INDONESIA

E-mobility Country Profile

Background

Indonesia is committed to achieving sustained economic growth and social development in the coming years. Looking ahead to 2050, the nation anticipates a significant influx of people into urban areas, with more than 2 million individuals being added to these regions annually. The GDP per capita is projected to experience robust growth at an annual average rate of 5%.[1]

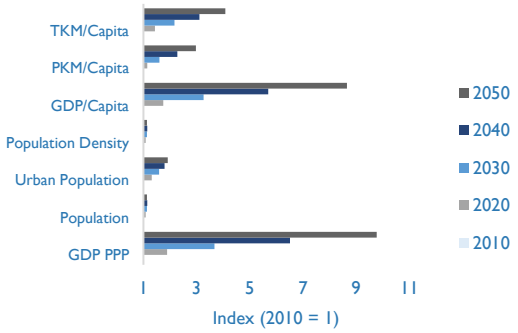
This rapid urbanization and economic expansion are expected to drive growth in transportation activities. Forecasts indicate an average annual increase of 3% in passenger transport activity, measured in passenger-kilometres, and a 4% average annual growth rate for freight transport activity. [2]

Consequently, there will be a notable rise in the number of vehicles on the road. It is estimated that between 2020 and 2050, approximately 98.17 million two and three-wheelers will be added, along with 24.73 million light-duty vehicles.[3] By 2050, it is projected that the motorization rate will reach 885.94 vehicles per 1000 people (mostly driven by 2wheeler motorization). It is essential to note that Indonesia is also experiencing demographic changes, with the aging population projected to double between 2015 and 2050. These demographic shifts will have implications for future transportation demand and supply.

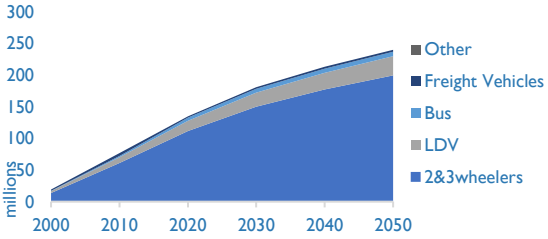
The transportation sector is one of the major contributors to air pollution and greenhouse gas (GHG) emissions in Indonesia. It is estimated that the transportation sector contributes 21% of the fuel combustion GHGs in the country (total of 532 million tons in 2020). Ninety-six percent (90%) of the transport GHG emissions are estimated to be from the road sector. [4]

The average concentration of PM2.5 in Jakarta (2018) stood at 43.14 µg/m³. The World Health Organization sets a PM2.5 guideline value of 5 µg/m³. The road transport sector is estimated to contribute 12 % of the total burden of disease related to Particulate Matter 2.5 (PM2.5) — in Indonesia. Road transport air pollution is also deemed to have significant contributions to the burden of disease related to ischemic heart disease (30%), and chronic obstructive pulmonary disease (7%) in the country. [5] In 2019, it is estimated that more than 93.81 thousand premature deaths were attributed to PM2.5 pollution in Indonesia. [6,7]

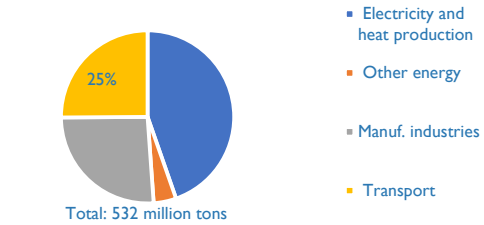
Socio-economic & Transport Indicators



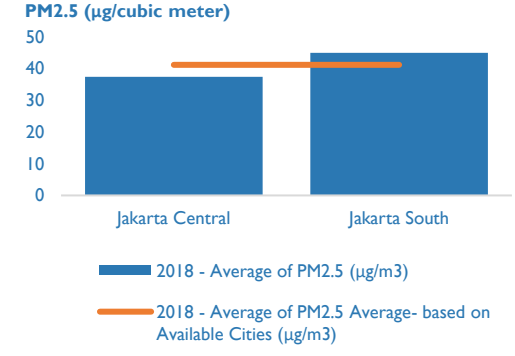
Vehicle Stock Projections



2020 Fuel Combustion CO2: % By Sector



PM2.5 (µg/cubic meter)



E-mobility at a Glance

Electric mobility has the potential to transform transportation in Indonesia. This push towards electrification is driven by concerns over air pollution and energy security. High fuel subsidies in Indonesia have led to rapid motorization, but electric vehicles provide an opportunity to avoid increasing gasoline and diesel consumption. Transitioning to electric mobility will require investment in charging infrastructure across Indonesia's thousands of islands. If managed well, growth in electric vehicles can reduce urban air pollution while decreasing fuel imports.

The current uptake of electric vehicles (EVs) in Indonesia is still in its early stages. It is estimated that out of the 125 million motorcycles in Indonesia's road fleet at the end of 2022, only 32,000 are electric.[8] In terms of car sales, only 1,647 battery electric cars were sold in 2022.

The sales is picking up, though, as figures for 2023 (January to August) shows that there had already been 8,209 battery electric cars that had been sold, which is approximately 5 times the sales in 2022.

The number of electric two wheelers (E2W) on the road has also been estimated to have grown by at least 4 times between 2021 and 2022.[9] The Ministry of Industry, through regulation No.6/2022 issued targets of producing 600 thousand electric four-wheelers (E4W) by 2030 and 2.45 million E2W by 2030.

It is estimated that around 840 units of public charging stations are now in operation in Indonesia. In 2022, the installation of public charging stations (SPKLU) experienced rapid advancement, growing more than 200% compared to the previous year. Nonetheless, this development is not uniformly distributed, as 88% of the total SPKLUs are concentrated in Jakarta and Bali.

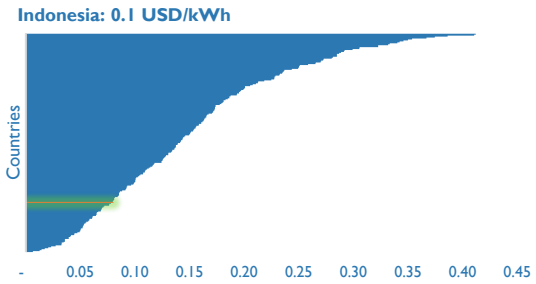
There is a need to assess the distribution locations of both fast and slow -medium chargers. Particularly in Jakarta, the majority of fast chargers are situated in state-owned enterprises (SoEs), whereas their optimal location would be along highways to reduce waiting time for users.[10]

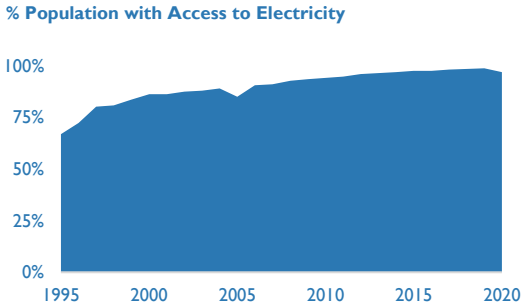
The state electricity company PT PLN plays a key role in putting up charging stations. In June 2023, it had announced that it had already installed 616 EV charging stations and 1,401 battery charging stations (SPBLKU).[11] Difficulty in finding EV charging stations, EV price differentials, limited range, operational challenges ranked as the top challenges to adopting EVs based on a study by IESR (2022). [12]

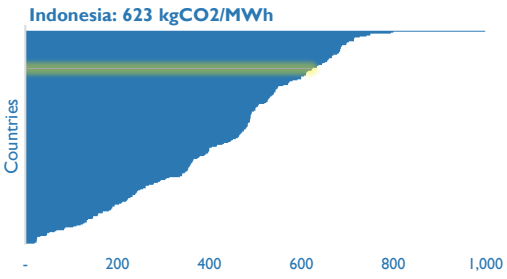
The average price of electricity in Indonesia (2021) was estimated to be 0.10 kWh.[13] This is on the lower end of the global range, and ranks 73rd out of 237 countries.

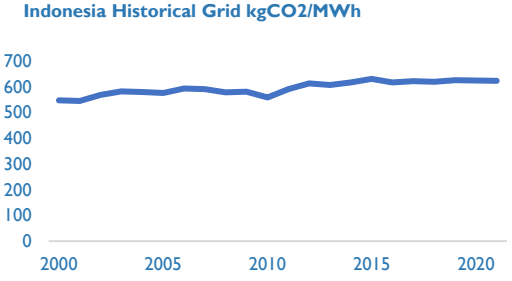
Considering overall access to electricity, Indonesia had reached 98% in terms of access to electricity. In terms of the emissions impact of the electricity grid, the national average is estimated at 623 kgCO2 is emitted per MWh, which ranks at 185th place out of 225 countries globally.[14]

The average grid emission factor has marginally declined steadily since the turn of the century, wherein in 2000, the emission factor was at 548 kgCO2/MWh. The nation's electricity grid is still dominated by coal in terms of power generation, constituting 61% of the generation in 2022.[15]









Policy Measures: Highlights

Indonesia has embarked on a comprehensive journey to combat climate change and enhance energy sustainability through key frameworks such as the Nationally Determined Contributions (NDCs), the Net Zero initiative, and the Long-Term Strategy for Low Carbon and Climate Resilience (LTS-LCCR). A focal point in these policies is the electrification of transportation, underlining its critical role in reducing emissions and promoting sustainable energy use.

Indonesia's **NDCs** are foundational in its commitment under the Paris Agreement, aiming to reduce greenhouse gas (GHG) emissions by 29% unconditionally and up to 41% conditionally by 2030. The electrification of the transportation sector is a priority within the NDCs, seeking to lessen dependence on fossil fuels, improve energy efficiency, and lower emissions. The country is actively promoting electric vehicles (EVs), establishing charging infrastructure, and incentivizing both consumers and manufacturers to accelerate the shift towards electric transportation.

Targeting **net-zero emissions by 2060**, Indonesia is implementing a myriad of strategies across diverse sectors. The electrification of transportation is a cornerstone of this initiative, aiming to reduce emissions, mitigate air pollution, and decrease reliance on oil imports. The government is fostering investments in EV manufacturing, infrastructure development, and renewable energy integration to power the transportation sector, thereby contributing to the realization of the net-zero emissions goal.

The **LTS-LCCR** provides a blueprint for Indonesia's transition to a low-carbon and climate-resilient future. It projects that, with strategic interventions, emissions from the transportation sector could significantly decrease by 2050, compared to a business-as-usual scenario. Electrification is pivotal in this transition, with an anticipated high utilization of electricity in the transportation energy mix by 2050. The strategy envisions extensive adoption of electric vehicles, supported by a robust charging infrastructure and powered increasingly by renewable energy sources.

Presidential regulation (PERPRES) 55/2019 – Acceleration of BEV as part of an overall transition from fossil fuel-based transport sector to a cleaner one—serves as a comprehensive guideline for the acceleration of BEV adoption in the country. This regulation lays out the roadmap for the development of electric vehicles, including both two-wheelers and four-wheelers. It covers various aspects including fiscal incentives, non-fiscal incentives, development of charging infrastructure, and the utilization of domestic products. The policy aims to encourage domestic production of BEVs, reduce greenhouse gas emissions, improve air quality, and promote energy efficiency and conservation. By fostering an enabling environment for BEVs, this regulation is a significant step toward Indonesia's transition to more sustainable and environmentally friendly transportation. Following the introduction of the Presidential Regulation for the acceleration of Battery Electric Vehicles (BEV) in 2019, the government has enacted several policies and regulations in support. Fiscal incentives, crucial for minimizing the cost disparity between Electric Vehicles (EV) and Internal Combustion Engine Vehicles (ICEV) to hasten adoption, currently include exemptions from luxury tax (PPNBM), title transfer and ownership fee (BBNKB), and vehicle tax (PKB). The recent inclusion of EVs exemptions from BBNKB and PKB taxes in **Law No. 1/2022** marks a significant step, even though its implementation is scheduled for 2025.

The prevailing **non-fiscal strategies** primarily establish the operational guidelines for EVs, which include the standardization of battery charging and swapping stations, along with local content prerequisites. Conversely, existing fiscal strategies are primarily designed to entice consumers by enhancing the appeal of EVs. Presently, the emphasis of the government is on amplifying sales (demand), rendering the fiscal incentives directed at invigorating the EV industry (supply) comparatively scarce. Post the initiatives of the national government, various sub-national administrations initiated the implementation of EV policies from 2019 onwards. Bali and DKI Jakarta stand out as the prominent provinces in this regard. In parallel, other regions are progressing by proposing tax reductions for EVs and incorporating electric vehicles into their bus rapid transit fleets.

The government has initiated **purchase subsidies** of US $5,130 for each electric car sold and has reduced the value-added tax (VAT) for battery-based electric cars and buses from 11% to 1% for the period of April-December 2023. Nonetheless, these benefits are confined to two models—Hyundai IONIQ 5 and Wuling Air EV—that comply with the local content requirement of incorporating 40% local materials. In addition, EV acquisitions are exempt from specific taxes such as the luxury sales tax, generally ranging from 15%-40% for an ICE. EVs are also relieved from both transfer (a one-time payment made during the change of vehicle ownership) and circulation tax (paid annually), typically around 12% and 2%, respectively, for an ICE. To further enhance the diversity of available EV models, the Indonesian government has permitted the importation of EVs in semi-knocked-down (SKD) form at a 0% rate, compared to the usual 7.5% for xEV and ICE. From a non-fiscal perspective, EVs enjoy the advantage of being exempt from the odd-even traffic regulation in Jakarta.[17] For E2W, 7 million rupiahs are provided as purchase subsidies (**MoI Regulation No. 21/2023**), and has allocated subsidies for 200,000 motorcycles in 2023.[18]

Policy Measures: Highlights

Early this year, **MEMR Regulation Number 1/2023** Providing Electricity Charging Station Infrastructure for Battery Electric Vehicles was issued to revise the previous regulation on charging stations (**MEMR No. 13/2020**) which resulted in key challenges for the proliferation of charging stations, as MEMR No. 13/2020 requires that the installation of charging stations to have 3 port types (AC Type 2; DC CHAdeMO, and DC CC2). Now, only 1 is enough.

A **motorcycle conversion program** was launched in 2020. At least 13 conversion workshops had been licensed in 2022. The recent **MEMR Regulation Number 3/2023** Two wheeler conversion from ICE to BEV announced a target of converting 50,000 ICE two-wheelers to electric by the end of 2023.[19] It is estimated that between 2022 and 2023, 6 million two-wheelers are available for conversion each year.[20]

The government also intends to provide **455 million USD subsidy to manufacture 800 thousand new electric two-wheelers**, and to convert 200 thousand petrol scooters to electric. The Indonesian Minister of Industry, announced in December 2022, that a subsidy of 80 million Indonesian rupees (IDR) or approximately 5,130 USD will be given to consumers for purchasing new BEVs, while purchasing of conventional hybrids will be subsidized by half of this amount. Buyers of new electric motorbikes will receive 8 million IDR or around 520 USD. Conversion of petrol two-wheelers to electric will be subsidized by 5 million IDR (~320 USD). [21]

The Indonesian government has been proactive in establishing a regulatory framework to promote the adoption and safe operation of electric vehicles (EVs). The Ministry of Transportation (MoT) introduced several regulations in this regard. MoT Reg. No. 15/2022 manages the conversion of vehicles other than two-wheelers. **MoT Reg. 44/2020** outlines the processes for EV testing and certification, ensuring standardization and safety. The **MoT Reg. No. 45/2020** governs vehicles with electric motors, detailing safety requirements, riding behaviour, and designating specific vehicle lanes. Furthermore, **MoT Reg. No. 65/2020** validates the conversion of traditional two-wheelers to electric two-wheelers (E2W). This regulation also provides a guideline on the components required for conversion, mandates for Small Medium Enterprises (SME) workshops to get certified as conversion shops, and lists safety and administrative protocols.

On the other hand, the Ministry of Industry (MoI) issued **Reg. No. 6/2022**, providing a guideline for technical requirements and local content requirements (LCR) for EVs. **Presidential Instruction No. 7/2022** emphasizes the adoption of EVs as official government vehicles, further demonstrating the administration's commitment to the transition. The Ministry of Energy and Mineral Resources (MEMR) in its Reg. No. 13/2020 has standardized charging plug types and formulated electricity tariff policies for public EV charging stations and battery replacement services, ensuring a unified and cost-effective infrastructure. Collectively, these policies lay a solid foundation for Indonesia's green transportation future.

The Indonesian government is stepping up its push for the national auto industry to move towards electric vehicles. The Ministry of Industry (through **MOI 6/2022**) has raised production targets recently in 2022- 12 million units of E2W, and 1 million units of E4W by 2035.[22]

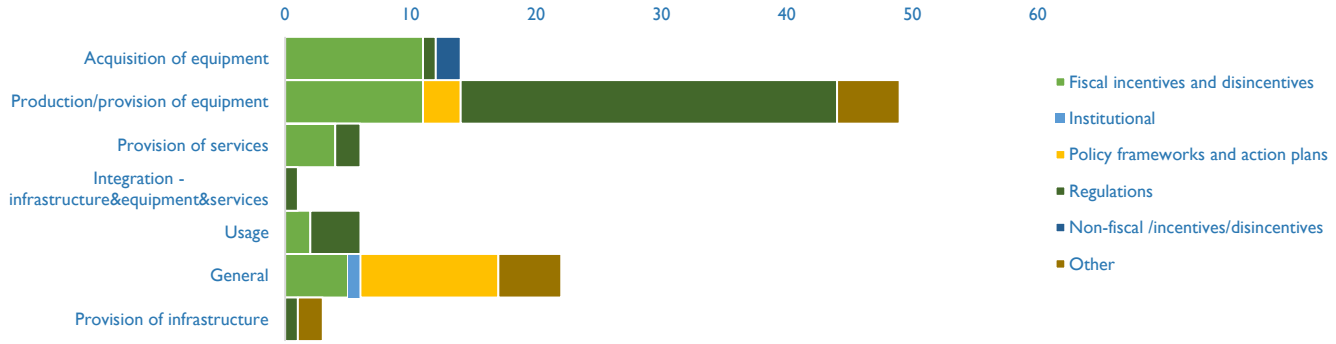
Indonesia has instituted several fiscal policies to foster the growth of the electric vehicle (EV) sector. **Law No. 1/2022** has sanctioned exemptions on title transfer fees (BBNKB) and the maximum yearly vehicle tax (PKB) for EVs, effective from 2025. In a bid to facilitate affordable financing, the Financial Services Authority (OJK) has reduced the **Risk Weighted Assets** (RWA/ATMR) for EV financing from 75% to 50%, and allowed for the possibility of 0% down payment on EV credit purchase payments.

Furthering the commitment to make EVs more financially appealing, **Government Regulation No. 74/2021** has granted Battery Electric Vehicles (BEV) an exemption from the sales tax on luxury goods (PPnBM). Additionally, the Ministry of Home Affairs (MoHA) Regulation No. 1/2021 caps the BEV **maximum yearly tax** (PKB) and **title transfer fee** (BBNKB) at only 10% of its imposition fee calculation, thus reducing the cost of EV ownership. Lastly, Ministry of Finance (MoF) Regulation 138/PMK.02/2021 significantly reduces the **Vehicle Type Test cost** for BEVs compared to ICEVs. For Electric Two-Wheelers (E2W), it is IDR 4.5 million, and for Electric Four-Wheelers (E4W) and Electric Buses (E-bus), it is IDR 13.2 million. Moreover, the **Type Test Certification** (Sertifikat Uji Tipe/SUT) is 25 times cheaper for E2W and six times cheaper for E4W and E-bus compared to their ICEV counterparts. These policies collectively create a conducive financial environment for both producers and consumers in the EV market.

Currently, there are 38 **Indonesian national standards** that had been established for electric vehicles, with 12 of them related to safety standards and vehicle system performance; 11 are on safety and performance standards related to batteries and propulsion components; 15 are on standards related to electric vehicle infrastructure and components. [23]

Snapshot of E-mobility Policy Measures

Distribution of Policy Measures



Pillar	Stage	Category	Type of Policy Measure
Charging equipment and components	Production/provision of equipment	Regulations	Test specifications - Chargers
	Provision of services	Fiscal incentives and disincentives	Tax Incentives for firms engaging in charging services
		Regulations	Charging business models regulations
	Integration - infrastructure&equipment&services	Regulations	Standards for chargers including interoperability of the EV charging system
EVs and EV components	Acquisition of equipment	Fiscal incentives and disincentives	Exemption motor vehicle tax
			Exemption transfer of ownership tax
			EV procurement targets
			Sales tax waiver for EV and components
			Purchase incentives for EVs and components
			Value-added tax waiver or reduction for EV and components
			Preferential tax rates for Evs
			EV procurement - fleets
		Regulations	Risk-weighted assets for EV financing
		Non-fiscal /incentives/disincentives	Fuel economy and tailpipe CO2 standards
			Fuel/energy economy labelling for vehicles
	Production/provision of equipment	Fiscal incentives and disincentives	Corporate income tax reduction/holiday - manufacturers of Evs/ components
			Import duties reduction for EVs and components
			Vehicle type test cost cheaper for Evs
			Vehicle certification cost cheaper for Evs
			Export financing incentives
			Preferential luxury goods sales tax for Evs
		Policy frameworks and action plans	EV production targets
		Regulations	EV safety standards
			EV specifications, standards and Type approval
			EV standards - multidimension
			Test specifications - Evs
			Vehicle conversion regulatory framework
			Domestic or local content regulation
			Test specifications - Batteries
			Battery standards - safety
			Battery standards - performance
			Standards - battery swapping
			Standards EV - other
			Battery standards -reliability
		Other	Sales targets
			Total EV fleet target
	Usage	Fiscal incentives and disincentives	Parking charges reduction for EV
			Removing Fossil Fuel subsidies or Increased tax on fossil fuels
		Regulations	EV performance standards
			Access rules favoring Evs
	Provision of infrastructure	Regulations	Noise regulation for ensuring safety
General	Production/provision of equipment	Other	Product certifications and/or technical standards for manufacturer of BEV and its components
	General	Fiscal incentives and disincentives	Deduction taxable income for expenses for R&D
			General Subsidy (No information)
			Feed-in-tariff
		Institutional	Defined institutional setup
		Policy frameworks and action plans	Renewable energy targets
			EV included in NDC
			General EV industry plan
			EV included in LTS
			Net zero
			Exploitation of new resources - RE
			General pronouncement of support - RE
		Other	Security assurances for industries
			Enabling local governments
			Carbon trading
			EV businesses registration
Infrastructure	General	Other	General mention of EV Infrastructure
	Provision of infrastructure	Other	Charging stations targets - total
Services	Provision of services	Fiscal incentives and disincentives	Charging rate ceiling
			Subsidized charging rates

Note: The graph and the table pertaining to the e-mobility policy measures are mainly those that the authors had been able to collect, collate, and categorize. The authors make no claims about the completeness of the list, nor the accuracy of the categorization. These are presented to provide an approximation of the developments that are happening in terms of e-mobility policy measures, but may not be fully representative of the actual situation.

Endnotes

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