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The Electric Vehicle Transition and the Future of Petroleum-Producing Economies in Southeast Asia: Who Wins and Who Loses in this Revolution?

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Abstract: **The rapid spread of electric vehicles (EVs) is reshaping the economic prospects of petroleum-producing economies in Southeast Asia. Electric car sales in the region more than doubled in 2025 to nearly one-fifth of new car sales, and the 2026 closure of the Strait of Hormuz exposed the costs of dependence on imported oil. This paper examines how the EV transition affects the region's oil and gas producers and asks who is likely to win and who is likely to lose. Using a qualitative, desk-based approach that synthesises institutional data, peer-reviewed research and recent policy evidence, it analyses the cases of Brunei Darussalam, Timor-Leste, Malaysia and Indonesia alongside major net-importing EV markets such as Thailand and Viet Nam. The analysis identifies four channels of impact: fiscal revenue, trade and energy security, industrial and mineral opportunity, and distribution within society. It finds that the main dividing line is not between producers and importers as such, but between economies that can convert the transition into new revenue, industry and energy security and those whose public finances remain tied to hydrocarbon income. Small revenue-dependent producers face the greatest risk; hedged producers face mixed outcomes; resource-rich industrialisers and net-importing manufacturers are best positioned to gain. The paper proposes a typology of winners and losers and recommends using petroleum income to diversify, reforming fuel subsidies with visible compensation, building EV value chains beyond assembly, decarbonising power generation and planning a just transition for affected workers.**

Keywords: **Electric vehicles, Energy transition, Petroleum-dependent economies, Southeast Asia, Stranded assets, Fuel subsidy reform, Nickel, Economic diversification.**

I. INTRODUCTION

The electrification of road transport is often presented as a technological story about batteries, charging networks and falling vehicle prices. For Southeast Asia, it is also a story about public finance, trade balances and industrial strategy. The region contains economies whose budgets have long relied on oil and gas, economies that import most of the fuel they burn, and economies that hold the minerals and manufacturing capacity on which electric vehicles (EVs) depend. As the electric share of new vehicle sales rises, the gains and losses from this shift will not be shared evenly.

The pace of change has surprised many observers. Global electric car sales exceeded 20 million in 2025, about one in four new cars sold worldwide, and the International Energy Agency (IEA) expects close to 30% of cars sold in 2026 to be electric [1]. In Southeast Asia, EV sales more than doubled in 2025 to roughly half a million units, nearly one in five new cars, led by Viet Nam, Indonesia and Thailand [1], [2]. The closure of the Strait of Hormuz from late February 2026 pushed oil prices above US$100 per barrel and forced several governments in the region to expand fuel subsidies or restrict fuel use [3], giving the debate about oil dependence a new urgency.

Much of the literature on oil producers and the energy transition focuses on large exporters in the Middle East, Russia or Africa [4], [5]. Southeast Asia receives less attention, even though it combines small petroleum-dependent states, mature producers with declining output and fast-growing EV markets in a single regional economy. This article addresses that gap through three questions: (1) how is the EV transition unfolding in Southeast Asia; (2) through which channels does it affect petroleum-producing economies in the region; and (3) which countries and groups are positioned to gain or lose, and what policies can shift the balance?

The article argues that the most important dividing line is not simply between oil producers and oil importers. It lies between economies that can convert the transition into new sources of revenue, industry and energy security, and those whose fiscal systems remain tied to hydrocarbon income without credible alternatives. On that basis it proposes a four-part typology of winners and losers and sets out policy responses for each.

II. METHOD AND CONCEPTUAL APPROACH

The study uses a qualitative, desk-based design that synthesises institutional reports, official statistics, peer-reviewed research and selected news reporting. Sources were chosen for their relevance to EV adoption in Southeast Asia, petroleum dependence in the region, or the economics of fossil-fuel producers in a decarbonising world. Institutional data from the IEA, the International Monetary Fund (IMF) and the U.S. Geological Survey (USGS) supply the quantitative context. Peer-reviewed work provides the theoretical framing. News reports are used only to document recent policy events and are treated as reports of those events rather than as independent analysis. The study does not estimate causal effects or produce new forecasts; its purpose is to organise the available evidence into an analytical framework.

Three bodies of theory inform the analysis. The first is the resource-curse literature, which shows how dependence on petroleum revenue can weaken institutions, concentrate economic power and expose budgets to price volatility [6]. The second concerns stranded assets: if global oil demand falls faster than producers expect, reserves and infrastructure may lose value, with macroeconomic effects that spread through trade and finance [7], [8]. The third examines how producers adapt. Some authors argue that petrostates will not disappear but will be forced to diversify and to compete harder for a shrinking market [9], [10], while others stress that the geopolitics of the transition is more complex than a simple transfer of power from oil exporters to importers [11]. Together these perspectives suggest that outcomes depend on how dependent an economy is on oil revenue, how quickly that dependence can be reduced, and whether the economy holds assets that the new energy system values.

III. THE EV TRANSITION IN SOUTHEAST ASIA

A. Adoption is accelerating, unevenly

Southeast Asia's EV market is growing quickly from a low base, but national trajectories differ. Viet Nam became the region's largest electric car market in 2025 after sales more than doubled, and the IEA suggests its electric share of car sales could exceed 80% by 2035 [1]. In Thailand, electric car sales rose to roughly 140,000, nearly a quarter of new car sales, while in Indonesia they more than doubled to about 15% of sales [1]. Malaysia, the region's most significant mixed oil-and-gas producer, lagged with an electric share of about 7% [1]. The region also has the world's largest fleet of two- and three-wheelers, and the IEA projects that the electric share of their sales could reach nearly 60% by 2035 [2]. Because motorcycles dominate personal transport in several countries, their electrification may matter as much for oil demand as the electrification of cars.

Adoption does not yet mean a fall in regional oil use. Under current policy settings, transport oil demand in Southeast Asia is still projected to rise by about 20% by 2035 [2]. Globally, the EV fleet avoided around 1.7 million barrels per day of oil consumption in 2025, and that figure is on track to reach about 5 million barrels per day by 2030 [1]. For the region's producers, the transition is therefore less a sudden collapse in demand than a gradual tightening of the long-term market in which their oil and gas must be sold.

B. An industrial policy race

Governments are competing to capture the manufacturing side of the transition. Thailand's EV 3.5 package, approved in late 2023 for 2024–2027, combines purchase subsidies, excise-tax cuts and temporary import-duty relief with obligations for manufacturers to offset imported vehicles with domestic production; it supports the country's target for zero-emission vehicles to account for at least 30% of motor vehicle production by 2030 [12]. Indonesia has used its mineral wealth as

leverage: export restrictions on unprocessed nickel ore, reinstated as a full ban from 2020, were intended to attract smelting, battery and EV investment into the country [13]. Malaysia's National Energy Transition Roadmap sets long-term goals for electrified vehicles and local EV manufacturing capability [14]. These strategies reflect a shared belief that the value of the transition lies as much in producing vehicles, batteries and materials as in consuming them.

C. The 2026 oil shock as a catalyst

The 2026 Middle East crisis exposed the region's vulnerability to imported oil. Before the crisis, about 60% of Southeast Asia's crude oil imports came from the Middle East, and fossil-fuel subsidies cost around US$40 billion a year, a figure the IEA expects to rise sharply in 2026 [2]. After the Strait of Hormuz was closed, the Philippines cut fuel use in state institutions and introduced a four-day week for selected agencies, Viet Nam drew on its fuel price stabilisation fund, Thailand raised its diesel subsidy cap, and Malaysia announced RM24 billion in support for households [3]. The IEA notes that countries and consumers are responding to the crisis partly by turning to electric mobility [1]. The shock thus strengthened the energy-security argument for EVs, especially in net oil-importing countries.

IV. PETROLEUM DEPENDENCE ACROSS THE REGION

Petroleum-producing economies in Southeast Asia differ greatly in how much they depend on oil and gas and in their capacity to adjust. Four cases illustrate the range.

A. Brunei Darussalam: high dependence, gradual diversification

Brunei remains among the most hydrocarbon-dependent economies in Asia. IMF data indicate that oil and gas accounted for roughly half of nominal gross domestic product and of government revenue in 2022, while oil output fell from about 112,000 barrels per day in 2018 to an estimated 84,000 in 2023 [15]. The IMF has urged Brunei to pursue fiscal prudence amid uncertainty about oil and gas production and prices and long-term decarbonisation pressures, and to mobilise non-hydrocarbon revenue [15]. Growth in downstream activity has partly offset declining upstream output, but the fiscal base remains narrow.

B. Timor-Leste: the end of production and a finite fund

Timor-Leste, ASEAN's newest member, faces the most acute version of the challenge. Oil production ceased in 2025, and the IMF projects that the balance of the Petroleum Fund will fall from about US$17.7 billion in 2025 to about US$12.8 billion in 2030 unless spending is restrained [16]. The fund was designed to protect the country from the resource curse by saving petroleum income for future generations [17], but withdrawals have long exceeded the estimated sustainable income. For Timor-Leste the EV transition is less a direct threat than a reinforcement of an existing problem: there is little time left to build a non-oil economy, and future gas developments face a market in which long-term demand is uncertain.

C. Malaysia: a hedged producer

Malaysia is a significant oil and gas producer, but its dependence on petroleum revenue has fallen markedly. Petroleum income was expected to provide about RM62 billion, or 18.3% of federal revenue, in 2025, compared with 41.3% in 2009 [18]. Malaysia has also begun to reform costly fuel subsidies: from September 2025, subsidised RON95 petrol was limited to eligible citizens at RM1.99 per litre within a monthly quota, while non-citizens pay an unsubsidised price of about RM2.60 [19]. Experimental evidence suggests that public support for such reforms increases when they are presented as redistributive [20]. Malaysia's diversified manufacturing base and its energy transition roadmap [14] give it more options than smaller producers, although its relatively slow EV uptake [1] shows that adjustment is not automatic.

D. Indonesia: a former exporter turned importer with mineral leverage

Indonesia still produces oil and gas, but it is now a net oil importer and is better understood as a resource-rich industrialising economy. Its strategic asset in the transition is nickel. Indonesia accounted for an estimated 62% of global mined nickel production in 2024 [21], and nickel is a key input for many lithium-ion battery chemistries [13]. Research on the export ban suggests that it raised the share of domestic value added in exports, but also drew in smaller and less efficient firms and left the country reliant on imported steel [22]. Indonesia's experience shows that mineral leverage can attract investment, but turning it into durable industrial capability requires attention to productivity, environmental standards and the social effects of mining [23].

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V. WHO WINS AND WHO LOSES?

The effects of the EV transition reach producer economies through four main channels: fiscal revenue, the trade balance, industrial and mineral opportunity, and distribution within society. Their combined effect differs by country type, as summarised in Table I.

A. The fiscal channel

The most direct risk falls on governments that rely on petroleum revenue. Lower long-term demand implies lower expected prices and volumes, reducing royalties, taxes and dividends from national oil companies. Modelling of stranded assets suggests that the macroeconomic losses can be large for producers that do not diversify, and that some of the financial losses ultimately fall on investors in other countries [7], [8]. Economies with high revenue dependence and few alternatives, such as Brunei and Timor-Leste, are the most exposed [15], [16]. Paradoxically, the same transition can strengthen public finances in countries where fuel subsidies are large, because lower fuel consumption reduces the subsidy bill [2].

B. The trade and energy-security channel

For net oil importers, every barrel displaced by electricity generated from domestic sources reduces exposure to imported fuel and to price shocks. The IEA estimates that, without structural change, Southeast Asia's energy import bill could rise from more than US$80 billion in 2024 to around US$245 billion by 2035, and that meeting climate pledges would roughly halve the 2035 bill [2]. The 2026 crisis showed how quickly import dependence can become a fiscal and social burden [3]. Importers that electrify transport and expand domestic power generation are therefore likely winners, although the benefit depends on the electricity mix: EVs charged mainly from imported coal or gas shift rather than remove import dependence.

C. The industrial and mineral channel

The transition creates new value chains in batteries, materials, components and vehicle assembly. Countries that capture these activities can offset losses in petroleum. Thailand seeks to remain the region's main vehicle production hub [12], Indonesia aims to move from nickel ore to batteries [13], and Viet Nam has become the region's largest electric car market [1]. Mineral wealth does not guarantee success, however. Critical minerals can reproduce some of the governance problems associated with oil, including environmental damage and concentrated rents [23], and the geopolitical gains of the transition are less straightforward than often assumed [11]. The winners in this channel will be economies that combine resources with skills, infrastructure and credible regulation.

D. The distributional channel

Within countries, the transition creates winners and losers among households, workers and firms. Drivers who switch to EVs may benefit from lower running costs, while those who cannot afford a new vehicle remain exposed to fuel prices. Workers in upstream oil and gas, refining, fuel retail and the supply chain for internal combustion engine components face disruption, while new jobs emerge in battery production, charging and electricity networks. Fuel subsidy reform can free fiscal space for targeted support, but it is politically sensitive, and its acceptability depends on how gains are shared [20]. A transition seen as unfair could slow reform and lock in costly subsidies.

TABLE I: Typology of Winners and Losers among Southeast Asian Economies in the EV Transition

Economy type	Examples	Main exposure	Main opportunity	Likely outcome
Revenue-dependent producer	Brunei, Timor-Leste	High reliance on oil and gas revenue; declining output; narrow non-oil base	Use remaining revenue and funds to diversify; downstream and service sectors	Loser unless diversification accelerates
Hedged producer	Malaysia	Petroleum revenue still significant; fuel subsidy costs; slower EV uptake	Subsidy reform; manufacturing base; EV and component production	Mixed; potential net winner
Resource-rich industrialiser	Indonesia	Domestic oil production decline; net oil imports	Nickel processing and battery value chain; large domestic market	Winner if productivity and standards improve
Net-importing manufacturer	Thailand, Viet Nam	Imported oil; exposure of ICE supply chains	Lower import bills; EV production hub; fast domestic adoption	Winner if power sector decarbonises

Note: Typology developed by the authors from the synthesis in this paper. Outcomes are conditional assessments, not forecasts.

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The typology suggests that the clearest losers are small, revenue-dependent producers without a manufacturing base, unless they use their remaining petroleum income to diversify. Hedged producers such as Malaysia face mixed outcomes and can become net winners if they reform subsidies and capture parts of the EV value chain. Resource-rich industrialisers and net-importing manufacturers have the strongest prospects, provided that industrial strategies deliver productivity and that power systems decarbonise.

VI. POLICY RECOMMENDATIONS

A. Use petroleum income to build the post-oil economy

Producers should treat remaining hydrocarbon revenue as a transitional asset. Sovereign funds, national oil company dividends and fiscal rules should be oriented towards human capital, infrastructure and non-oil sectors rather than recurrent spending. The IMF's advice to Brunei and Timor-Leste to mobilise non-oil revenue and restrain spending reflects this priority [15], [16], and comparative work on fossil-fuel-dependent countries points to diversification and international cooperation as the main protective strategies [24].

B. Reform fuel subsidies with visible compensation

Untargeted fuel subsidies are costly and become more regressive as wealthier households buy EVs. Targeted schemes such as Malaysia's RON95 reform [19] can reduce fiscal costs, but they need clear communication and visible redistribution to retain public support [20]. Savings should be linked to transparent benefits such as cash transfers, public transport and support for low-income vehicle users.

C. Build value chains, not only assembly

Incentives for EV assembly should be tied to local supplier development, skills and technology transfer. Mineral-rich countries should pursue downstream processing with strong environmental and labour standards, and should monitor productivity rather than treating domestic value-added ratios as the only measure of success [22], [23].

D. Decarbonise power to secure the energy-security dividend

The energy-security benefits of EVs depend on the electricity that charges them. Expanding domestic renewable generation, strengthening grids and improving regional power interconnection will determine whether electrification reduces import bills or simply changes the fuel being imported [2].

E. Plan a just transition for workers and regions

Governments should identify the workers, firms and regions most exposed to declining petroleum and internal-combustion-engine activity and provide retraining, income support and investment in alternative industries. National oil companies can play a role by redeploying engineering skills towards low-carbon activities, consistent with the adaptation strategies discussed in the literature [10].

VII. DISCUSSION

The analysis suggests that Southeast Asia's EV transition is better described as a redistribution of advantage than as a simple contest between oil producers and oil consumers. The region's producers are already managing declining output, so the transition reinforces existing pressures rather than creating entirely new ones. What it changes is the time available. Producers that could once expect decades of stable demand must now plan for a market that may peak and decline within the working life of current investments [5].

This conclusion is consistent with the view that the end of the petrostate is not inevitable but that its form will change [9]. Producers with diversified economies and strong institutions can manage the transition, while those that rely on petroleum rents to sustain public spending face a harder adjustment [6]. It also complicates the assumption that importers automatically win. Importers gain only if they build domestic manufacturing and clean power; otherwise they may replace dependence on imported oil with dependence on imported vehicles, batteries or fuels for power generation.

The study has limitations. It is a qualitative synthesis and does not model fiscal or trade effects quantitatively. Some evidence on recent events comes from news reports, and data on EV markets and petroleum revenue change rapidly. Myanmar, the Philippines and Singapore are discussed only briefly; Singapore's position as a refining and trading hub, in particular, deserves separate analysis. Future research could quantify the fiscal exposure of each producer under different global demand scenarios, examine the employment effects of EV and battery investment, and assess whether nickel-based industrialisation in Indonesia generates durable productivity gains.

VIII. CONCLUSION

The EV transition is changing the economic geography of Southeast Asia. Electric vehicles still account for a minority of the region's fleet, but their rapid growth, combined with the 2026 oil shock, has made clear that the long-term market for oil is no longer secure. The economies most at risk are small, petroleum-dependent producers whose budgets rely on hydrocarbon income and whose non-oil sectors remain underdeveloped. Hedged producers such as Malaysia face a mixed outlook, while net importers with manufacturing capacity or mineral resources, such as Thailand, Viet Nam and Indonesia, are positioned to gain.

Who ultimately wins and who loses is not predetermined. It depends on whether governments use remaining petroleum income to diversify, reform subsidies fairly, build genuine industrial capabilities, decarbonise their power systems and protect the workers and communities most exposed to change. The revolution in transport will reward economies that prepare for it and penalise those that wait.

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