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Accelerating the electric two-wheeler transition in Indonesia

Rijhul Ladha, Ridhi Palia, Anannya Das Banerjee, Aditya Ramji

There are about 600 million two-wheelers (2Ws) on the road across Asia, Africa and Latin America, contributing 20-30% of the global motorized vehicle fleet¹. Unlike developed economies where passenger cars dominate, two-wheelers remain the predominant mode of mobility for a majority of the population living in the global south. According to UNEP, two-wheelers are also the fastest growing mode of transport in many low and middle-income economies².

Globally, electric two-wheeler (e-2W) sales reached nearly 10 million units in 2025, about 14% share of the global 2W market³. Their rapid adoption has been underpinned by relatively lower technological complexity, smaller battery requirements, lower operating costs, and charging flexibility compared to larger vehicle segments.

Indonesia is the third largest global 2W market, accounting for 84% of all vehicles registered in the country. The total stock or number of 2Ws

on road increased from 94 million in 2016 to about 145 million in 2025, growing at a CAGR of 5% (Figure 1)⁴. With a motorisation rate of 450 two-wheelers per 1000 people, they are the predominant mode of transport for a large share of Indonesian households, used for daily commute, ride-hailing, and last-mile deliveries⁵. However, Indonesia is yet to capitalise on the potential of electrifying its two-wheeler market.

The sustained dominance of 2Ws within Indonesia's vehicle market highlights their structural importance in the mobility ecosystem, including its utility in the form of personal mobility and as a source of livelihood. For instance, 2Ws accounted for 64% of all trips in Greater Jakarta in 2019, increasing from only 13% in 2004⁶. The ownership of 2Ws is estimated to increase further, with 90% of households in Greater Jakarta projected to own at least one 2W by 2030, and 36% households owning at least two⁷.

¹ <https://documents1.worldbank.org/curated/en/099091525114534821/pdf/P505757-4c0a7953-af8f-4096-805a-6218ae20dd44.pdf>

² <https://www.unep.org/topics/transport/electric-mobility/electric-two-and-three-wheelers>

³ <https://iea.blob.core.windows.net/assets/857aa690-2a43-453f-9f12-147cc8f0a1dd/GlobalEVOutlook2026.pdf>

⁴ <https://www.bps.go.id/en/statistics-table/3/VjJ3NGRGa3dkRk5MTIU1bVNFOTVVbmQyVURSTVFUMDkjMw%3D%3D/jumlah-kendaraan-bermotormenurut-provinsi-dan-jenis-kendaraan--unit---2023.html>

⁵ <https://asiantransportobservatory.org/data/>

⁶ <https://itdp-indonesia.org/wp-content/uploads/2024/02/ENG-Promoting-Road-Safety-Through-the-Adoption-and-the-Regulation-of-Electric-2Ws.pdf>

⁷ https://rmi.org/app/uploads/dlm_uploads/2025/06/rmi-2025-06-indonesia-sector-transformation.pdf

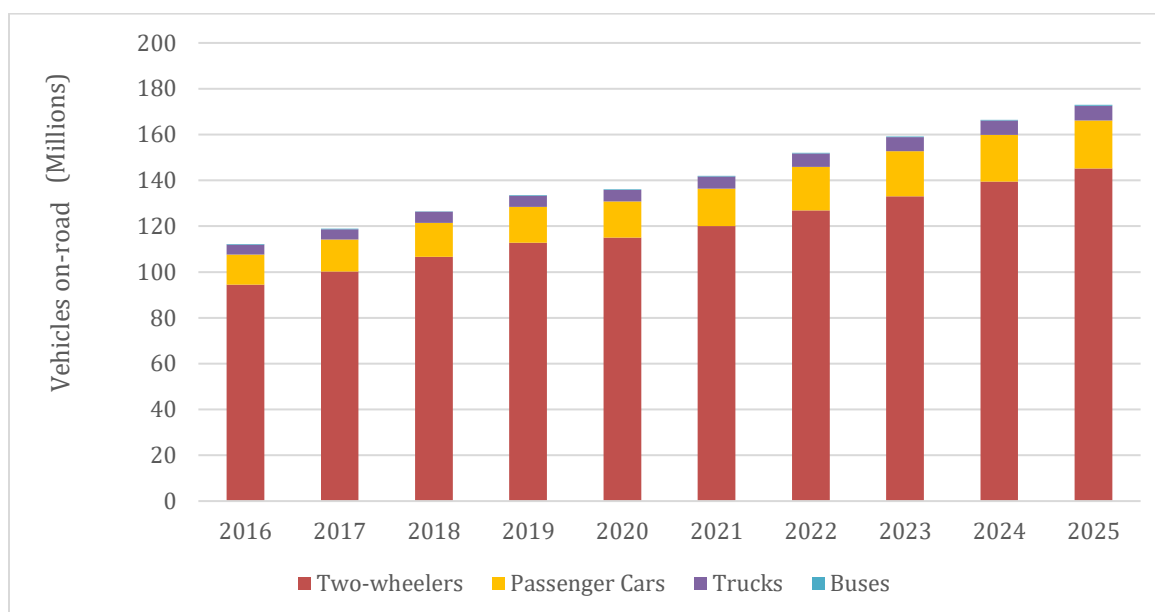


Figure 1: Vehicles on-road in Indonesia (2016-2025) (Source: BPS Statistics Indonesia, 2026)

Additionally, 2Ws contribute to about 28% of greenhouse gas (GHG) emissions from the road transport sector in Indonesia and are a significant contributor to air pollution, especially in urban areas⁸. In Jakarta, land transport contributes to about 65% and 60% of NOx and PM2.5 emissions, respectively. Due to their large volume, 2Ws are the second-largest contributor to NOx emissions and the third-largest to PM2.5 emissions⁹.

Road transport accounts for over 90% of annual fuel consumption in the transport sector⁸. 2Ws are the largest consumers of gasoline in Indonesia, primarily consuming subsidized gasoline called Pertalite (RON 90)¹⁰. The recent global oil supply disruption in 2026, resulted in gasoline price increase of around 32%, reinforcing the vulnerability of continued reliance on imported transport fuels¹¹. Indonesia, however has been subsidizing

transport fuel over the past decade, despite global crude oil price fluctuation, adding a significant cost burden on the government. The Indonesian government paid a compensation of about IDR 100 trillion (~USD 5.6 billion) in 2024 to the state-owned fuel company to distribute subsidized gasoline¹². Consequently, electrifying this segment offers one of the largest opportunities to enhance energy and economic security as well as reduce urban air pollution and GHG emissions for Indonesia.

Indonesia is the third-largest global 2W market, but has only unlocked 1% e-2W sales share

As the third-largest global 2W market, Indonesia averaged 6 million units in annual sales over 2016-2025¹³, but e-2Ws contributed only about 1% (~60,000) of domestic 2W sales

⁸ <https://iesr.or.id/wp-content/uploads/2025/07/Indonesia-Sustainable-Mobility-Outlook-2025-IESR-2.pdf>

⁹ <https://itdp-indonesia.org/wp-content/uploads/2024/04/Full-Report-Jakarta-LEZ-Roadmap-UK-PACT.pdf>

¹⁰ <https://iesr.or.id/wp-content/uploads/2023/02/Indonesia-Electric-Vehicle-Outlook-2023.pdf>

¹¹ <https://www.reuters.com/business/energy/indonesia-raises-price-widely-used-fuel-by-32-adds-cost-of-living-concerns-2026-06-10/>

¹² <https://www.iisd.org/publications/digital-story/indonesia-energy-support-measures#oil-gas-and-coal-subsidies>

¹³ <https://theicct.org/sneak-peek-at-the-2025-global-electric-2W-market-dec25/>

in 2025¹⁴. The e-2W sales share in Indonesia remains very low compared to the other three largest global 2W markets – China (56%), Vietnam (22%), and India (6%) (Figure 2). In 2025, India, China, and Vietnam contributed about 56% of global 2W sales but over 90% of global e-2W sales leveraging it as an entry point to mass electrification. Meanwhile, Indonesia

contributed 10% of global 2W sales, but only 1% of global e-2W sales (Figure 3). Indonesia's nascent e-2W market presents a significant opportunity to electrify its largest vehicle segment while supporting domestic manufacturing, reducing fuel import dependence, and improving urban air quality.

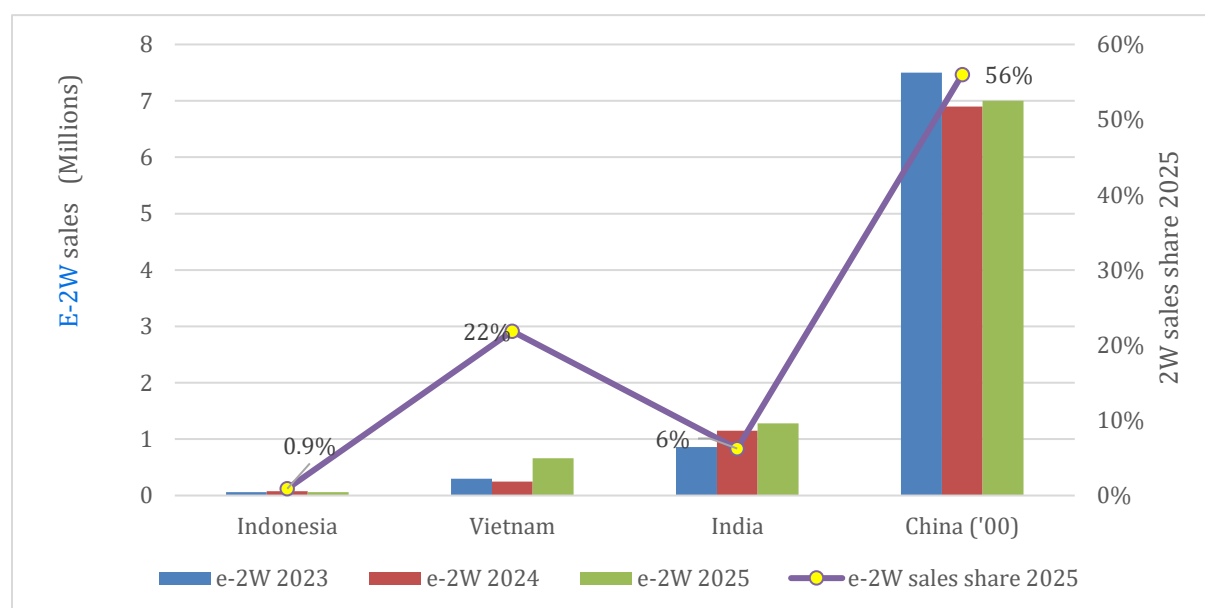


Figure 2: Electric 2W sales share in major global 2W markets

Source: AISI (Indonesia), Marklines (Vietnam), Vahan dashboard, MoRTH (India), IEA (China)

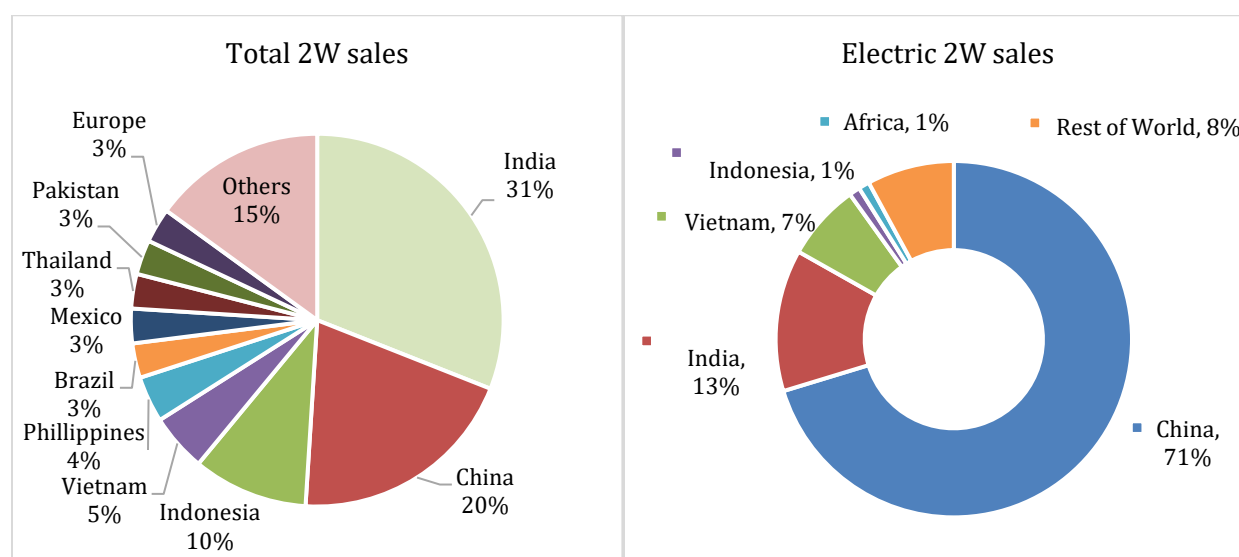


Figure 3: Country-wise share of global sales of 2Ws (left) and e-2Ws (right)

Source: ICCT, 2025 (left) and IEA, 2026 (right)

Note: The global 2W sales share is based on sales from January – October 2025

¹⁴ Data as per Association of Indonesian Motorcycle Industry (AISI) gathered during stakeholder consultations

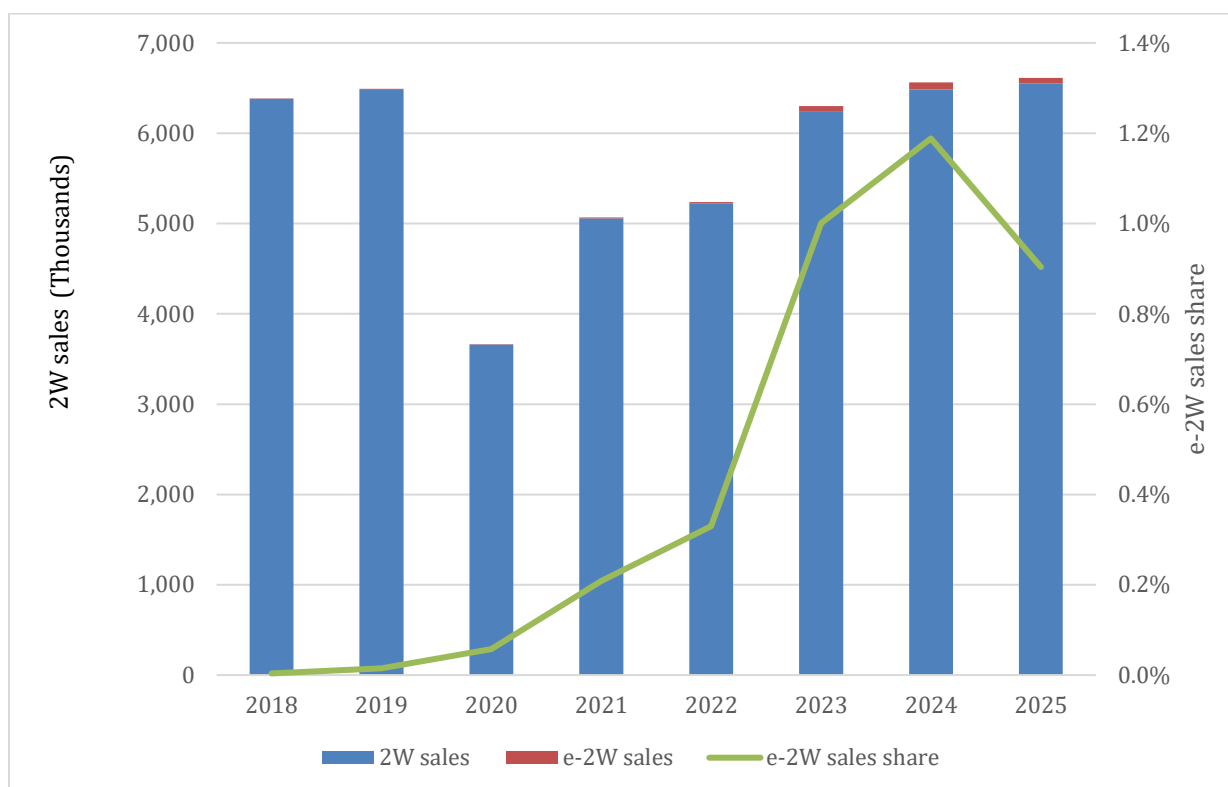


Figure 4: Indonesia 2W sales and e-2W sales share from 2018-2025

Source: Marklines,2026 and AISI (Association of Indonesia Motorcycle Industry)

Electric-2W sales in Indonesia further declined following lapse of incentives

Indonesia's e-2W transition has been characterized by an inconsistent policy environment. In 2023, the government unveiled an ambitious roadmap for motorcycle electrification through the Grand Strategi Energi Nasional (GSEN), which set a target of 13 million e-2Ws on the road by 2030, with six million new battery e-2Ws and seven million retrofits¹⁵. This was complemented by a purchase subsidy of IDR 7 million (USD 400) for new e-2Ws and IDR 10 million (USD 570) for conversion of existing

2Ws to battery-electric powertrains^{16,17, 18, 19}.

The policy package stimulated market growth for e-2W sales in 2023, but the lapse of the policy in October 2024 led to a decline in e-2W sales by 23% in 2025 (Figure 4). This inconsistency in policy creates investment uncertainty for manufacturers and delays purchase decisions for consumers.

The slowdown in e-2W sales also comes at a point when Indonesia remains consistently exposed to international oil price volatility and energy supply risks. Despite this risk, the price of the subsidized low-quality fuel (Pertalite) has remained the same, adding to the subsidy burden for the government and artificially

¹⁵ <https://www.esdm.go.id/id/media-center/arsip-berita/kementerian-esdm-ajak-k-l-lain-percepat-konversi-kendaraan-listrik>

¹⁶ Regulation No. 6/2023, <https://peraturan.bpk.go.id/Details/254545/permenperin-no-6-tahun-2023>

¹⁷ Regulation 21/2023, <https://peraturan.bpk.go.id/Details/268779/permenperin-no-21-tahun-2023>

¹⁸ MEMR Regulation 13/2023,

<https://jdih.esdm.go.id/dokumen/download?id=Permen+ESDM+Nomor+3+Tahun+2023.pdf>

¹⁹ MEMR Regulation 3/2023, <https://peraturan.bpk.go.id/Details/268779/permenperin-no-21-tahun-2023>

lowering the operating costs of ICE 2Ws. Moreover, the subsidy for the low-quality fuel adds to the growing air quality concerns in urban areas. The fuel subsidy provided by the Indonesian government benefits about 80% of the population, most of whom are dependent on 2Ws and qualify as the most cost sensitive segment²⁰. The recent fuel price increase in June 2026, increases the fuel cost burden for driving 1,200 kms in a month by about IDR 100,000 (USD 7), which is 3% of a monthly average household income of IDR 3.3 million (USD 200), going up to about 8% of the average monthly income of the lowest quintile of the population²¹. Taking note of this volatility, President Prabowo highlighted reduction in fuel consumption as crucial, announced formation of a taskforce to drive clean energy and renewed discussions to revive subsidies for e-2Ws to meet the target of 13 million e-2Ws on road by 2030²². This underscores the urgent need for a predictable, multi-year policy framework for 2W electrification in Indonesia.

Learnings from global markets suggest policy continuity is crucial to sustain growth in EV adoption

China, India and Vietnam have seen higher adoption of e-2Ws building on a consistent policy framework. All three countries have seen success through a combination of national incentive programs, sub-national urban mobility policies and a focus on industrial development. These policies together have led to favorable market economics (total cost of ownership or TCO) and product innovation bringing down the upfront price, creating an attractive proposition

for consumers. A key learning from these markets also highlights the need for coherence and coordination across different policy measures, the need to move from an incentives-only approach to a regulation-backed incentives program that creates a resilient market demand signal, providing certainty to investments and industrial development.

China began with regulating polluting Internal Combustible Engine (ICE) 2Ws through urban local policies since the 1990s, making the purchase of ICE 2Ws more expensive; introduced purchase incentives, tax breaks and trade-in subsidies for the purchase of e-2Ws; built EV ready infrastructure, and supported large scale manufacturing²³.

India's approach has been more incentive-led, with a relatively consistent policy signal to support the growth of electric two-wheelers. Since 2015, the national government has provided successive demand incentives through FAME scheme, the interim EMPS, and PM E-DRIVE, along with other measures under sub-national EV policies increasing e-2W sales share from 4% in 2023 to 6% in 2025 (Figure 5). Subsequently India increasingly focused on supply creation. Production-linked incentives for automobiles and advanced automotive technologies, alongside battery manufacturing support and state-level interventions, have sought to strengthen domestic manufacturing and localization²⁴.

Policy consistency is also evident within the ASEAN region where Vietnam has emerged as a leading e-2W market, albeit through a different playbook and emergence of a strong domestic

²⁰ <https://prabowosubianto.com/prabowo-we-will-maintain-fuel-subsidies-for-80-percent-of-the-common-people/>

²¹ <https://www.bps.go.id/en/pressrelease/2025/11/05/2479>

²² <https://en.antaranews.com/news/407191/indonesia-targets-6-million-motorcycles-for-ev-conversion-each-year>

²³ <https://english.news.cn/20250123/179302705e8f4611b31a420a1fcb8947/c.html>

²⁴ <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2294688®=48&lang=1>

manufacturer, VinFast, in 2018²⁵. By 2025, Vietnam recorded 22% e-2W sales, more than doubling from a 10% market share in 2024 (Figure 5)²⁶. Vietnam did not rely on purchase incentives but rather a long-term roadmap introduced in 2022 which supported investment in domestic EV manufacturing through import tariff exemption and tax holidays and increasing e-2W sales, while planning to impose ban on production and import of ICE vehicles²⁷. As a result, VinFast shaped early market

transformation by launching multiple e-2W models at lower prices than ICE models (VinFast Evo models are priced ~USD 400 cheaper than Honda Vision models) and expanding into ride-hailing through Xanh SM Bike service²⁸. In 2026, Vietnam complemented national policies with city-level policies to implement a phased restriction on use of ICE 2Ws in Hanoi to curb air pollution, further promoting e-2W adoption²⁹.

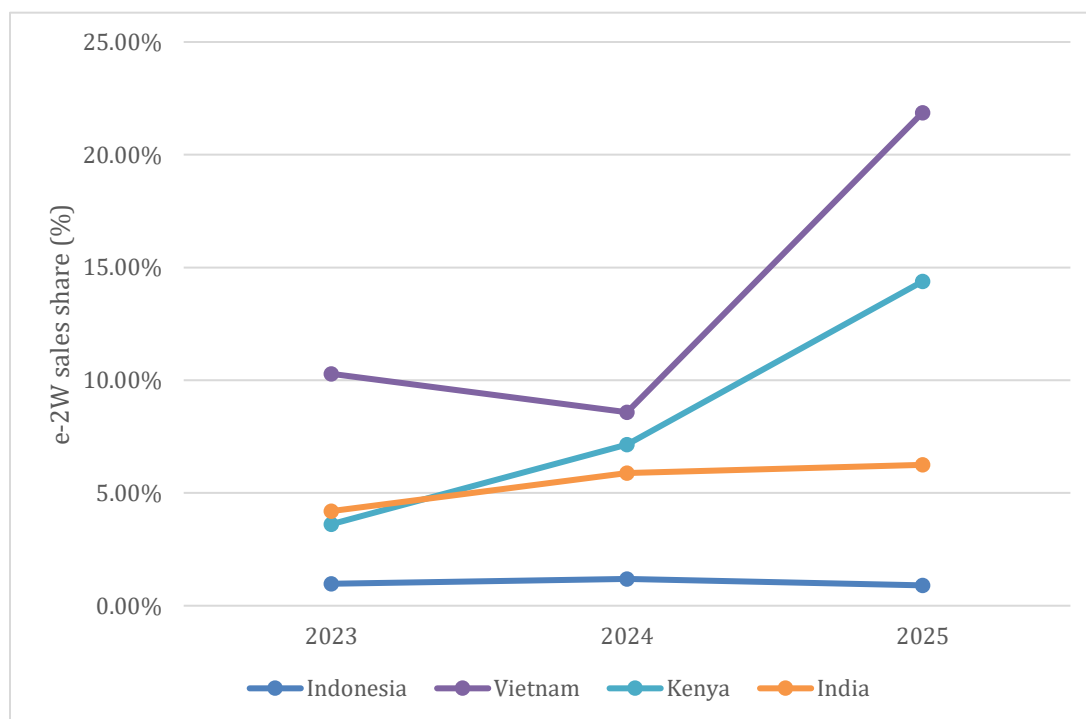


Figure 5: Electric 2W sales share in key emerging economies

Source: Marklines, Vahan Dashboard, IEA

²⁵ <https://web.archive.org/web/20190920203222/https://www.vir.com.vn/vinfast-launches-electric-motorcycle-63542.html>; https://www.segmenty.com/GenerateNewsStaticJsps/VinFast_e-scooter_sales_surge_sixfold_overtaking_Honda_in_Vietnam.html#:~:text=Users%20receive%20free%20charging%20at,authorised%20e%2Dscooter%20dealers%20nationwide

²⁶ https://theicct.org/wp-content/uploads/2026/05/ID-516-%E2%80%93-Vietnam-EV-policies_policy-brief_final.pdf

²⁷ <https://datafiles.chinhphu.vn/cpp/files/vbpq/2022/07/876-ttg.signed.pdf>

²⁸ https://www.greensm.com/vn-vi/news/dich-vu-xanh-sm-bike-ra-mat-tai-ha-noi-bat-dau-hoat-dong-tu-ngay-14-8-2023?utm_source

²⁹ <https://moc.gov.vn/vn/tin-tuc/1273/86924/ha-noi-sets-roadmap-for-transitioning-transportation.aspx>

Indonesia's electric two-wheeler market has 68 manufacturers, but barely any market leaders

As of 2026, the e-2W market has 100 available models from 68 manufactures in Indonesia, but barely any market leaders, representing a highly fragmented market³⁰. Despite such extensive model availability, the e-2W market share in Indonesia is still under 1%. Only eight of these manufacturers were able to sell more than 1,000 units in 2025. Most of these manufacturers are startups, with only 1-2 model offerings, limited credibility as 2W manufacturers, and lack of comparable products with existing ICE models (discussed further in the next section).

Without sufficient demand and long-term predictability, achieving scale and product competitiveness will be difficult, making a market slowdown inevitable. As of 2026, only two established manufacturers, namely, Honda and TVS, have introduced e-2Ws, but their products are priced significantly higher than the mass-market 2W segment. This highlights both a gap in the market and a significant opportunity for manufacturers. In contrast, the conventional 2W market is highly consolidated and built around a competitive manufacturing ecosystem. There are 14 active brands and about 180 models. Between 2022 to 2025, Japanese manufacturers particularly Honda (Astra Honda Motor Indonesia) and Yamaha (Yamaha Motor Indonesia) together accounted for 95% of the market in Indonesia, with Honda alone making up 75% of the market (Figure 6).

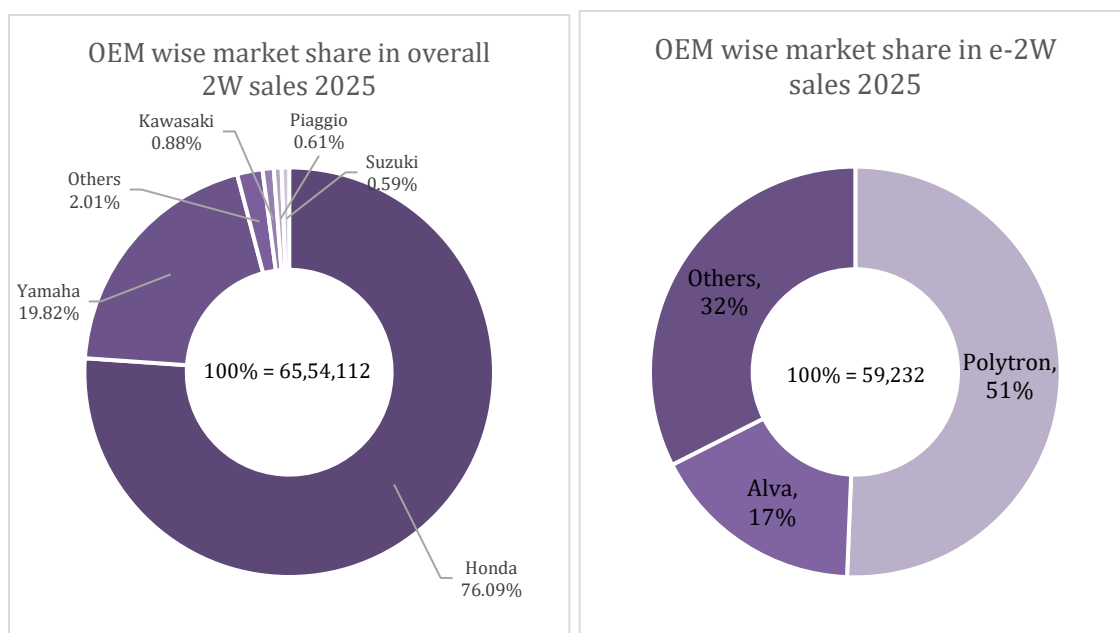


Figure 6: Market share for ICE and EV 2Ws in Indonesia

Source: Marklines, 2026 (left), Stakeholder consultations (right)

Note – EV OEM shares are taken from stakeholder consultations. They reflect an approximate market share and not actual sales figures.

³⁰ https://gatrik.esdm.go.id/assets/uploads/download_index/files/4a827-bahan-aismoli.pdf

Product market-fit has been a key barrier to 2W electrification

In case of 2Ws, upfront price parity alone is insufficient to drive electric two-wheeler adoption in Indonesia. As the country's most popular mode of personal transport, two-wheelers are purchased by a highly cost-sensitive consumer base that expects electric models to deliver performance and functionality comparable to existing ICE 2Ws to justify replacement. Although purchase prices of electric two-wheelers have become increasingly competitive, achieving true equivalency between ICE and EV models remains challenging.

However, establishing equivalency between ICE and EV 2Ws is not straightforward. Range is not a directly comparable metric for ICE 2Ws. Similarly, battery capacity in EVs cannot be directly compared with fuel tank capacity or engine displacement in ICE vehicles. To establish a more comparable benchmark, we use peak power output as a metric across ICE and EV powertrains in the 2W context³¹. Peak power reflects the vehicle's ability to deliver acceleration, load-carrying capability, and overall riding performance across use cases. Thus, peak power (determined by the motor capacity in EVs and engine size in ICE) along with vehicle price can be a useful metric to understand model equivalency for electric and ICE two-wheelers, providing better insights into potential for consumer adoption.

Among the 24 best-selling e-2W models, around 70% are priced below IDR 25 million (USD 1,500) which is similar to the 2W ICE market where 60% of the 10 best-selling models are within the same price range (Figure 7), indicating that upfront purchase cost alone is not the primary differentiator, or the e-2W market share would have been higher.

The key differentiator lies in performance. At comparable price points of IDR 17–25 million (USD 1,000-1,500), conventional ICE 2Ws typically offer – two to four times higher peak motor power than available electric models. Most best-selling ICE 2Ws deliver 6-7 kW of peak motor power, whereas the majority of electric models are limited to 1.5-4 kW (Figure 7). Consequently, consumers often perceive e-2Ws as a low performing asset in comparison to its ICE counterpart, which ultimately shapes consumer purchase decisions. Despite similar upfront prices, lack of performance equivalency reduces the attractiveness for available e-2Ws.

Electric 2W models in Indonesia do not offer comparable performance to e-2W models in India and ASEAN region as well. At a similar median price of USD 1,135, Indonesian e-2W models offer 35% lower range as compared to Indian e-2W models. When compared to Vietnam e-2W models, they offer an 11% lower range even at a 20% higher median price (Figure 8).

However, newer e-2W models in Indonesia suggest that this gap based on value for money versus product availability is slowly beginning to narrow. In 2025, new EV only manufacturer Polytron has introduced Polytron Fox 350 which is positioned close to the ICE best-selling model, the Honda BeAT that alone contributes to 30% of sales. Based on our consultations, this product market fit in terms of product and its total cost of ownership (discussed in the following sections) is rapidly gaining popularity. VinFast has also entered the Indonesian market in 2026, offering three products with the flexibility to choose an e-2W with battery subscription, battery swapping or purchasing an e-2W with battery, along with building a vast battery swapping station network in major cities³².

³¹ <https://escholarship.org/uc/item/6b01b5dp>

³² <https://otomotif.kompas.com/read/2026/07/20/121200815/punya-2.000-titik-tukar-baterai-vinfast-pede-jual-motor-listrik-skema-swap>

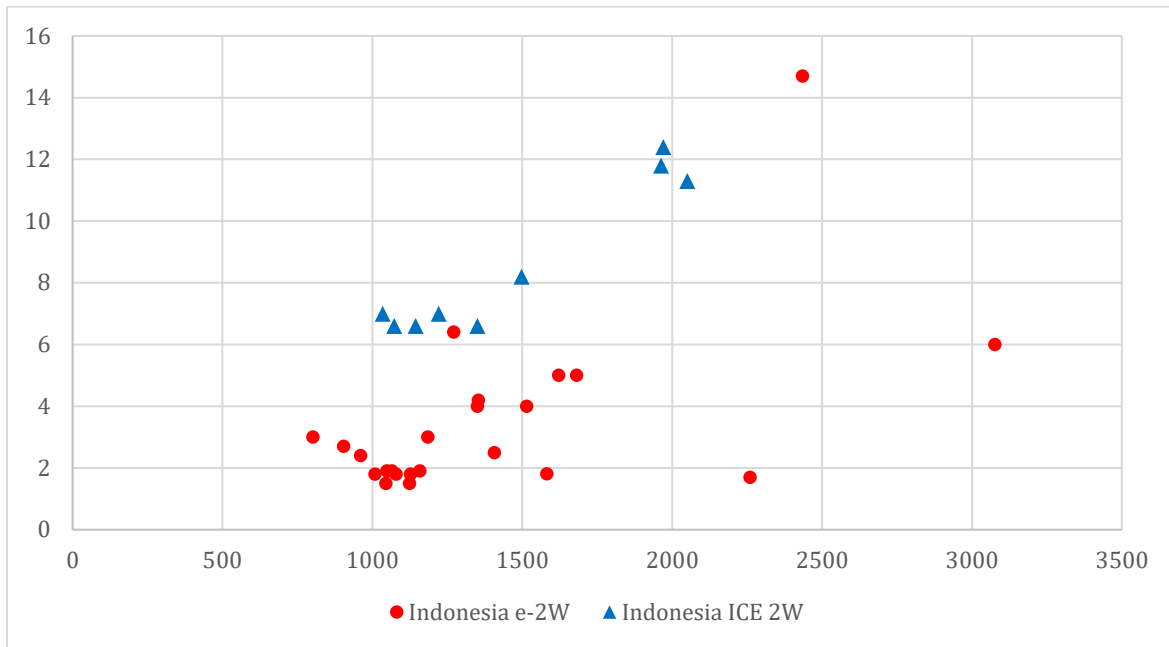


Figure 7: Peak motor power and price comparison for ICE and electric 2Ws in Indonesia
Source: Data from manufacturers' websites

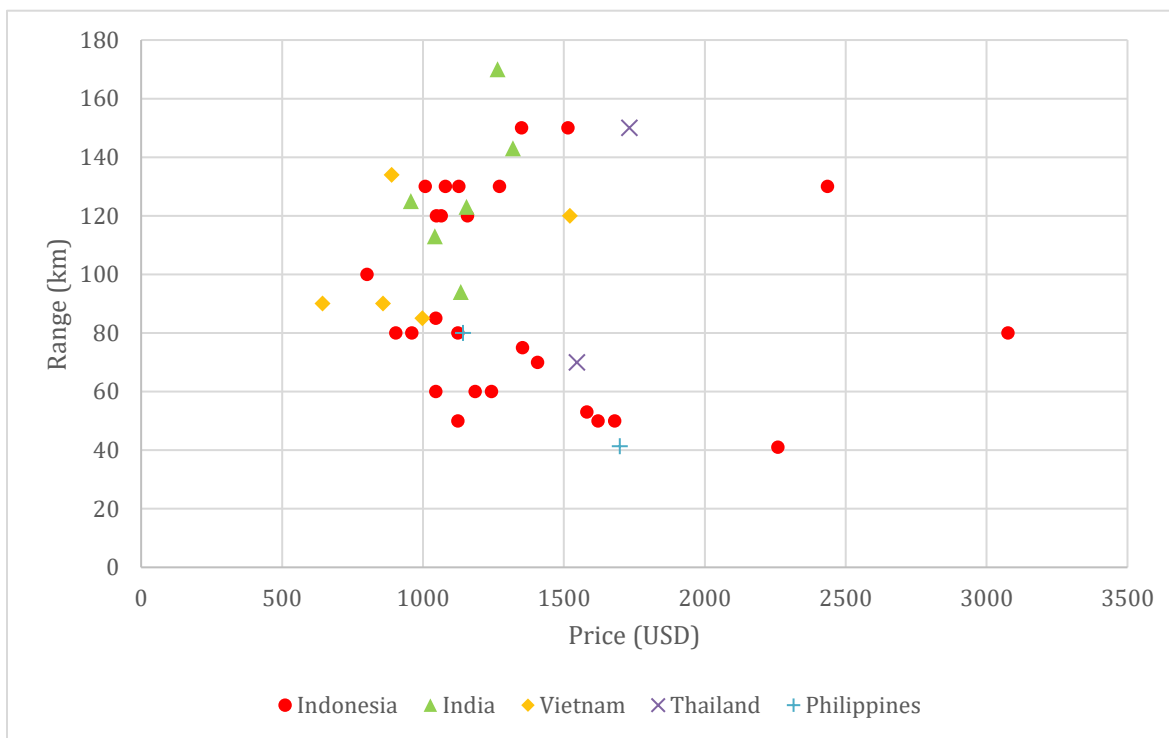


Figure 8: Comparison of Indonesian e-2W models with e-2W models in India and ASEAN
Source: Data from manufacturers' websites

Fuel subsidies distort the competitiveness of electric two-wheelers for personal use in Indonesia

Affordability and total cost of ownership are key determinants of vehicle choices. With a national GDP per capita of around IDR 83.7 million (USD 5,100) and average monthly wages of about IDR 3.33 million (USD 200), purchase decisions are highly sensitive to lifetime ownership costs^{33,21}. 2Ws are widely used for daily commuting as well as income-generating activities such as ride-hailing, deliveries, and urban logistics. Consequently, purchase decisions are influenced not only by upfront vehicle cost but also by lifetime ownership costs.

While incentives for e-2W purchase were available for a temporary period (2023-2024), transport fuel has been subsidised in Indonesia through the state owned subsidiary, Pertamina, since 2010 to keep 2W ownership affordable. This keeps the operating cost of ICE 2Ws artificially low, reducing the economic advantage of lower energy costs associated with operating e-2Ws³⁴.

As per our estimates, the total cost of ownership (TCO) of ICE 2W being run for 35 km daily for a 5-year ownership, 60% resale value and using subsidized fuel is IDR 726/km (USD 0.041/km). The TCO of e-2W (vehicle with battery) is 30% (IDR 950/km or USD 0.054/km) Table 1). Therefore, a daily mileage of 60 km is economically feasible even with the subsidized fuel making the transition to e-2Ws in high-operating applications such as ride-hailing,

higher than ICE. An e-2W (vehicle with battery subscription), where the consumer only pays the vehicle price at purchase and a monthly rental for the battery has become popular in Indonesia³⁵. However, even with a battery subscription model³⁶, the TCO of e-2W is 16% (IDR 840/km or USD 0.047/km) higher than the ICE model.

However, if 2Ws use the unsubsidized fuel available in the market (priced 60% higher than the subsidized fuel), the e-2Ws (vehicle with battery subscription) achieve TCO parity with the ICE model even for a daily mileage of only 35 km (Figure 9). The two key challenges in achieving TCO parity for e-2Ws are the fuel subsidy and the lack of a secondary market for e-2Ws. However, higher daily running of e-2Ws can address these challenges as discussed below:

A daily running of at least 60 kms can offset the impact of fuel subsidies for achieving TCO parity

The availability and use of subsidized fuel reduce the cost competitiveness of e-2Ws. For the current subsidized fuel price (IDR 10,000/l or USD 0.6/l), a daily mileage of 60 km makes the cost economics favorable for e-2Ws (vehicle with battery subscription). However, for 2Ws using the unsubsidized fuel (IDR 16,250/l or USD 0.9/l), a daily mileage of even 35 km makes the transition to e-2W feasible (

deliveries, urban logistics feasible for the market.

³³ <https://www.bps.go.id/en/pressrelease/2026/02/05/2546/ekonomi-indonesia-tahun-2025>

³⁴ <https://finance.detik.com/energi/d-7014177/kementerian-esdm-ungkap-harga-asli-pertalite-rp-12-000-liter#:~:text=Kementerian%20ESDM%20Ungkap%20Harga%20Asli,Energi>

³⁵ Vehicle with battery subscription does not necessarily mean a swappable battery only. A number of e-2W models by Alva, Polytron etc. offer battery subscription with chargeable fixed battery in the vehicle.

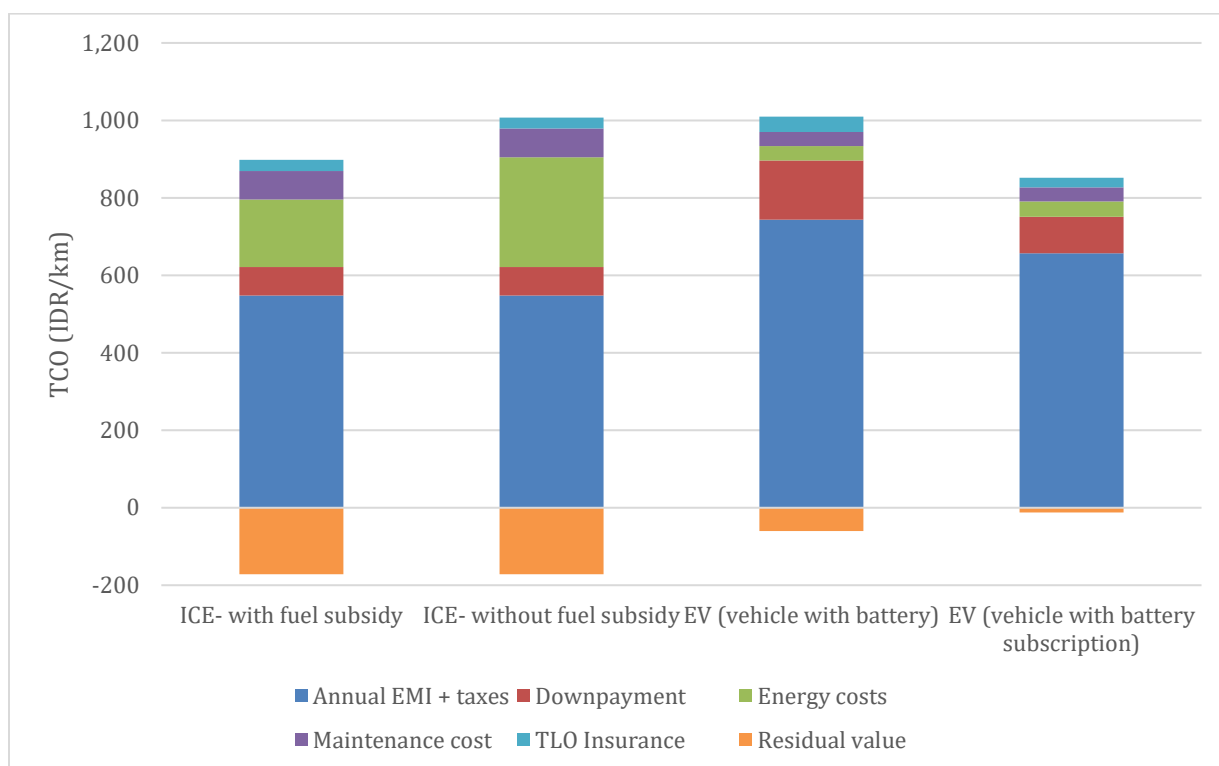


Figure 9: TCO (IDR) of ICE and e-2Ws for personal use

Note: Models considered for TCO analysis: ICE- Honda BeAT CBS, EV (vehicle with battery) – Volta PatriotX, EV (vehicle with battery subscription) – Polytron Fox 350

A daily running of about 100 kms can offset the resale value difference between an ICE and electric 2W

Indonesia is a very cost-sensitive market where 2Ws are also an asset that can be liquidated as and when need arises. This influences a consumer's purchase decision for a 2W, where a mature after-sales service network and robust secondary market for ICE 2Ws make them a preferred choice with a resale value of 50%-60% after 4-5 years of ownership. The secondary market for e-2Ws is almost non-existent. However, running an e-2W for at least 100 kms

daily can cumulatively save more than IDR 11 million (USD 620), as highlighted in Table 1, at any fuel price. This cost savings is higher than the resale value of the best-selling ICE model (~IDR 9 million net present value) after 5 years of ownership. However, the lack of a secondary market does not provide asset liquidity and leads to resale value uncertainty for e-2Ws as compared to the secondary ICE 2W market, estimated to be ~20% (1.5-2 million units) of the new annual 2W sales, as per our stakeholder consultations.

Table 1: TCO difference of ICE and EV (vehicle with battery subscription) models in IDR million

		Daily mileage (km)					
		20	40	50	60	80	100
Fuel price (IDR/litre)	10,000	-9.8	-4.7	-2.1	0.5	5.7	10.8
	12,000	-8.8	-2.6	0.5	3.6	9.9	16.1
	14,000	-7.7	-0.5	3.2	6.8	14.0	21.3
	16,000	-6.7	1.6	5.8	9.9	18.2	26.5
	18,000	-5.6	3.7	8.4	13.1	22.4	31.8

Note: Red indicates cheaper ICE TCO and green indicates cheaper EV TCO.

Table 2: Decadal growth rate of 2Ws across major global markets

Countries	India	China ³⁷	Vietnam	Indonesia
CAGR (2016-2025)	2.10%	(-) 3.23%	(-) 1.95%	1.12%

Sources: Indonesia (BPS Indonesia, 2026), India (Ministry of Road Transport and Highways, 2026), VietNam (Marklines, 2026), China (IEA)

Electric 2Ws with battery subscription have emerged as an innovative solution to address the high upfront costs. According to information gathered through stakeholder consultations, emerging domestic players such as Polytron (PT Hartono Istana Teknologi) and Alva Auto (PT Ilectra Motor Group) have established themselves as market leaders by such e-2W models where a fixed battery vehicle is sold to a consumer but the consumer only pays upfront for the vehicle, with the battery costs distributed as a monthly rental. Such models also achieve TCO parity with the ICE model. Favorable cost economics for such models has increased their sales to comprise almost 60% of total e-2Ws sales (~ 35,000 units) in 2025.

Indonesia's large 2W market and manufacturing capabilities provide a strong foundation for scaling e-2W production

Indonesia is one of the fastest growing 2W market among the four largest global 2W markets, with annual 2W sales growing at a CAGR of 1.1% over 2016-2025; unlike China and Vietnam where annual 2W sales have decreased over the same period (Table 2). With Indonesia's market size and growth rate, electrification potential of 2Ws presents an opportunity for developing domestic e-2W manufacturing and supply chains. The Indonesian President launched the [National Electric Motorcycle \(MOLINAS\)](#) program in

August 2026 as a strategic initiative to achieve industrial self-reliance, technological development, and energy security³⁸. The program aims at utilizing Indonesia's nickel resources to develop an integrated industrial ecosystem including vehicle and battery production, charging networks and service infrastructure along with financing support for consumers through Danantara³⁹. The government has set four criteria including domestic content level above 60%, domestic design and engineering, using Ni-based batteries, and building affordable products for the market, with about 10 manufacturers qualifying to produce and sell e-2Ws under this program⁴⁰.

Indonesia's established 2W manufacturing ecosystem provides a strong foundation for scaling e-2Ws. With an annual production capacity of around 11 million units, investments exceeding IDR 30 trillion (USD 1.7 billion), and a domestic market of more than 6 million annual sales, Indonesia is already the world's third-largest 2W producer. Beyond meeting domestic demand, the country exports around 600,000 two-wheelers as Completely Built Units (CBUs) annually, primarily to ASEAN and African markets, while Completely Knocked Down (CKD) exports are estimated to be comparable to domestic sales, reflecting Indonesia's growing role in regional manufacturing⁴¹.

At present, Indonesia is a major ICE 2W manufacturing hub with Japanese

³⁷ https://www.fastener-world.com/data/pdf_download/CFW_65_W_50.pdf

³⁸ <https://setkab.go.id/en/president-prabowo-launches-national-electric-motorcycle-molinas/>

³⁹ <https://www.briefasia.com/en/article/indonesia-launches-domestic-electric-motorcycle-push-to-absorb-nickel-surplus>

⁴⁰ <https://en.antaranews.com/amp/news/427940/indonesia-sets-four-criteria-for-national-electric-motorcycles>

⁴¹ Based on stakeholder consultations with Association of Indonesian Motorcycle Industry (AISI)

manufacturers (Honda, Yamaha, Suzuki, Kawasaki) producing locally through joint ventures or subsidiaries⁴². Electric 2Ws offer an opportunity not only to sustain this manufacturing base but also to increase domestic value addition and strengthen Indonesia's position in regional EV supply chains. The government's industrial strategy under Presidential Regulation No. 55/2019 and the TKDN (domestic content) framework targets 40% local content by 2026, increasing to 80% by 2030, alongside an ambition to produce 2.5 million e-2Ws annually by 2030⁴³. These policy signals have already attracted significant capital investment, including IDR 19 trillion (USD 1 billion) in planned investments and new manufacturing facilities by companies such as Yadea, which is investing USD 150 million (IDR 2.4 trillion) in local manufacturing⁴⁴.

There is an opportunity for domestic manufacturers such as, Polytron, Alva, Gesits, Smoot, and Volta, dominating the e-2W market, to make Indonesia a key global e-2W manufacturing destination with local manufacturers and supply chains. However, realizing these industrial ambitions will depend on the pace of domestic market development.

Policy implications

Indonesia possesses many of the structural advantages needed to build a globally competitive e-2W ecosystem – a large and growing domestic 2W market, an established manufacturing base, growing base of e-2W manufacturers, and supportive industrial policies. However, the market remains constrained by inconsistent policy support, suitable product availability, lack of affordable financing and EV-ready infrastructure. The policy experience over 2022-2025 demonstrates that while demand-side incentives can rapidly

stimulate adoption, policy uncertainty can be equally effective in slowing market momentum. The next phase of Indonesia's transition should therefore focus on creating a stable and predictable policy environment that allows market forces, private investment and innovation to scale sustainably. Policy priorities for accelerating Indonesia's e-2W market include:

Creating market certainty through regulations and demand signalling

As e-2W market accelerates, regulations such as an adoption target, fuel economy standards or phasing out of ICE 2W registrations, along with transparent demand incentive trajectories can improve market certainty, attract investment, improve product availability, and reduce risk perception amongst consumers. Global south countries have also been experimenting with non-fiscal policy measures such as phased restriction of ICE 2Ws in high-polluted areas, fleet electrification and regulatory mandates to accelerate electrification. Additionally, a predictable demand trajectory would enable manufacturers to commit investment, achieve economies of scale, deepen supplier localization, improve product competitiveness, and leverage Indonesia's manufacturing base to expand exports across ASEAN and other emerging markets.

Improving access to affordable financing

While purchase subsidies play an important role in stimulating nascent e-2W market, particularly in cost sensitive markets, sustaining adoption at scale will require policy support that addresses the broader economics of vehicle ownership. For over 80% of Indonesian households, 2Ws are both a mobility necessity and a financial asset, making purchase decisions heavily

⁴² https://itdp.org/wp-content/uploads/2026/04/Internal-ITDP_Global-Landscape-of-SS-Policies-for-E-2Ws.pdf?mc_cid=22e3296ba0&mc_eid=08914e893c

⁴³ https://gatrik.esdm.go.id/assets/uploads/download_index/files/4a827-bahan-aismoli.pdf

⁴⁴ <https://indonesiabusinesspost.com/2601/business-and-investment/yadea-to-set-up-us150-million-electric-motorcycle-factory-in-karawang>

influenced by access to affordable financing, residual value, and long-term operating costs rather than upfront price alone. As the market matures, policy support should increasingly focus on reducing total cost of ownership and improve risk perception of e-2Ws. This could include innovative and concessional financing, interest rate subvention, vehicle warranty frameworks, targeted incentives for fleet electrification, and development of a secondary market. Such measures can improve affordability and lower cost of financing for e-2Ws proven with the success of e-2Ws with battery subscription becoming the most-selling e-2Ws in the market in 2025.

Aligning Indonesia's industrial strategy to support domestic 2W manufacturing

Global experience suggests that leading EV markets have combined demand creation with supply side regulations and interventions to

support domestic manufacturing. Indonesia has an opportunity to integrate its e-2W transition with its broader industrial development strategy. The country already possesses many of the structural advantages required to build a globally competitive EV ecosystem, including one of the world's largest 2W manufacturing industries, a rapidly expanding battery manufacturing base, and the world's largest nickel reserves. Industrial development policies that enable manufacturers to invest in new product development, localize supply chains, achieve economies of scale, and improve cost competitiveness would enable Indonesia to leverage its structural advantages. Aligning industrial policy with demand-side policies would create the scale needed for domestic manufacturers for investment in domestic manufacturing and local supply chains, and strengthening Indonesia's e-2W export competitiveness.