In Indonesia, Buses and Two-Wheelers Are Key to Scaling Electrification

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The Government of Indonesia has set a significant target to reduce greenhouse gas (GHG) emissions by 540 million tonnes of carbon equivalent by 2050. As part of this goal, the government adopted a plan to accelerate the transition to Battery Electric Vehicles (BEVs) across the country, reinforcing a commitment to addressing high emissions from its transportation sector. The plan includes targets for deploying 13 million electric two-wheelers and 2 million electric four-wheelers nationally by 2030, with the electrification of 100% of the country’s urban bus fleets in the same timeframe. Several major provinces — such as Jakarta and Bali — have adopted policies and taken steps to commit more resources to meeting these ambitious electrification goals.
Nevertheless, as of September 2022, the BEV uptake nationwide — for both two-wheelers and four-wheelers — only accounts for 1.7% of the 2030 target. Bus electrification has a similarly low transition rate — in the Transjakarta system, where the city aims to have more than 50% (or 3,000 vehicles) of its bus fleet electrified by 2025, there are only 30 e-buses fully deployed as of summer 2022. For the country to reach its targets, a comprehensive plan is needed to keep electrification on track; otherwise, Indonesia risks being locked into a cycle of growing emissions and pollution from its transport sector.

### PRIORITIZING TWO-WHEELERS AND BUSES

To make progress on electrification in Indonesia, a significant focus must be placed on Jakarta, the country’s capital and most populous city. In particular, Jakarta’s roads are overwhelmed with people making use of two-wheelers, primarily due to their affordability and flexibility. Two-wheelers are the most dominant type of vehicle currently operating in the country, and ride-hailing accounts for a significant percentage of usage in major cities. Greater Jakarta’s Commuter Statistics shows that two-thirds of commuters in Jakarta used private and ride-hailing motorcycles in 2019 for daily commuting, the highest among all transport modes. Traffic counting by ITDP Indonesia concluded that on average, a quarter of two-wheelers on the road in Jakarta are ride-hailing motorcycles. This high number of two-wheelers also means a significant amount of related emissions; data from 2018 found that 15.5% of Jakarta’s GHG emissions come from motorcycle use alone.

Traditional diesel buses have had a similar impact on the country’s growing emissions. Even though regular bus fleets account for less than 2% of all transport modes in Jakarta, they are responsible for over 45% of the city’s emissions and 21% of its air pollutants, due in part to the long distances they travel. The ubiquity and popularity of both urban buses and two-wheelers means that prioritizing the electrification of these two modes is critical if Indonesia is to meet its 2050 goals. Several studies have found that buses and ride-hailing
two-wheelers have the potential to jumpstart large-scale electrification progress across the country, considering both modes’ operational characteristics and socio-economic benefits. According to research from ITDP Indonesia, the large-scale electrification of 1.4 million ride-hailing two-wheelers and 5,000 urban buses by 2030 would mean a respective 58% and 30% reduction in the city’s emissions, compared to a business-as-usual scenario.

To accelerate electrification in Jakarta and nationally, policymakers and local governments need to incentivize and expand infrastructure that facilitates an easier transition to BEVs. One priority is ensuring that utility and infrastructure companies establish more accessible battery charging and swapping facilities for two-wheelers. The expansion of public charging stations would address issues of ‘range anxiety’, or the fear that a BEV would not have sufficient energy to cover long distances — a concern which poses big barriers to BEV adoption in a sprawling metro like Jakarta. Making charging infrastructure a priority for e-buses is also crucial to easing the transition for public transport agencies. The operational predictability of bus fleets like Transjakarta — which tend to have fixed daily patterns, schedules, routes, and distances — would mitigate potential risks and guarantee demand for charging facilities citywide.

In addition to building out reliable infrastructure, transport agencies and ride-hailing companies should also focus on the provision of more standardized BEV models in their fleets, rather than customized ones. Standardized models streamline and ease evaluation, maintenance, and other technical issues that arise with the upkeep of vehicles. Scaling the use of more standardized BEV models could help bring other economic benefits to Indonesians — from decreasing operational costs for ride-hailing drivers, to reducing fuel subsidies, to creating jobs in adjacent industries.

**BEYOND ELECTRIFICATION**

Keeping global warming below the 1.5°C threshold cannot solely depend on electrification efforts, however. In 2021, ITDP and the University of California, Davis collaborated on The Compact City Scenario — Electrified report that looked at four different scenarios for urban transportation in the coming decades: business-as-usual; electrification only; compact cities development; and electrification and compact cities combined.

The only scenario that would effectively mitigate the worst effects of climate change is one in which a dual policy approach is taken that focuses on the electrification of urban passenger transport alongside compact cities that highlight walking, cycling, and transit. In Indonesia specifically, the need for this dual policy approach is no less critical, although the slow rates of BEV adoption demonstrates that electrification is an urgent priority. To reach its emissions targets, Indonesia now needs to place a major emphasis on transitioning its two-wheelers and urban buses, beginning in Jakarta.