

## **Title: Unlocking Electric Two-Wheelers Adoption in Thailand: Strategic Solutions to Key Challenges**

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### **Abstract:**

Thailand's transition toward sustainable mobility is guided by ambitious targets for electric vehicle adoption, including a full shift to electric motorcycles by 2035. Despite supportive policies under the EV3.0 and EV3.5 schemes, electric two-wheelers (E2Ws) accounted for only 0.51% of first motorcycle registrations between 2019 and 2024—falling short of national expectations.

Drawing on a comparative Total Cost of Ownership (TCO) analysis of internal combustion engine and electric motorcycle models, this study finds that although E2Ws offer significant fuel cost savings, their appeal is often diminished by limited battery performance and high opportunity costs associated with charging downtime. These barriers are particularly acute for high-mileage users such as motorcycle taxi drivers, who prioritise vehicle uptime and reliability. Additionally, access to affordable and flexible financing remains limited—especially for users who treat motorcycles not only as transport but also as informal financial assets to support household liquidity during emergencies.

Unlocking broader E2W adoption will require coordinated action across infrastructure, technology, and policy domains. Key priorities include expanding accessible and reliable charging networks, improving battery range and durability, and developing inclusive financing models tailored to user needs and behaviours. These findings offer policy-relevant insights for advancing a more practical, equitable, and scalable transition to electric mobility in Thailand.