Received: 30 September 2025 | Revised: 09 January 2026 | Accepted: 7 February 2026

Papua Journal of Diplomacy and International Relations
Volume 6, Issue 1, May 2026 (135-157)
DOI: 10.31957/pjdir.v6i1.4958
ISSN 2797-0957 (Online)

State-Business Relations and Electric Vehicle Industrial Policy in ASEAN: Evidence from Indonesia, Thailand, and Vietnam

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ABSTRACT

This article examines how political economy factors, particularly state-business relations and political context that shape electric vehicle (EV) industrial policy in ASEAN. Using a comparative political economy approach, it analyzes Indonesia, Thailand, and Vietnam through four dimensions: policy process, state motivations, capability formation, and enforcement of government support. The study finds that variations in coordination mechanisms and bargaining structures between governments and firms explain divergent policy mixes and industrial upgrading trajectories despite similar policy goals. Thailand demonstrates institutionalized coordination with enforceable conditionality that supports supplier upgrading; Indonesia adopts executive-led downstreaming with state-owned enterprise brokerage and evolving local content requirements; while Vietnam employs a decree-driven, champion-led model focused on scaling production but with limited supplier inclusion. The article contributes to the literature by showing that effective industrial upgrading depends on where coordination authority is located and how credible and enforceable policy conditionality is, rather than on incentives alone.

KEYWORDS

ASEAN; Electric Vehicle; Industrial Policy

INTRODUCTION

Electric vehicle development has become a central policy priority in many countries. Within these trends, governments are not only supporting EV adoption through demand incentives and charging infrastructure but also employing industrial policy instruments to attract investment, expand domestic production, and shape firms' participation in emerging EV industries (Győrffy, 2024). This policy has, hence, created differences across regions in the pace of adoption and the direction of industrial upgrading.

Within these broader trends of transition, Southeast Asia has become a policy-active region for EV adoption and industrial development. Governments across ASEAN countries have introduced targets and incentive packages that aim to accelerate domestic EV diffusion while positioning their economies within emerging EV production networks. Table 1 thus summarises how ASEAN countries have articulated EV adoption and manufacturing targets policies, showing both the breadth of policy activity and the uneven pace of commitment across the region (Doi et al., 2023).

Table 1. EV Adoption Policy in ASEAN Countries

Country	EV Adoption Policy Target
Brunei	• Brunei's National Climate Change Policy plans to set EV sales at 65% of total vehicle sales by 2035.
Indonesia	• Indonesia targets the phase-out of gasoline-powered two-wheelers by 2040 and the phase-out of internal combustion engine vehicles by 2050. • The government also intends that alternative-powered vehicles account for 20% of total vehicle production by 2025. • The national roadmap further specifies staged production and sales targets for motor vehicles and motorcycles through 2035, and infrastructure targets that include 31,859 private charging installations and 7,146 public charging stations by 2030, plus 22,500 battery swap stations for two-wheelers by 2035.
Malaysia	• Under the Low Carbon Mobility Blueprint 2021-2030, Malaysia targets an EV sales share of 9% by 2025 and 15% by 2030. • The same policy direction is linked to charging expansion plans, including installation targets that reach 10,000 charging units by 2025.
Thailand	• Thailand's EV roadmap targets EV production at 30% of total annual automotive production by 2030, operationalised through phased production and usage targets for passenger cars and pickups, buses and trucks, and motorcycles. • The roadmap is paired with charging infrastructure targets that include 12,000 DC chargers by 2030, alongside station targets for passenger vehicles and motorcycles.
Vietnam	• EV promotion targets have been set in a number of cities. 5% e-motorcycle share of total motorcycles in Ha Noi by 2030, a goal of 200 e-buses by 2025 in Nha Trang, and Da Nang's charging-station targets for 2025 and 2030.

Source: Doi et al., (2023)

Among the ASEAN countries that have started to develop EV policies, Thailand, Indonesia, and Vietnam have become pivotal leading actors. This is underlined by the amount of EV sales in its domestic markets. Figure 1 presents electric car sales, which illustrate the stronger pace of EV uptake in these three countries, which helps explain why they have become central reference points for EV policy development in ASEAN (Direkudomsak, 2024). Furthermore, the three countries are relevant for a political economy analysis because they have distinct political economy approaches that combine EV ambitions with distinct governance structures and patterns of government-business relations that can shape how policies are designed, implemented, and monitored. In this case, Schröder (2024) and Wijaya and Sinclair (2024) mention that Thailand builds on a long-standing automotive industrial base and relies on established investment promotion and inter-agency coordination practices that structure engagement with domestic and foreign firms. On the other hand, Negara (2024) describes Indonesia's EV strategy, which has been closely linked to resource-based industrial priorities and to bargaining with investors in the battery and downstream industries. Lastly, Vu-Thanh (2022) describes that Vietnam's EV trajectory is embedded in a party-state context in which industrial priorities and business influence are managed through governance arrangements that differ from those in Thailand and Indonesia.

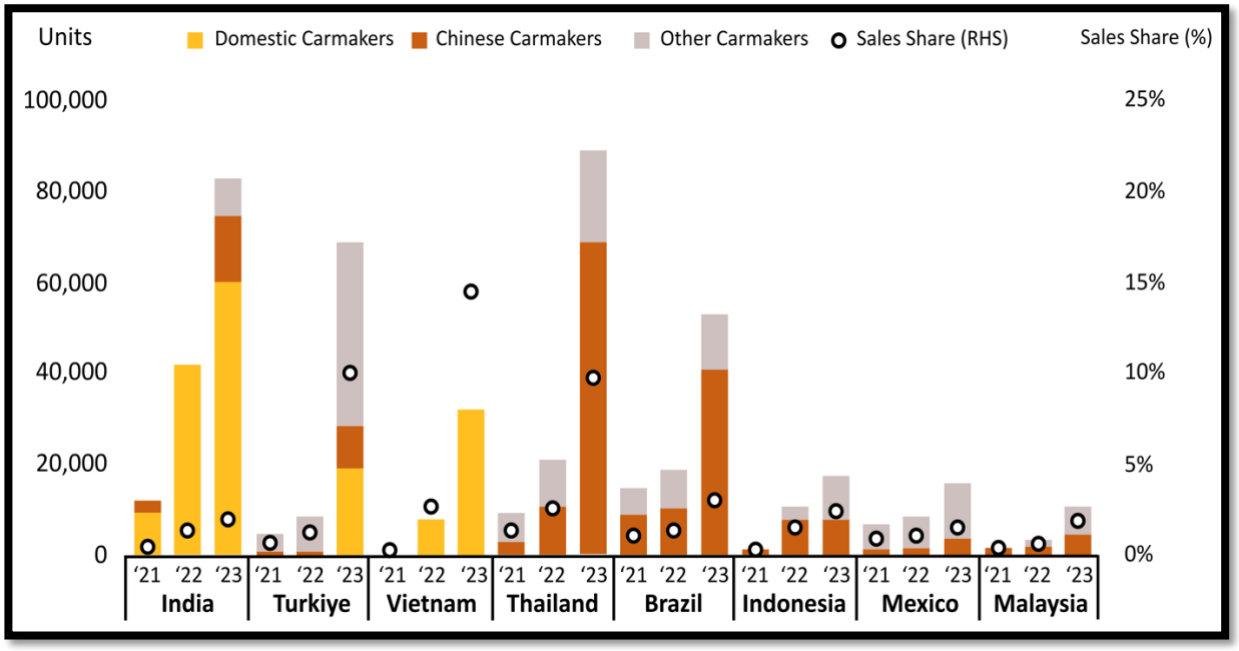

Figure 1. Electric Car Sales in Selected Countries, by Origin of Carmaker
Source: Direkudomsak (2024)

Despite the distinct political-economy approaches of Indonesia, Thailand, and Vietnam, no studies have analyzed how political-economy factors in these three countries shape EV industrial policies. Existing studies by Doi et al. (2023), Li et al. (2025), and Schröder (2024) have mapped

ASEAN EV policy targets, adoption pathways, and sectoral prospects. However, they still give limited attention to the political economy factors that shape EV industrial policy design. In particular, those studies offer less explanation of how the political economy of state-business relations and domestic governance structures influence EV industrial policy over time (Li et al., 2025; Schröder, 2024).

This study, hence, addresses the gap by analysing evidence on EV industrial policies in Thailand, Indonesia, and Vietnam from a political economy perspective, with specific attention to domestic governance structures and state-business relations. The main research questions to be answered are: how state-business relations shape EV industrial policy instruments, and how differences in political-economy aspects of governance arrangements affect the implementation of EV policies. For the further outline, the article first reviews the ongoing discussion on EV industrial policy development and the political economy of industrial policy, then develops an analytical framework for examining political-economy aspects and government-business relations in the three countries. Next, it explains the research methods. The subsequent sections present the country analyses and the discussion of findings. Lastly, the conclusion are the main arguments and highlights implications for understanding EV industrial policy variation in ASEAN.

LITERATURE REVIEW

Industrial policy has become a prominent topic in international political economy because governments have returned to targeted intervention to shape industrial upgrading in strategic sectors. In this context, Bulfone's (2022) study thus provides a strong foundational starting point for this debate by reviewing how industrial policy research has developed and how policy practice has shifted over time. The study is valuable for positioning industrial policy as a central topic in contemporary political economy rather than a residual category of protectionism. It also clarifies that modern industrial policy often operates through a broad mix of tools, including fiscal incentives, regulatory measures, and investment facilitation, which are used to influence firm decisions and industrial trajectories in sectors that governments consider strategic (Bulfone, 2022).

Within these trends, the ASEAN automotive industrial policy literature provides an additional foundation by explaining how regional industrial structures shape policy choices. A study from Tai & Ku (2013) examines the political economy of the automotive sector in ASEAN with attention to trade liberalisation, foreign direct investment, and the evolution of regional production networks. This contribution helps situate EV development within a longer trajectory of automotive industrialisation in Southeast Asia. It also motivates a comparative focus on the region by showing that national strategies have long been shaped by the interaction among state policy choices, multinational firm strategy, and regional competitive pressures (Tai & Ku, 2013).

Furthermore, recent EV-focused studies on ASEAN have provided critical empirical mapping of ASEAN's transition, but they remain limited in political economy explanation. One

study from Doi et al. (2023) maps EV policy targets, infrastructure needs, and policy measures across ASEAN and offers a detailed overview of national policy directions. Additionally, Li et al. (2025) examine the battery-electric vehicle sector in ASEAN, with an emphasis on regulatory frameworks and EV value chain development. Lastly, Schröder's study (2024) analyses differences in EV-related industrial strategies in Southeast Asia and links them to the evolving regional division of labour. While these studies clarify the existing policies and show that countries differ in their instruments and stated priorities, they offer less explanation of how domestic political economy factors shape EV industrial policy over time. In particular, existing work pays limited attention to how state-business relations influence EV industrial policies and how domestic governance arrangements also affect the EV industrial policies in ASEAN countries (Li et al., 2025; Schröder, 2024). Henceforth, this is the gap addressed in this study, which analyses EV industrial policy in Thailand, Indonesia, and Vietnam from a political-economy perspective, with particular attention to domestic governance structures and state-business relations.

To achieve this goal, this study employs the analytical framework developed by Győrffy (2024) to examine the political economy of EV-related industrial policies. While Győrffy's study draws on Sweden and Hungary, its analytical logic is applicable to the ASEAN case. The comparison in Győrffy's study demonstrates that transition motivation can produce different policy processes and industrial outcomes when political-economy aspects of governance arrangements, such as conditionality in political institutions, state capacity, and patterns of state-business relations, differ. This logic is relevant to the present research objective, which is to explain how governance arrangements or conditionality affect the EV industrial policies and how state-business relations in Thailand, Indonesia, and Vietnam shape EV industrial policies.

Table 2. Political Conditionality Aspect Shaping Industrial Policy

Aspect	Conceptual Definition
Policy process	The way the battery/EV strategy is developed and implemented, ranging from collaborative, stakeholder-inclusive policymaking to top-down, secretive decision-making, is shaped by political system characteristics.
Motivations	The dominant goals steering policy: environmental and business opportunity versus TNC-driven preferences and rent-seeking; motivations link political system traits to sector choices.
Research & Development (R&D) and capability formation	Orientation of knowledge base: domestic R&D building local capabilities versus imported technology via TNCs; tied to the country's variety of capitalism and growth model.
Government support (instrument profile and enforcement)	Mix and discipline of state aid: mainly indirect support with rule-based oversight versus large direct subsidies paired with lax regulation; enforcement and monitoring determine outcomes and rent discipline.

Source: Győrffy (2024)

Furthermore, Győrffy's framework of political aspect conditionality (see Table 2), shaping industrial policy, is operationalised within the fourth dimension through indicators that can be identified in policy design and observed in implementation. The first dimension is the policy process, which is examined by determining how EV policy is initiated, which agencies lead and coordinate, how consultation with firms is organised, and how policy decisions are revised over time. The second dimension is the motivation guiding state intervention, which is examined by tracing the stated priorities underpinning EV industrial policy, including competitiveness and upgrading objectives, environmental goals, resource-based strategies, and domestic political considerations that shape the allocation of support. The third dimension is capability formation, which is examined by assessing whether policy instruments support local learning through supplier development, workforce training, research and development, and incentives that encourage domestic linkages rather than limiting outcomes to assembly and sales expansion. The fourth dimension is the character of government support and its enforcement, which is examined by identifying the instrument mix and assessing whether policy benefits are linked to obligations and whether those obligations are implemented through monitoring and sanctions.

Building on this framework, the article specifies three propositions that are assessed against the policy instruments and governance arrangements analysed. First, when consultation is institutionalized and coupled with credible enforcement instruments, such as conditional incentives, monitoring mechanisms, and sanctions, industrial policy is more likely to yield durable foreign direct investment and supplier upgrading rather than short-term assembly expansion. Second, where resource rents dominate state strategy, industrial policy will prioritize upstream value capture, including mining, smelting, and precursors, and will intensify contestation over localization rules as firms and incumbents' bargain over costs and feasibility. Third, where the state privileges national champions and selected foreign partners, incentives can accelerate rapid scaling and project execution. Still, the benefits may be unevenly distributed, creating risks of excluding smaller domestic suppliers, limiting capability diffusion, and creating financing bottlenecks for second-tier firms. These propositions provide a bridge between the literature and the comparative evidence, and anchor the findings around identifiable causal mechanisms.

METHODS

This study employs a comparative political economy design to analyse how political economy factors shape EV industrial policy in Indonesia, Thailand, and Vietnam (Boeije, 2009). This approach enables the study to examine how policy choices are embedded in institutional arrangements, particularly in state-business relations, coordination mechanisms, and enforcement practices (Boyer, 2018).

The three countries are selected as leading ASEAN cases in EV industrial development, allowing the study to focus on governments that actively promote EV industrialisation and demonstrate significant policy momentum (Doi et al., 2023). This case selection supports the

analysis of how policy instruments are designed, implemented, and adjusted over time within different governance contexts. Data are collected through a systematic desk review of policy documents published between 2016 and 2025, including laws, regulations, incentive guidelines, official decisions, and reports from public agencies and international organisations (Barbieri et al., 2025). This approach allows the study to trace formal policy commitments and observable implementation arrangements, while acknowledging its limitation in capturing informal bargaining processes.

The analysis follows a staged procedure of document identification, screening, and verification to ensure transparency and consistency. It applies a within-case thematic analysis based on four dimensions—policy process, state motivations, capability formation, and enforcement—followed by cross-case comparison to identify variations in policy design and implementation (Yin, 2014; Győrffy, 2024). To strengthen reliability, findings are cross-checked across multiple document types, with priority given to the most recent binding regulations when discrepancies arise.

RESULTS AND DISCUSSION

Underlying Political Aspects Influencing the Electric Vehicle Industrial Policy in Thailand, Indonesia, and Vietnam.

Across Thailand, Indonesia, and Vietnam, the findings show that EV industrial policy is shaped through distinct combinations of governance arrangements and state-business coordination. Table 3 summarises these findings based on the four analytical dimensions applied in this study, and the discussion that follows explains how differences in governance arrangements affect implementation over time and how state-business relations shape EV policy instruments.

Table 3. Summary of the Political Conditionality Aspect Influencing the EV Industrial Policy

Aspect	Thailand	Indonesia	Vietnam
Policy process	Committee-centered coordination plus institutionalized consultation	Executive-led centralization plus SOE brokerage	Party-state direction plus decree-based implementation, without a dedicated EV coordination body
Motivations	Competitiveness and export-based defense translated through sustainability legitimacy	Resource nationalism and down streaming framed through transition legitimacy	Transition legitimacy filtered through industrial pragmatism and selective market-making
Research and development and capability formation	Incentive plus institution bundle for learning	Midstream capability via down streaming and SOE-brokered projects	Scale-first industrialization with

			weaker EV-specific learning inducements
Government support and enforcement	Catalytic support with credible enforcement	Localization gatekeeping through TKDN and time-bound import windows	Primarily price-based fiscal steering with weaker EV-specific upgrading enforcement

Source: Author's Analysis (2025)

Policy Process: Collaborative vs. Top-Down Decision-Making Structures

Across the three cases, how the policy process shaped EV industrial policy can be explained by a standard causal chain that runs from decision-making structures to credible commitment, instrument coherence, and implementation capacity. Where consultation is institutionalized, as in Thailand through the JPPCC legacy and the NEVPC, repeated state-business interaction reduces information asymmetries, enables rapid feedback on feasibility, and signals credible commitment to investors, thereby supporting coordinated packages that align incentives, standards, and infrastructure under a single roadmap (Laothamatas, 2019). While in Indonesia, as Karim and Kholid (2025) note, authority is centralized and recentralized through Perpres mandates, CMMAI style cross ministry harmonization, and the Job Creation Law's risk based licensing, the mechanism operates by compressing veto points and speeding strategic project approval, while SOE brokerage provides a state controlled interface for bargaining with large foreign partners, but this concentrates negotiation into project based deals rather than broad consultation. Furthermore, in Vietnam, where steering is anchored in party resolutions and executed through decrees without a dedicated EV coordination body, the mechanism produces swift fiscal adjustments and demand stimulation, but weaker cross-agency integration increases siloed implementation and uneven local execution, which can dilute policy coherence even when headline direction is centralized (London, 2022).

To be precise, in Thailand, the policy process for EV policies combines centralized steering with institutionalized consultation, which is concentrated among economic ministries and major industry actors. The creation of the National Electric Vehicle Policy Committee in February 2020 consolidated EV policy direction under a high-level committee and set a single national roadmap through the 30@30 target and phased implementation plans, which were then formalized through Cabinet endorsement and implemented by line agencies (Doi et al., 2023). Hence, the policy process is coordinated by a central steering body, while implementation authority remains distributed among ministries responsible for investment promotion, taxation, standards, and infrastructure. This arrangement supports consultation with large firms and associations through structured channels. Yet it also reflects a top-down element, as key incentives and timelines are set centrally and embedded in binding requirements for participating manufacturers. It also indicates that this centralization was intended to address fragmented policymaking across agencies, although coordination challenges persist where implementation depends on agencies

with distinct mandates and constraints (Ungsuchaval, 2025). Therefore, Thailand's process is collaborative in that prominent industry actors have routinized access to policy discussions, but it remains centrally directed in target-setting, rule design, and revisions across phases.

In Indonesia, the policy process for EV policies is more explicitly executive-led and organized around centralized mandates, ministerial rulemaking, and the strategic deployment of state-owned enterprises in the battery segment (Lahadalia et al., 2024). Presidential Regulation No. 55 of 2019 establishes EV acceleration as a national priority. It assigns responsibilities across ministries, while subsequent executive instruments further steer adoption and implementation through state directives such as Presidential Instruction No. 7 of 2022, which directs government agencies to use EVs as official vehicles, and Presidential Regulation No. 79 of 2023, which adjusts elements of the EV policy regime, including local content and incentive arrangements. The same steering is also reflected in ministerial regulations that translate the national mandate into implementable requirements, notably Minister of Industry Regulation No. 27 of 2020 on technical specifications, the development roadmap, and TKDN calculation for BEVs, and MEMR Regulation No. 13 of 2020 on EV charging and battery swap infrastructure. In addition, investment governance is governed by the Job Creation Law (Law No. 11 of 2020) and its risk-based licensing approach, as well as by the Minister of Investment Regulation No. 1 of 2022, which links certain investment facilities to obligations to partner with MSMEs.

Hence, the policy process in Indonesia relies less on a standing consultative committee and more on hierarchical coordination, with the central government shaping investment conditions through licensing reforms and fiscal incentives (Ussainar et al., 2025). It shows that engagement with firms is substantial, yet it is structured through selective, project-based bargaining that links priority investors to state goals, especially in battery and minerals downstreaming. Wijaya and Sinclair (2024) further note that the establishment of the Indonesia Battery Corporation in March 2021 further institutionalizes this approach by consolidating strategic SOEs and positioning them as the state's commercial interface for joint ventures and technology partnerships within the battery ecosystem. Therefore, Indonesia's process reflects a state-led investment strategy in which coordination and bargaining are concentrated in executive offices, core economic ministries, and SOE consortia, rather than in broad consultation with a wide range of stakeholders (Negara & Hidayat, 2021; Warburton, 2017).

In Vietnam, it points to a centralized political direction through high-level resolutions and national fiscal instruments, alongside limited cross-agency integration in EV governance. Resolution No. 55-NQ/TW, issued in 2020, provides a national orientation toward clean energy in transport, and subsequent decrees and tax measures have reduced the cost of EV ownership and supported domestic assembly through tariff and fee adjustments (Doi et al., 2023). Thus, national steering is present through Party-state direction and executive decrees. Still, the policy process differs from those in Thailand and Indonesia because it lacks a dedicated EV coordination body and a single national EV roadmap that integrates industrial upgrading, infrastructure rollout, and standards development within a single institutional platform (Tien, 2025; Yean,

2023). Responsibilities are instead distributed across ministries with separate mandates, and implementation often depends on ad hoc coordination as policies are introduced through discrete instruments rather than a unified package (Dorband et al., 2020; Vu-Thanh, 2022). Therefore, Vietnam's approach can be characterized as centrally oriented but institutionally fragmented, with implementation shaped by ministerial silos and uneven local capacity, even when national incentives apply uniformly.

These differences in policy process matter because they affect how governments coordinate across agencies and how credible policy commitments are to investors and domestic producers. To sum up, Thailand's centralized steering through a high-level committee improves the coherence of targets and the alignment of incentive packages across ministries, yet it also concentrates participation among large capital and key associations, which can shape whose interests are prioritized during transitions and revisions (Doi et al., 2023; Ungsuchaval, 2025). Indonesia's executive-led model reduces veto points and accelerates strategic projects by recentralizing authority and using SOEs as implementation vehicles, although this approach also narrows the range of actors with influence over policy design and may increase distributional tensions when social and environmental concerns are weakly integrated into decision-making (Negara & Hidayat, 2021; Warburton, 2017). On the other hand, Vietnam's reliance on broad political direction and fiscal decrees can stimulate demand and support domestic assembly quickly, yet fragmented governance and gaps in standards and lifecycle regulation can limit monitoring capacity and weaken the consistency of implementation across sectors and localities, which is central to understanding how state-business relations shape the evolution of EV industrial policy over time (Tien, 2025).

Motivations: Sustainability Goals vs. Interests of Transnational Corporations (TNCs) and Domestic Industry

EV industrial policy across Thailand, Indonesia, and Vietnam is motivated by a dual logic: (i) sustainability and energy-transition legitimacy, and (ii) industrial competitiveness and value capture. Across the three cases, stated sustainability goals translate into EV industrial policy through a political economy mechanism in which governments must simultaneously secure transition legitimacy and manage dependence on TNC capital, technology, and market access. In Thailand, the competitiveness motive to preserve an export oriented automotive base converts decarbonization commitments into an upgrading strategy by pairing fiscal incentives with cluster and capability institutions, so sustainability is operationalized through coordinated roadmaps, EEC style agglomeration logic, and standards and testing infrastructure that reduce uncertainty for investors while allowing the state to attach conditionality aimed at local parts, skills, and R&D (Medina, 2020). In Indonesia, sustainability narratives legitimize a resource nationalist project where the key mechanism is down streaming, since export restrictions and TKDN based incentives raise the cost of remaining upstream and steer investment into domestic processing and batteries, while SOE brokerage and executive rulemaking de risk large joint

ventures and enable the state to bargain over localization, even as contestation by incumbents and investors periodically forces timetable adjustments (Karim & Kholid, 2025). In Vietnam, sustainability legitimacy is channelled through party state directives that authorize rapid executive action, and the mechanism becomes selective market making plus industrial pragmatism, where demand side tax relief expands adoption and scale based import duty privileges reward firms that can meet output thresholds, which accelerates assembly and favors national champions, but can also constrain broad supplier participation because smaller domestic firms face higher barriers to qualifying for the same rents (Tien, 2025).

To be clear, Thailand's EV agenda is frequently justified through sustainability and energy-transition narratives, but the policy architecture demonstrates that environmental commitments are operationalized primarily through *industrial policy instruments* rather than climate documents alone. While Thailand's NDC Roadmap and related energy-efficiency planning emphasize transport mitigation and efficiency improvements, the country's most explicit EV ambitions are institutionalized through the NEVPC's 30@30 roadmap, which frames electrification as both decarbonization and an industrial strategy to preserve Thailand's export-oriented automotive base (Doi et al., 2023). This translation from climate aspiration to EV uptake occurs through concrete fiscal instruments, including CO2-linked excise taxation and the 2022 EV promotion package (subsidies and import-duty reductions). Yet Thailand's dependence on foreign assemblers and EV technology suppliers means that the same instruments that accelerate adoption also create leverage for TNCs to shape the pace and depth of localization. Policy therefore reflects a balancing act: attracting and retaining TNC investment (including newer Chinese entrants) while using conditionality to protect domestic upgrading goals (e.g., linking market-entry privileges to future local production and component localization).

In Indonesia, the motivations are explicitly articulated in Presidential Regulation No. 55/2019, which frames EV development as a combined project of enhancing energy security, protecting the environment, and accelerating domestic industry. Unlike Thailand's pathway, in which climate planning and industrial policy operate in parallel, Indonesia's EV program is explicitly tied to a resource-based industrialization agenda, in which sustainability narratives help legitimize a broader strategy of downstreaming and national value capture. The state translates these motivations into operational instruments through local content (TKDN) roadmaps and a wider suite of incentives and constraints that discipline firms to produce domestically. At the same time, Indonesia's policy sequence reveals the political-economic tension between ambitious localization and the realities of attracting global OEMs: Presidential Regulation No. 79/2023 relaxes near-term localization timelines and enables time-bound import privileges for CBU EVs, while still conditioning these benefits on commitments to future domestic production (Negara, 2024). Indonesia also employs executive steering to create demand and reduce investor risk, including Presidential Instruction No. 7/2022, which directs the government to adopt EVs as official vehicles. These instruments collectively show that Indonesia's sustainability framing is inseparable from a developmentalist project that relies on

TNC technology (e.g., batteries and processing know-how) while seeking to secure domestic ownership, control, and upgrading within the EV value chain.

Vietnam's EV motivations are anchored less in a dedicated EV master plan than in a high-level political directive. Resolution No. 55-NQ/TW orients national energy policy toward clean and renewable energy in key sectors and is identified as the first national-level document explicitly requiring the promotion of e-mobility. Vietnam then operationalizes this orientation through a set of targeted fiscal levers rather than a unified EV roadmap. On the demand side, Decree 10/2022/ND-CP reduces adoption barriers via EV registration fee exemptions (followed by partial reductions in subsequent years), complemented by a sharply differentiated excise tax regime that lowers rates for battery EVs relative to ICE vehicles (Tien, 2025). On the supply side, Vietnam's approach addresses localization constraints and cost disadvantages through import-duty relief instruments that are conditional on scale: Decree 57/2020/ND-CP provides a 0% import tax rate for inputs not produced domestically, tied to program participation and phased output milestones, while Decree 122/2016 links component tax exemptions to a minimum 3,000 units per model threshold. This design reflects an explicit attempt to overcome a fragmentation trap (many assemblers producing low volumes) while also revealing how general incentives can structurally favor large firms capable of meeting output requirements, most notably large conglomerates and established manufacturers, thereby narrowing the space for SME participation. In political-economy terms, Vietnam's sustainability motivation is real but mediated through industrial pragmatism: the state relies on fiscal tools that support market formation and domestic assembly scale-up, while the deeper coordination problems associated with standards, batteries, and long-term capability-building remain comparatively under-institutionalized.

Research and Development: Emphasis on Domestic Innovation vs. Reliance on Turnkey Imports

EV industrial policy strategies across the three cases diverge most clearly in their efforts to build *domestic technological capabilities*. Across the three cases, capability formation hinges on whether incentives are designed to convert production and market growth into learning, standards compliance, and supplier upgrading, or whether firms can meet policy goals through turnkey imports and limited local linkages. In Thailand, the mechanism is an incentive and institution bundle: BOI tax holidays are paired with merit based extensions that reward R&D and key part manufacture, while complementary intermediaries for testing, standards, and training lower the fixed costs of innovation and make upgrading legible and financeable for firms, which encourages investors to embed engineering, skills development, and validation activities locally rather than importing them (Medina, 2020). In Indonesia, the mechanism is structural bargaining around downstreaming: export and local content rules raise returns to locating midstream battery processing in the country. SOE brokerage de-risks large projects, but spillovers into broader domestic R&D depend on how strictly conditionality is enforced and whether project-

based deals translate into sustained supplier and skills programs beyond the enclave of mineral and battery complexes. In Vietnam, the mechanism is scale first market making: demand side tax and fee relief accelerates adoption and output, and assembly oriented import duty support reduces costs for producers that can meet volume thresholds, which can speed industrial scaling, but provides weaker and less specific inducements for domestic R&D and second tier supplier development, so learning outcomes are more likely to remain concentrated in a few large firms and foreign linked operations (London, 2022).

To be clearer, in Thailand, the policy architecture explicitly embeds R&D and skills upgrading within the incentive regime, reflecting an effort to move beyond passive FDI-led production toward capability formation within the local ecosystem. A key instrument is the Thailand Board of Investment (BOI) Announcement/Decree 3/2564 (Office of the Board of Investment Thailand 2021), which introduced a package that combines tiered corporate income tax (CIT) exemptions (3-8 years, depending on investment value) with R&D grants, human resource development grants, and investment support for EV-battery pilot plants (KPMG in Thailand, 2022). This design matters politically: it uses fiscal rents not only to expand production but also to incentivize upgrading activities that are typically undersupplied when firms can rely on imported technology and components.

Thailand's BOI framework also operationalizes innovation through merit-based extensions that reward specific upgrading behaviors. BOI guidance and promotional materials indicate that firms can receive additional CIT years (+1 to +3) for R&D-related activities, and that incentives can be strengthened when projects deepen local production beyond assembly, particularly through the manufacture of EV key parts (e.g., Battery Management Systems, traction motors, drive control units, on-board chargers, inverters) alongside the vehicle project (Doi et al., 2023). The political-economy analyses, however, caution that such merit-based incentives have historically faced *implementation challenges*, including vague criteria and low uptake, suggesting that the presence of upgrading clauses does not automatically translate into strong learning outcomes (Doner et al., 2021a, 2021b). Even so, compared with its peers, Thailand is distinctive in explicitly incorporating R&D and human capital formation into the national incentive menu, rather than treating them as incidental spillovers.

Beyond fiscal incentives, Thailand has developed a supporting institutional layer to reduce coordination failures in standardization and technology testing, both prerequisites for localized innovation. The national ecosystem includes intermediary bodies and initiatives such as the Thailand Automotive Institute (TAI) (including collaboration to establish EV battery testing capacity), the Thai Industrial Standards Institute (TISI) (standards for batteries, charging systems, and related equipment), and specialized facilities and training-oriented entities (e.g., ATTRIC, the Thai-German Institute, and university-linked centers of excellence) (Kaewtatip, 2019). These institutions serve a governance function: they create shared testing infrastructure, certify standards, and support workforce upgrading, thereby lowering the fixed costs of capability-building for firms that would otherwise default to turnkey solutions.

In contrast, the primary EV-related instruments reviewed for Indonesia and Vietnam rely more heavily on demand creation and manufacturing localization through fiscal levers, rather than explicitly tying incentives to domestic R&D performance. Indonesia's policy thrust has centered on attracting foreign capital and technology into an integrated battery value chain. At the same time, domestic technological capability for advanced EV manufacturing remains under development (Lahadalia et al., 2024). Vietnam's EV transition has likewise been driven largely by fiscal measures and industry expansion dynamics in which foreign technology and investment play major roles (Schröder, 2021). Importantly, this is not a claim that Indonesia and Vietnam have *no* R&D activity in practice; instead, in the core EV policy instruments assessed here, Thailand stands out for making R&D, skills, and testing infrastructure *visible, rule-based policy objects* within the incentive framework. In contrast, the comparable upgrading conditionalities are less clearly specified in the headline EV instruments of Indonesia and Vietnam.

Government Support: Catalytic vs. Incentivizing Investments

Across the three cases, the mechanism linking government support to EV industrial outcomes depends on whether fiscal benefits are paired with enforceable obligations that translate market growth into localized production and capability building. Thailand's approach is comparatively catalytic: beyond using tax privileges, the state seeks to build an enabling ecosystem for innovation and coordination through the Board of Investment (BOI) framework, including corporate income tax exemptions for next-generation vehicles (BOI Announcement 3/2564) and accompanying R&D and human resource development support, alongside efforts to strengthen testing/standards and public-private collaboration (Office of the Board of Investment Thailand, 2021; Kaewtatip, 2019; KPMG in Thailand, 2022). At the same time, Thailand also deploys targeted consumer subsidies under its EV promotion package (e.g., per-vehicle purchase support), indicating that "catalytic" support is complemented by selective demand-side transfers.

In contrast, Indonesia and Vietnam rely more heavily on fiscal incentives and market-creation tools that lower costs for investors and consumers, rather than primarily building domestic innovation institutions. In Indonesia, the state's support centers on industrial scale-up and battery ecosystem formation through tax-based incentives (e.g., emission-linked vehicle taxation and investment-linked tax holidays) and state-led de-risking in strategic segments, reflecting a developmental push to convert resource endowments into downstream manufacturing capacity (Lahadalia et al., 2024). Vietnam's support is even more clearly incentive-led: instead of direct purchase subsidies, the state has primarily stimulated adoption and production through registration fee exemptions, excise tax reductions for battery EVs, and import-duty relief for components used in domestic assembly (e.g., Decree 10/2022/ND-CP; Excise Tax amendments; Decree 57/2020/ND-CP; Decree 122/2016) (Tien, 2025). While such price-based incentives can accelerate early diffusion and attract investment, they may generate

windfall gains or shallow localization if not paired with clear upgrading requirements and credible monitoring mechanisms, thereby limiting longer-term technological deepening.

Government-Business Relations in the EV Industry in Thailand, Indonesia, and Vietnam

Across Thailand, Indonesia, and Vietnam, EV industrialization is governed through state-managed bargaining rather than market coordination, with governments offering incentives to attract foreign investors while imposing conditionalities to encourage localization; however, the credibility and inclusiveness of these arrangements vary. Thailand institutionalizes coordination through formal committees that align ministries and enforce incentive contracts, Indonesia centralizes authority in the executive and leverages SOEs and mineral resources with local content rules as key gatekeeping tools, while Vietnam relies on party-state directives and decree-based fiscal policies that indirectly favor large assemblers. These differences reflect distinct political settlements and industrial legacies, shaping how each country manages capital accumulation, policy coordination, and the inclusion of domestic suppliers, with Thailand emphasizing institutionalized consultation, Indonesia resource-driven executive control, and Vietnam hierarchical but less integrated coordination.

Thailand: Committee-Centered Coordination with Enforceable Conditionality

Thailand's EV transition is anchored in a committee-based coordination model in which the National Electric Vehicle Policy Committee (NEVPC)-often referred to as the EV Board-acts as an apex clearinghouse across fragmented ministries. As the EV Board was established in 2020 and, in 2021, clarified EV policy direction and committee structure, including the 30@30 target (30% ZEV production by 2030) (Doi et al., 2023). In political-economy terms, this institutional design reflects Thailand's longer tradition of organized business consultation (e.g., via peak associations). Still, it operationalizes that corporatist logic for EVs by concentrating agenda-setting and interagency alignment in a single node.

Crucially, the EV Board's function is not merely deliberative; it triggers downstream regulation. The EV tax incentive package is explicitly described as arising from EV Board resolutions (e.g., 3/2564 and 1/2565), endorsed by the Cabinet, and subsequently translated into implementing notifications by relevant agencies, such as the Ministry of Finance and the Excise Department (KPMG in Thailand, 2022). This provides a concrete policy mechanism linking "consultation/coordination" to market-facing instruments. The committee's composition also illustrates the distributive politics of coordination. Evidence on NEVPC participation indicates that participation is skewed toward economic ministries and prominent industry associations (including the Federation of Thai Industries), with notable absences of labor unions, SMEs, and civil society (Kulkolkarn, 2025). This matter because it shapes which adjustment costs are visible in policy design. While the governance model is collaborative in the sense of formalized state-capital coordination, it is comparatively weaker on just transition inclusion for workers and smaller suppliers.

Thailand's policy package also embeds rigid enforcement tools-a feature that makes state-business relations observable in compliance mechanisms rather than rhetoric (Laothamatas, 2019). The Excise Department framework requires firms to sign an MOU/agreement with the state and to place a bank guarantee. It binds import privileges to production offset ratios: imported CBU volumes during the initial window must be offset by domestic production at 1:1 by end-2024, or 1:1.5 if extended to end-2025 (KPMG in Thailand, 2022). Non-compliance triggers explicit clawbacks: revocation of EV tax incentives, liabilities for duties and taxes, penalties, and the recall of excise subsidies alongside forfeiture of bank guarantees. The scheme further deepens industrial conditionality through localization requirements, including a requirement that, after 1 January 2026, participating firms must use locally produced batteries, and that locally produced BEVs meet local materials requirements under the Excise Notification (KPMG in Thailand, 2022). In short, Thailand's state-business bargaining over EVs is mediated through a credible "carrot-and-stick" contract structure: upfront market creation is traded for measurable future production and localization obligations.

Furthermore, Thailand also combines incentive discipline with ecosystem-building initiatives that reduce coordination failures in testing, standards, and skills (Suttipun & Bomlai, 2019). Policy documents and presentations identify the Thai Industrial Standards Institute (TISI) as responsible for EV standards (charging systems, EMC, batteries, DC metering) and national testing facilities. At the same time, ATTRIC is tasked with constructing testing laboratories and developing technical human resources (Aunphattanasilp, 2019). The Thailand Automotive Institute (TAI) serves as an intermediary for battery testing capabilities, collaborating with Korea Conformity Laboratories (KCL) to establish an EV battery testing center and associated training. Parallel coordination appears in industry-led standardization efforts, such as the EVAT consortium with private firms to develop charging arrangements, and university-state enterprise collaboration, such as the Thammasat-EGAT Smart City sandbox for EV and charging trials (Laochankham et al., 2024). Together with BOI investment promotion, where BOI Decree/Announcement 3/2564 is summarized as providing 3-8 years of CIT exemptions (tiered by investment value) plus R&D grants, human resource development grants, and support for EV battery pilot plants (Doi et al., 2023). These initiatives show how Thailand's "collaboration" is institutionalized not only in committees but also in technical infrastructure and incentive design.

Indonesia: Hyper-Centralized Executive Steering and State Capitalism via SOEs

Indonesia's EV industrialization is governed by a more explicitly executive-centered model, anchored in Presidential Regulation (Perpres) No. 55 of 2019 and subsequent adjustments, such as Perpres No. 79 of 2023, alongside broader state restructuring through the Omnibus Law on Job Creation (Negara, 2024). The governance architecture assigns strategic coordination to the Coordinating Ministry for Maritime and Investment Affairs (CMMAI). At the same time, technical mandates are distributed across ministries (Industry for roadmaps and TKDN, Energy for charging infrastructure, Transport for usage standards) (Hadi et al., 2021). Politically, this

model aims to overcome bureaucratic "silos" by concentrating steering capacity in the executive, particularly by aligning mining, industrial policy, and investment promotion under a single downstreaming agenda (Karim & Kholid, 2025).

Indonesia's state-business relations in EVs are also distinctive for the scale of SOE-led orchestration. The establishment of the Indonesia Battery Corporation (IBC) in 2021 consolidates four primary SOEs-MIND ID, Antam, Pertamina, and PLN-into a holding structure (equal ownership in the sources), positioning the state as an investor, risk absorber, and bargaining agent with foreign capital. The IBC is described as a central interface that "de-risks" foreign entry while allowing the state to retain strategic control over minerals and the battery chain, with PLN simultaneously tasked with charging infrastructure targets and consumer-side support measures (e.g., electricity upgrade discounts).

Indonesia's resource-linked governance is made concrete through the legal chain underpinning downstreaming (*hilirisasi*). Mining and processing mandates rooted in Law No. 4/2009 and enforced through regulations such as MEMR Regulation No. 11/2019 accelerated the nickel ore export ban (effective 2020), which was explicitly intended to compel onshore processing and attract foreign investment into smelters and battery-grade materials (Lahadalia et al., 2024). In effect, the state converts mineral control into industrial leverage: export restrictions serve as the stick, while fiscal incentives and market creation serve as the carrots at lower levels of the value chain.

Conditionality in Indonesia is most evident in the TKDN regime, which links fiscal incentives to certified domestic content. The policy specifies progressive TKDN targets by vehicle category and period (e.g., increasing toward 60% and 80% in later phases), while also showing pragmatic flexibility: Perpres 79/2023 relaxes earlier timelines, extending the 40% threshold for some automakers to 2026. Multiple fiscal instruments are explicitly linked to TKDN thresholds, including VAT reductions (e.g., reduced effective VAT for EVs meeting TKDN requirements), luxury tax (PPnBM) advantages for qualifying EVs, and purchase subsidies for electric two-wheelers with minimum TKDN (Wijaya & Sinclair, 2024). Indonesia also uses conditional liberalization to accelerate market adoption while locking in future localization: Perpres 79/2023 and BKPM/Investment Regulation No. 6/2023 permit CBU EV imports until the end of 2025 under incentive terms tied to commitments for subsequent local production and TKDN compliance, typically backed by guarantee and offset-type obligations in the policy design. Demand is further steered by public procurement: Presidential Instruction No. 7 of 2022 mandates EV adoption for official vehicles, with an indicative procurement scale (around 39,000 units) intended to de-risk investment for domestic producers that meet content and eligibility criteria.

Overall, Indonesia's EV governance represents a state-capitalist configuration: central executive steering, SOE holding structures, mineral-based coercion, and local-content conditionality. This has accelerated upstream and midstream investment, but it also concentrates decision-making authority and compresses the space for subnational discretion and broader

stakeholder participation, especially where the Omnibus Law rescales licensing and spatial planning authority toward the center.

Vietnam: Party-State Directives, Decree-Based Fiscal Steering, and Locally Uneven Implementation

Vietnam's EV governance is anchored less in a single EV law than in a layered structure of party-state directives and executive decrees. At the top of the policy hierarchy, Resolution No. 55-NQ/TW (2020) is identified as the key national political directive that orients clean and renewable energy promotion, particularly in transport, and is characterized in the sources as the first national document to require the promotion of e-mobility. The Resolution's political function is to set direction and expectations rather than to codify a unified EV framework; implementation is then delegated through ministerial decisions and local programs. For example, Decision No. 2707/QD-BGTVT assigns the Ministry of Transport the responsibility for developing sustainable transport action plans and adopting energy-efficient vehicles and public transport measures to reduce urban emissions and air pollution (London, 2022).

In practice, Vietnam's state-business relations in EVs are most visible in fiscal instruments issued by decree, which serve as rapid levers to shift market incentives. Demand-side support includes EV registration fee exemptions under Decree 10/2022/ND-CP (full exemption for three years, then a 50% reduction for two years) and subsequent extensions, such as Decree 51/2025/ND-CP (full exemption for an additional period) (Tien, 2025). Vietnam also strongly favors BEVs in excise taxation under the Excise Tax 2022 Law, creating a hefty price wedge against ICE vehicles. While at the same time, it emphasizes that several industrial support measures remain broad automotive rather than EV-specific, most notably Decree 57/2020/ND-CP, which provides a 0% preferential import tax rate on raw materials and accessories not produced domestically for manufacturers' domestic assembly, while explicitly not limited to EVs (Tien, 2025). This strengthens the interpretation that Vietnam's EV state-business relation remains fragmented: EVs benefit from targeted fiscal relief, but industrial upgrading tools are often shared with the conventional auto sector.

On the supply side, Vietnam's industrial policy relies on output-based conditionalities that shape which firms can realistically access state rents. Decree 122/2016 ties import tax exemptions for components to a commitment to assemble at least 3,000 units per model, while Decree 57/2020/ND-CP links preferential import taxation to program participation and minimum production outcomes (e.g., at least 125 vehicles from the third year) (Schröder, 2021). Politically, these thresholds function as structural filters: they are general in legal form but tend to advantage capitalized assemblers capable of meeting volume commitments, while smaller firms face entry barriers. This provides a concrete mechanism through which state-business relations can become hierarchical even without explicit champion clauses in EV law.

Vietnam's implementation is also visibly uneven and localized. The national directive encourages localities to develop targets and programs, and specific cities have set distinct goals

(e.g., Hanoi targets e-motorcycle penetration by 2030; Nha Trang targets e-buses by 2025; Da Nang has adopted measures to promote the installation of charging stations) (Tien, 2025). Local governance also extends to regulatory restrictions on ICE use in dense urban areas, including measures under Decision 5953/QD-UBND to restrict access to city centers for two-wheeled ICE vehicles and the longer-term aspiration to ban motorbikes in Hanoi by 2030. These local measures indicate that Vietnam's EV transition is shaped not only by firm incentives but also by urban administrative controls-yet the overall picture remains one of decentralized rollout under a centralized political directive, rather than a single integrated national EV roadmap.

Taken together, the three cases illustrate distinct state-business relations in the development of the EV industry. Thailand relies on committee-centered coordination that incorporates significant industry associations into policy steering and uses enforceable incentive contracts (MOUs, bank guarantees, offset ratios, localization milestones) to make commitments credible. Indonesia relies on executive-driven centralization, SOE orchestration (IBC), and mineral-based coercion to secure downstream investment, with TKDN conditionality serving as the primary instrument for converting subsidies into localization. Vietnam relies on party-state directives and decree-based fiscal steering, with output thresholds and broad-based localization instruments that shape participation and often privilege high-capacity assemblers, while leaving implementation highly uneven across localities.

CONCLUSION

This study concludes that the effectiveness of EV industrial policy in Thailand, Indonesia, and Vietnam is determined not merely by the provision of incentives, but by the structure of state-business coordination and the credibility of policy conditionality. The three countries exhibit distinct governance configurations: Thailand's committee-based coordination with enforceable conditionality enables more effective capability development; Indonesia's executive-led, resource-based strategy attracts investment but faces challenges in securing sustained learning outcomes due to ongoing renegotiation; and Vietnam's decree-driven, scale-oriented model supports market expansion but limits broader supplier upgrading.

The findings highlight a broader theoretical implication: industrial upgrading trajectories depend on (1) the institutional location of coordination authority and (2) the degree to which policy conditionality is specific, monitorable, and enforceable. Policies that combine clear coordination structures with credible enforcement mechanisms are more likely to translate incentives into long-term capability building.

Policy recommendations emphasize strengthening capability-linked conditionality in Thailand, stabilizing localization frameworks and expanding downstream learning in Indonesia, and complementing demand-driven policies with structured upgrading mechanisms in Vietnam. However, the study is limited by its reliance on secondary data and lack of direct observation of firm-level dynamics. Future research should incorporate fieldwork, firm-level analysis, and

comparative datasets on policy enforcement to better capture how industrial policy translates into actual upgrading outcomes.

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HOW TO CITE THIS ARTICLE:

Azis, A. A., & Diphda, B. C. (2026). State-Business Relations and Electric Vehicle Industrial Policy in ASEAN: Evidence from Indonesia, Thailand, and Vietnam. *Papua Journal of Diplomacy and International Relations, 6*(1), 137-157. DOI: 10.31957/pjdir.v6i1.4958