indonesian government has made the decision to grant exemptions on two local taxes, vehicle tax (PKB) and vehicle ownership transfer fee (BBNKB) for EVs</p>
Otoritas Jasa Keuangan	<p>Otoritas Jasa Keuangan (OJK) or Financial Services Authority (FSA):</p> <p>As the regulatory and supervisory authority for Indonesia's financial services, OJK oversees banking, securities, and non-bank financial institutions (NBFIs). It is pivotal in creating a conducive business climate for the financial services industry, supporting electric mobility. OJK achieves this by issuing policies that promote financing and investment in the electric mobility sector.</p>
Badan Standardisasi Nasional	<p>National Standardization Agency of Indonesia (Badan Standardisasi Nasional, BSN):</p> <p>BSN is a government agency responsible for standardization and quality assurance in Indonesia. Its role involves developing, promoting, and implementing national standards to improve the quality, safety, and competitiveness of products and services. BSN is a key stakeholder in the standardization of EV charging infrastructure, batteries, and related sectors, influencing the industry, trade, and public services.</p>
Indonesian Police (POLRI)	<p>Function:</p> <p>They assist in the administrative procedures related to vehicle documentation, facilitating, and overseeing processes such as registration, licensing, and other relevant paperwork.</p>
<b>Government Entities (Sub National)</b>	
Pemerintah Provinsi Bali	<p>The Bali Provincial Government is at the forefront of electric mobility development in Indonesia. Key initiatives and roles of various entities include:</p> <ul style="list-style-type: none"> <li>• Aims for 40% of all vehicles in Bali to be electric by 2030.</li> <li>• Providing financial incentives for electric vehicle purchases, including tax breaks and subsidies.</li> <li>• Investing in charging infrastructure development, including public stations and points at tourist sites.</li> <li>• Mandating electric vehicle use for government officials and tourism vehicles.</li> <li>• Promoting electric vehicles through public awareness campaigns and educational programs.</li> </ul>

Dinas Perhubungan Provinsi Bali	<p>Bali Province Transportation Agency:</p> <ul style="list-style-type: none"> <li>• Crucial in developing and implementing transportation-related rules and policies.</li> <li>• Involved in launching the Sustainable Mobility Advancing Real Transformation (SMART@Ubud) project.</li> </ul>
Office of Governor of Bali	<p>Governor's Office:</p> <ul style="list-style-type: none"> <li>• Plays a pivotal role in policy implementation and oversight related to e-mobility.</li> <li>• Responsible for strategic decisions and supporting other departments in e-mobility initiatives.</li> </ul>
Badan Perencanaan Pembangunan Daerah (Bappeda) Provinsi Bali	<p>Badan Perencanaan Pembangunan Daerah (Bappeda) Provinsi Bali:</p> <ul style="list-style-type: none"> <li>• Regional development planning agency in Bali.</li> <li>• Implements supporting functions for provincial government affairs in planning.</li> <li>• Involved in drafting the Bali Regional Medium-Term Development Plan (RPJPD) and coordinating Sustainable Development Goals (SDGs) implementation.</li> </ul>
Dinas Ketenagakerjaan dan Energi Sumber Daya Mineral	<p>Dinas Ketenagakerjaan dan Energi Sumber Daya Mineral:</p> <ul style="list-style-type: none"> <li>• Assists the Governor in labor, energy, and mineral resources sectors.</li> <li>• Formulates technical policies in these areas.</li> </ul>
Dinas Pekerjaan Umum, Penataan Ruang, Perumahan & Kawasan Pemukiman	<p>Dinas Pekerjaan Umum, Penataan Ruang, Perumahan &amp; Kawasan Pemukiman:</p> <ul style="list-style-type: none"> <li>• Assists the Governor in public works, spatial planning, public housing, and settlement areas.</li> <li>• Develops technical policies in these fields.</li> <li>• They also have a role to play in the mapping of EV Charging stations &amp; the acquisition of land for these charging stations</li> </ul>
Municipal Corporations of Denpasar and other governments in Sarbagita Metropolitan Area	<p>Municipal Corporations:</p> <ul style="list-style-type: none"> <li>• Play a vital role in promoting e-mobility in cities.</li> <li>• Develop and implement e-mobility supportive policies.</li> <li>• Work with public transportation operators for electric fleet transition.</li> <li>• Raise public awareness about e-mobility benefits.</li> <li>• Collaborate with other municipal corporations and government agencies to promote e-mobility.</li> </ul>
<b>Related Entities</b>	
Perusahaan Listrik Negara	<p>PLN (Perusahaan Listrik Negara):</p> <p>Indonesia's state-owned electricity company, responsible for ensuring electricity availability and distribution to support the country's growing population and economy. PLN generates electricity using thermal power plants (coal, natural gas, oil), hydroelectric plants, geothermal power plants, and renewable sources (solar, wind).</p> <p>It aims to diversify its energy sources for sustainability and is a key player in installing public charging infrastructure for EVs. Understanding PLN's electricity grid distribution is crucial for strategizing EV charging infrastructure.</p>

Indonesia Tourism Development Corporation	A state-owned enterprise initially tasked with developing the Nusa Dua tourism complex in Bali. ITDC has since been assigned to develop The Mandalika along the southern coastline of Lombok’s neighboring island.
<p>Bus Operators</p> <ul style="list-style-type: none"> <li>• Trans Sarbagita</li> <li>• Trans Metro Dewata</li> <li>• Kura-Kura Bus</li> <li>• Teman Bus</li> </ul>	<p><b>Trans Sarbagita:</b> A Bus Rapid Transit (BRT) system operating in the Denpasar metropolitan area, Bali, since 2011. It serves Denpasar, Badung Regency, Tabanan Regency, and Gianyar Regency, aiming to rebuild Bali’s public transport system.</p> <p><b>Trans Metro Dewata:</b> An integrated BRT system operating in Bali since 2020, primarily in Denpasar, Badung, Gianyar, and Tabanan. It is a program by the Ministry of Transportation, operated by PT Satria Trans Jaya, and fully subsidized by the central government.</p> <p><b>Kura-Kura Bus:</b> A shuttle bus service primarily in southern Bali, providing affordable transportation for tourists and residents. It covers popular tourist areas and operates on scheduled routes.</p> <p><b>Teman Bus:</b> A reliable and comfortable transportation service implemented by the Ministry of Transportation as part of the “Buy the Service” program for urban road-based public transport development. Operating in 10 cities, including Bali, it uses telematics technology and is cashless.</p> <p>Understanding the willingness of operators to switch to electric buses is key for shaping policy recommendations. It is also beneficial to comprehend the factors they consider when deciding to shift to EVs.</p>
Indonesia Battery Corporation (IBC)	<ul style="list-style-type: none"> <li>• The Indonesia Battery Corporation (IBC) is an initiative by the Indonesian government aimed at positioning Indonesia as a key global producer of electric vehicle (EV) batteries.</li> <li>• IBC is a collaborative effort involving four major state-owned companies: PLN (electric utility), Pertamina (oil and gas), Aneka Tambang (nickel mining), and Inalum (a holding company for the national mining industry).</li> <li>• As a subsidiary of MIND ID, PLN, Pertamina, and Antam, IBC’s primary role is to develop EV batteries, thereby supporting the independence of national automotive manufacturers.</li> <li>• Furthering its objectives, IBC has entered into a framework agreement with CATL Group, China’s largest battery manufacturer, through its subsidiary Ningbo Contemporary Brupn Lygent Co (CBL).</li> </ul> <p>This partnership encompasses the entire spectrum of the battery production process, from nickel mining and processing to EV battery manufacturing and recycling.</p>
<b>Industrial Bodies</b>	
Gaikindo	<p>Gaikindo (The Association of Indonesia Automotive Industries):</p> <ul style="list-style-type: none"> <li>• Gaikindo, established in 1969, is a non-profit organization comprising brand-holder agents, producers, distributors, and manufacturers in Indonesia’s automotive industry.</li> <li>• The association facilitates its members’ interests concerning government policies related to the automotive sector, including areas like industry and trade, energy, tax, safety standards, the use of technology, and environmental concerns.</li> </ul>

### 3.5.2 Development Partners (Development Finance Institutions)

Several projects supported by Development Finance Institutions (DFIs) play a crucial role in advancing the Electric Vehicle (EV) market in Indonesia. These projects offer financial and technical assistance for various aspects, including the development of charging infrastructure, the acquisition of electric vehicles, and the promotion of EVs among consumers and businesses. It is anticipated that these initiatives will significantly boost EV sales in Indonesia in the upcoming years.

The initiatives taken by the World Bank, Asian Development Bank (ADB), Millennium Challenge Corporation (MCC), and United Nations Development Programme (UNDP) in Indonesia for the Electric Vehicle (EV) sector are as follows:

**Table 13-** Summary of DFI's & their Role in the EV Ecosystem in Indonesia

Development Finance Institutions	Programmatic Interventions
World Bank	<p><b>MASTRAN Project:</b> Approved on May 20, 2022, with a \$224 million fund to enhance urban mobility in Medan and Bandung. The project aims to improve transportation efficiency, reduce travel times, increase ridership, and promote the employment of women in Bus Rapid Transit (BRT) system operations. It also supports the development of agencies for mass transit systems and aims for the eventual electrification of the BRT fleet.</p> <p><b>Study on EV Space:</b> Conducted a study titled “National Workshop on Accelerating Battery Electric Vehicles” to understand gaps and opportunities in Indonesia’s EV sector.</p>
Asian Development Bank (ADB)	<p><b>Technical Assistance (TA) to Indonesia:</b> In October 2020, provided TA for the development of a roadmap, feasibility study, and regulatory frameworks for electric charging infrastructure. This also included suggestions for electricity tariff structures and policy initiatives for electric transport.</p> <p><b>Study on Electric 2-Wheeler Infrastructure:</b> In October 2022, published a study outlining the roadmap for electric 2-wheeler charging infrastructure in Indonesia.</p>

<p>Millennium Challenge Corporation (MCC)</p>	<p>The Millennium Challenge Corporation (MCC), established by the U.S. Congress in 2004 with bipartisan support, collaborates with the world's poorest nations committed to just governance, economic freedom, and investing in their populations. Prioritizing countries with strong governance practices, MCC encourages reform from the outset. Through time-limited grants, it fosters economic growth, poverty reduction, and institutional strengthening, positively impacting nearly 270 million individuals in 46 countries across five continents. MCC's contributions align with American interests, promoting stability and prosperity in partner countries. With a cost-effective, transparent approach and evidence-based methodology, MCC ensures prudent allocation of American taxpayer dollars to countries sharing common values.</p> <p><b>Advancing Transport and Logistics Accessibility Services Project (ATLAS):</b></p> <p>A five-year initiative funded by the Millennium Challenge Corporation, ATLAS aims to enhance Indonesia's transportation and logistics sector's efficiency and competitiveness. It includes e-mobility components like charging infrastructure development, electric bus purchases, and promoting EVs in the private sector.</p> <p>Signed on April 13, 2023, this \$649 million grant aims to address financial impediments to economic growth in Indonesia. It focuses on enhancing infrastructure financing, especially in transport and logistics, and expanding access to finance for MSMEs.</p> <p><b>E-BRT Bali:</b></p> <p>This initiative aims to enhance public transport connectivity in Bali by conducting feasibility assessments, developing business cases, and creating preliminary infrastructure designs for two key electric bus mass transit corridors. The project aligns with the Sarbagita Sustainable Urban Mobility Plan (SUMP) and the Bali Electric Vehicle Regional Action Plan, with the goal of improving mobility for residents in Bali.</p>
<p>United Nations Development Program (UNDP)</p>	<p><b>Transition to Electric Vehicles (ENTREV) Project</b></p> <p>Funded by the Global Environment Facility (GEF) and implemented by the UNDP, this five-year project focuses on accelerating Indonesia's transition to electric vehicles.</p> <p>Under the Global Environment Facility (GEF), this project aims to support the implementation of EV charging stations, develop the EV industry, demonstrate EV implementation in Jakarta and Bali, and exchange knowledge and strengthen technical capacity of institutions.</p> <p>It focuses on planning, technical standards, business models, regulations, and awareness-raising initiatives for the transition to electric vehicles.</p>

Indonesia Australia Partnership for Infrastructure (KIAT)	<p>The Indonesia Australia Partnership for Infrastructure (KIAT) is a ten-year initiative aimed at assisting the Government of Indonesia in achieving sustainable and inclusive growth by enhancing access to high-quality infrastructure for all citizens. KIAT is dedicated to offering technical support and advisory services to enhance infrastructure policy, planning, and implementation in alignment with mutually agreed-upon priorities.</p> <ul style="list-style-type: none"> <li>• A collaboration between Indonesia and Australia, KIAT supports infrastructure development in Indonesia. It has funded projects related to e-mobility, including charging infrastructure development and electric bus purchases.</li> <li>• Ulan e-mobility plan- Supported by the Australian Government and MCC, this plan is part of the Sarbagita Sustainable Urban Mobility Plan and Bali Electric Vehicle Regional Action Plan. It includes masterplans and pre-feasibility assessments for transport and pedestrian mobility improvements in Ubud.</li> </ul>
Indonesia-Australia Comprehensive Economic Partnership Agreement	<p><b>Economic Cooperation Program (IA-CEPA ECP) Katalis</b></p> <p>Funded by the Australian Government, this five-year program, implemented jointly by Indonesia and Australia, focuses on economic development in Indonesia, including promoting clean energy &amp; e-mobility.</p>
GIZ - Green Infrastructure Initiative (GII):	<p>A joint effort between Indonesia and Germany, part of the Indonesian-German climate initiative.</p> <p>It includes a five-year financial cooperation facility providing up to EUR 2.5 billion for environmental or climate-relevant infrastructure projects, promoting green infrastructure in solid waste management, water and wastewater management, and urban public transport.</p>
Toyota Mobility Foundation support to SMART @Ubud	<p>A collaboration with the Bali Provincial Government, this program involves a 6-month eco-system trial, funded by Toyota Mobility Foundation, to test two mobility solutions in Ubud, Bali. These include an on-demand xEV shuttle service and the installation of digital display monitors for real-time bus schedules at bus stops.</p>
World Resource Institute (WRI)	<p><b>TUMI E-bus mission:</b></p> <p>WRI is assisting in implementing the TUMI E-bus mission in Indonesia. The objective of the TUMI E-Bus Mission is to facilitate the adoption of more than 100,000 e-buses, which will result in an estimated reduction of more than 15 megatons of CO<sub>2</sub> over the useful lives of the vehicles. The ecosystem developed by the TUMI E-Bus Mission may also aid future types of transport electrification.</p> <p><b>Workshop:</b></p> <p>The “Indonesia E-Bus Roadmap and Financing Strategy Workshop” was held by WRI Indonesia in collaboration with ICLEI Indonesia and other TUMI partners in Jakarta in October 2022. The workshop explored how the policy, financing, and market support can play role as key enablers to accelerate the transition of e-buses in the country.</p>

## Financial Institutions

The high financing costs have been a significant barrier to EV adoption, with EV interest rates traditionally higher at 29% per annum compared to 21% for ICE vehicles<sup>23</sup>, largely due to uncertainties in after-sales service and the EV used car market.

23 AC Ventures, Indonesia’s Electric Vehicle Outlook, July 2023 (page 40), [Ref](#)

However, recent government initiatives and support from the Financial Services Authority (OJK), along with corporate incentives and the Himbara initiative focusing on EVs, have improved financing affordability. Some finance companies now offer rates as low as 27% per annum for one-year loans.

EV financing in Indonesia, which was between IDR 600 billion to IDR 700 billion from 2020 to 2022, is projected to increase 2-3 times in 2023. Additionally, multiple financing institutions are now offering a variety of EV financing schemes.

**Table 14- Summary of FI's & their Initiatives for the Promotion of EV's in Indonesia**

Banks	Initiatives for EV financing
Bank Indonesia	<b>EV Initiatives:</b> Bank of Indonesia Regulation (PBI) No. 22/13/PBI/2020 on Second Amendment to PBI No. 20/8/2018 on LTV Ratio for Property Credit, FTV Ration for Property Financing and Down Payment for Motor Vehicle Credit or Payment allows financial institutions to give 0% down payment for BEV.
Bank of Central Asia	<b>EV Initiatives:</b> PT Bank Central Asia (BCA) has extended financing for battery-based electric motor vehicles, reaching IDR 327 billion by March 2023, marking an impressive 19-fold year-on-year increase.
Bank Mandiri	<b>Partnership with Volta:</b> Bank Mandiri partnered with Volta, a local electric vehicle manufacturer. Customers can purchase Volta's electric motorcycles through Bank Mandiri's super app, Livin'. This initiative supports Indonesia's net-zero emissions target by 2060. It includes integrating Volta's rental program to promote EV adoption in Indonesia.
Bank BNI	<p><b>Special Financing Scheme:</b> BNI has introduced a special financing scheme to support the ownership of EVs, aligning with Indonesia's goal for net-zero emissions by 2060. This scheme is part of the government's incentives for new electric motorbike purchases.</p> <p><b>Collaboration with State-Owned Banks:</b> BNI, in collaboration with other state-owned banks, is committed to supporting financing that aligns with renewable energy use. Existing BNI customers can already access a special financing program for EV ownership.</p>
Bank BRI	<p>Bank Rakyat Indonesia (BRI) is one of the largest state-owned banks in Indonesia, and it is focused on serving the micro, small, and medium-sized enterprises (MSMEs) sector.</p> <p><b>Mission:</b></p> <p>The bank's primary mission is to support the development of the micro, small, and medium-sized enterprises, as well as to contribute to poverty alleviation.</p> <p><b>Focus on MSMEs:</b></p> <p>BRI is known for its strong commitment to serving the MSME sector, providing financial services tailored to the needs of small businesses and entrepreneurs.</p>

Banks	Initiatives for EV financing
Bank Pembangunan Daerah Bali	<p>BPD Bali is categorized as a regional development bank, indicating its focus on supporting local economic development in the Bali region.</p> <p><b>Ownership and Operations:</b></p> <p>It is owned by the provincial government of Bali and operates primarily within the Bali province, providing financial services to individuals, businesses, and local government entities.</p> <p><b>Financial Services:</b></p> <p>BPD Bali offers a range of banking services, including savings and current accounts, loans, credit facilities, and other financial products tailored to the needs of the local community.</p> <p><b>Local Economic Development:</b></p> <p>The bank plays a crucial role in supporting local economic development by providing financial assistance and services to businesses, entrepreneurs, and various economic sectors within Bali.</p>



Photo Credit: Putu Rani Hapsari

## 4. MARKET ENABLERS AND BARRIERS

The market assessment for Indonesia's EV sector is essential for comprehending and addressing the unique challenges and opportunities in this field. Central to this assessment is the identification of barriers and gaps that impede the widespread adoption of electric vehicles. Engaging a diverse range of stakeholders is critical to this endeavor. This involves consultations with policymakers, government departments, technology providers, multilateral and bilateral financing institutions, international investors, and industry representatives.

Such comprehensive interactions are key to identifying policy and regulatory gaps, as well as uncovering market enablers that could accelerate EV adoption. These enablers encompass a range of factors, from government mandates aimed at achieving net-zero targets and supporting the manufacturing ecosystem, to technological advancements, increased consumer awareness, and available incentives.

Conversely, market barriers, encompassing both financial and market-related challenges, will be rigorously assessed. These include the high initial costs of EVs, the scarcity of charging infrastructure, market readiness, supplier availability, and financing constraints. Moreover, conducting a need-gap assessment is crucial for pinpointing existing market voids and uncovering potential opportunities within the EV segment.

The goal of this market assessment is to provide a clear and comprehensive picture of Indonesia's EV sector, highlighting the drivers of growth and identifying the hurdles that must be surmounted. This holistic approach aims to guide strategic planning and policymaking, ensuring the robust development of the electric vehicle ecosystem in Indonesia.

### 4.1 Market Enablers

The adoption of Electric Vehicles (EVs) in Indonesia is being facilitated by a range of market enablers that create an ecosystem conducive to their integration into the transportation sector. These enablers address

various aspects, from environmental goals to economic and manufacturing strategies. Here's a detailed look at each of these enablers:

### 4.1.1 Government Policies and Incentives

The Indonesian government's commitment to reducing carbon emissions plays a vital role in fostering the adoption of Electric Vehicles (EVs). To support this initiative, the government has implemented several policies:

1. Financial Incentives for EV Investment:
  - a. Companies investing in the EV sector are encouraged through significant tax incentives. Investments of IDR 10 trillion or more receive a five-year corporate income tax holiday, while smaller investments qualify for mini-tax holidays. This is provided by the Ministry of Finance.<sup>24</sup>
  - b. Regulations to boost local production: There are regulations in place to stimulate the local EV industry, including a requirement for EVs to have a minimum of 40% local components by 2023.
  - c. Tax Deductions for R&D and Innovation: Companies can deduct up to 300% of expenses incurred in research and development, technological innovation, and industrial vocation activities.
2. Incentives for EV Owners:
  - a. A subsidy of IDR 7 million (~US\$453) for two-wheeler (2W) EV purchases.
  - b. Electric buses / E4Ws receive a 10% VAT tax deduction with a minimum TKDN (domestic component) of 40%, with a graduated scale of incentives based on TKDN levels.
  - c. Exemption on luxury taxes, vehicle transfer fees and circulation taxes.

These policies and incentives are designed to accelerate EV adoption, reduce emissions, and cultivate a robust local EV manufacturing ecosystem.

### 4.1.2 Financial Accessibility

Enhancing the financial accessibility of Electric Vehicles (EVs) through appealing financing options and reducing counterparty risks is crucial for boosting their adoption. The Financial Services Authority (OJK) has expressed strong support for the government's initiative to accelerate the battery-based electric vehicle (KBLBB) industry. In line with this, OJK has implemented several measures:

#### **Ref: OJK (Otoritas Jasa Keuangan) Year- 2022**

- Relaxation of Financial Regulations: Lowering the credit risk weight (ATMR) from 75% to 50% for EVs
- Discounts on Green Bond Registration: For funding related to EVs, reducing them to 25% of the original
- Allows the purchase of EVs on credit without a down payment (0%)

These initiatives by OJK have lowered the financial barriers to EV ownership, making them a more viable option for a broader range of consumers. These market enablers collectively create a supportive environment for the EV sector in Indonesia, addressing key issues like financial accessibility.

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24 <https://www.aseanbriefing.com/news/indonesia-market-prospects-for-electric-vehicles-sales-manufacturing-investments/>

### 4.1.3 Leveraging Abundant Nickel Reserves for Battery Manufacturing

Indonesia's substantial nickel reserves give it a strategic advantage in starting local production of cell and battery components, potentially making electric vehicles (EVs) more affordable. With significant local demand and the possibility of exporting, Indonesia is well-positioned to become a leading EV battery OEM by 2027.

The increasing stock of batteries and expanding use cases pave the way for the development of a robust battery recycling industry, which could further reduce the costs of battery electric vehicles (BEVs). Currently, Indonesia is enhancing its infrastructure across the EV supply chain.

**Indonesian government is investing significantly in battery production sector**, with a US\$5 billion investment to construct a battery factory supported by CATL and a US\$9 billion investment by a consortium led by LG Energy for an integrated battery project. These moves highlight Indonesia's growing focus on battery production.

Furthermore, the Indonesian Battery Corporation, a joint venture between Pertamina, PLN, MIND ID, and Antam, aims to enhance both the upstream and downstream sectors of the country's battery industry.

These strategic investments position Indonesia to become a major player in the global battery market, with an expectation to surpass China in nickel processing by 2025, and to bolster the local emerging EV industry.

### 4.1.4 Promoting Local EV Manufacturing

Indonesia is actively promoting local EV manufacturing to reduce costs and strengthen the supply chain. The government is incentivizing this through financial benefits, including a five-year corporate income tax holiday for investments of IDR 10 trillion (~US\$647 million) or more, and mini-tax holidays for smaller investments.

Additionally, regulations mandate a minimum of 40% local components in EVs by 2023. The rise in electric two-wheelers and four-wheelers, supported by both local and international manufacturers, is a testament to these efforts.

**E2W Market-** Two-wheeler (E2W) market in Indonesia is predominantly dominated by domestic companies such as Gesits Motors, Viar Motor Indonesia, and SELIS, which together account for 65%-70% of the market share. In addition to these companies, local startups like Volta Indonesia, Ilectra Motor Group, and Charged Indonesia have also introduced various EV models.

A significant portion of E2W sales in Indonesia is aimed at businesses, with Grab Indonesia playing a crucial role in promoting the production and development of E2Ws in the country.

**E4W Market-** In the four-wheeler (E4W) segment, Chinese OEMs like Wuling Motors, Chery Automobile and SAIC-MG began their foray into the Indonesian market with EV launches in 2022.

Indonesia is leveraging joint ventures (JVs) as a strategy to boost the supply of EVs. Collaborative efforts have led to the establishment of partnerships and joint ventures aimed at developing EV components and enhancing manufacturing capabilities. PT Solo Manufaktur Kreasi (Esemka), an Indonesian company, is actively seeking international partnerships to develop EV platforms.

Additionally, significant investments in local manufacturing by global companies like Hyundai and Tesla are a direct response to the incentives offered to manufacturers, demonstrating the country's commitment to expanding its EV industry.

## 4.1.5 Expansion of Charging/Swapping Infrastructure

There is a significant ongoing effort to develop charging and swapping infrastructure for EVs in Indonesia, which is crucial for reducing range anxiety and making EV ownership and operation more feasible.

**Expansion Plans:** The state electricity company PLN, as the primary provider of EV charging, plans to significantly expand its network by installing 22,000 public chargers by 2030 up from 850 in 2023.

**Collaboration with Private Sector:** Additionally, there is a growing presence of battery swapping and charging infrastructure, with major local companies like Astra Group, PT Starvo Global Energi, and Swap Energi leading these initiatives. Oil and gas companies such as Shell, Pertamina, and MedcoEnergi have also ventured into the battery swapping market, albeit with limited presence so far.

## 4.2 Market Barriers

### 4.2.1 Vehicle Affordability

The adoption of Electric Vehicles (EVs) in Indonesia is significantly hampered by their high upfront costs compared to Internal Combustion Engine Vehicles (ICEVs). This price disparity is a major deterrent for potential buyers, particularly in a market like Indonesia where cost sensitivity is a critical factor in vehicle purchase decisions.

**Import Dependency and Local Production Challenges:** A major contributing factor to the higher prices of EVs in Indonesia is the reliance on imported vehicles. Import tariffs and additional logistics costs inflate the prices of these vehicles. Moreover, the local production of EVs is still at a sub-scale level, leading to higher production costs that are inevitably passed on to the consumers.

All major automotive economies have their own OEMs, which provides them with strategic advantages. India, for instance, boasts several local OEMs, including Tata and Mahindra. While Indonesia is home to e2W OEMs such as Viar and Gesits, it lacks a local E4W OEM. Consequently, most EVs available in the Indonesian market are imported, rendering them more expensive and less attractive to potential buyers.

**Conversion Program Challenges:** The motorcycle conversion program aimed to reduce upfront costs and increase market flexibility but registered only 194 conversions by the end of 2023, well below the 1000 unit's target. High conversion costs and short warranties hindered the uptake of the vehicle conversion market.

Price Comparison between EVs and ICEVs

- Two-Wheelers (E2W): Most electric two-wheelers are priced above IDR 25 million, whereas the majority of ICE motorcycles in Indonesia are sold for less than IDR 20 million.
- Four-Wheelers (E4W): The price gap is more pronounced for electric four-wheelers, with most models costing over IDR 600 million, in stark contrast to ICE four-wheelers, where the majority are priced below IDR 300 million.

For an electric four-wheeler to be considered affordable and attractive to consumers, it should ideally be priced at about 1.2–1.4 times higher than its ICE counterpart. The introduction of a new E4W model in the IDR 200–300 million range in 2022, which garnered significant interest, highlights the price sensitivity of consumers.

A comparison of specific models illustrates the price disparities between EVs and ICE vehicles:

**Table 15- Summary of Price Comparison of ICE & EV's in Indonesia**

ICE Vehicle	Price (IDR Million)	EV Vehicle	Price (IDR Million)	EV / ICE Ratio
4W Honda CRV	460.7	Hyundai Ioniq 5	785	1.71
4W Honda HRV	382.9	Hyundai Kona	706	1.84
2W Yamaha Mio	17.1	Selis E-max	22	1.28
2W Honda Vario	22.2	Gestis G1	28.9	1.30
2W Honda PCX	32.1	Alva One	34.9	1.08

### Subsidy Limitations

While Indonesia offers subsidies for both electric two-wheelers and four-wheelers, these incentives have limited impact due to their marginal coverage. Moreover, the subsidies are restricted to models meeting a 40% local content requirement, further reducing their efficacy in lowering the upfront costs for a broader range of EVs.

The initial acquisition cost is a key factor in vehicle purchasing decisions. The significant price difference between EVs and ICE vehicles limits the adoption of EVs, especially among Business-to-Consumer (B2C) segments. Consumers often prioritize upfront cost over the entire lifecycle cost, making EVs less attractive despite their potential long-term economic benefits.

### 4.2.2 Limited Model Availability

The Electric Vehicle (EV) market in Indonesia faces a significant challenge due to the limited variety of models available. This shortage in model diversity restricts consumer choice, which is a critical factor in the decision-making process for potential EV buyers. This lack of diversity in EV options can significantly impact consumer choice, deterring potential buyers who seek specific features or styles that align with their needs.

#### Limited Availability of EV Models

As it stands, the Indonesian EV market offers very few E2W & E4W models as compared to available models for ICE vehicles. Such a limited selection is not only indicative of the nascent stage of the EV market in Indonesia but also highlights a significant gap in meeting the varied demands of the Indonesian population.

The available EV models primarily consist of small, urban cars. While these vehicles may be suitable for city driving, they do not cater to all segments of the market. For instance, they may not meet the needs of families requiring more spacious vehicles or individuals looking for different vehicle types such as SUVs or trucks.

#### Limited Coverage of Subsidy

Adding to the complexity is the Indonesian government's tax exemption/ subsidy policy, which currently benefits only two E4W models: the Wuling Air EV and the Hyundai IONIQ 5. This subsidy of 7 million IDR on E2W is also contingent on the EV models meeting a 40% local content requirement. This stipulation, while aimed at boosting local manufacturing, inadvertently limits the range of models that can benefit from government support. Consequently, it affects the overall attractiveness of EVs for both consumers and manufacturers.

The combination of these factors has led to a slow pace in the introduction of new EV models by incumbent automotive players. The stringent subsidy criteria, coupled with a market that is still evolving, has possibly deterred manufacturers from rapidly expanding their EV portfolios in Indonesia.

### 4.2.3 Inadequate Charging Infrastructure

The expansion and adequacy of charging infrastructure are pivotal for the widespread adoption of electric vehicles (EVs) in Indonesia. One of the primary concerns for potential EV buyers is range anxiety, the fear of running out of power without access to a charging station. This concern is underscored by recent surveys, which found that 2/3<sup>rd</sup> of respondents identified the lack of sufficient charging infrastructure as a major barrier to EV adoption.

**Lack of Focus on Charging point Operators:** There's no specific direct incentive/ subsidies for EV charging station operators, which may slow initial expansion. Lack of CAPEX Subsidy & land allocation by the government also poses challenges to the CPO's & manufacturers.

#### Government's Divided Focus

The Indonesian government's approach has been divided between developing charging infrastructure for four-wheeled electric vehicles (e4W) and promoting battery-swapping stations for two-wheeled electric vehicles (e2W). This dual strategy, while addressing different aspects of the EV ecosystem, may have diluted the focus and resources necessary for the rapid development of a comprehensive charging infrastructure.

#### Market Dynamics and PLN's Role

PLN, as Indonesia's primary energy provider, has a crucial role in the EV charging market. The company holds the authority to set fixed prices for EV charging, which can create a challenging environment for new entrants in the charging business. This power to dictate prices could potentially limit the market share of new players, making it difficult for them to compete.

#### Tariff Regulations

Ministry of Energy and Mineral Resources introduced a draft of new incentives in February 2023 to foster a more open and competitive market for EV charging stations. This move is aimed at making EV charging more affordable for consumers. These incentives include a regulatory cap on charging rates at IDR2,466 per kW<sup>25</sup>. However, the cost charged by PLN is around IDR1,600, leaving a small margin for charging station operators.

Hence, there remains a concern that PLN, with its established position as an energy provider, could adjust its prices to maintain market competitiveness. This ability to potentially lower prices to match or undercut new entrants could continue to pose a challenge for the growth of a competitive EV charging market in Indonesia.

### 4.2.4 Financial Barriers in EV Adoption

The financing landscape for EVs in Indonesia is fraught with challenges, primarily due to the unique risk factors associated with EVs compared to ICEVs. These challenges impact both two-wheelers (E2W) and four-wheelers (E4W) and can be categorized into several key areas:

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25 Indonesia Business Post, September 2023, [Ref](#)

## 1. Technology Risk

- **Uncertainty in EV Performance:** FIs are hesitant due to insufficient data on EV performance in Indonesian context. Factors like range, asset life, maintenance requirements, and load capacity remain ambiguous.
- **Insurance Reluctance:** Insurers are cautious about covering EVs due to the perceived risks in both short-term and long-term usage.
- **Lack of Manufacturer Guarantees:** The absence of substantial guarantees or warranties from manufacturers further exacerbates the risk for FIs.

## 2. Policy Risk

- **Need for Stable Policies:** FIs seek stable and effective national policies to boost their confidence in lending to the EV sector.
- **Lack of Policy Clarity:** Unclear national and provincial policies and difficulties in accessing incentives contribute to an increased risk perception.
- **Geopolitical Risks:** Global EV supply chain vulnerabilities, especially in a post-COVID economy, add to the uncertainties.

## 3. Manufacturer Risk

- **Limited Proven OEMs:** Few EV Original Equipment Manufacturers (OEMs) are established and proven, with most lacking historical performance data.
- **Lending Formalities with New OEMs:** FIs often have not established formal lending procedures with newer OEMs.
- **Financial Stability of OEMs:** The high capital cost of EVs means OEMs may sell at low or negative margins, posing a risk to their financial stability.

## 4. Resale Risk

- **Lower Resale Value:** EVs suffer from reduced resale values due to an immature ecosystem and the absence of a structured secondary market.
- **Collateral Risk:** This poses a risk to financiers in case of borrower defaults, as the repossessed vehicle's lower value might not cover the outstanding loan.

## 5. Utilization Risk

EVs have high upfront costs but lower operating expenses, unlike ICE vehicles. For commercial operators, the feasibility of financing EVs is linked to the FIs' confidence in the projected cash flows, which is uncertain due to variable utilization levels.



## 5. GENDER ACTION PLAN

In Indonesia, the EV market is rapidly growing, yet women remain significantly underrepresented as both consumers and industry participants. Despite the rising popularity of EVs, the adoption rates among women are substantially lower than those among men. This disparity is influenced by cultural factors, societal norms, and economic conditions.

The automotive industry has traditionally been male dominated, with marketing and sales strategies often directed towards men. This trend is mirrored in EV adoption, where women are significantly less likely to be EV owners compared to men, reflecting a gender gap in technological adoption.

Such gender imbalances also extend to the EV manufacturing sector, with women underrepresented in both leadership and technical roles. These trends reflect the broader issue of gender gaps in technology adoption and participation within the automotive industry.

### 5.1 Gender-Based Challenges

Women face unique barriers in adopting EVs, such as higher financing costs, limited access to information tailored to their needs, and a male-dominated car industry. This lack of representation and tailored information could be contributing to lower adoption rates among women. There are several gender-based challenges that impede the adoption of electric vehicles among women:

- **Higher Financing Costs:** Women often face higher financing costs due to various socioeconomic factors such as disparities in income and credit access, which make the higher upfront costs of EVs more prohibitive.
- **Limited Access to Tailored Information:** The gap in knowledge stems from targeted marketing strategies that often overlook women and educational resources that do not address their specific concerns and needs.

- **Male-Dominated Industry:** The automotive industry, including the EV sector, is predominantly male. This gender imbalance can create an environment that feels less welcoming to women.
- **Safety and Security Concerns:** Women may have specific safety concerns regarding EV usage, particularly related to charging infrastructure such as location and safety of charging stations, especially at night.
- **Range Anxiety:** Concerns about the driving range of EVs and the availability of charging stations can be more pronounced among women, who might prioritize reliability and convenience in transportation.
- **Practicality and Family Needs:** Women, often primary caretakers in families, may require vehicles that meet specific practical needs. The perception that EVs might not cater to these needs could hinder adoption.
- **Technological Intimidation:** A lack of familiarity with the technical aspects of EVs can be a barrier. Women who feel less confident about understanding EV technology might be hesitant to make the switch.

Addressing these challenges requires a multi-faceted approach, including targeted financial schemes, inclusive marketing strategies, education and awareness campaigns focused on women.

**Transjakarta Case Study<sup>26</sup>:** Transjakarta is transitioning from ICE buses to electric buses with assistance from UK PACT and the Institute for Transportation and Development Policy (ITDP) in Indonesia, focusing on implementing best practices. A Gender Equality and Social Inclusion (GESI) assessment revealed significant gender disparity within Transjakarta’s workforce, where only 14% are female compared to a passenger base that is 77% female.

This has led to strategies aimed at attracting more female employees and enhancing services for women. Electrification efforts are focused on routes popular with female passengers, individuals with disabilities, and low-income groups, emphasizing fare equality with conventional buses. Additionally, Transjakarta is launching a campaign to increase the number of female drivers from the current 2% and is committed to equal job opportunities for women and people with disabilities, supported by revised policies on gender equality and social inclusion.

## 5.2 Implementing Targeted Interventions

The plan should include targeted financial schemes to make EVs more accessible to women, such as lower interest rates or flexible payment options. Additionally, awareness campaigns should specifically address women’s needs and concerns, helping demystify EV technology and its benefits. It’s also crucial to create a more inclusive EV ecosystem, with female-friendly design and marketing, and increasing women’s participation in the EV manufacturing sector.

In addition to that advocating for policies that address women’s unique barriers in owning and using EVs and building a community of women EV enthusiasts can foster a supportive network. This approach will encourage more women to consider transitioning to EVs.

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26 UK- Pact GESI considerations within e-mobility- [Ref](#)

- **Financial Accessibility:** In a country where credit access can be gender-biased, introducing financial schemes specifically for women, can be transformative. Implementing financial schemes that offer lower interest rates, subsidies, or flexible payment options can make EVs more accessible to women. These could include women-centric loans and financing programs. Collaborations with financial institutions and DFIs to develop women-friendly financing options can also be explored.

In India, under the World Bank-led EV risk-sharing program, women borrowers are provided with an interest subvention of 0.25%. Similarly, for risk-sharing facilities, women-led businesses will receive a 0.1% discount on risk guarantee fees for the risk-sharing facility.

- **Tailored Information and awareness:** Developing campaigns and informational resources that speak directly to Indonesian women, addressing their specific concerns (such as safety, affordability, and usability), can help bridge the knowledge gap. Utilizing local women ambassadors or influencers who are seen as role models can significantly impact the perception and desirability of EVs among women.
  - In India, the SIDBI-led EV program specifically targets women borrowers and fleet operators with female drivers to foster awareness and conduct workshops.
- **Women-Friendly EV Ecosystem:** Developing an EV ecosystem that caters to the needs of women, such as safe and accessible charging stations, can encourage adoption.
- **Support Women in EV Manufacturing:** Encouraging women's participation in the EV manufacturing sector through education, training programs, and policies promoting gender diversity in the workforce can create a more inclusive industry. Examples of successful Indonesian women in the automotive sector can be highlighted to inspire and encourage more women to enter this field.
- **Policy Advocacy:** Advocating for policies that specifically address the barriers faced by women in owning and using EVs. This could involve lobbying for changes in credit scoring systems, promoting gender-inclusive research and development, and ensuring representation of women's interests in policymaking.
  - Most developing countries have enhanced their MSME programs to support women-led MSMEs with extended incentives. These incentives could potentially be applied to EV loans as well.
- **Community Engagement:** Building a community of women EV enthusiasts and users can foster a supportive network, encouraging more women to consider and transition to EVs. This includes community-based programs that educate and empower women about the benefits of EVs and how they align with Indonesia's values of sustainability and innovation.

By addressing these challenges and implementing focused interventions, the adoption of EVs among women can be significantly increased, contributing to a more inclusive and sustainable transportation future. Incorporating these elements into a Gender Action Plan can significantly enhance the involvement of women in the EV sector, contributing to a more inclusive and sustainable transportation future.



## 6. CONCLUSION AND RECOMMENDATIONS

Based on the comprehensive assessments conducted, the report will propose incentives and recommend strategies to accelerate consumer uptake of EVs through financial incentives and subsidies. It will also suggest enabling regulations needed to support EV adoption and the deployment of charging infrastructure, as well as recommend policies to encourage the development of EV charging infrastructure and boost EV/battery manufacturing.

### 6.1 Policy Measures and Clear Directions for Promoting EV Adoption

This measure outlines several policy measures and clear directives aimed at promoting the adoption of electric vehicles (EVs).

Challenges Identified:

- 1. Lack of Cohesion:** There is a notable lack of alignment between national and provincial level EV penetration goals and action plans, resulting in fragmented efforts.
- 2. Uncoordinated Targets:** Each ministry has set separate EV targets without the existence of a central nodal agency to oversee and support the adoption of EVs comprehensively.
- 3. Insufficient Regulation for ICE Vehicles:** There is an absence of stricter norms for Internal Combustion Engine (ICE) vehicles and a lack of measures to disincentivize their use, which could otherwise encourage a switch to EVs.

## Recommendations

### Proposed Policy Alignments and Measures:

- 1. Policy Cohesion: It is suggested to establish uniform incentives or subsidies at both the national and provincial levels to streamline EV adoption.**

The discrepancy between national ambitions and provincial targets in Indonesia reflects a challenge in policy cohesion regarding EV adoption. At the national level, Indonesia has set forth ambitious goals, aiming for the sale of 2.5 million EVs and the production of over 7.7 million E2Ws by 2025. In contrast, specific targets set by Bali for 2026 seem modest in comparison, with aims to achieve the use of 140 thousand units of electric motorcycles, 5,719 units of electric cars, and 50 units of electric buses.

Furthermore, there appears to be a gap in regulatory support for EV infrastructure. The lack of a mandatory obligation for buildings to include EV charging stations and insufficient incentives or policies to promote the use of EVs within government fleets at the sub-regional level are notable omissions.

Addressing these challenges requires a more coordinated approach between national and local governments to align EV adoption targets and policies.

- 2. Centralized Planning: It is imperative to designate a central nodal agency responsible for setting EV targets and action plans, with execution responsibilities delegated to provincial ministries.**

While Presidential Decrees (Perpres) have delineated clear mandates for technical ministries—with the Ministry of Industry developing an EV roadmap and action plan, and Ministry of Transportation enacting technical regulations as outlined in earlier discussions—a central level agency is essential for coordinating these efforts. This would ensure collaborative actions support every facet of EV adoption comprehensively.

To foster a cohesive ecosystem for EVs, the establishment of a nodal agency comprising representatives from key departments, including the Ministry of Transportation, Ministry of Industry, Ministry of Energy and Mineral Resources, and PLN (the state electricity company), is recommended. Such an agency would ensure that government entities work in concert to streamline the adoption of EVs across various sectors.

Moreover, this agency would play a crucial role in mandating provincial-level EV targets, aligning them with national objectives. This alignment is crucial for the cumulative achievement of Indonesia's ambitions for EV adoption, ensuring a unified approach across all levels of government.

### Disincentives for ICE Vehicles:

- 1. Implementing No-Emission Zones in heritage sites, tourist areas, and airports would effectively ban ICE vehicles.** By establishing these zones, ICE vehicles would be prohibited from entering, thereby reducing air pollution and preserving the integrity of these sites. Airports, serving as gateways for national and international visitors, can also benefit from such policies by setting a precedent for environmental responsibility right from the point of entry.
- 2. Additionally, imposing duties or penalties on ICE vehicles** through fines based on emissions could discourage their use. This measure can serve as a significant disincentive for the use of more polluting vehicles, encouraging individuals and businesses alike to consider cleaner transportation options.

## Segment-Specific Targets and Action Plans:

1. **Segmented Targets:** Setting up specific EV penetration targets for each EV segment (E2W, E4W, e-buses) and for each business model or use case, such as retail buyers, fleet operators, BaaS providers.

By segmenting targets, policymakers can address the unique dynamics and adoption barriers of each sector, making the goals more achievable and relevant. This specificity allows for a more focused allocation of resources and incentives, ensuring that each segment receives the attention it requires to grow within the broader EV market.

2. **Customized Action Plans:** Developing separate action plans and incentives or subsidies for each segment, tailored to their existing adoption rates and challenges.

For example, higher subsidies might be offered for e-buses to encourage public transport operators to transition away from diesel, while tax breaks and rebates could be targeted at retail buyers of E2Ws and fleet operators to make these options more financially attractive. By customizing action plans, the strategy becomes more agile and responsive to the evolving needs of the market.

## 6.2 Streamline Demand Subsidies for Consumers

This measure addresses the necessity to reform demand subsidies for end consumers of electric vehicles (EVs) in Indonesia, highlighting current challenges and offering recommendations for a more effective subsidy framework.

### Challenges:

1. **Marginal Demand Subsidies:** In comparison to other developing nations, the demand subsidies for EVs buyers in Indonesia are relatively modest. A planned reduction of about IDR 75 million for E4Ws represents approximately a 10% discount, which is seen as insufficient given that prices still exceed IDR 750 million. This pricing strategy renders E4Ws unaffordable for a significant portion of the market, unlike other developed EV markets that typically offered price reductions of 15–25% in their initial years.
2. **Flat Subsidy for Electric Two-Wheelers (E2Ws):** E2Ws are currently eligible for a flat subsidy of IDR 7 million, irrespective of the vehicle's cost or specifications. Although this subsidy amount may suffice for E2Ws, it does not scale with the vehicle's price. Providing larger subsidies for higher-end EVs could bolster consumer confidence in EV performance.
3. **Pending Subsidies for E4Ws:** Proposals exist for direct subsidies to encourage the purchase of E4Ws, yet these incentives have not been implemented. The delay in rolling out these subsidies impedes the adoption of E4Ws.
4. **Minimum Local Content Requirement:** To qualify for subsidies, there is a stipulated minimum local content requirement of 40%. Currently, only 3-4 E4W models meet this criterion, and no e-buses satisfy the requirement. This stringent requirement limits the range of vehicles eligible for subsidies and may hinder the broader adoption of EVs in the market.

## Recommendations for Streamlining Demand Subsidies:

### 1. Focus on High-Specification E2Ws:

- Introduce a minimum battery capacity and kilometer range as the eligibility criteria for subsidies, encouraging the adoption of E2Ws that are more suited for extensive use, such as in ride-hailing services. Currently, most E2Ws have a range of 50-60 km per charge, which is insufficient for ride-hailing drivers' daily needs.

Table 16- Example of Low Range E2W's in Indonesia

Name of Manufacturer	Model	Range
Gesits	Gesits G1	50 Km
Gesits	Gesits Raya G	60 Km
PT Volta Indonesia	Volta 401 lite	60 Km

In India, to qualify for incentive scheme (FAME), an E2W model must have a minimum range of 80 km on a single charge and a top speed of at least 40 kmph.

### 2. Performance-Based Incentives:

- Link incentives directly to EV performance metrics such as battery capacity, offering subsidies on a per kWh basis, to encourage the adoption of high-performance EVs.

### 3. Front-Loading Subsidies for E4Ws:

- Implement time-sensitive subsidies designed to reduce the initial cost of E4Ws by 15-20%, with plans to decrease the subsidy amount gradually over time as EV costs naturally reduce.

### 4. Minimum Local Content Requirement:

- Enforce a minimum local content requirement, which currently stands at 40% to qualify for incentives, thereby supporting the domestic EV industry.
- Initially, provide subsidies in proportion to the local content percentage, with intentions to raise the minimum requirement over time, incentivizing OEMs to meet these standards.

Implementing these strategies could significantly enhance the effectiveness of Indonesia's EV incentive programs. This approach would align with global trends in EV subsidies and support the growth of a sustainable and technologically advanced EV ecosystem in Indonesia.

## 6.3 Prioritizing the B2B, Public Sector Segment for EV Adoption

The shift towards EVs in the B2B and public sector segments is an essential strategy for accelerating EV adoption. This approach has numerous advantages and sets the stage for a broader retail market engagement in the future.

## Challenges:

- 1. Governmental Directives:** Presidential Instruction No. 7/2022 mandates the use of EVs by government departments and ministries, yet the implementation details are not fully outlined.
- 2. B2B Sector:** Ride-hailing and logistics companies are ahead in EV adoption, with over 60% of all registered EVs being used in the B2B sector, indicating a trend but also a gap in personal consumer adoption.
- 3. Public Transportation Initiatives:** BRT (Bus Rapid Transit) agencies, like Trans Sarbagita and Trans Jakarta, have planned to transition public buses to EVs, which requires significant coordination and investment.

## Recommendations for Public Transportation:

### 1. Innovative Business Models:

- Implementing operational expenditure (Opex) models, such as the Gross Cost Contract used in India, can reduce the burden of capital expenditures (Capex).

A Gross Cost Contract for electric buses (e-buses) represents a distinct procurement approach utilized by public transport authorities or governments to contract operators for bus service provision. In this arrangement, the transport authority compensates the operator with a predetermined sum for service operation, as detailed in the contract (typically in IDR per kilometer), irrespective of the revenue accrued from ticket sales. This framework stands in contrast to a Net Cost Contract, wherein the bus operator assumes greater risk and potential reward associated with revenue variability.

*Presently, Trans Jakarta employs this model for its bus operations, effectively reducing the financial risk for operators.*

- E-buses should be mandated for public transport with the provision of Capex subsidies to stimulate initial adoption.
- Support these implementations with funding from public banks and government-backed risk guarantee funds.

### 2. BRT System Electrification:

- Focus on electrifying BRT systems, especially in key areas like Jakarta and Bali, by leveraging existing infrastructure.
- Provide the necessary infrastructure readiness and set conversion targets for agencies like Trans Sarbagita and Trans Jakarta.

## Recommendations for the B2B/Commercial Segment:

### 1. Mandated e-Fleet Conversion:

- While the government has mandated EVs for its departments, a detailed action plan with phased targets for implementation is necessary.
- Sectors with high vehicle utilization, such as ride-hailing and e-commerce fleets, should be mandated to transition to electric fleets.

### 2. Demand Aggregation:

- Establishing a central agency, backed by the government and funded through development banks, could aggregate EV demand to achieve economies of scale.
- PLN should establish a large-scale EV charging solution, including fast-charging stations at commercial hubs, to cater to the increased demand from the B2B sector.

The prioritization of the B2B and public sector segments in EV adoption is a strategic approach that leverages the unique advantages of these sectors. It creates a solid foundation for the EV market, catalyzing its expansion into the retail domain. By aligning government mandates, incentives, and the proactive stance of private businesses, a synergistic environment for EV growth is established, setting a sustainable path for the future of transportation.

## 6.4 Expanding the Scope of Incentives and Other Enablers for Charging Infrastructure

Indonesia's commitment to developing its EV charging infrastructure, including the installation of charging stations at various locations with capped tariffs and service fees, marks a significant step forward. However, to further accelerate this development, a broader range of incentives and strategic planning is essential, especially for charging equipment manufacturers and station operators.

### Challenges:

- **Regulatory Cap on Charging Rates:** A regulatory cap on EV charging rates is set at IDR 2,466 per kWh, which leaves minimal profit margins for Charging Point Operators (CPOs).
- **Lack of CAPEX Subsidy:** There is no provision of capital expenditure (CAPEX) subsidies for CPOs or manufacturers to establish charging stations.

In India, most provinces offer capital expenditure (capex) subsidies ranging from 15-25% for charging infrastructure. This includes subsidies for both the charging equipment and the necessary electrical infrastructure required to establish charging stations.

- **Absence of Standardization:** Indonesia currently lacks a policy for standardizing batteries, which hinders the adoption of battery swapping infrastructure.

- **Monopolistic Infrastructure Establishment:** PLN, the state electricity company, is tasked with establishing charging infrastructure, posing a barrier to the entry of private players.

## Recommendations:

- **Direct Incentives for Manufacturers & CPOs:** The government should offer incentives to charging equipment providers and operators.
  - Potential incentives include:
    - Upfront Capital expenditure (CAPEX) subsidies.
    - Concessional land allocations.
    - Tax exemptions with benefits of accelerated depreciation
    - Access to low-cost financing.
    - Subsidized electricity tariffs to charge point operators
- **Charging Infrastructure via PPP:**
  - Collaborate with ride-hailing companies to use their data for strategic charger location planning.
  - Install fast-charging stations along highways.
  - Encourage Public-Private Partnership (PPP) models for the deployment of charging infrastructure.
- **Standardization of Batteries for Swapping:**
  - Implement standardized battery sizes, shapes, and electrical specifications to facilitate the development of SPBKLU (battery swapping stations) and ensure interchangeability across different EV OEMs.
- **Charging Port and Smart Charging Standardization:**
  - Adopt the DC charging CCS2 standard for fast charging. Retain the GB/T type port for medium-level charging to unify the charging infrastructure.
  - Promote smart charging solutions with Vehicle-to-Everything (V2X) features and incentives for renewable energy-based EV charging stations.

## 6.5 Addressing Battery Wastes by Promoting Battery Recycling

As EVs gain popularity, one of the emerging environmental concerns is the management of EV battery waste. Efficiently addressing this issue is crucial to ensure sustainable practices in the EV industry. The first step involves the government enacting robust regulations specifically targeting EV battery waste.

### Challenges:

- **Management of EV Battery Waste:** Handling the disposal and recycling of EV batteries is a significant environmental issue that needs to be addressed.
- **Need for Specific Regulations:** There is a pressing requirement for stringent government regulations aimed at managing EV battery waste effectively.

### Recommendations:

- **Extended Producer Responsibility (EPR):**
  - Implement EPR mandates for battery Original Equipment Manufacturers (OEMs). These mandates would hold manufacturers responsible for the collection and recycling of batteries, fostering a national battery recycling framework.
  - *EPR is a policy approach under which manufacturers are given a significant responsibility – financial and/or physical – for the treatment or disposal of post-consumer products. Assigning such responsibility could incentivize manufacturers to design products with minimal environmental impacts and facilitate the development of more sustainable product life cycles.*
  - For battery OEMs, EPR mandates would specifically require these manufacturers to take on the responsibility for the end-of-life management of batteries. This includes the collection, recycling, and, where applicable, the safe disposal of batteries
- **Comprehensive Waste Handling Regulations:**
  - Regulations should encompass all facets of waste management, including the collection, transportation, and processing of battery waste. Establishing such regulations would also spur the creation of a new industry sector and job opportunities.
- **Regulations for Battery Reuse:**
  - The government should enforce policies that incentivize the repurposing of batteries for secondary applications. Enforced regulations should ensure that OEMs can recoup expenses from used batteries, which would also enhance financial institutions' confidence in the residual value of EVs.
- **Support for R&D in Battery Recycling:**
  - Invest in government-supported research and development to pioneer advanced battery recycling technologies. Encourage innovation that can reintroduce recycled materials back into the supply chain for new battery production, thereby supporting raw material sustainability.

Effectively addressing the challenge of EV battery waste requires a multi-faceted approach that includes government regulations, recycling, refurbishing, and responsible disposal practices. By promoting battery recycling and refurbishing, Indonesia can mitigate the environmental impact of EVs and foster a sustainable EV ecosystem.

## 6.6 Capacity Building, Training, Skilling and Testing Facilities

Accelerating the adoption of Electric Vehicles (EVs) is closely tied to changing customer behavior and increasing awareness. Despite the growing interest in EVs, there remains a significant knowledge gap regarding their safety, environmental benefits, and ease of charging.

In addition to that, servicing of EVs, with their unique components like batteries, Battery Management Systems (BMS), telematics systems, and remote diagnostics, differs markedly from traditional ICE vehicles. This shift calls for specialized training, certification centers, and testing agencies.

### Recommendations for Capacity Building, Training, Skilling, and Testing:

- **Awareness Creation on EVs:**
  - Implement nationwide campaigns to inform the public about the environmental advantages, cost savings, and the latest technology developments in EVs.
  - Host an Electric Mobility Expo to consolidate industry stakeholders, encouraging dialogue and partnerships.
- **National Training and Skill Centers:**
  - Establish a national training and certification program dedicated to equipping the workforce with the skills necessary for the evolving EV market, with a focus on areas like battery technology, electric vehicles, and EV charging solutions.
  - The government can assess the feasibility of using institutions like Politeknik and Sekolah Tinggi Transportasi Darat (Land Transport Academy), which are under the Ministry of Transportation's jurisdiction, as centers for learning and development with a focus on electric vehicles (EVs). These institutions, leveraging their existing infrastructure and educational mandates, could become critical platforms for advancing knowledge, skills, and innovations within the EV sector. To ensure students are well-prepared for the rapidly evolving EV industry, the curriculum must be meticulously developed to encompass essential topics such as EV technology, battery management systems, charging infrastructure, and maintenance.
  - Additionally, the possibility of enrolling Sekolah Menengah Kejuruan (SMK) or Vocational Schools as training and skill centers for EVs could markedly improve the vocational education landscape. This strategy would not only equip students with specialized skills that are becoming increasingly sought after but also ensure vocational training is in line with national objectives for energy sustainability and environmental conservation.

- **Specialized Certification Centers and Testing Agencies:**
  - Set up specialized certification centers and testing agencies, taking cues from international models such as the International Centre for Automotive Technology (ICAT) in India.
  - These entities would be instrumental in ensuring that EVs and their components meet safety and performance standards, providing necessary certifications.
- **Capacity Building within Government:**
  - Strengthen the capabilities within government departments and ministries related to key EV sectors: manufacturing, charging infrastructure, and battery technology.
  - Enhance capacity building initiatives through knowledge sharing, technical training programs, and hands-on pilot or demonstration projects to provide government officials with practical insights into the EV industry's functioning and needs.

As Indonesia transitions towards electric mobility, the importance of vehicle certification, after-sales service, and worker re-skilling becomes paramount. By initiating re-skilling programs, developing a national training and certification framework, and setting up specialized centers, Indonesia can ensure that its workforce is well-equipped to handle the unique demands of EV maintenance and service.

## 6.7 Improve Accessibility to Finance for the EV Ecosystem

Financing EVs presents more significant challenges compared to financing ICE vehicles. Addressing these financial barriers is crucial for accelerating EV adoption.

### Challenges:

- **Financing Difficulties:** Financing EVs is challenging due to high-interest rates, low loan-to-value ratios, and less favorable loan terms compared to traditional vehicles.
- **Higher Costs and Perceived Risks:** The disparity in financing conditions is partly due to the higher costs associated with EVs and the perceived risks by financial institutions (FIs), including concerns over technology, resale value, and battery performance.
- EV interest rates are traditionally higher at 29% per annum compared to 21% for ICE vehicles, largely due to uncertainties in after-sales service and the EV used car market.

### Recommendations:

- **Risk-Sharing Facilities:** Implement risk-sharing facilities supported by the government and multilateral banks to mitigate the risks associated with lending for EVs. Such facilities could provide incentives for FIs to offer loans for EVs under more favorable conditions.
- In India, to accelerate the adoption of electric vehicles (EVs) in the two-wheeler (E2W) and three-wheeler (E3W) segments, the World Bank is allocating USD 125 million towards a partial risk-sharing facility for participating financial institutions (FIs). This facility will cover second-loss positions from 3-13% and up to 75% of the default amount. The aim of the second-loss facility is to bolster the confidence of FIs.

- **Mandating Suitable Battery Warranties:**

Mandate OEMs to provide warranties for batteries and components that are in line with the tenors of EV loans. These warranties could help reduce the perceived risks for FIs.

Bankers perceive that the battery depreciates more rapidly than the vehicle itself, necessitating replacement during the vehicle's operational lifespan. Additionally, EVs are considered to be in a nascent stage of technology, which underscores the need to enhance the confidence of financial institutions (FIs). To address this, battery warranties should cover minimum cycles and kilometers that are commensurate with the vehicle's life expectancy, thereby aligning with the vehicle's operational duration.

- **EV as a Priority Sector Lending:**

Continue to promote EVs as a priority lending sector to banks, drawing on the success of programs like Himbara. The Association of State Banks (Himbara) has introduced a range of attractive schemes to encourage the adoption of EVs among customers. These initiatives include offering light credit options with a five-year tenor, competitive rates and tenors in comparison to conventional fossil fuel motorcycle loans, and special programs that feature competitive interest rates, ease and speed of processing.

Additionally, these programs offer benefits such as financing without a down payment, light installment plans, and flexible loan tenors, aimed at providing the best offers to support customers interested in EVs.

- **Promote Innovative Business Models:**

- Encourage demand aggregation, particularly through fleet operators, to achieve economies of scale and assured utilization, which can be more attractive to FIs.
- Support innovative financing models, such as separating the battery's cost from the vehicle (battery-as-a-service), which can help create a secondary market for EVs and enhance their resale value.

Improving the accessibility of finance for the EV ecosystem is a multifaceted challenge that requires coordinated efforts across subsidies, warranty mandates, innovative financing programs, risk-sharing mechanisms, and strategic partnerships. By addressing these areas, Indonesia can create a more conducive financial environment for EV adoption, reducing the economic barriers and encouraging a swifter transition to electric mobility.

## 6.8 Prioritize Local Production Targeting New OEMs:

Indonesia's automotive sector, traditionally reliant on Japanese OEMs like Toyota, Daihatsu, and Honda, has a strong focus on alternate powertrains including biofuel, hybrid, and hydrogen fuel. Hence, there's an imperative need for Indonesia to broaden its scope and include OEMs and startups from various countries. This diversification is crucial for accelerating EV production and adoption within the country.

### Challenges:

- The Indonesian automotive sector's reliance on Japanese and Chinese Original Equipment

Manufacturers (OEMs) underscores the critical need for Indonesia to prioritize local production of electric vehicles (EVs).

- To capitalize on its rich nickel resources, essential for EV batteries, Indonesia must foster regional cooperation and attract investment in battery processing.

### **Recommendations:**

- **Production-Linked Incentives:**

- Implementing production-linked incentives could act as a catalyst to boost the local manufacturing industry. Indonesia might consider adopting strategies used in other developing countries to encourage investment in its EV sector.
- Taking inspiration from India's Advanced Chemistry Cell (ACC) Production Linked Incentive (PLI) scheme, which provides exemptions from taxes, tariffs, and duties in the battery industry. Under the PLI ACC scheme, a total manufacturing capacity of 50 GWh was allocated to four successful bidders. The incentive scheme has encouraged entities within the EV value chain to vertically integrate their operations and expand into cell manufacturing. To date, production capacities of 30 GWh are being developed by winning bidders such as Reliance, Ola Mobility, and others.

- **International Collaboration:**

- Encouraging international EV component manufacturers to establish facilities in Indonesia is pivotal. This move can significantly enhance local technical expertise and capabilities.
- By tackling supply chain challenges and providing targeted duty exemptions for selected EV components, Indonesia can foster an increase in local content production, thereby establishing itself as an attractive hub for EV manufacturing.

- **Leveraging Indonesia Battery Corporation's (IBC) Global Ambitions:** IBC can play a crucial role in positioning Indonesia as a key player in the global lithium-ion battery market, by securing technological support and forming partnerships and joint ventures with global players, thereby enhancing Indonesia's standing in the battery production arena, and contributing to the nation's economic growth and technological advancement.

- **Phasing in Localization of Battery Components:** A strategic approach towards localizing the production of battery components could significantly benefit Indonesia by temporarily relaxing import duties on essential parts, facilitating easier access to critical materials and technologies.

This strategy not only bolsters the local electric vehicle (EV) ecosystem but also fosters self-reliance and reduces dependence on imported components.

For Indonesia to effectively pivot towards a robust EV sector, prioritizing local production and targeting new OEMs is crucial. This approach should be multifaceted, incorporating strategic planning, international collaboration, and learning from successful incentive models in other countries.

Such a comprehensive approach will not only meet the 40% local components requirement but also set the stage for Indonesia to become a significant player in the global EV market.

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