STUDY

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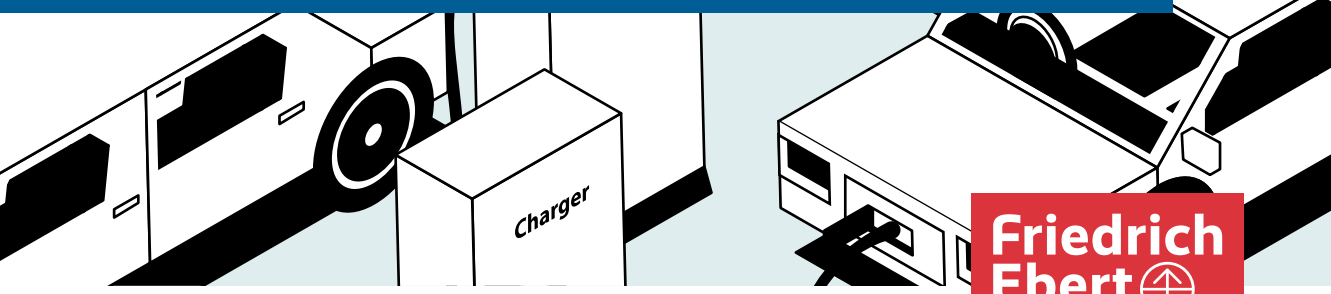
August 2025

Impact of Electric Vehicles on Thailand's Automotive Industry

Implications for Auto-Parts Suppliers and Workforce



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Contents

Abstract

Thailand's automotive industry—a key pillar of the economy—faces a transformative shift as electric vehicles (EVs) emerge. This paper examines the evolution of Thailand's auto sector and analyzes how the rise of EVs is impacting domestic auto-parts suppliers and the workforce. It chronicles the historical development from import-substitution policies to the country's emergence as a regional automotive export hub, and details Thailand's recent policies to promote EV adoption. The current state of the EV market is assessed, highlighting rapid growth in electric car uptake—driven largely by foreign (especially Chinese) investment and government incentives—juxtaposed against slower electrification in commercial vehicles. Through case studies of auto-parts suppliers, the paper explores the challenges Thai firms face (including technological disruption, integration into EV supply chains, and intense cost competition) and the strategies they are deploying (automation, diversification, and upskilling) to survive. Likewise, workforce perspectives are analyzed via case studies of labor union leaders and employees, complemented by a quantitative survey of 400 automotive workers that provides broader insight into workers' concerns over job security, evolving skill requirements, and labor practices. The role of Chinese investment is evaluated as a double-edged sword, bringing opportunities (capital, jobs, market expansion) but also risks (local supplier exclusion, labor and policy challenges). A political economy analysis of Thailand's EV transition underscores the influence of government policy, industrial power dynamics, and the need for more inclusive planning. Finally, the paper distills lessons learned and offers tailored recommendations to ensure a just and sustainable transition. These include strengthening local-content requirements through joint ventures with foreign automakers and parts suppliers; supporting SMEs and workers via targeted capacity-building programs; fostering public–private collaboration in technology development, training, and innovation; and safeguarding labor standards and inclusion. Greater strategic alignment between investment incentives and local integration—such as requiring component assembly or module production domestically in BOI-approved projects—can deepen high-value domestic linkages and support equitable, climate-friendly industrial transformation.

Keywords: electric vehicles; automotive industry; Thailand; auto-parts suppliers; workforce; industrial transition; Chinese investment; policy

1. Introduction

Thailand's automotive industry is central to the national economy, contributing roughly 11–15% of GDP and employing around 750,000 workers. For decades, Thailand has been a major vehicle production hub in Asia, often dubbed the "Detroit of Asia." About 1.5 million vehicles were produced in 2024, with approximately 69% exported to global markets[1]. This industry has long been a source of growth, foreign exchange, and employment for Thailand. However, the global push for cleaner transportation is now bringing disruptive change. Developed countries are implementing strict zero-emission vehicle (ZEV) mandates and planning bans on internal combustion engine (ICE) cars to combat climate change. These trends pose a significant challenge to Thailand's traditional automotive model, which has been heavily based on ICE vehicle manufacturing and related supply chains.

In response, Thailand has embarked on a transition toward electric vehicles to maintain its competitiveness in the global market. The government has announced ambitious targets and incentive programs to promote electric vehicles (EVs), signaling a strategic pivot for the industry. At the same time, an influx of Chinese EV manufacturers and imports has emerged as a key factor reshaping the landscape. Chinese automakers, taking advantage of cost efficiencies and favorable trade agreements, have rapidly gained market share in Thailand's nascent EV market. Their aggressive expansion, through both importing EVs and investing in local assembly, has begun to disrupt local suppliers and traditional automakers.

This paper examines how these developments are impacting Thailand's auto-parts suppliers and workers. It first reviews the historical evolution of Thailand's automotive industry and the policy-driven shift toward electrification, then analyzes the current status of EV adoption in Thailand. The core of the analysis presents detailed case studies from two perspectives: that of auto-parts suppliers (including Thai-owned firms and joint ventures) and that of the workforce (drawing on interviews with labor union leaders and employees in Thai, Japanese, and Chinese firms). These qualitative insights are supplemented by a survey of 400 automotive workers, which provides quantitative evidence on workforce readiness and concerns during the EV transition. Subsequently, a political economy analysis discusses how government policies are influencing the transition. The researcher also evaluates the role of Chinese investment, identifying the opportunities it creates and the risks it entails for the local industry. Finally, the paper offers lessons learned and policy recommendations to help Thailand navigate a path that maximizes benefits (such as innovation, new jobs, and environmental gains) while minimizing social and economic costs for local suppliers and workers.

1 In 2024, production fell by approximately 20% yearonyear to 1.47 million vehicles, down from around 1.83 million in 2023—the lowest level in four years. This steep decline reflects a protracted auto-sector downturn driven by weak domestic sales, shrinking export demand, high household debt (nearly 90% of GDP), and stricter auto-loan approval criteria.

2. Historical Development and Policy Shifts Toward EVs

2.1 Traditional Automotive Development (1960s–2010)

Thailand's automotive journey began in the 1960s under an import-substitution industrialization strategy. In the early years, the government protected nascent domestic auto assembly by imposing high tariffs on imported vehicles and setting localization requirements for parts. These policies allowed domestic assembly plants (especially those partnered with Japanese automakers) to gain an initial foothold. Throughout the 1970s and 1980s, Thailand nurtured its "infant" automotive industry behind tariff walls and local content rules, gradually building up a base of local parts suppliers. Major Japanese manufacturers established operations during this period, attracted by the market potential and supportive policies. By the 1980s, Thailand had developed a modest but growing automotive assembly sector, primarily serving the domestic market and relying on imported technology.

In the 1990s and early 2000s, Thailand transitioned toward a more export-oriented growth model for autos. A landmark initiative was the Eastern Seaboard Development Program, which improved infrastructure (ports, roads, industrial estates) and actively courted foreign direct investment (FDI) in manufacturing. During this time, Thailand identified specific "product champions" to promote. The 1-ton pickup truck became Thailand's first major automotive product champion. Generous incentives from the Board of Investment (BOI) – such as tax holidays – and a favorable excise tax structure for pickups spurred companies like Toyota and Isuzu to scale up production in Thailand. By leveraging these policies, Thailand evolved into a global production base for pickup trucks. By 2006, the country had become a net automobile exporter, shipping over 690,000 vehicles annually and solidifying its status as the leading automotive producer in Southeast Asia.

Building on this success, the government introduced an Eco-Car program in 2007 to further diversify and specialize production. The Eco-Car initiative offered tax breaks and incentives for manufacturers to produce small, fuel-efficient, low-emission vehicles in Thailand. To qualify, companies had to commit to high production volumes and substantial investments, meet stringent fuel efficiency and emissions standards, and use a significant portion of locally made components. This policy attracted investments from automakers such as Nissan, Honda, and Suzuki, which set up production lines for compact cars meeting the Eco-Car criteria. The Eco-Car program exemplified Thailand's industrial policy approach of selecting high-potential vehicle segments and backing them with coordinated incentives and infrastructure support.

By around 2010, Thailand had firmly established itself as a global and regional automotive manufacturing hub. The industry's structure featured strong Thai–Japanese partnerships: Japanese brands dominated vehicle production, while a network of auto-parts suppliers, including many local firms, grew to support them. The government's targeted policies (product champions like pickups and Eco-Cars) and investment-friendly environment were credited with creating "viable automotive spaces" where domestic supply chains could develop alongside growing domestic and export demand (Techakanont, 2024). However,

it is important to note that this success occurred under relatively stable technological conditions: the fundamental design of vehicles (engines, transmissions, etc.) had not dramatically changed for decades. Thailand's model assumed continuity – that it could keep incrementally improving efficiency and volume in known product categories. The looming transition to new drivetrain technologies (hybrids, electric, and fuel cell) was not yet a pressing issue in this era.

2.2 Policy Initiatives Toward Electrification (2010s–Present)

Entering the 2010s, global trends began shifting toward vehicle electrification. Thailand, recognizing this, started to formulate strategies to ensure its auto industry would not be left behind. An initial step was promoting hybrid electric vehicles (HEVs) as a bridge technology. In 2016, Thailand introduced a CO_2-based vehicle excise tax structure that significantly lowered taxes for low-emission vehicles. For example, efficient hybrid cars (with CO_2 emissions under 100 g/km and engine sizes below 3,000 cc) were taxed at only 5%, compared to much higher rates (30–50%) on traditional gasoline vehicles. This tax policy immediately made hybrid cars more financially attractive for consumers and signaled to manufacturers that the government was serious about cleaner technologies. Major Japanese automakers (Toyota, Honda, Nissan, etc.), already experienced in hybrid technology, responded by expanding their hybrid model offerings in the Thai market. As a result, HEVs quickly became the dominant form of "xEV" (electrified vehicle) in Thailand during the late 2010s, far outpacing early sales of battery electric vehicles at that time. The existing supply chain and consumer familiarity made HEVs a more accessible step toward electrification.

In 2017, the BOI rolled out an EV Investment Promotion Scheme, which offered incentives to produce various types of electrified vehicles domestically, ranging from HEVs and plug-in hybrids (PHEVs) to full battery electric vehicles (BEVs). Under this scheme, HEV production was incentivized with import duty exemptions on machinery, but the most generous perks (multi-year corporate income tax exemptions) were reserved for BEV and PHEV projects. This indicated a policy tilt: while hybrids were supported as an incremental step, Thailand aimed eventually to leap toward full EVs. Nevertheless, several automakers took advantage of the scheme for hybrids. For instance, Toyota set up local assembly of hybrid batteries (nickel-metal hydride) in 2019 for models like the Camry and C-HR; Nissan and Honda also invested further in hybrid vehicle production and related components in Thailand. These moves were driven by confidence that hybrids would sell well in the interim, given Thailand's still-developing EV charging infrastructure and consumers' familiarity with hybrid technology. Indeed, by the late 2010s, HEVs remained the most prevalent form of electrified vehicle in Thailand, leveraging the robust existing ICE supply base while adding electrification components gradually.

However, Thai policymakers understood that hybrids were a transitional strategy rather than the end goal. In 2015, the government formally announced plans to make Thailand a regional EV manufacturing hub. Over the next few years, it set ambitious targets such as 30% of all vehicles produced in Thailand to be electric by 2030 (approximately 750,000 BEVs per year out of an expected 2.5 million total production). This "30@30" goal was accompanied by the formation of a National EV Policy Committee (EV Board) in 2020 to coordinate efforts across ministries and agencies. A series of EV policy packages (often referred to as EV 3.0 and later EV 3.5) were introduced, combining both supply-side and demand-side measures:

- → Supply-Side Incentives: Generous benefits were offered to attract EV manufacturing investments. Companies could receive up to 8 years of corporate income tax exemption (up to 13 years if investing in the Eastern Economic Corridor special zone). Import duties on machinery and critical EV parts were waived. Investment in key EV components (batteries, electric motors, battery management systems, etc.) was especially encouraged through additional incentives

to start building a domestic parts ecosystem for EVs.

- Demand-Side Incentives: To stimulate local EV sales, the government launched consumer purchase subsidies in 2022. Depending on battery size, an EV buyer could get a rebate between THB 70,000 to 150,000 (approximately $2,000–$4,300) per vehicle. Additionally, the excise tax on BEVs was slashed from 8% to as low as 0–2%, drastically reducing retail prices. Import tariffs were temporarily reduced or eliminated for automakers that committed to later produce EVs in Thailand, allowing them to import EVs to build market demand now, on condition of localizing production within a few years.

These measures led to a noticeable uptick in EV industry interest. By 2022–2023, several major EV players from China (such as BYD, Great Wall Motors, and SAIC/MG) as well as some Western automakers had announced investments or begun assembling EVs in Thailand. According to government reports, Thailand became one of the leaders among emerging economies for EV growth. By the end of 2023, over 87,000 new electrified vehicles (BEVs and PHEVs combined) were registered that year – a record number – in part due to the subsidy-fueled surge in demand. Companies like BYD and Great Wall not only sold EVs in Thailand but also started constructing manufacturing facilities (e.g., BYD's new factory in Rayong, established in 2022, planned to produce 150,000 EVs per year).

While these initiatives marked significant progress, critiques also emerged. Industry experts pointed out that despite Thailand's ambitious targets, the market by the mid-2020s was still dominated by hybrids rather than full BEVs. Even with new incentives, many consumers and automakers leaned toward HEVs (and to a lesser extent PHEVs) because of cost and infrastructure considerations. By 2024, hybrid sales still far outstripped pure EV sales, indicating that Thailand's transition was in an early phase. On the production side, most EV-related manufacturing in Thailand was (and still is) focused on assembly; the most technologically advanced components, especially battery cells, were largely imported. Local battery production was mainly at the pack assembly level, not cell manufacturing, meaning Thailand's local content in EVs remained limited in the highest-value areas.

Policymakers began to acknowledge these challenges. Unlike the earlier Eco-Car program (which had strict requirements for local sourcing and production volumes), the initial EV packages were more flexible, aiming to attract a wide range of players quickly. In late 2023 and 2024, adjustments to policy were made. For instance, manufacturers benefiting from the consumer subsidy program are now required to start producing EVs in Thailand by 2024–2025 and to use a certain proportion of locally made parts (including batteries) within a few years. The government also introduced the concept of a "70:30" policy, aiming to help the existing ICE/hybrid industry (the "70%") transition in parallel with the new EV industry (the "30%"). This included continued support for hybrid and efficient ICE vehicles alongside EVs, suggesting that traditional and electric vehicles would coexist in Thailand's market and industrial strategy for some years to come.

In summary, Thailand's historical automotive policies cultivated a robust manufacturing hub under ICE technology, and from the mid-2010s onward, the country has been actively reorienting its policies toward electrification. The transition strategy has been two-pronged: use hybrids as a stepping stone (leveraging current capacities while cutting emissions) and lay the groundwork for BEVs through incentives and infrastructure for the longer term. By 2025, Thailand finds itself with a solid policy framework and some early successes in EV adoption, but also facing critical questions about how to deepen domestic capabilities in the EV era, ensure local suppliers and workers are part of the new ecosystem, and manage the strong presence of foreign (especially Chinese) firms in its EV rollout. These issues set the stage for the current state of the EV market and the impact on stakeholders, as examined in subsequent sections.

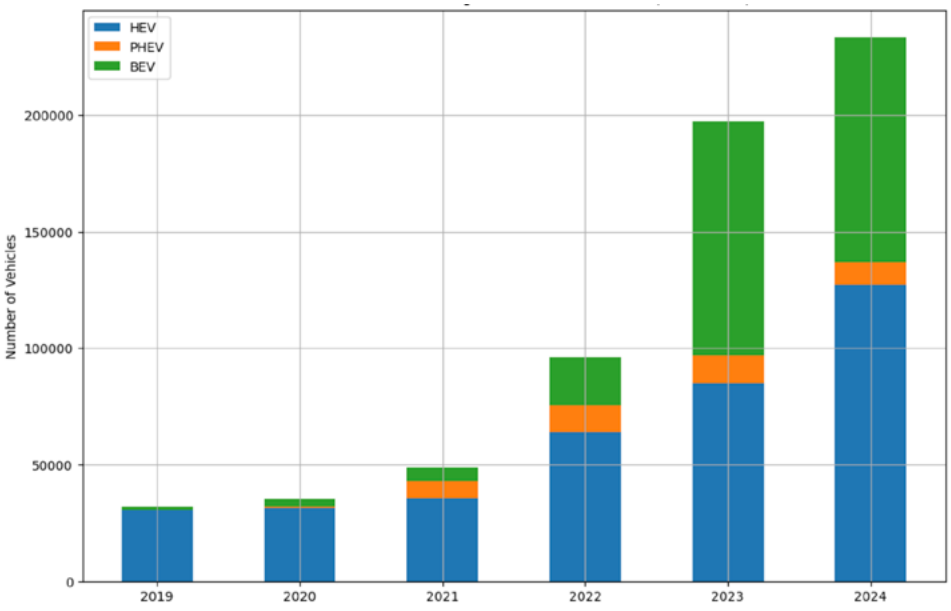
3. Current State of Thailand's EV Market

Over the past five years, Thailand's automotive sector has seen remarkable shifts in vehicle registration trends, indicating the beginning of an electric transition. While traditional ICE vehicles still dominate the roads, electrified vehicles are rapidly gaining ground in new sales. Official registration data from 2019 to 2024 show a clear pattern: conventional ICE new registrations have been gradually declining, while various forms of electric vehicles (collectively referred to as xEVs, which include hybrid electric vehicles or HEVs, plug-in hybrid electric vehicles or PHEVs, and battery electric vehicles or BEVs) have surged from virtually nothing to a notable share of the market.

Annual New Registrations: In 2019, Thai consumers registered about 2.93 million new ICE vehicles. By 2024, that number fell to roughly 2.44 million. This decline in ICE cars coincided with the rise in electrified vehicles, as shown in Figure 1:

→ HEVs (Hybrid Electric Vehicles): Registrations grew from around 30,700 in 2019 to about 127,200 in 2024. Tax incentives and a growing model lineup (especially from Japanese brands) made hybrids an increasingly popular choice for those seeking better fuel economy without reliance on charging infrastructure. HEVs have effectively become a mainstream option for many car buyers in Thailand's cities.

Figure 1: Registered xEVs in Thailand, 2019-2024
Source: Department of Land Transport, Thailand



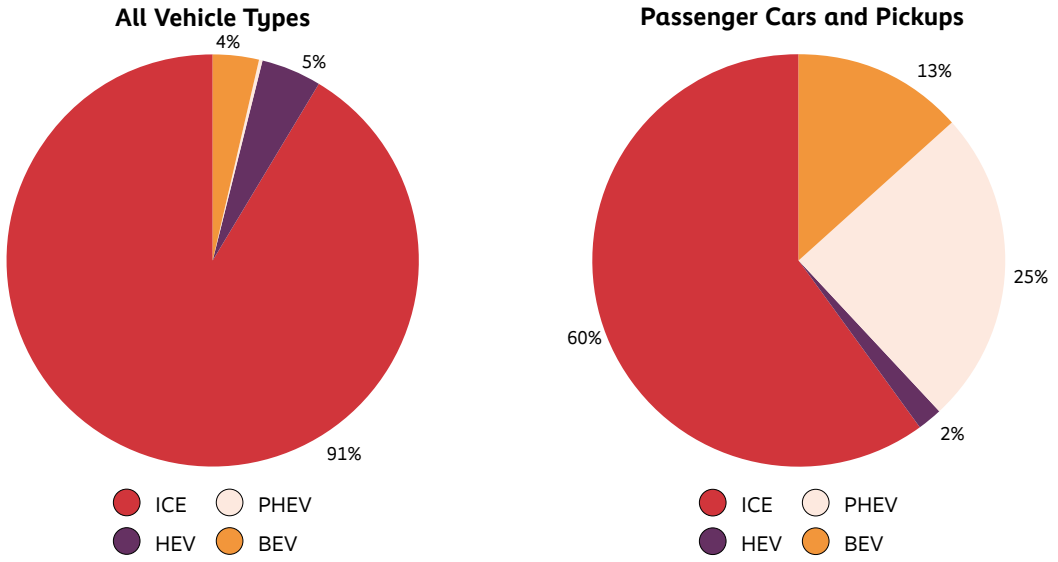


Figure 2: Vehicle Registration by Fuel Type (2024)
Source: Department of Land Transport, Thailand

→ PHEVs (Plug-in Hybrid Electric Vehicles): Uptake has been more modest. PHEV registrations peaked in 2023 at about 11,700, then slightly declined to around 9,300 in 2024. PHEVs appeal to a narrower segment (often higher-end models) and require charging for optimal use, which may have tempered their growth despite incentives.

→ BEVs (Battery Electric Vehicles): This category saw explosive growth, albeit from a very low base. From only about 1,570 new BEVs in 2019, the number shot up to over 100,000 in 2023, then leveled off to about 96,700 in 2024. The year 2023 was a tipping point for BEVs in Thailand, driven by the consumer subsidies (which began in 2022) and the aggressive entry of Chinese EV brands offering more affordable models. The slight dip in 2024 could be due to economic slowdown, subsidy adjustments, or supply bottlenecks, but overall, the trajectory remains strongly upward.

These trends led to a shift in market composition. By 2024, approximately 9% of all new vehicle registrations in Thailand were some form of xEV (HEV, PHEV, or BEV), with the remaining 91% still being ICE, as shown in Figure 2. However, looking closer, the electrification is more pronounced in certain segments:

→ For passenger cars and pickup trucks (combined) – the core of personal vehicle sales – xEVs accounted for about 40% of new registrations in 2024. Within this subset, BEVs made up roughly 13.4% of new car/pickup sales, HEVs about 24.9%, and PHEVs 1.8%, leaving ICE vehicles at around 60%. In other words, over one-third of consumer car purchases were already electrified to some degree by 2024 – a significant change in a short time.

→ In contrast, other categories like motorcycles, buses, and commercial trucks have seen slower change. Motorcycles are beginning to electrify (with some e-scooters and electric motorbikes entering the market), but as of 2024, electrics were still a small fraction of the huge two-wheeler market. Electric buses and trucks remained very limited, often confined to pilot programs or small fleet deployments.

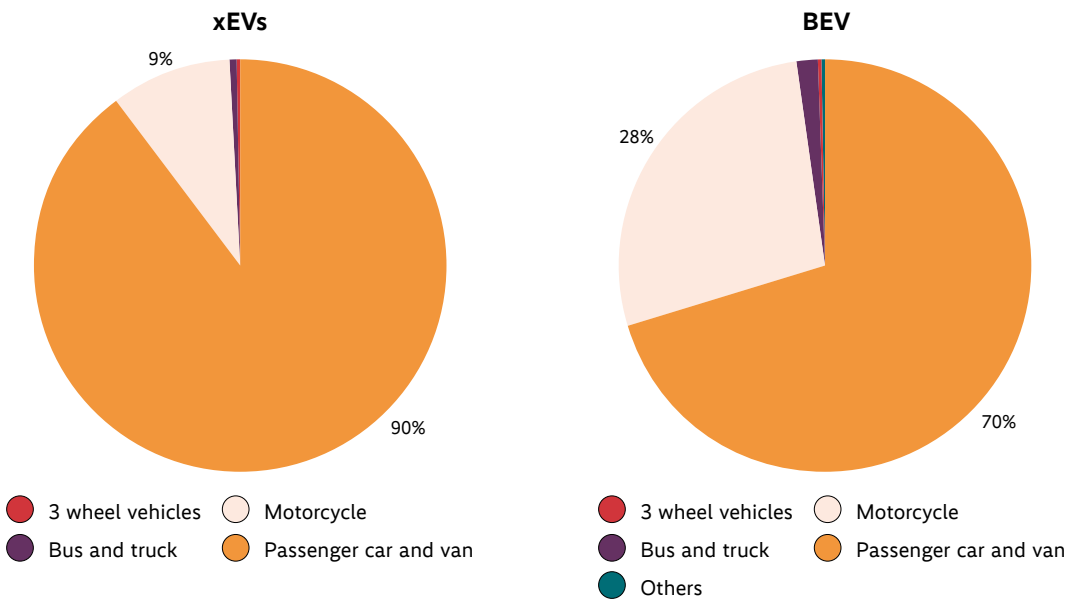
Between 2019 and 2024, Thailand cumulatively registered about 760,000 electrified vehicles (mostly HEVs). Of these, the vast majority (approximately 90%) were passenger cars and pickups, about 9–10% were motorcycles, and less than 1% were larger vehicles like buses, trucks, or three-wheeled tuk-tuks, as shown in Figure 3. This skew shows that early EV policies have been most effective in the private light-duty vehicle segment (individual and family vehicles in urban areas). Commercial and public transport electrification – buses, logistics fleets, etc. – is lagging, likely due to higher upfront costs, lack of charging infrastructure for heavy-duty use, and the need for different policy support (such as fleet-specific incentives and depot charging programs).

The year 2023 marked a significant milestone for Thailand's EV market. Two main factors converged: strong government incentives came into full effect, and Chinese automakers made a big push into the market. Brands such as BYD, Great Wall (with its ORA EV sub-brand), and SAIC (which sells EVs under the MG brand in partnership with Thailand's CP Group) captured the imagination of Thai consumers by offering modern EVs with long range at prices often below those of comparable gasoline cars (especially after subsidies). Many of these models enjoyed import tariff exemptions under the ASEAN-China Free Trade Agreement, further lowering their cost. Thai buyers – helped by the point-of-sale subsidies that directly cut purchase prices – flocked to these offerings, resulting in waiting lists for certain models. By late 2023, industry reports suggested that Chinese brands accounted for the majority of new BEV sales in Thailand.

Focusing specifically on Battery Electric Vehicles (BEVs) on the road, by the end of 2024, Thailand had around 227,000 BEVs in use (cumulative). Despite strong progress, the current EV market shows imbalances across vehicle types:

→ About 70% of these BEVs were passenger cars and pickups. This includes popular small to mid-size electric cars, many of which are from Chinese brands offering a range of models from compact city EVs to larger crossovers at competitive prices.

Figure 3: Cumulative Vehicle Registration by Vehicle Type (2019–2024)
Source: Department of Land Transport, Thailand



- → Nearly 27–28% of BEVs were motorcycles. Electric two-wheelers have gained some traction, particularly for urban delivery services and among environmentally conscious consumers. Their lower cost relative to cars and rising fuel prices have made electric motorbikes attractive for certain users. (The government has also started paying attention to this segment, seeing potential in electrifying motorcycle taxis and delivery fleets.)

- → Only about 2–3% of BEVs were in categories like buses, trucks, or three-wheelers. There have been limited electric bus deployments (e.g., trials in Bangkok's transit system) and some startups converting tuk-tuks to electric, but these are still small-scale initiatives.

Meanwhile, charging infrastructure – still a work in progress – expanded alongside vehicle adoption. By 2024, charging stations had become increasingly common in Bangkok and major cities. Oil companies like PTT, along with startups and utilities, were investing in charging networks. The government offered support for charging infrastructure development as well, aware that consumer confidence in BEVs depends on convenient charging access.

As of 2024, Thailand's progress toward its EV goals is mixed across segments. In the passenger car segment, BEV registrations for passenger cars by 2024 had achieved about 16% of the government's 2030 target for that category – a promising sign. However, other segments are falling behind: electric motorcycles reached only about 4% of their 2030 target, and electric buses/trucks about 3% of theirs by 2024. This indicates that while private EV use is taking off, commercial and public EV adoption will require much more effort and targeted policies.

Overall, the EV market in Thailand as of 2025 can be characterized as follows:

- → R**apid early adoption in consumer markets**: Thanks to policy incentives and attractive new models, Thai consumers have embraced hybrids and, increasingly, BEVs for personal use. EVs are becoming a common sight in Bangkok and other major cities.

- → **Market still in transition**: Conventional ICE vehicles remain the majority of new sales and an overwhelming majority of vehicles on the road. The vehicle fleet will take many years to turn over, even if EV sales continue to grow quickly, so ICE vehicles will remain relevant in the near-to mid-term.

- → **Key role of foreign entrants**: New EV sales are dominated by foreign automakers (notably Chinese). Thailand does not have indigenous major car brands, and the long-established Japanese automakers in Thailand have so far focused on hybrids or are only beginning to introduce BEVs. This means foreign entrants are setting the pace of EV innovation and capturing growing market share, which has implications for who controls technology and supply chains.

- → **Infrastructure playing catch-up**: The charging network and related services are expanding but will need to accelerate to support the growing EV fleet, particularly if BEVs move beyond early adopters to mass-market audiences and regions outside the main urban centers.

- → **Uneven sectoral progress**: Passenger vehicles lead the way in electrification, followed by some progress in two-wheelers. Heavy-duty transport and public transit electrification are lagging due to higher barriers (cost, technology readiness, insufficient policy focus). Future measures may need to specifically address these segments (for example, incentives or mandates for electric buses, or subsidies for converting diesel buses and trucks).

In summary, Thailand's EV market is gaining momentum faster than many initially expected. The achievements in spurring EV sales have been significant, yet they bring to light new challenges, especially for the auto-parts suppliers and workforce that thrived under the old ICE regime.

4. Methodology

This study employs a mixed-methods approach combining qualitative interviews, a field visit, a worker survey, and secondary research to explore the impacts of Thailand's automotive transition, particularly the shift toward EVs, on auto-parts suppliers and workers.

1. In-depth Interviews: A total of 16 in-depth interviews were conducted between September and November 2024 with key stakeholders in the automotive ecosystem:

   → Government stakeholders (4 interviews): Senior officials from relevant agencies (the Thailand Board of Investment, the Ministry of Industry, Thailand Automotive Institute, and the Ministry of Labor) were interviewed to understand EV investment promotion strategies, the transition roadmap, and labor policy responses.

   → Workers (6 interviews): Six workers were interviewed to capture their experiences and perspectives on workplace changes, job security, and skills. Five were trade union leaders representing workers from different auto-parts firms (Japanese-affiliated, Thai-owned, and Chinese-owned suppliers), and one was a skilled Thai engineer employed by a major Chinese EV manufacturer.

   → Employers (6 interviews): Six interviews were conducted with employer-side representatives. Four were owners of Thai small and medium-sized enterprises (SMEs) in the ICE auto-parts supply chain, providing insight into how local suppliers are strategizing amid the transition. In addition, one human resources (HR) manager from a Japanese supplier and one secretary from a Thai supplier were interviewed to discuss workforce adjustments and training from a management perspective.

2. Field Visit: A field visit and on-site observation were carried out at a Chinese EV car manufacturing facility in Thailand (the Thai plant of the world's largest EV maker). During the August 2024 visit, the researcher observed the production line and interviewed members of the management team. This provided first-hand insights into production processes, labor practices, and the company's localization and expansion strategies in Thailand.

3. Worker Survey: A structured questionnaire survey was administered to 400 automotive workers, primarily from vehicle manufacturers and first-tier suppliers. The survey gathered quantitative data on workers' employment conditions, job satisfaction, perceived job security, and concerns about the EV transition. The sample was drawn through convenience sampling at automotive labor seminars hosted by five different organizations, where the researcher was invited to speak. The sample provides valuable insights into workforce sentiments, especially among those in larger firms or unionized settings.

4. Secondary Research: To contextualize and support the primary data, the study also analyzed secondary sources, including national statistics on employment, investment, and ve-

hicle production trends; government policy documents and EV transition plans; and relevant research studies and industry reports. These secondary materials helped frame the analysis within broader economic and policy trends.

The next sections delve into how those suppliers and workers are faring amid this market shift.

5. Impacts on Thai Auto-Parts Suppliers (Case Study Findings)

The shift toward electric vehicles is having profound effects on Thailand's extensive network of auto-parts suppliers. The auto-parts industry forms the backbone of the country's automotive sector, so any major change in vehicle technology reverberates through this supplier base. For context, Thailand hosts around 2,400 auto-parts manufacturers in a three-tier structure: roughly 700 Tier-1 suppliers (companies that supply parts directly to automotive OEM assemblers, often multinational joint ventures producing complex systems), about 1,100–1,200 Tier-2 suppliers (firms that supply components to Tier-1 suppliers, many of them locally owned with moderate technological capabilities), and 500–600 Tier-3 suppliers (small domestic companies providing basic parts, raw materials, or simple components). In addition to these tiers, there is a web of smaller subcontractors and job shops that handle overflow work or specialized processes. This local supplier network has been vital to Thailand's automotive competitiveness: local suppliers provide over 80% of the parts (by value) for vehicles assembled in Thailand, and the country exported over $20 billion in auto parts in 2023 (around 6% of GDP).

The advent of EVs is disrupting this network, as EVs require fewer mechanical parts (like engines or transmissions) and more electronic components and batteries – areas where many incumbent suppliers have limited experience. Several threats to Thai suppliers have emerged:

- → Parts unique to ICE vehicles (engines, transmissions, fuel systems, exhaust systems) will see declining demand over time, directly affecting firms specialized in those products.
- → Many Tier-2 and Tier-3 suppliers specialize in precisely those soon-to-be-sunset components or materials, putting them at particular risk.
- → EVs still need numerous parts (chassis, body, brakes, suspension, etc.), so not all suppliers are threatened – but those who cannot adapt to produce the new types of EV components (such as battery enclosures, high-voltage connectors, and electronic controls) could lose business.
- → New foreign EV entrants may bring in their own established supply chains or use a smaller number of highly integrated suppliers, potentially displacing Thai firms that are not already in those networks.

In the face of these challenges, Thai auto-parts firms are responding in different ways. The following case studies illustrate how six suppliers – ranging from a large joint venture to smaller local companies – are coping with or being challenged by the EV transition.

5.1 Industry Representative's Perspective on Supplier Adaptation and Policy Gaps

An interview with a senior industry representative shed light on how Thai auto-parts suppliers are navigating the EV transition and what policy gaps remain. In this employer-centric view, Thailand's suppliers are differentiated by their ability to cope with electrification. The interviewee categorized local automotive suppliers into three groups, each facing distinct challenges and strategies:

1. Cope (C Group) – Suppliers whose products remain relevant in electric vehicles and can continue supplying the EV market with minimal change. These firms (e.g., makers of chassis, suspension, braking, or body parts) do not face technological obsolescence, but must aggressively improve efficiency to survive. With Chinese entrants intensifying price competition, even EV-relevant suppliers risk losing business unless they cut costs and boost productivity. Chinese manufacturers benefit from massive scale and lower costs, making it "difficult for Thai factories to compete on price", as local firms have warned. Therefore, C-group suppliers are urged to streamline operations (through automation, lean manufacturing, etc.) to meet the challenge of low-cost Chinese rivals.

2. Adapt (A Group) – Suppliers that do face product change, but can pivot to new components for EVs. These firms must adapt their production lines toward emerging technologies (for instance, shifting from mechanical engine parts to electrical or battery-related components). The interviewee noted that many traditional Tier-2 and Tier-3 suppliers need to invest in retooling and R&D to supply parts like battery enclosures, electric powertrain components, or advanced electronics, instead of the declining ICE parts. This adaptation is arduous but feasible: some Thai suppliers have already begun securing contracts in EV supply chains by leveraging their manufacturing expertise in new areas. Successfully transitioning A-group firms are those proactively partnering with technology providers or foreign OEMs to acquire the know-how for EV components, thereby "not waiting for government protection" but finding new niches in the value chain. The key for this group is strategic innovation—developing capabilities in high-growth areas (battery packs, charging systems, lightweight materials, etc.) to remain relevant as the industry transforms.

3. Transfer (T Group) – Suppliers whose core products will become obsolete in the EV era, requiring them to diversify into other sectors. This group includes manufacturers of components unique to internal combustion engines – for example, turbochargers, multi-gear transmissions, radiators, fuel injection systems, and exhaust parts – which are not used in battery electric vehicles. For these companies, the interviewee emphasized a need to "think beyond automotive". Since EVs use far fewer moving engine parts (no engine block, no fuel system, etc.), T-group firms cannot rely on automotive demand alone in the future. They are advised to transfer their engineering and production expertise to adjacent industries such as agricultural machinery, medical devices, or aerospace components. By pivoting to new markets, these firms can mitigate the risk of declining ICE-vehicle orders. For instance, a manufacturer of precision metal parts for engines might repurpose its equipment to produce medical equipment or agricultural machine parts. Such cross-industry diversification is crucial for T-group suppliers to survive the EV transition's fallout.

Beyond categorizing suppliers, the industry representative drew stark comparisons between Chinese and Japanese investment models and their implications for the Thai industry. Japanese automakers, who have dominated Thailand for decades, tended to upgrade production gradually, providing Thai firms and workers time to adjust. In contrast, Chinese EV manufacturers are setting up highly automated, "smart" factories from the outset, effectively leapfrogging to cutting-edge technology. Chinese companies "will bring technology from China to Thailand" and often implement more automation on the shop floor, reducing their reliance on Thai labor. This raises concerns that the EV transition, as led by Chinese investors, could displace workers or limit new hiring. Indeed, electric vehicle production generally requires fewer workers – an EV factory can assemble a car in 30% less time than an ICE factory, and EV battery manufacturing needs 80% fewer workers than traditional engine production. The interviewee stressed that this rapid automation underscores the urgency of upskilling Thai workers. Digital literacy, robotics, and automation skills are now essential for the workforce to remain employable.

In response, Thai agencies and industry groups have begun rolling out training programs (e.g., the Ministry of Labour's EV skills training for thousands of engineers), but the scale needs to increase. Without rapid reskilling, many workers, especially older or SME workers, will struggle to find a place in the new EV production ecosystem. The employer perspective here is clear: human capital development is as critical as industrial policy in this transition. The interviewee advocated for coordinated public-private initiatives to train workers in EV-relevant skills (electrical engineering, battery technology) and in advanced manufacturing techniques, aligning with recent ILO recommendations for continuous skills development in the sector.

Another major point raised was the challenge of integrating Thai suppliers into Chinese EV makers' supply chains. Despite Thailand's strong supplier base, Chinese OEMs entering Thailand have struggled to find local parts that meet their cost and efficiency targets. Many Chinese automakers still rely heavily on their established network of Chinese suppliers, which can often deliver parts at lower cost due to economies of scale. The result is a mismatch: Thai part manufacturers worry they are "struggling to secure orders from Chinese brands such as BYD that can source from China" instead. In other words, unless Thai suppliers can offer competitive pricing and high productivity, Chinese firms prefer to import components or bring in their own subcontractors. This dynamic risks excluding local firms from the new EV supply chain, undermining Thailand's industrial base. The interviewee pointed out that Chinese OEMs did not initially localize their entire supply network – for instance, when launching new models, they may import critical components – but they are open to local sourcing if standards and costs are met. This window of opportunity, perhaps 4–8 years, as Ms. Chanapun Juangroogruangkit, Senior Vice President of Thai Summit Group, estimated, is when Thai suppliers must ramp up to win contracts before overseas competitors fully settle in.

To address these integration challenges, the interviewee argued that Thai policymakers (especially the BOI) should take a more proactive role in ensuring local supplier participation. While market forces push Thai firms to become more competitive, government intervention can accelerate their inclusion in EV supply chains. The interviewee suggested three key policy measures. First, mandate or incentivize Thai–Chinese joint ventures for EV manufacturing projects, thereby pairing foreign OEMs with local partners. Joint ventures would facilitate technology transfer and give Thai companies a stake in production, mirroring the approach China itself used to build its auto industry (where foreign automakers long had to form JVs with Chinese firms). Such partnerships can help localize knowledge and foster trust between Chinese assemblers and Thai suppliers. Second, enforce local content requirements for EV assembly. This could mean setting a minimum percentage (e.g., 40% or higher) of parts that must be sourced domestically to qualify for government EV incentives. Notably, Thai authorities have already begun nudging Chinese carmakers in this direction: for example, GAC Aion pledged to use 40% local content in its Thai-made EVs, and Changan Auto committed to an initial 60% local content. Formalizing such requirements would ensure foreign investors contribute to the local supply chain rather than simply importing kits. Third, offer financial and technical support for supplier modernization. This includes targeted grants, soft loans, or tax breaks for Thai SMEs to invest in new machinery, automation, and quality certification, as well as advisory services to upgrade their operations. By bolstering the capacity of local parts makers, the government can help them meet the stringent cost, quality, and technology standards that EV production demands. The Board of Investment has already introduced training programs and incentives to encourage technology upgrading, but the interviewee sees room for more robust support, especially for smaller Tier-2/Tier-3 suppliers that lack capital for costly upgrades. In sum, a mix of regulatory requirements (to guarantee local content) and supportive measures (to raise local firms' capabilities) is needed to bridge the gap between Thai suppliers and the needs of fast-moving Chinese EV manufacturers.

Despite the disruptions caused by electrification and foreign competition, the industry representative was optimistic about Thailand's fundamental advantages. Thailand remains the "Detroit of Asia" with the most comprehensive automotive supply chain in the region. Decades of being an auto production hub have yielded a dense network of suppliers, skilled engineers, and logistics infrastructure that newcomers like Indonesia or Vietnam cannot yet match. This deeply rooted ecosystem, from large Tier-1 firms to hundreds of smaller subcontractors, gives Thailand a strong foundation to support EV manufacturing. It is no coincidence that most Chinese EV investment is concentrated in Thailand's Eastern Economic Corridor (EEC), the country's automotive heartland. The EEC offers industrial estates with ready access to ports and highways, experienced workers, and existing auto-part clusters. BYD, for instance, chose Rayong (in the EEC) for its first Southeast Asian EV plant, a 96-hectare facility capable of producing 150,000 EVs annually. Other Chinese players like Great Wall and GAC Aion have similarly set up in the EEC. This regional clustering means Thailand can leverage its agglomeration economies – proximity between assemblers and part makers – to remain competitive. However, the interviewee cautioned that this traditional advantage will erode over time if not reinforced by policy. Competing countries are rapidly developing their own EV ecosystems (Indonesia, for example, is leveraging its raw materials for batteries). Thailand, therefore, must not be complacent; it should continuously strengthen its local supply chain capabilities to maintain its lead.

In conclusion, the industry representative's perspective highlights Chinese investment in Thailand's EV industry as a double-edged sword, bringing both opportunities and risks. On one hand, the influx of Chinese EV makers is a boon: it brings in capital, world-class technology, and can create new markets for Thai firms willing to adapt. If managed well, these investments could help Thailand achieve its EV production targets and sustain its status as an automotive hub. On the other hand, there is a clear danger of local displacement – without deliberate action, Thai suppliers and workers could be left behind in this transition. The interviewee argued that realizing the upside of Chinese investment will require strong policy intervention and coordinated reskilling initiatives at a national scale. The government must act as a steward of the transition, ensuring local companies and the labor force are protected and empowered to participate. This means enforcing rules that secure local content and joint ventures, as well as massive upskilling programs so that Thai engineers and workers can fill the high-tech jobs that EV manufacturing generates. Recent studies by the ILO and others echo this approach, calling for reskilling and upskilling as "critical for supporting just transitions" in the auto industry. Likewise, Thai experts warn that failure to adapt could carry significant economic and social costs. The interviewee's view aligns with these warnings: with proactive policies and skill development, Chinese-led growth can be harnessed for Thailand's benefit, but without them, the nation's comparative advantages may be lost. Ultimately, this case underscores a pivotal point – Thailand's EV transition, catalyzed in part by Chinese investment, will succeed only if local stakeholders are effectively integrated into the new landscape. A concerted effort to fill the policy gaps and prepare the workforce will determine whether Thailand can truly ride the EV wave or be swept aside by it.

5.2 SME Supplier Diversifies Market Focus

A medium-sized Thai-owned supplier (around 300 workers) known for producing ball joints and suspension parts for the automotive aftermarket has taken a different path. This company's primary income comes from selling replacement parts for vehicles in use (about 90% of its business is aftermarket, with only a small portion supplying new OEM production). In the short term, EVs have not significantly affected their aftermarket business – there are millions of ICE cars on the road that will need parts for years to come. However, the owner anticipates that as EV adoption grows, consumers might eventually shift away from repairing older ICE vehicles (opting to buy new EVs instead), which could shrink aftermarket demand

in the longer term.

Rather than trying to join new EV supply chains dominated by big players, this company has opted to diversify into entirely different industries. Over the past few years, it has invested profits into branching out to aerospace and medical device components – fields that require high precision and quality (leveraging skills developed from making precise auto parts) and that offer higher profit margins. This transition is challenging: it requires purchasing new machinery, obtaining international certifications, and upskilling workers (including improving English proficiency and technical knowledge to meet aerospace standards). The owner sees this as necessary "future-proofing," given his belief that the traditional automotive sector's growth potential is leveling off.

Internally, the company is also adopting advanced manufacturing technologies like robotics and IoT (Internet of Things) in its factories to improve efficiency and reduce dependence on manual labor. It has brought in consultants and specialist technicians to train its workforce in these new systems. Importantly, the owner has committed to no layoffs during this transition. Instead, workers who can learn new skills are being retrained and moved into the new aerospace/medical production lines. This approach maintains morale and preserves valuable skilled labor while preparing the company for a post-automotive future.

The owner does note intense competition from Chinese suppliers in the traditional auto-parts space. He consciously chose not to become a lower-tier supplier to Chinese EV companies because the profit margins in that role would be very slim. Instead, his strategy is to "leap" to higher-value markets where Chinese firms are less dominant. He believes government policy should support such moves – for example, by creating domestic demand for high-tech industries (suggesting that the Thai government and military procure locally made aerospace or medical components where possible), simplifying certification processes, and providing R&D grants to help companies like his innovate and pivot.

In summary, this SME case illustrates a diversification strategy: rather than directly engaging with the EV supply chain, the firm is leveraging its expertise to enter different industries less threatened by electrification. This path is resource-intensive and requires a long-term vision, but it could pay off by opening new revenue streams and reducing reliance on an automotive sector in flux.

5.3 Resilience and Realism: A Medium-Sized Supplier Confronts the EV Shift

The case features a long-standing Thai auto-parts manufacturer that has been in operation for 54 years. The company specializes in high-pressure aluminum and zinc die casting and machining, producing a range of metal components. It serves as a first-tier supplier for truck manufacturers and acts as a second- or third-tier supplier for other sectors, including passenger vehicles, agricultural machinery, and electrical equipment. Its product mix is predominantly automotive (around 63% of output), with the remainder split between agricultural parts (23%) and electrical components (11%). The firm employs about 270 full-time workers and notably uses no subcontract labor. This employment model reflects the owner's philosophy of fostering long-term employment relationships to retain skilled workers and maintain consistent product quality over time.

In recent years, the business has experienced declining sales due to multiple converging pressures. The owner identified three key factors driving this downturn:

1. The rise of Chinese EV manufacturers in the Thai market – New Chinese automakers have entered Thailand aggressively, bringing intense price competition.

2. Stricter emissions regulations (Euro 5) for trucks – Tighter emission standards for heavy vehicles have impacted the domestic truck market and, by extension, demand for the company's truck parts.

3. A general economic slowdown – Broader economic sluggishness has reduced overall demand in the automotive and related sectors.

Together, these factors have put significant strain on the company's order books. Unlike in past decades when Japanese car makers were the dominant partners and emphasized quality and long-term collaboration, the owner observes that Chinese manufacturers today focus primarily on cost-cutting and volume production. This shift in industry dynamics has made it difficult for his company to compete on price. The firm's attempts to break into the supply chains of Chinese EV makers have so far been unsuccessful. Chinese automakers setting up in Thailand often fulfill local content requirements by sourcing certain key components, especially batteries, from their own newly established facilities or affiliated suppliers in Thailand, thereby bypassing traditional Thai parts suppliers. This exclusion from the new EV supply chain has further compounded the company's challenges.

Despite the rapid push toward electrification in the auto industry, the owner remains skeptical that battery electric vehicles (BEVs) will completely dominate Thailand's market in the near future. He points to the high cost of EV technology, the still-limited charging infrastructure, and long charging times as factors that will likely slow full EV adoption among Thai consumers. In his view, hybrid vehicles (which combine an internal combustion engine with an electric drivetrain) will continue to play a prominent role for many years. Hybrids are seen as a more practical and affordable solution in the Thai context, since they leverage the existing engine-based supply chain and avoid the range and infrastructure limitations of pure EVs. This realistic assessment of the market's trajectory has influenced the company's strategy: rather than pivoting abruptly to EV-only products, the firm continues to support the conventional and hybrid vehicle segment where it sees sustained demand.

Facing the headwinds of market change, the company has adopted a survival strategy centered on internal improvements and diversification, exemplifying resilience. Crucially, it has avoided layoffs, choosing not to shed its experienced workforce even as sales decline. Instead, management has doubled down on cost control and efficiency. Production processes have been streamlined, and waste has been reduced to lower operating costs. The company is also investing in energy-saving technologies and processes in its factories, which not only cut expenses but also align with a broader industry move toward sustainability. These measures help the firm stay competitive on cost without compromising the workforce that it has cultivated over the decades. In parallel, the owner is actively exploring opportunities beyond the traditional automotive realm. Leveraging the company's core expertise in aluminum casting and machining, he is investigating new markets and product lines in sectors such as agricultural machinery and electrical equipment (areas where the firm already has some footing) as well as other industries that require precision metal components. This diversification effort is aimed at reducing dependence on the uncertain automotive market and capitalizing on the company's technical know-how in aluminum parts manufacturing.

The owner offers a critical yet constructive view of Thailand's current pro-EV policies. He argues that the government's incentive packages to attract EV production, particularly those benefiting Chinese manufacturers, have been too generous, effectively making imported EVs or knock-down kits very cheap in the Thai market. While these incentives have succeeded in bringing in foreign investment and boosting EV sales in the short term, he questions the long-term benefit for Thailand's economy. In his assessment, such policies risk creating an uneven playing field that disadvantages other car brands and local suppliers, yielding little more than basic assembly jobs domestically. Instead of heavy subsidies for foreign EV makers, the owner advocates for a more balanced, gradual approach to developing the EV ecosystem. He emphasizes capacity-building for local small and medium-sized enterprises (SMEs) – strengthening the fundamentals, such as technical skills, quality standards, and production systems – before pushing them to adopt expensive new technologies. Rapid promotion of high-cost innovations (for example, requiring firms to implement advanced

digital manufacturing or costly EV-specific equipment) without first ensuring they have a solid foundation could, in his view, do more harm than good to domestic industry.

Aligned with this philosophy, the owner is supportive of initiatives that build local capabilities through education-industry collaboration. He cites the Eastern Economic Corridor (EEC) – a major regional development program in Thailand – as a positive example. The EEC has initiatives that foster partnerships between private companies and educational institutions, such as internship programs that bring engineering students into factories. Such collaborations help cultivate a skilled workforce and drive incremental innovation, exactly the kind of long-term investment in human capital that the owner believes will enable Thai firms like his to eventually compete in the evolving automotive landscape.

This case study showcases a medium-sized supplier responding to the EV transition with a blend of resilience and realism. On one hand, the company exhibits resilience by safeguarding its workforce, improving operational efficiency, and seeking out new markets to buffer against the automotive downturn. On the other hand, the owner's cautious outlook on the pace of change – recognizing the continued role of hybrids and the pitfalls of one-size-fits-all EV policies – reflects a pragmatic realism. Together, these traits underline the importance of steady adaptation and clear-eyed strategy for traditional automotive suppliers navigating the uncertainties of Thailand's electrified future.

5.4 Thai Stamping Firm Accelerates Automation

A Thai-owned metal stamping company (approximately 288 workers) that serves as a Tier-1 for some simple parts and Tier-2 for others provides insight into how smaller firms are trying to stay relevant. This company produces various metal parts (brackets, chassis components, etc.) and has prided itself on flexibility – it can do small production runs and quickly switch tooling to meet different orders. Pre-EV, this flexibility was an asset. But as automakers standardize EV designs and potentially reduce the number of stamping parts (EV platforms can be simpler in some body structures), the firm has seen fewer orders from traditional customers. It also tried and failed to become a supplier to a Chinese EV OEM due to cost competition and some material sourcing issues (the company uses certain grades of steel imported from Japan that are high-quality but expensive; the Chinese OEM prioritized lower cost even if the specs were slightly lower).

Responding to declining revenue, the firm decided to double down on technology and productivity improvements:

- → It invested in sensor-equipped stamping machines and robotics to increase output and reduce accidents. By automating material feeding and part retrieval in the stamping lines, one operator can now oversee multiple machines, significantly boosting output per worker.

- → It implemented better materials recycling and reuse processes, cutting waste and appealing to customers' environmental, social, and governance (ESG) requirements.

- → Recognizing that some low-skill jobs would vanish with automation, the company began retraining its remaining workers to be multi-skilled. For example, press operators were taught to program basic robot tasks or to conduct quality inspections. The firm reduced its subcontracted workforce (which had handled many of the menial tasks) but aimed to keep all its core full-time staff by upskilling them.

- → An interesting challenge they face is labor availability: stamping is tough, physical work, and has historically struggled to attract young Thai workers, leading the firm to rely on migrant labor for the most dangerous or dirty tasks. With automation taking over some of those tasks, the company can operate with fewer unskilled workers, but it now needs more technically skilled staff. The owner worries there

may be a shortage of the kind of high-tech manufacturing workers he now requires, given Thailand's aging workforce and existing skill gaps, making training of existing employees all the more important.

The owner also noted growing ESG pressures from clients. Japanese carmakers, for instance, now evaluate suppliers on sustainability metrics, requiring things like carbon footprint reduction and good labor practices. To stay competitive, the stamping firm installed a solar panel system on its factory roof through an innovative financing model (a third party owns the panels, and the company pays via savings in its electricity bill). This cut energy costs and boosted the factory's use of renewable energy, which appeals to eco-conscious customers. Moves like this, while not directly related to EVs, improve the firm's overall resilience and image as a modern supplier.

Despite modernization efforts, the owner is realistic that some smaller Tier-3 suppliers are shutting down because they cannot meet new standards or invest in upgrades. He likens the situation to a "frog in boiling water" – a gradual decline that may not be fully apparent until it is too late. To avoid that fate, he has advocated for easier access to financing for SMEs to invest in new tech, and for government-run programs that expose SMEs to new ideas (such as industrial roadshows or knowledge exchange forums). He also mentions that education reform is vital – the industry needs a pipeline of technically proficient workers and engineers interested in manufacturing careers, which requires collaboration between companies, universities, and technical colleges.

In summary, this stamping company's story highlights an important theme: automation and technology adoption are no longer optional for Thai suppliers – they are becoming necessary for survival. While these steps can improve efficiency and help a firm retain some business, they often mean doing more with fewer people and contending with new workforce challenges (like finding skilled talent). This case also underlines how broader issues such as workforce development and access to capital play into the ability of SMEs to adapt in the EV era.

5.5 Human Resource Management in Transition: A Tier-1 Supplier's EV Strategy

This case examines a Thai automotive parts company listed on the stock exchange, operating as a Tier-1/Tier-2 supplier with about 1,900 employees. Established nearly six decades ago, the company specializes in critical components for pickup trucks and commercial vehicles – including axle shafts, disc and drum brakes, safety components, and suspension parts – and it also produces parts for agricultural machinery. These product lines have long been the backbone of its business and reflect the firm's deep experience in Thailand's traditional automotive supply chain.

Unlike many Thai auto-parts firms, this supplier has so far avoided major disruption from the recent influx of Chinese electric vehicles. Its market niche – supplying parts for pickup trucks and agricultural vehicles – remains relatively insulated, as those segments have been slower to electrify and continue to be dominated by conventional (ICE and hybrid) models. Nevertheless, the company has opened discussions with Chinese EV manufacturers to explore new business opportunities. Progress has been difficult, however, due to intense price competition and contrasting production cultures. Chinese automakers, unlike the Japanese clients the firm is accustomed to, often prioritize rapid production and time-to-market over the rigorous, quality-focused processes that Thai suppliers have traditionally followed. This mismatch in approach has made partnership negotiations slow and challenging.

Internally, the firm enjoys several strengths that bolster its position amid these industry changes. It benefits from a highly skilled workforce, nearly 60 years of operating experience, and solid financial footing as a publicly listed company. These attributes give it resilience and credibility with customers. On the other hand, the company faces a notable capability gap in advanced manufacturing

technology. It lacks some of the cutting-edge technical know-how needed for the EV era and relies on foreign technical consultants to help upgrade processes like casting, machining, and iron foundry work. This dependence on external expertise highlights a vulnerability in the firm's ability to innovate and adapt entirely on its own.

Over the past year, the company encountered a significant downturn in demand, with sales dropping by approximately 20%. This decline was attributed to a combination of broader economic sluggishness and the ripple effects of an El Niño-induced drought that hurt the agricultural sector (and in turn, demand for related vehicles and parts). In response, management implemented a series of cost-cutting and efficiency measures to safeguard the business. The firm scaled back its outsourced contract labor and sharply curtailed overtime hours for full-time staff to reduce labor costs. It also consolidated its operations from two plants into one, streamlining production into a single facility to better match the lower volume of orders. These adjustments, while difficult, were seen as necessary to stabilize the company's finances and reflect a strategic adaptation to tougher market conditions.

Looking ahead, the company is actively exploring new product directions to secure its future in the emerging EV landscape. Thus far, it has not identified a viable new product line in the EV domain, but efforts are underway to study and anticipate where it could participate in the electric vehicle supply chain. In the meantime, it has already broadened its portfolio over the past decade by expanding into agricultural vehicle components, which provides an additional revenue stream outside the conventional automotive market. Management fully recognizes that the automotive industry's trajectory is shifting toward greener technologies – whether battery electric vehicles (BEVs) or hybrid systems – and acknowledges that sooner or later the company's offerings must align with these trends to stay relevant. There is an understanding within the firm that its current product mix will need to evolve in tandem with the industry's transition to cleaner drivetrains.

In its strategic planning, the company places heavy emphasis on automation as a key to long-term cost reduction and competitiveness. Plans are in motion to gradually introduce more automated processes on the factory floor, aiming to boost productivity and offset rising labor costs. However, an aging population in Thailand is creating additional pressure on the labor supply, raising concerns about potential skilled worker shortages in the coming years. This demographic shift underscores the importance of workforce upskilling. The firm has identified the need to train and reskill its employees in digital and automation technologies so that its human capital can effectively support and sustain the new automated systems. In essence, the company sees investment in employee skills, particularly in advanced manufacturing techniques and IT competencies, as crucial for leveraging automation successfully and mitigating the talent crunch caused by an aging workforce.

In summary, this case study highlights how a well-established Thai auto-parts supplier is navigating a period of industry transition through careful balancing of its resources and strategies. On one hand, the company's traditional focus on pickup trucks and agricultural vehicle parts has provided a degree of buffer against the immediate impacts of the EV boom, especially the onslaught of Chinese EV entrants, keeping its core business stable for now. On the other hand, long-term competitiveness will require proactive adaptation. The firm's experience underscores the need for Thai suppliers to balance the adoption of automation with the development of human capital. Leveraging its strengths will likely involve forging strategic partnerships (to access new technology and know-how) and investing in technological upgrades to modernize production. At the same time, cultivating a highly skilled, digitally proficient workforce will be critical to operate advanced machinery and drive innovation. By simultaneously advancing automation and workforce development, while drawing on decades of industry experience, this tier-1 supplier aims to remain resilient and competitive as Thailand's automotive sector shifts toward an electric future.

5.6 Continuity and Constraint: A Japanese-Affiliated Gear Manufacturer's Perspective

This case study examines a Japanese-affiliated Tier-1 automotive parts manufacturer in Thailand that specializes in gear components for both vehicles and agricultural machinery. The company has about 1,400 employees and serves primarily a single Japanese automaker, which accounts for roughly 80% of its business. As a first-tier supplier deeply integrated with its Japanese partner's supply chain, the firm has developed full in-house production capabilities for gears – from machining to assembly – supported by a skilled workforce and a comprehensive suite of equipment. This end-to-end capability is a key strength, enabling quality control and flexibility in production. However, the company's heavy reliance on one major client and its limited access to cutting-edge technologies represent significant vulnerabilities, especially as the automotive industry pivots toward electrification.

In the past year, the company experienced a 15–20% decline in sales, mirroring a broader slump in Thailand's automotive sector. National auto output fell to a four-year low in 2023–2024, with domestic car sales plummeting by about 26%. This downturn, described by industry officials as the worst crisis in decades, is partly due to weak domestic demand and tighter credit, but also reflects disruption from new electric vehicle (EV) entrants. Chinese EV manufacturers such as BYD and Great Wall Motors have rapidly expanded in Thailand, investing over $3 billion in local facilities and aggressively undercutting prices. Their rise has intensified competition and eroded the market share of traditional Japanese automakers, indirectly impacting suppliers like this gear maker. Notably, fully battery-electric vehicles require far fewer mechanical parts (as low as 20% of the components of an equivalent internal-combustion car), which foreshadows a shrinking demand for conventional components such as multi-gear systems. These market forces have put immense pressure on the company's main customer and, by extension, on the company itself.

Despite the nascent opportunities presented by Chinese EV assemblers setting up in Thailand, the gear manufacturer has opted not to pursue contracts with Chinese automakers. The representative emphasized that the firm remains committed to its long-standing Japanese client and will not seek to become a supplier to Chinese EV brands. This strategic choice of continuity over diversification carries both reassurance and risk: on one hand, it solidifies trust and alignment with its Japanese partner's gradual transition plans; on the other, it means forgoing the rapidly growing EV segment dominated by newcomers. Management also questions whether Chinese EV brands will manage to establish robust local supplier networks in Thailand, or if they will rely mostly on imported components. (Thai authorities have indeed been urging Chinese car makers to source more parts locally to build a sustainable ecosystem .) The company's cautious stance reflects skepticism about the immediate benefits of the Chinese EV boom for incumbent Thai parts suppliers.

Facing the sales decline and uncertain market outlook, the company has undertaken several measures to cut costs and refocus its production strategy. A primary step was workforce adjustment: the firm reduced its subcontracted (temporary) labor force down to approximately 100–200 workers and imposed a hiring freeze for permanent positions. Rather than resorting to mass layoffs of full-time staff, management chose not to replace employees who retired or resigned, allowing the core workforce to shrink gradually through natural attrition. This approach helped preserve the jobs of existing skilled workers while flexibly scaling down labor costs. It also reflects a relatively measured response compared to some larger automakers; for instance, Nissan announced plans to cut about 1,000 jobs in its Thai operations amid falling sales. The gear manufacturer's strategy of trimming contract labor and protecting permanent workers suggests an effort to maintain morale and retain expertise, positioning the firm to ramp up quickly when business rebounds.

Concurrently, the company is adapting its product mix and processes to align with evolving

automotive technology. Recognizing that hybrid electric vehicles (HEVs) are gaining traction, the firm has started shifting production toward hybrid-compatible gear components. These are parts that can be used in the transmissions of hybrid cars, which still require complex gearing systems alongside electric motors. By modifying designs and materials to meet hybrid vehicle specifications, the supplier stays relevant to its Japanese OEM's pivot toward hybrids. In parallel, the company is investing in more digital and electronic technologies within its operations – for example, upgrading machining centers with digital controls, introducing advanced quality inspection systems, and exploring components with electronic sensors. These steps mark a gradual move toward higher-tech manufacturing, helping to compensate for the firm's acknowledged weakness in advanced technology. While still far from producing sophisticated EV powertrain parts, these incremental upgrades improve productivity and build the technical foundation needed for future diversification.

Both management and employees at the company share a cautious outlook on the pace of full electrification in Thailand. The prevailing belief within the firm is that hybrid vehicles will expand their market share more quickly than battery electric vehicles (BEVs) in the coming years. In their view, consumer adoption of BEVs will be gradual – BEVs will grow, but slowly, and are unlikely to dominate the Thai market in the near term. This perspective aligns with the company's strategic focus on hybrids and is influenced by perceived constraints in Thailand's charging infrastructure, higher costs of BEVs, and the Japanese automakers' own technology roadmaps. It also echoes broader industry sentiment: Japanese carmakers like Toyota (the probable partner of this supplier) have been vocal about a "multi-pathway" approach favoring hybrids, and Thai policymakers in late 2024 even moved to introduce incentives for hybrid EV production to support the struggling sector. By concentrating on hybrid-compatible parts, the company is essentially betting that internal-combustion technology (in electrified form) will retain a significant role during Thailand's transition period.

The interviewee raised notable policy concerns and recommendations. A major point is the call for equal government tax incentives for hybrid and battery EV producers. Thus far, Thailand's EV promotion policies have heavily favored BEVs – for example, the government slashed excise taxes for BEVs and offered consumer subsidies as part of its EV incentive package. While these measures attracted foreign investment and boosted EV sales, they left hybrid-focused manufacturers at a relative disadvantage. The company urges that tax breaks and incentives be extended equally to hybrid vehicle programs, arguing that a more technology-neutral policy would support a smoother transition for traditional suppliers and automakers. Recent signals suggest the government may be heeding such advice: officials announced plans in early 2025 to offer new tax incentives for plug-in hybrid manufacturing from 2026 onwards, a move aimed at leveling the playing field and sustaining industry employment. The firm's stance is that hybrids and BEVs are complementary paths to emissions reduction, and policy should not "pick winners" too early.

Beyond EV-specific policy, the company is also concerned about the general business environment amid the transition. The interviewee noted that layoffs are rising across the auto industry as orders soften and stressed the need for government support to help firms retain workers. In particular, as Thailand prepares to raise the national minimum wage (to 400 baht per day in 2024), manufacturers fear additional cost burdens while the market is weak. The company suggests that the government could ease tax burdens on employers or offer temporary relief measures when mandated wage hikes occur, so that companies can comply without resorting to job cuts. Such support would be especially valuable for parts suppliers trying to upskill their workforce for new technologies at the same time as they face profitability pressures. Essentially, the firm is appealing for a buffer to manage the twin challenges of technological change and rising labor costs during this volatile period.

Another insight from the employer's perspective touches on the workforce's readiness for leaner times. The representative emphasized the

importance of financial literacy and resilience among workers. In this company (as in much of Thailand's manufacturing sector), overtime pay and annual bonuses form a significant portion of workers' incomes, often exceeding base wages in good years. Many shop-floor employees have come to rely on these extra earnings for their household finances. However, with production volumes uncertain and cost-cutting measures in place, overtime hours and bonus payouts are likely to diminish. Management has begun cautioning employees that their take-home pay may shrink and is encouraging better financial planning. By promoting saving habits and budgeting, the company hopes to mitigate the social impact of income fluctuations. This focus on worker financial health indicates a recognition that the EV-driven industry slowdown is not only a business challenge but also a human one, and that a successful transition must consider the well-being of employees who have long underpinned the industry's competitiveness.

This case highlights a Tier-1 supplier striving to maintain continuity in the face of disruptive change. Commitment to a traditional Japanese partner and a gradual shift toward hybrid vehicle components have provided a measure of stability for the gear manufacturer, allowing it to weather the recent downturn without drastic layoffs. The company's strong in-house capabilities and skilled workforce give it a solid base to build on. However, its experience also underscores the constraints confronting legacy suppliers: heavy dependence on one automaker, slower adoption of cutting-edge EV technologies, and exclusion from fast-growing BEV value chains. These factors pose long-term risks that cannot be ignored. The interviewee's perspective suggests that with the right support, such as balanced incentive policies and temporary tax relief to offset rising labor costs, traditional suppliers can buy time to upgrade technologically and find their footing in the new EV era. Ultimately, the continuity of established relationships and incremental innovation must be balanced against the need to overcome technological constraints. How well companies like this adapt will influence not only their own survival but also the broader success of Thailand's automotive transition. The case therefore underlines the importance of a strategic, inclusive approach to EV policy, one that supports incumbent firms and workers in adapting to change, alongside fostering new industry entrants, to ensure a just and sustainable transition for all stakeholders in the "Detroit of Asia."

6. Workforce Perspectives amid the EV Transition (Case Study Findings)

The EV transition is not only an industrial and technological shift but also a human one. This section presents perspectives from the workforce, including labor union leaders and engineers, to illustrate how workers in Thailand's auto industry are experiencing and responding to the changes. The cases span local and foreign-owned firms, highlighting common concerns about job security and working conditions, as well as differing labor practices among Thai, Japanese, and Chinese companies.

6.1 Navigating Change Through Dialogue: A Union Perspective from a Japanese–Thai Auto-Parts Firm

The first case is a trade union leader at a Japanese Tier-1/Tier-2 auto-parts company that has been operating in Thailand for over 30 years and has approximately 4,000 employees. The company primarily produces sealing rubber components used in various vehicles (passenger cars, pickup trucks, motorcycles, and agricultural vehicles) for multiple automakers, with both domestic and export sales. This diverse product range, including parts for ICE and hybrid vehicles, and the continued dominance of Japanese ICE vehicles in the Thai market, has so far insulated the firm from the major impacts of EVs. The company even exports some hybrid-related components to its Japanese parent company, ensuring steady demand. Although sales declined in the past year, the union leader attributed this mostly to broader economic challenges rather than the emergence of EVs. During the COVID-19 crisis, notably, the company retained its permanent employees and did not cut its subcontracted workforce; instead, management and employees cooperated to implement cost-cutting measures while maintaining employee benefits like stable bonuses.

Facing financial pressures from the economic downturn, the company adopted several cost-reduction strategies in consultation with the union :

- → Adjusted work schedules to reduce overtime (e.g., cutting weekend overtime and increasing productivity on regular weekdays).
- → Required employees to use accumulated paid leave (instead of receiving cash payouts for unused leave).
- → Trimmed or suspended various employee perks and events: for example, uniform allocations were reduced (from three sets per year to two), and office staff now receive safety shoes only upon request; the annual company trip was suspended (saving nearly 10 million baht) and family day events were put on hold (saving another approximately10 million baht); and the company's fleet of executive vehicles was consolidated (reducing from about 40 cars to a few shared vans).
- → Expanded automation in operations, such as using robots for moving heavy molds and transporting containers, to improve productivity and reduce manual workload .
- → Cut costs on everyday expenses, including tightening budgets for employee meals, utilities, and transportation allowances.

These measures were implemented with input from both management and the union, aiming to

save costs without resorting to layoffs or pay cuts for permanent staff.

The union leader noted that the primary drivers of change in the company have been technological advancements (automation and digital transformation) rather than EVs directly. Increased automation has led to a decrease in manual labor needs and necessitated worker retraining and reassignment. The company even branched out into an unrelated product (producing rubber hair ties) to diversify revenue – an example of firms seeking alternative streams beyond the automotive sector.

He observed that smaller firms with limited capital have faced greater challenges in adapting to such technological shifts. Moreover, the competitive advantage of Chinese firms (able to produce at lower costs) has intensified competition, adversely affecting smaller Thai auto-parts companies. His firm has initiated discussions with Chinese companies for possible collaboration, but he acknowledged that language barriers hinder progress.

The union leader expressed concerns about job security industry-wide and the role of subcontracted labor. He urged companies to prioritize direct employment over heavy reliance on subcontractors to provide greater job stability for workers. He also advocated stronger labor protections, including stricter enforcement of laws on severance pay to deter unlawful layoffs. Additionally, he called for improvements to Thailand's social security system to ensure fair and stable benefits for workers. These suggestions align with a broader "just transition" approach, emphasizing that the shift to EVs should not come at the expense of workers' rights and livelihoods.

In summary, this case shows that, at least for some larger and diversified suppliers, the EV transition has not yet directly harmed business. Instead, general economic factors and technology trends (automation) have been more immediate forces of change. The company's cooperative approach with its union – engaging in dialogue to reduce costs while preserving jobs and core benefits – exemplifies a more worker-inclusive way of weathering industry challenges. The union's voice underscores the importance of job security, fair labor practices, and early action (by both employers and policymakers) to protect workers as the industry evolves.

6.2 Adapting to Automation and Competition: A Union Perspective from a Thai Auto-Parts Manufacturer

This case is a trade union leader at a Thai-owned auto-parts firm (publicly listed) that produces metal parts for both domestic and export markets. The firm is positioned between Tier-1 and Tier-3 in the supply chain and has had to adapt to fluctuating demand, automation, and increasing competition. It employs approximately 1,200 workers, with a significant portion of the production line staffed by subcontracted labor (about 50%, down from 60% previously). Most full-time employees hold office or supervisory roles on the production line. The company's business model is diversified, producing parts for multiple clients rather than relying on one major automaker. While this diversification provides stability, it also means the firm is often a lower-tier supplier for some customers, which affects its pricing power and bargaining position.

One of the most significant shifts in this company has been the adoption of automated production. Automation has reduced reliance on manual labor and enhanced efficiency, but it also impacts employment. Rather than conduct mass layoffs, the company manages workforce reductions through attrition – it does not replace workers who retire or resign. Subcontract workers, on the other hand, tend to leave if overtime opportunities dry up, which indirectly helps the company scale down the workforce without direct layoffs.

Over the past year, the firm faced declining sales as Thai automakers struggled with a soft market. To sustain operations, the company had to seek additional orders even at lower profit margins. Despite these difficulties, the company managed to secure a contract to supply a Chinese EV manufacturer – an opportunity facilitated by the owner's personal business connections. This marked the firm's entry

into an EV supply chain. Additionally, the company has been expanding its market reach to the United States to diversify revenue streams.

The union has raised concerns about the competitive landscape and policy environment. The union leader believes government tax incentives in the automotive sector should be distributed more equitably among all car manufacturers – Chinese, Japanese, and others – to create a level playing field. (This reflects a view that early EV incentives in Thailand mainly benefited new entrants, particularly Chinese firms, potentially disadvantaging incumbents.) He also emphasizes the need for stronger government support for laid-off workers. One suggestion is a system where workers receive due compensation promptly before other stakeholders (e.g., creditors) in cases of layoffs or bankruptcies, to ensure workers are not left waiting for owed wages or severance.

In conclusion, this case highlights the adaptability of a Thai auto-parts manufacturer to industry shifts. The firm leveraged automation and sought new markets (both new EV clients and exports) to maintain stability, while avoiding dramatic layoffs through attrition management. However, the pressures of a changing market and global competition are evident. From the union's perspective, there is a call for fair competition policies and better safety nets for workers who do lose their jobs. It underscores that even as companies adapt technologically, attention must be paid to the human impact of industry cycles and transitions.

6.3 Adapting Under Pressure: A Union Perspective from a Thai Auto-Parts Supplier

This case study examines a Thai automotive parts supplier established approximately 50 years ago, operating primarily as a tier 1–2 manufacturer. Located in Samut Prakarn province, the company's main factory employs around 1,200 workers, including outsourced labor. Approximately 90% of its output comprises auto parts for a single Japanese pickup truck manufacturer, producing nearly all components except engines. Additionally, the firm owns subsidiaries in Chachoengsao and Ayudhya provinces, supplying parts for various other car brands. Collectively, these companies employ more than 10,000 workers.

Over the past year, the company experienced significant disruptions due to a dramatic decline in pickup truck sales, which fell by around 40%. Consequently, the firm's orders sharply decreased, necessitating a workforce reduction at its primary facility from approximately 1,500 to 1,200 employees. Many of these layoffs were involuntary, and although employees received compensation, some were left financially vulnerable, reportedly with only 700 baht remaining after debt repayments.

In response to financial pressures, the company also revised its salary structure, aiming to boost productivity and reduce labor costs. A key policy change stipulated that workers already receiving higher salaries would not see further increases unless they improved their productivity through training and passing standardized tests. This approach contrasted sharply with the company's previous practice, where longevity of employment often resulted in higher salaries, irrespective of productivity or role complexity. The policy has created particular hardships for older workers, many of whom struggle to adapt to these new expectations. Conversely, newer employees, often taking on greater responsibilities and leadership roles, sometimes receive lower salaries compared to their more tenured but less productive colleagues.

Financial stability remains the company's primary strength, which has historically secured its position as a trusted first-tier supplier to major automakers. However, the firm faces a significant weakness in technological advancement. Approximately 60% of its production processes are still manual, with minimal investment in automation. This technological shortfall recently caused the company to miss an important business opportunity: it nearly secured a contract with a Chinese manufacturer to produce battery components—a high-value product—but ultimately lost the deal due to its cost inefficiencies. The Chinese firm opted to

manufacture these components itself, highlighting the urgency of technological upgrades.

To further cut costs, the company has considered replacing high-salary, full-time workers with outsourced labor. While the interviewed employee understood the need to link compensation more closely to productivity, he criticized the company's broader shift toward reducing welfare provisions and labor protections. In his view, these changes originated less from ownership and more from newer generations of HR managers, who, he argued, prioritized cost-cutting over empathy and workers' quality of life.

Given the uncertain outlook for traditional auto-parts production, the company has begun diversifying beyond automotive markets. New ventures include the manufacturing of solar cells, golf carts, and even luxury boats. The employee interviewed expressed significant concern about future industry prospects, particularly if Chinese pickup trucks enter the Thai market. He warned that Thai suppliers would be severely threatened, given the appeal of Chinese vehicles' advanced technology and attractive design. As evidence of this vulnerability, he referenced a recent high-profile bankruptcy of a large, publicly listed Thai automotive firm directly impacted by competition from Chinese EV manufacturers. Workers from that firm have reportedly faced severe hardships, including prolonged protests for unpaid layoff compensation.

The interviewee advocated strongly against the current trend of cost-cutting through employee welfare reductions, arguing instead for policies that prioritize workers' rights and livelihoods. He proposed that government intervention should not only refrain from eliminating import taxes on Chinese vehicles, thus protecting local manufacturers, but should also actively assist newer, smaller companies. Rather than rewarding only established firms, he suggested governmental programs could provide essential support to early-stage businesses, fostering best practices from their inception.

Finally, the interviewee emphasized the importance of strengthening workers' voices in negotiations and policy discussions. He suggested that worker representatives needed to play more proactive roles, actively engaging with employers and the government to secure better outcomes, rather than passively attending meetings for the sake of maintaining connections. This would enhance labor bargaining power and help balance industrial relations during this critical transition period.

This employee perspective highlights the multifaceted challenges facing traditional Thai automotive suppliers amid a rapid market shift toward electrification and increased competition from Chinese manufacturers. The case illustrates the delicate balance companies must strike between financial pressures, technological upgrades, workforce adaptation, and ethical employment practices. Ensuring a just transition, the employee argues, requires empathy-driven management, proactive governmental support, and genuine empowerment of labor representatives.

6.4 Thai Engineer's Experience in a Chinese EV Company

This case provides the perspective of a Thai engineer who worked in two Chinese automotive companies operating in Thailand. Her experiences highlight both the opportunities and limitations of Chinese investment from a worker's viewpoint, touching on work culture, training, career progression, and technology transfer in Chinese-owned firms.

First Chinese EV Employer – Learning in a Fast-Paced Environment: After graduating, the engineer joined a Chinese car manufacturer's Thai subsidiary as a process engineer, responsible for quality assurance. She described the workload as diverse and intense, with unclear job processes and undefined responsibilities at first. Paradoxically, this lack of rigid structure allowed her to take initiative and develop strong problem-solving skills. One key benefit she noted was the frequent training the company provided. The work culture was relatively independent and less procedural compared to her prior experiences with Japanese firms. Meetings were informal but efficient, encouraging open communication. She appreciated the chance

to learn and gain hands-on experience quickly, though she found that the path for career growth within the company was ambiguous.

The company provided standard welfare benefits and followed safety standards. However, there was no trade union at this workplace, which meant employees had little collective bargaining power for salary raises or bonuses – a disadvantage she recognized compared to Japanese firms, where unions are present and labor conditions tend to be well-regulated.

In terms of workforce composition, Thai employees made up over 95% of the roughly 1,000 workers, with Chinese staff holding most executive roles. Engineers and technicians were Thai for the most part, while Chinese experts were initially on site to help set up operations. The engineer observed that technology transfer was quite accessible in the early stages when Chinese technicians were working alongside Thai staff. After those consultants left, she continued to seek guidance remotely as needed. She felt that knowledge transfer could have been even better if Thai employees had higher proficiency in the Chinese language – language barriers limited some learning opportunities. After about 2.5 years, she left this first company due to a lack of new challenges and limited promotion prospects; she did not see a clear career path upward.

Second Chinese EV Employer – Different Business Model: The engineer then joined another Chinese automotive company in Thailand, which operated under a different model. This second company did not manufacture complete vehicles locally; instead, it imported most parts from China and contracted Thai factories for assembly. This meant Thai workers were primarily involved in final assembly steps rather than in earlier manufacturing processes, which are more value-added. Despite the different operational model, she noted a similar fast-paced work culture. The company focused on rapid results over detailed up-front planning (contrasting with the meticulous Plan-Do-Check-Act processes common in Japanese firms). She found this approach efficient in that it shortened decision cycles without significantly hurting outcomes. As with her first job, frequent training sessions were provided, and internal communication was straightforward and brisk.

Before working at these Chinese companies, she had interned at two Japanese car manufacturers during university. Reflecting on the differences, she observed that Japanese firms offered clearer job responsibilities, structured training programs, and well-defined career paths. They also had more rigid procedures and required employees to follow specific steps and protocols. Japanese companies tended to offer better job stability and labor benefits, partly due to the presence of trade unions and a tradition of protecting employee welfare. In contrast, the Chinese companies provided a more flexible and dynamic environment with faster learning opportunities but less structure in terms of career development and less formal worker representation.

In the engineer's view, she actually preferred the flexibility and learning opportunities she found in the Chinese companies, at least in the early stage of her career, because they allowed her to rapidly build skills and take on responsibilities that might take longer to get in a traditional setting. However, she acknowledged that for long-term career growth, the lack of clear advancement pathways and weaker labor protections (no union support, etc.) were downsides.

The expansion of Chinese automakers in Thailand presents both opportunities and challenges for local professionals. On one hand, Chinese firms offer dynamic work environments, quick decision-making, and ample training that can accelerate skill development for young engineers. On the other hand, they may lack the structured career progression, job security, and labor benefits associated with long-established Japanese or Western companies. From a policy and industry standpoint, this suggests the need to address career progression and worker welfare in the context of new foreign entrants. Ensuring that, as the industry evolves, companies (and possibly government regulations) find ways to provide not just jobs, but sustainable careers and skills development, will be important for retaining talent in the Thai automotive sector.

6.5 Labor Challenges in a Chinese EV Factory: A Union Perspective

This case focuses on a Thai trade union representative at a Chinese EV manufacturing company in Thailand, highlighting critical labor issues in a foreign-owned operation. The company, established in October 2021, assembles electric buses and truck tractors, importing all components from China. At its peak, it employed over 500 workers. However, after a halt in new orders, it laid off around 430 workers (mostly younger employees), leaving the workforce at just over 100 people. During the production stoppage period, the remaining employees have had little or no work and have been paid only 75% of their normal salary for over a month.

The factory employs both Thai and Chinese workers on the shop floor, not just in management. According to the union representative, Chinese employees are present in almost every process, working alongside Thai workers. However, communication between the Thai and Chinese staff is limited due to language barriers. He suspects (though without confirmed information) that the Chinese workers likely receive higher wages than their Thai counterparts. He also noted that the Chinese employees live near the factory, though he is unsure if their accommodation is provided for free.

Reflecting on his previous job at a Japanese auto-parts firm, this worker found the Japanese system more organized and equitable, particularly in how bonuses were distributed, even though the workload there was more demanding. He emphasized the greater fairness he experienced under Japanese management compared to his current situation under Chinese management.

Despite a lack of support from his current management, he and his colleagues successfully organized a trade union in 2023. He believed that legal protection through unionization would enable them to advocate for better welfare and workplace safety. The union was formed discreetly, essentially under the radar of the company owner, until it was established. Since its formation, the union has primarily focused on improving occupational safety in the factory.

The union representative expressed a strong belief that Thailand's Ministry of Labor should actively support the formation of trade unions, especially in Chinese-owned companies where unionization tends to be unwelcome or suppressed by management. He suggested that the government promote the idea that trade unions can have mutual benefits for both employers and employees, not only safeguarding worker rights but also contributing to a more stable, productive workplace and thus a more sustainable economy and society.

This case underscores the challenges facing Thai workers in some foreign-owned (particularly Chinese-owned) EV factories, including sudden layoffs, reduced pay during downtimes, communication issues on mixed-nationality shop floors, and resistance to organized labor. It highlights how different foreign management styles (Japanese vs. Chinese, in this comparison) can significantly affect worker experiences. The proactive step taken by workers to unionize – and their call for government backing – reflects a desire to ensure that basic labor standards and fairness are upheld amid the rapid industrial changes. In essence, it points to the need for stronger labor protections and channels for worker voice in new EV ventures, to prevent exploitation and to balance the power between workers and employers.

6.6 Effects of a Chinese Takeover on a Japanese Auto-Parts Company: A Union Perspective

"If we don't meet production targets, they lay us off... back when the Japanese were investors, they respected the rules," said the union leader.

This case provides insight into how a change in ownership, specifically, a Chinese takeover of a Japanese auto-parts company, impacted labor conditions and industrial relations. The perspective comes from a worker at a long-established auto-parts manufacturer (around 30 years old) that makes critical safety components (airbags, seat belts, steering wheels) for leading Japanese car brands assembled in Thailand.

Originally, the company was founded with Canadian capital and managed by a Japanese team. Under the Japanese management, a robust trade union was active, and the workforce was composed entirely of full-time employees (no subcontracted labor), numbering around 1,200–1,300 at its peak. This indicates a relatively stable, traditional employment model with strong worker representation.

In 2019, the company was acquired by a Chinese firm. Following the Chinese acquisition, many employee benefits were cut, and the original union became inactive. In response to deteriorating conditions, workers organized a new trade union, which now includes most of the full-time employees. The new management's approach led to a reduction in full-time staff and an increase in subcontracted workers for production. The presence of subcontracted labor, which had been zero before, suggests a shift toward a more flexible, potentially lower-cost workforce structure under Chinese ownership.

The worker described specific changes: the Chinese management attempted to increase the standard workweek from five days to six, but the newly formed union successfully blocked this proposal. Nonetheless, other changes proceeded. During the last year's economic downturn, the company cut working hours, halted overtime, and reduced bonuses. For a period, employees were paid only 75% of their normal wages (similar to the situation described in the previous case). The average monthly salary dropped to about 17,000 THB (approximately $480). Although the company provides lunch for employees, many workers are feeling financial strain. Morale is low, and the worker noted that many would leave for better jobs if they had opportunities, but with hiring slow across the industry, people feel "stuck".

Union membership has declined from over 700 at its peak to about 519, largely due to layoffs and an early retirement program. Meanwhile, new hires are mostly brought in as subcontract workers, who are less likely to join the union. Management is openly resistant to the union's presence, which further undermines collective bargaining efforts.

Despite these challenges, the worker credited the Workers' Council (a broader industry or regional labor council of which the union is a member) for providing crucial support and guidance in dealing with the company's management. Interestingly, he noted that the rise of EV manufacturing in Thailand has indirectly benefited this company – apparently, the firm has won some new orders related to EVs, which has helped stabilize operations and bring in revenue. This suggests that even a company struggling with management-labor issues can potentially gain business from the EV boom, highlighting the complex mix of outcomes during this transition.

The worker called on the Ministry of Labor to intervene and facilitate dialogue between the company's management and the union. He believes that if both sides better understood the mutual benefits of cooperation, they could foster a healthier, more sustainable work environment. Additionally, he urged the company to invest in training programs for workers, emphasizing that developing employees' skills is key to improving productivity and worker satisfaction alike.

In essence, this case shows how a change in ownership (to an investor with a possibly different labor philosophy) can disrupt previously stable labor relations. Benefits were cut, and union influence was initially suppressed, leading to worker pushback in the form of a new union. It paints a picture of tension between cost-cutting, output-focused management, and a workforce trying to defend its prior gains and adapt to new realities. The mention of EV-related orders helping the company also introduces a note of irony: the very transition that is causing upheaval is also offering a lifeline, if managed properly. The worker's emphasis on dialogue and training aligns with the broader theme of "just transition" – ensuring that changes in industrial ownership or technology do not come at an undue cost to workers, and that, through communication and upskilling, a win-win path can be found.

7. Survey of Thai Auto Workers in the EV Era

A structured questionnaire survey of 400 automotive manufacturing workers in Thailand provides a quantitative snapshot of employee experiences amid the EV transition. The survey, conducted in late 2024, covered workers from both vehicle assembly plants and auto-parts suppliers. It gathered data on employment conditions, job security, income and debt, and overall sentiment toward the shift to electric vehicles. The sample spans various companies and roles, ensuring a broad view of the workforce. Below, the researcher presents the key findings, highlighting prevalent company measures in response to EVs and the concerns weighing on workers.

Company Responses to the EV Transition: Most workers reported that their firms responded to the EV transition by adjusting products and markets rather than resorting to mass layoffs. Over one-third of respondents said their employers were reducing subcontracted labor (37%), shifting to hybrid auto-parts production (30%), or expanding into export markets to hedge against domestic uncertainty (30%). Many companies also adopted cost-saving strategies short of dismissals. About 18% of workers noted shortened work shifts or reduced workdays (with full pay) as temporary austerity measures. Voluntary downsizing was also used, with 15% observing early retirement packages offered to senior employees. Roughly 10% mentioned new investments in automation. However, few firms have begun producing next-generation EV components locally—only about 5% of workers reported this. A minority of companies diversified into non-automotive sectors or moved some operations overseas. Notably, few workers reported meaningful retraining or upskilling efforts, reflected in a low average satisfaction score of 2.9 out of 5 for training opportunities. Overall, Thai automotive firms appear to be streamlining operations and shifting focus to navigate the EV transition, while avoiding widespread layoffs and investing minimally in workforce reskilling.

Worker Concerns and Perceived Threats: On the employee side, the survey reveals widespread anxiety about job security and earnings as the industry evolves. When asked to rate potential threats, the top concern was the broader economic slowdown affecting the auto industry, leading to job or income loss (averaging about 6.5 out of 10 in perceived severity). Close behind was the specific fear that the rise of EVs will undermine workers' income stability (6.2/10). Technological displacement also looms large: workers gave high seriousness ratings to the risk of automation replacing jobs (5.8/10) and to a possible mismatch of their skills with new industry demands (5.7/10). In other words, many worry about becoming "obsolete" as electric powertrains and advanced manufacturing take hold. While outright job loss is on the radar (over half of respondents indicated at least moderate fear of eventual displacement), workers seem even more immediately concerned about erosion of their earnings and role relevance in the near term.

Income and Personal Finance Worries: The survey responses underscore that financial strain is a pressing issue for workers during this transition. On a separate 5-point agreement scale, the highest-scoring statement was "my debt has been rising", with an average agreement of 3.85/5. This suggests many workers are accruing

debt or feeling greater financial pressure, likely as overtime pay shrinks or economic conditions tighten. Close behind were concerns about declining income and reduced overtime hours (mean scores approximately 3.8/5 each). In effect, workers report that their take-home pay is already under stress – a finding consistent with reports of overtime cuts and shorter workweeks. They also voiced significant agreement that new technologies are disrupting their jobs (3.75/5) and that the EV transition is threatening their earnings in particular (3.69/5). By comparison, direct fear of imminent job loss scored slightly lower (around 3.6/5), hinting that while workers are certainly uneasy about layoffs, their day-to-day worries center more on underemployment and income shortfalls than on being fired tomorrow. Notably, a considerable segment of workers even indicated interest in early retirement if it were available (average approximately 3.4/5). This suggests that, amid uncertainty, some employees (especially older or longer-tenured ones) would prefer to exit the industry early with a retirement package rather than risk a destabilizing job loss later. It is a telling sign of how precarious some workers feel in the face of industry upheaval.

Job Security and Outlook: When asked to self-assess their current job security, a majority of respondents painted a middling picture. Two-thirds (66%) of workers described their job security as "moderate" – neither fully secure nor in immediate jeopardy. Only about 13% felt outright insecure, typically citing looming restructuring or declining demand for the parts they work on, while roughly 21% felt secure in their roles. Those expressing confidence often worked at firms seen as stable or in segments still in high demand. Thus, most workers are in a cautious wait-and-see posture: they have not lost their jobs, but they are not entirely confident about the future either. This cautious outlook extends to personal finances as well. About 60% of respondents rated their current financial well-being as "moderate" –living month-to-month without major hardship, but far from comfortable. Meanwhile, 27% reported being satisfied (or very satisfied) with their finances, likely reflecting those who still enjoy steady earnings or have managed to adjust, whereas 13% were dissatisfied, often pointing to debt burdens, rising living costs, or recent income declines due to lost overtime. These figures show a workforce coping, but with a sizable minority already feeling financial pain.

Sentiments on Support and Safety Nets: The survey also reveals gaps in the support that workers feel during this transition. Despite some positive feedback on day-to-day workplace conditions (e.g., safety and peer relationships were rated favorably), employees voiced critical dissatisfaction with career-related support. Ratings for management support and training/upskilling opportunities were low (averaging only approximately 2.9 out of 5), indicating that workers do not feel adequately prepared or backed by their employers in navigating the changes. The most striking result was in labor relations: satisfaction with labor-management relations received an average of just 1.5 out of 5, by far the lowest score among survey items. This points to a significant breakdown in trust and communication between workers and company leadership during the EV transition. Many employees appear to lack confidence that their concerns are being heard or that the company will take care of them if hard decisions arise. These findings echo the calls from labor leaders for stronger support systems: Thai unions have urged the government to strengthen unemployment benefits and strictly enforce severance pay laws so that workers are not left unprotected if EV-related restructuring leads to layoffs. In our survey, while the researcher did not directly ask about government safety nets, the low confidence in management and the inclination of some workers toward early retirement suggest an underlying worry about the adequacy of social safety nets and exit options. Simply put, many workers are uncertain if they could rely on current safeguards (like standard severance or the social security fund) should they lose their jobs. This apprehension is especially telling given our sample skews toward larger, relatively stable firms; workers in smaller second- or third-tier suppliers (not well-represented in this survey) likely feel even more vulnerable.

8. Political Economy and Policy Analysis of Thailand's EV Transition

The rise of EVs in Thailand is not just about technology and market forces; it is equally a story about government policy, institutional responses, and how the benefits and burdens are distributed among stakeholders. This section analyzes Thailand's EV transition from a political economy perspective, examining how policy decisions are made, who is influencing these decisions, who benefits, and who might be left at a disadvantage. It draws on insights from policymakers (ministries, BOI), industry actors, and the experiences of workers and suppliers discussed earlier.

Policy Focus and Early Orientation: Thailand's government recognized the global EV trend early and responded primarily with an investment-driven, top-down strategy. In 2020, the formation of the National EV Policy Committee (often called the EV Board) centralized EV policy under high-level officials. The composition of this board was skewed toward representatives from economic ministries and large industry associations (e.g., the Federation of Thai Industries), with notable absences of formal representation from labor unions, SMEs, or civil society. This meant initial EV policies (incentives, targets, etc.) were crafted largely with macroeconomic metrics in mind (investment volume, production numbers) rather than with strong input on mitigating impacts to local suppliers or workers. The absence of labor voices, in particular, was a missed opportunity to incorporate "just transition" principles from the start.

The government's headline goal became the 30@30 target: having 30% of Thailand's vehicle production be electric by 2030. Early policies, such as the EV 3.0 incentive scheme, heavily incentivized foreign automakers to produce or import EVs. This succeeded in attracting investment (especially from China) and boosting EV sales, which are clear wins. However, critics point out these measures were somewhat one-dimensional, focusing on EV unit numbers without equally robust provisions for:

- → Local content or technology transfer: Thailand does not mandate local content in EV production but encourages manufacturers to reach at least 40 percent. This non-binding approach does not guarantee meaningful technology transfer. Even when production occurs locally, key technologies often remain within the parent company, limiting benefits to domestic suppliers and slowing industrial upgrading.

- → Supplier development programs: Unlike the Eco-Car program of the 2000s, which had elements to upgrade local suppliers, the early EV push had no specific programs to prepare Thai suppliers for electrification.

- → Worker retraining: The EV incentive packages originally did not include a labor component; any training efforts came later or through separate initiatives in the education or labor ministries.

Winners and Losers So Far: The first phase of EV promotion clearly benefited certain groups. Foreign automakers (especially new entrants like Chinese firms) and early-adopting consumers reaped advantages. By subsidizing EV purchases, the government essentially used public funds to spur sales that primarily benefited those automakers gaining market share and consumers wealthy

enough to buy new cars. Chinese firms such as GWM, BYD, and SAIC/MG saw strong sales and established their brands, thanks to the subsidies and tariff breaks. Meanwhile, Japanese automakers – long the backbone of Thailand's auto industry – found themselves at a disadvantage because they did not yet have comparable BEV offerings to compete with the subsidized Chinese models. As a result, companies like Toyota and Honda began losing market share in certain segments. Since these Japanese firms anchor huge supplier networks and employ tens of thousands in Thailand, the ripples of their setback were felt among the Thai suppliers and workers connected to them (as seen in case studies where orders fell and some layoffs occurred).

Large Thai conglomerates that ventured into EV-related projects (for example, energy companies installing charging networks, or CP Group partnering with China's SAIC for MG assembly) also stand to gain in the new landscape. On the other hand, many small and medium enterprises (SME) suppliers not directly involved in the new EV ventures have been among the early losers – their business volumes shrank as ICE production slowed, and they were not yet tapped into the EV supply chain.

One might ask: could policy have been more gradual or protective? Some industry voices suggest Thailand could have imposed higher local content requirements or phased in support for hybrids alongside BEVs to give domestic suppliers more time to adjust. Indeed, the government's parallel "70:30" policy to support the incumbent industry (70%) while pushing EVs (30%) came a bit later, essentially as a corrective measure after seeing the shock to ICE producers. This indicates an initial policy gap that is now being addressed, acknowledging that ICE/hybrid vehicles will coexist for some time and need support so companies and workers tied to them are not abruptly abandoned.

Industrial Strategy – Continuity and Change: Historically, Thailand's industrial policy in autos revolved around nurturing local manufacturing through protective measures and then targeted development (like local content rules in the early era, and later tax incentives for specific vehicle categories). The EV shift is a more disruptive change than the industry has faced before. Some policymakers have noted that traditional policy tools need updating: for example, picking a single "champion" vehicle (like 1-ton pickups or Eco-cars) is harder when technology is rapidly evolving (batteries, software, autonomy, etc.). Thus, Schröder (2023) views that policy must become more flexible and broad-based, focusing on building an innovative ecosystem rather than one specific product. The researcher see signs of this shift with efforts not just to attract EV assembly, but also to encourage battery production, charging infrastructure deployment, and even EV-related software and R&D activities in Thailand.

Inter-agency Coordination and Gaps: The EV transition cuts across multiple domains – industrial policy, environmental goals, labor, energy infrastructure, and so on. While the EV Board exists to coordinate, in practice there have been silo challenges:

- → The Ministry of Industry and BOI pushed investment incentives and production targets.
- → The Energy Ministry and state utilities worked on charging infrastructure and grid readiness.
- → The Finance Ministry managed consumer subsidies and tax adjustments.
- → The Ministry of Labor, however, was not deeply involved in EV planning early on. It only began to engage more when layoffs started and union voices grew louder, calling meetings with companies about retraining programs after issues had surfaced.

Although the Ministry of Higher Education, Science, Research and Innovation sits on Thailand's EV board, its mandate focuses on preparing new labor and fostering new skills, rather than addressing the needs of workers already in the labor market. As a result, early labor planning in the EV transition lacked integration and foresight. Key measures such as worker retraining funds or social safety nets for

displaced workers were not included at the outset of the EV policy rollout and had to be added later. This reactive approach sometimes led to delays and inadequate support for affected workers.

Local Content and Innovation Policy: Thailand's initial EV investment criteria were relatively lenient – for instance, the minimum investment to qualify for some incentives was only THB 1 million, deliberately kept low to encourage many players. A critique of this approach (noted by researchers like Schröder 2023) is that it led to some companies doing just enough to get incentives ("symbolic compliance") without deeply investing in building local capacity. Now, the government is tightening requirements: as mentioned, companies enjoying consumer subsidy schemes must start producing in Thailand within a few years and incorporate local parts (including batteries) by set timelines. Enforcing these commitments will be crucial. If firms delay or find loopholes, the policy's goal of developing local industry might not be achieved.

Technology transfer remains a concern. Past policies often mandated joint ventures or certain local content, which forced knowledge sharing to some degree. With EV policies, aside from broad aspirations, there have been limited concrete mechanisms for tech transfer – e.g., foreign EV firms have not been required to partner with Thai firms or set up R&D centers. Some experts suggest adding measures such as:

- → Requiring a percentage of engineers in any EV project to be Thai and trained at the parent company's facilities.
- → Mandating collaboration with Thai universities or research institutes on EV technology projects, perhaps funded by those investors.

As of 2025, such measures are more encouraged than mandated, meaning much is left to the goodwill of investors.

Social Dimension and "Just Transition": Only recently has the policy conversation explicitly included the phrase "just transition" – the idea of ensuring the EV shift is fair to all stakeholders, including workers and communities. Labor unions and some academics have been urging the government to embed these principles. For instance, if a region like the Eastern Seaboard (which has many ICE parts factories) is likely to see job losses, a just transition approach would push for targeted development programs in that region – say, attracting a battery gigafactory there to re-employ displaced workers, or offering retraining well in advance to help workers move to new industries.

Political Dynamics: Thailand's top political leadership has promoted the EV push as part of the "Thailand 4.0" economic modernization narrative. This high-level backing meant resources were allocated and policies passed quickly, which was beneficial in jump-starting the sector. However, political priorities can change. There is a risk that if, for example, public sentiment sours on EV policies – say, if they are perceived as benefiting foreign companies too much at taxpayer expense, or if layoffs in older industries cause public outcry – then political support could waver or policy could shift. So far, the overall direction (toward EVs) has enjoyed multi-party support, since it's seen as necessary for keeping Thailand competitive. But policymakers have to remain sensitive to public and political feedback; significant negative fallout (like a major plant closure or large-scale layoffs blamed on EVs) could create pressure for mid-course adjustments in policy.

Furthermore, Thailand competes with neighboring countries (Indonesia, Vietnam, Malaysia) to attract EV investments. This regional race influences policy – for instance, Indonesia's combination of incentives and abundant nickel resources for batteries is a strong lure, and Malaysia offers generous tax holidays. Thailand has had to ensure its package is attractive enough, which sometimes means foregoing stricter conditions to not scare investors away. This competition can be a double-edged sword: it benefits automakers who can shop around for the best deal, but it can limit how much any one country (like Thailand) can demand in local benefits without risking losing the investment. Thailand's challenge is to maintain

its edge (thanks to its established base and good infrastructure) without engaging in a "race to the bottom" on incentives or standards.

In summary, the political economy analysis shows that Thailand's EV policies have been effective in kick-starting an industry, but they need refinement to ensure long-term local benefits and social balance. The initial push advantaged big global players and new entrants, which achieved the goal of rapid EV expansion. Now, attention is turning to making sure local suppliers and workers are not left behind by this transformation. The researcher sees the government already adjusting policies – adding localization rules, extending support to hybrids, initiating training programs – in response to feedback and observed outcomes, which is a healthy sign of an iterative policy process.

Going forward, many suggest a few key policy adjustments to embed the lessons learned:

- → Make the EV Board (and related decision bodies) more inclusive by bringing in labor and SME representatives, so future policies consider those viewpoints – for example, in planning retraining programs or SME financing schemes.

- → Enhance support for local firms and workforce: perhaps set up an EV transition fund to help suppliers retool, and a well-funded program for worker retraining and job placement.

- → Link incentives more tightly to performance: ensure that companies getting tax breaks or subsidies deliver on promises of local production and investment in Thailand's economy.

These considerations segue into the final part of the paper. In the next section, the researcher presents concrete lessons and recommendations for making the EV transition as just and sustainable as possible.

9. Lessons Learned and Recommendations

Insights from surveys and case studies of Thailand's auto-parts workforce—including perspectives from union leaders, company owners, officials, and engineers—reveal shared concerns and experiences as the industry undergoes a major transformation driven by electric vehicles. These findings underscore the human dimension of the transition and point to the conditions necessary for a just transition in the Thai context. While Chinese investment is accelerating Thailand's entry into the EV era and unlocking new opportunities in electric mobility and manufacturing, the absence of strong, coordinated policy responses could lead to overdependence on foreign technology and capital, the sidelining of local firms, and growing social and environmental pressures.

Lessons Learned:

- **Gradual Adaptation is Possible:** Companies that proactively plan and collaborate with their workforce show that a gradual, negotiated adaptation can cushion the blow of change. For example, some larger suppliers found cost savings with union input, retrained staff for new tasks, and avoided sudden layoffs. When there is dialogue and planning, transitions can be managed over time; by contrast, abrupt cuts and closures tend to happen where worker engagement was lacking.

- **Technology Disruption is Real but Uneven:** The shift to EVs is not uniformly affecting all players. Suppliers tied to engines and transmissions face existential challenges, whereas those making "neutral" components (tires, glass, interiors, etc.) see much less impact. This unevenness means policy responses must be targeted – a one-size-fits-all approach will miss the mark. Some firms need deep help to reinvent themselves, while others may need little to no intervention.

- **Diversification and Flexibility Are Crucial:** Firms that have diversified product lines or customer bases (serving multiple automakers or even multiple industries) have shown greater resilience. Relying on a single technology or client greatly increases vulnerability. Similarly, companies with a flexible, multi-skilled workforce can redeploy employees more easily than those with very specialized roles. Encouraging both business diversification and worker cross-training appears key to weathering industry shifts.

- **Foreign Investment Needs Local Anchoring:** The rapid influx of Chinese investment has significantly boosted Thailand's EV manufacturing capacity. However, without deliberate efforts to anchor this investment locally, through joint ventures or local sourcing, the broader Thai economy may not fully benefit. Thailand's experience with Japanese foreign direct investment (FDI) provides a valuable lesson. Over time, Japanese FDI led to the development of a robust local supplier network, thanks to effective localization policies. A similar approach should be encouraged with Chinese FDI to ensure that Thailand does not remain merely an assembly venue with limited value capture. Relying heavily on a few Chinese players for investment and technology poses strategic risks. Geopolitical issues or trade disputes could

prompt these companies to scale back or alter their plans, potentially leaving Thailand with partially realized projects or idle capacity.

- **Workers Value Security and Voice:** Thai workers have demonstrated adaptability and willingness to learn new skills, but they strongly value job security and fair treatment. Case studies showed that where companies engaged workers (through unions or direct communication) and committed to things like no layoffs, the outcomes were better, both in morale and in implementing changes smoothly. When workers are heard and have some assurance of stability, transitions are far more likely to be successful and equitable.

- **Policy Coherence and Inclusion:** The government's early EV policies achieved quick wins but lacked input from all stakeholders, resulting in some unintended pains (e.g., supplier distress, worker anxiety). A clear lesson is that inclusive, coordinated policy planning – involving labor representatives and SME voices alongside industry and government – can foresee and mitigate such issues better. Now that adjustments are being made (like adding just transition considerations), it is an implicit acknowledgment that the initial exclusion of those voices was a gap to be filled.

- **Continuous Learning and Adjustment:** The EV landscape is evolving fast (technologies, business models, market trends). Thailand's policy approach must be iterative. The government has shown a willingness to update incentives and rules (for instance, extending support to hybrids upon reviewing outcomes). This flexibility is a strength; continuously monitoring the transition's results and being ready to adjust course is vital for long-term success.

- **Labor and Work Culture Concerns:** As highlighted in the workforce case studies, there are concerns about labor practices in some Chinese-operated factories. Reports indicate that some Chinese companies initially struggled with Thai labor law compliance, local work-hour norms, and openness to unions. There have been instances of extremely high work-pressure environments. These practices alarm Thai labor groups. If left unchecked, they could lead to worker exploitation or industrial disputes. There's also a broader competitive issue: companies that neglect labor standards might achieve lower costs in the short run, undercutting competitors that treat workers better – an unhealthy dynamic if it spreads.

- **Environmental Impact and Waste Management:** Large-scale EV manufacturing involves handling batteries and chemicals, which carry environmental risks. Ensuring that Chinese factories in Thailand adhere to environmental regulations is crucial. For example, battery production and recycling can cause significant pollution if not properly managed. Thai regulators need to ensure that the incoming investments include proper technology and processes for waste handling and recycling (e.g., safe battery recycling plans). There have been cases globally of factories – including some Chinese-run operations – facing criticism for environmental issues; it's imperative to prevent such outcomes in Thailand.

Recommendations:

Building on these lessons, the following recommendations are offered for different stakeholders to ensure Thailand's transition to EVs is successful and just:

For Government and Policymakers:

- **Enhance Local Content and Supplier Support:** Tie future EV incentives to stronger local content requirements (e.g., gradually raise the required percentage of parts sourced from Thai suppliers) and provide grants or soft loans for Thai SMEs to upgrade equipment and meet EV standards. The government should consider specialized programs to help auto-parts SMEs pivot – for instance, funding to re-certify or re-engineer traditional products for EV use, or to enter new sectors like renewable energy or aerospace using existing capabilities.

- **Invest in Worker Reskilling:** Launch a national Automotive Workforce Transition Program with dedicated funding. This could offer free or subsidized training courses in EV manufacturing, battery technology, electrical engineering, and digital skills for workers coming from declining segments. Partner with automakers to provide trainers or equipment, and link completion of such courses to real job opportunities (for example, an online portal or commitments from EV firms to interview trainees). Essentially, create clear pathways for an ICE-era worker to become an EV-era worker.

- **Ensure Labor Standards in New Ventures:** Strengthen labor inspection and enforcement, especially in newly established, foreign-operated plants. The Ministry of Labor should set up a task force focusing on EV factories to proactively monitor compliance with Thai labor laws (wages, hours, safety, etc.). Additionally, consider requiring medium-to-large companies to establish worker committees or liaisons (if full unions are absent) to facilitate communication and address grievances early. Signal to foreign investors that adhering to Thai labor norms is not optional but expected, perhaps even hold orientation sessions for new companies on local labor practices.

- **Promote Joint Ventures and Partnerships:** To foster technology transfer, incentivize joint ventures between foreign EV investors and Thai companies. For example, offer extra tax breaks or faster regulatory approvals if a foreign EV maker partners with a Thai firm for local production, or with a Thai university on R&D or training initiatives. Likewise, encourage global battery and component manufacturers to team up with Thai partners to set up local plants – possibly through matchmaking events or BOI facilitation services that connect foreign investors with capable Thai SMEs.

- **Include All Stakeholders in Policy Dialogue:** Reform the EV Policy Committee (EV Board) or create a parallel advisory council to include representatives from trade unions, SME suppliers, and academia. This broader group can provide input on new policy measures (e.g., how to design a severance support fund, or what kinds of retraining are most needed). Incorporating these voices will lead to more holistic policies and help build consensus, reducing pushback during implementation. It will also institutionalize the "just transition" approach within policy-making.

- **Transparent Monitoring and Adjustment:** Regularly publish progress reports on the EV transition, including metrics like the number of jobs created vs. lost, the amount of local content in EVs, training program outcomes, etc. Use this data to adjust policies. For instance, if local content is not rising over time, tighten requirements or increase support for local suppliers; if certain regions are hit by factory closures, target them for new investments or special assistance (such as establishing EV-related industrial estates or training centers in those areas). Make the transition an evidence-driven process.

For Industry (Automakers and Suppliers):

- **Embrace Supplier Development:** Automakers, especially new entrants, should implement local supplier development programs. This can involve auditing Thai suppliers to identify those who could supply EV components with some technical support, and then actively helping them upgrade – sending technical experts to assist, sharing specifications and quality expectations well in advance, and perhaps even co-investing in tooling. It is in the automakers' long-term interest to cultivate a robust local supply chain for resilience and goodwill; it also fulfills some of the localization expectations of the government.

- **Practice Responsible Restructuring:** Companies that need to downsize or close certain operations due to the EV shift should do so responsibly. Provide advance notice to employees, offer retraining or job placement assistance (perhaps coordinating with the government programs mentioned above), and pay full legal compensation promptly. Whenever possible, consider gradual phase-outs of old product lines

while ramping up new ones, so workers can be retrained and moved rather than terminated. These steps maintain morale and reputation, and they can prevent labor disputes or community backlash.

- **Invest in Workforce Upskilling:** Employers should invest in continuous training for employees as products and technologies evolve. For example, if a parts company is starting to make EV components, provide supplemental education to machinists or engineers on high-voltage systems or new materials. Many Thai workers are eager to learn and stay relevant (as evidenced by case studies); companies that provide such opportunities are likely to retain talent and boost productivity. These programs can be done in-house or in collaboration with technical institutes.

- **Collaborate with Educational Institutions:** Proactively engage with universities, vocational colleges, and technical schools to align curricula with industry needs. Offer internships or apprenticeships to students in EV-related fields, co-develop courses on EV technology, or donate equipment (like EV components or diagnostic tools) for training purposes. By shaping the next generation of engineers and technicians, companies help ensure a steady pipeline of skilled labor. This collaboration also signals corporate commitment to the country's human capital development.

- **Maintain Fair Labor Practices:** For new industry entrants (particularly foreign firms), actively adapt to Thai labor culture and legal standards. It's recommended that these companies engage local HR consultants or experts on Thai labor law and industrial relations early on to integrate best practices – for example, understanding regulations on working hours, overtime pay, holidays, and how to effectively and respectfully communicate with Thai workers. Participating in Thailand's existing tripartite forums (which include government, employer associations, and worker representatives) could help foreign managers gain insight into local expectations. Ultimately, companies that treat workers well and involve them tend to face fewer disruptions and achieve better productivity – it's both a moral and pragmatic approach.

For Labor Unions and Worker Organizations:

- **Engage Proactively with EV Employers:** Unions in the automotive sector should not wait for issues to arise; they can reach out to new EV companies to establish dialogue from the start. Even if formal union recognition in those workplaces is not immediately feasible, worker organizations can offer cooperation on initiatives like training or safety protocols, positioning themselves as partners in the transition. Over time, they can advocate for union representation or collective bargaining agreements in these new firms to ensure fair conditions as they grow.

- **Support Displaced Workers:** Unions and labor federations should set up support systems (help desks, hotlines, or information centers) for workers who lose jobs due to industry changes. These can guide affected workers on how to claim their lawful benefits, inform them about available retraining or job fairs, and even provide emotional support or counseling. Unions can also use these cases to lobby the government for stronger safety nets – for example, using testimonies of laid-off workers to push for improvements in unemployment insurance or emergency assistance funds.

- **Participate in Policy Advocacy:** Worker representatives need to continue pushing for a "just transition" framework at the national policy level. This could involve concrete proposals such as a government-funded Just Transition Fund that specifically aids workers and communities affected by the shift (possibly financed by a small levy on EV sales or by reallocating a portion of subsidy budgets). By engaging with parliamentary committees, public hearings, and media, unions can keep worker issues in the spotlight and influence the shaping of transition policies.

→ **Educate Union Members on Change:** Internally, unions should educate their members about the EV transition, not only highlighting the threats (job losses, etc.) but also teaching how to seize new opportunities. This could mean informing workers which new skills are in demand for EV production, encouraging younger members to take courses in electronics, software, or battery tech, and dispelling myths where needed. A well-informed membership is more likely to proactively engage in retraining and career development rather than simply fear the change. Unions can partner with educational providers to run information sessions or short courses for their members.

By implementing these recommendations, Thailand can strive to ensure that its EV transition is not only a technological and economic success but also a model of inclusive and sustainable industrial transformation. The country has a strong track record in automotive manufacturing; now it must update that model for the 21st century by blending technological progress with inclusive growth. The policy and industry adjustments recommended here aim to mitigate the pains of transition and distribute the gains more broadly across Thai society.

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RAPPORTEUR REPORT:
Social Dialogue on the Impact of EVs on Thai Auto Parts Suppliers and Workers
Date: Tuesday, 10 June 2025
Location: Vie Hotel, Bangkok

OPENING REMARKS

Mr. Henning Effner, *Director of FES Thailand*, opened the session by introducing the foundation's mission to advance economic development and social justice through inclusive dialogue and evidence-based policymaking. He emphasized FES's longstanding engagement with the automotive sector, recognizing its role as a key driver of industrial growth, employment, and exports.

Today, the sector faces a profound transformation driven by electric vehicles (EVs), automation, and rising investment from Chinese firms; developments that pose significant challenges for Thai auto parts suppliers and workers amid technological disruption and labour market uncertainty.

In response, this social dialogue aims to convene stakeholders across sectors to explore how Thailand can navigate the EV transition in ways that uphold workers' rights, support SMEs, and ensure the benefits of change are widely shared. The discussion builds on research commissioned by FES Thailand and led by Associate Professor Dr. Kiriya Kulkolkarn of Thammasat University.

PRESENTATION OF RESEARCH FINDINGS: "THE IMPACT OF ELECTRIC VEHICLES ON THAILAND'S AUTOMOTIVE INDUSTRY: IMPLICATIONS FOR PARTS MANUFACTURERS AND WORKERS"

Associate Professor Dr. Kiriya Kulkolkarn presented findings from a research study commissioned by FES Thailand. The study aimed to explore the multifaceted impact of the EV transition on Thai automotive parts manufacturers and workers. The study combined over 400 surveys and multiple in-depth interviews with workers across Thai, Japanese, and Chinese firms.

The Development of Thailand's Automotive and EV Industry

Dr. Kiriya began by tracing Thailand's automotive evolution, which began with import substitution policies that promoted local component use and high tariffs on imports. Over time, Thailand became a regional manufacturing hub, especially for pickup trucks and eco-cars.

Since the 2010s, the shift toward electrification has gained momentum, initially led by Japanese-backed hybrid electric vehicles (HEVs). The government introduced the 30@30 policy to promote battery electric vehicles (BEVs). However, given the uncertainty around future technologies and pragmatic concerns, the government has effectively embraced a dual pathway: 30% BEVs

alongside 70% HEVs/MHEVs/PHEVs to de-risk the transition, preserve domestic industry, and accommodate consumer readiness amid infrastructure constraints.

Today, Japanese firms dominate hybrid production, while Chinese manufacturers have rapidly gained ground in the BEV segment. Thai suppliers remain mostly tied to Japanese ecosystems, with limited participation in Chinese supply chains, often restricted to lower-value activities like battery assembly.

Impact of Disruption on Thai Manufacturers and Workers

Manufacturers:

- → Thai manufacturers are navigating multiple uncertainties as they weigh whether to stay within Japanese-led HEV supply chains, shift toward BEVs dominated by Chinese firms, or diversify into entirely new industries such as electronics, aerospace, or medical devices. Most continue to align with Japanese partners due to longstanding ties and confidence in hybrid technology, especially as the direction of future technology remains unclear.

- → Many firms report declining sales, though it remains unclear whether this results primarily from the EV transition or broader economic conditions. These challenges, combined with the complexity of joining Chinese supply chains - including faster production cycles, advanced technology requirements, and language and cultural barriers - have made adaptation especially difficult for Thai manufacturers.

- → Thai manufacturers face structural disadvantages in entering Chinese-led BEV ecosystems, including lower demand for replacement parts and lower profit margins. In response, some are adopting automation and circular production models to keep pace with sustainability standards and evolving labour conditions.

Workers:

- → Workers, especially those in subcontracted or informal roles, are facing rising job uncertainty as manufacturers respond to financial strain with layoffs, reduced hours, and early retirements, rather than workforce development.

- → For those entering Chinese-operated factories, the shift brings flexible job roles that span multiple tasks but often lack structure, clarity, and predictable career progression.

- → Labor protections are weaker in Chinese firms: unionization is rare, and where unions exist, they often face pressure or interference, limiting workers' ability to negotiate or advocate for their rights.

Key Recommendations

Dr. Kiriya concluded the session by presenting a three-pronged policy framework to guide Thailand's transition to EVs in a way that is inclusive, technology-driven, and socially just.

1. Enabling Thai Manufacturers and Workers to Become Part of the EV Supply Chain

While the government has promoted local content requirements and joint ventures to stimulate domestic participation, there is still no effective mechanism for verifying whether such content is truly local, particularly given that many Chinese firms operate through Thai-registered subsidiaries. Furthermore, joint ventures have had limited success in building meaningful, long-term capabilities.

To address these gaps, the government should strengthen verification standards for local content and explore alternative mechanisms such as internship-based cooperation with Chinese EV manufacturers. These internships can facilitate practical knowledge transfer to Thai workers and technical graduates. In addition, the rising demand for interpreters with technical expertise presents an opportunity to professionalize and expand this emerging job category, which will become

increasingly critical in multinational production settings.

2. Promoting Technology Transfer from Chinese to Thai Stakeholders

Long-term competitiveness requires institutionalized channels for technology and knowledge exchange. Dr. Kiriya proposed the establishment of a Thai-Chinese Technical Institute, modelled on the Thai-German Institute, as a platform to systematize collaboration in curriculum development, workforce training, and joint research. Such an institute would help ensure that Thailand does not remain an assembly base but becomes a centre of innovation within the regional EV ecosystem.

3. Ensuring a Fair and Inclusive Transition

A just transition must go beyond technical and economic considerations to include governance, worker protections, and support for vulnerable sectors. Currently, Thailand's National Electric Vehicle Policy Committee (EV Board) lacks representation from labour stakeholders, limiting the inclusiveness of its decisions. Reforming its composition to include the Ministry of Labour or labour organizations would help ensure that worker concerns are integrated into industrial policy planning.

Dr. Kiriya also emphasized the need to support Thai suppliers in diversifying into new industries and markets as part of the transition. This could include early-stage support through public procurement to reduce entry risks for Thai companies. At the worker level, training incentives should be directly tied to real employment outcomes, using tools such as training vouchers or targeted subsidies. A dedicated transition fund should be established to provide financial assistance to both displaced workers and SMEs adapting to structural change. Lastly, labour rights protections must be enhanced, especially in foreign-owned factories, to ensure decent working conditions throughout the transition.

PANEL DISCUSSION

The first panel discussion brought together academic and policy experts to reflect on the research findings and assess how industrial, labour, and environmental policies should evolve in response to EV disruption.

Associate Professor Dr. Veerayooth Kanchoochat, *Advisor to the Economic Development Committee* emphasized the importance of viewing the EV transition through a labour lens, highlighting that job losses are likely to deepen at the lower tiers of the supply chain without government intervention. He noted that Tier 1 suppliers may see profit compression, while Tier 2 and smaller firms will be forced to reduce labour costs, increasing the risk of adverse impacts on workers over time.

He explained that Chinese firms operate with a results-driven, high-competition mindset, differing significantly from the protocol-based approach of Japanese firms. For workers to adapt, the most critical input is time. Government support should be designed to buy time for workers to reskill outside work hours.

Reflecting on Thailand's policy trajectory, Dr. Veerayooth noted that industrial policy was limited prior to 2017. He observed that current EV support measures are heavily shaped by classical economic thinking, particularly the use of incentives to stimulate innovation and attract investment. However, these assumptions may not reflect the realities of complex global supply chains. He cautioned that if such subsidy frameworks fail to account for the position and capacity of local manufacturers, they could unintentionally undermine domestic firms.

In response to the recommendations presented, Dr. Veerayooth offered a cautious perspective on how the government should navigate the evolving industrial landscape. He expressed scepticism about the feasibility of establishing a Thai-Chinese technical institute, noting that while previous bilateral partnerships like the Thai-German Institute worked due to mutual benefit and complementary needs, China's current competitive posture and

limited incentive to transfer knowledge make such collaboration less viable.

He also questioned whether Thailand's EV policies, which aim in part to achieve environmental objectives, will be effective without complementary measures - particularly the retirement of aging internal combustion engine (ICE) vehicles. Merely adding BEVs to the market will not reduce overall emissions if older, more polluting vehicles remain in circulation.

Dr. Veerayooth concluded by emphasizing the need for a more integrated policy approach that extends beyond the EV Board and considers the full scope of the automotive ecosystem. To ensure a meaningful transition, he recommended mapping the transferable and non-transferable skills between ICE and EV production, which would help policymakers design targeted upskilling and workforce support programs that reflect actual industry needs.

Ms. Thitipat Dokmaithet, *Manager of Industrial Development, Thailand Automotive Institute,* offered a forward-looking set of recommendations centred on supply chain development, technology transfer, and skills alignment. She emphasized that government funding and incentives for manufacturers should be tailored to the competitiveness levels and needs of individual firms, rather than driven solely by thematic agendas like EV promotion.

Recognizing the difficulty in keeping pace with Chinese cost structures and rapid product cycles, she urged policymakers to take a step back and revisit the fundamental question of why and where Thailand should maintain automotive manufacturing, which would enable the government to set clearer priorities and identify the most relevant technologies and workforce skills to develop.

On technology transfer, Ms. Thitipat acknowledged the potential of joint ventures but cautioned that monitoring mechanisms are essential to ensure genuine spillover to the broader industry, not just to individual firms. She also urged that technology transfer initiatives be designed to build systemic capability, not only training outputs.

Regarding workforce development, she warned that training alone is insufficient unless it matches company capacity and leads to actual employment. Upskilling programs must be integrated into existing corporate systems (e.g., ISO or internal compliance) to be sustainable, and should not overlook practical, non-technical roles such as interpreters with Chinese language and technical fluency.

Finally, Ms. Thitipat also flagged developments that could affect Thailand's long-term competitiveness. These include intensifying regional competition for EV investment and tensions between China's mineral export controls and Thailand's push for higher local content. She noted that ESG compliance will become increasingly important but questioned whether civil society currently has sufficient influence to hold companies accountable on these issues. While she welcomed the idea of expanding representation on the EV Board, she cautioned that its large size may limit its ability to act quickly or respond flexibly to emerging challenges.

PANEL DISCUSSION: "THE IMPACT OF ELECTRIC VEHICLES ON THAILAND'S AUTOMOTIVE INDUSTRY: IMPLICATIONS FOR PARTS MANUFACTURERS AND WORKERS"

The second panel brought together perspectives from the private sector, labour, and government to reflect on Thailand's industrial policy environment and the implications of EV-related disruption.

Mr. Somphop Klyosumphan, *Director of AI Digital and Automation Cluster, Thai Subcontracting Promotion Association,* noted that recent trends show a growing disconnect between domestic consumption and industrial production, suggesting that Thailand may be serving more as a transit country rather than a production base. He emphasized that while Thai SMEs are agile and capable of shifting sectors, policies such as 30@30 may not yield long-term benefits for SMEs unless supply chain integration is deliberately supported. He also raised concerns that foreign investment,

particularly from Chinese firms, has not meaningfully included Thai suppliers.

Mr. Laray Youpensuk, *President of TEAM (Federation of Thailand Automobile, Metal, Electronics and Electrical Appliances Workers)* representing workers across the automotive, electronics, and steel sectors, explained that EV production dramatically reduces the number of parts required per vehicle; down from over 30,000 for ICE cars to around 3,000 for EVs. This structural shift has significant implications for employment. In practice, companies tend to respond by downsizing, which affects not only workers but also their families and broader consumption levels. He stressed that while workers are ready to adapt, they need real support for upskilling and reskilling efforts.

Ms. Yordkamon Suthirapoj, *Investment Promotion Officer, Board of Investment (BOI),* outlined current investment promotion tools. The BOI mainly operates through tax incentives, offering activity-based and merit-based schemes that support both EV-specific and broader automotive sector innovation. Capacity-building initiatives are supported through additional tax benefits and competitiveness funds, including top-up schemes for firms investing in high-cost HRD and tech transfer.

BREAKOUT SESSIONS: BRAINSTORMING AND PRESENTATION OF "URGENT AND IMPORTANT RECOMMENDATIONS"

In breakout sessions, participants were divided into groups to discuss practical challenges and proposed urgent policy recommendations to support a fair and inclusive EV transition. The following summarizes the core messages that emerged from each group:

Employers emphasized:

→ **Shifting Organizational Mindsets:** Both management and workers must adopt more proactive, agile, and performance-driven approaches. Participants cited Chinese companies as examples of how cultural and organizational attitudes that prioritize speed and productivity can drive efficiency.

→ **Expanding Industrial Support Policies:** Government support should go beyond EV-specific technologies to include hybrid vehicles, EV-adjacent components, and other high-potential sectors such as medical devices and advanced agriculture. Participants warned that competition in core EV manufacturing is intense and that diversification is needed for long-term resilience.

→ **Centralizing Employer Coordination:** A dedicated platform or lead agency should be established to collect employer feedback, facilitate knowledge sharing, and coordinate responses to industry-wide challenges. Such a mechanism could help align policy support more effectively with business needs on the ground.

Government, academia, and international organizations called for:

→ **Developing a Unified Workforce Transition Plan:** Current upskilling and reskilling programs are fragmented across multiple government agencies, reducing their effectiveness. A coordinated national strategy is needed to streamline delivery and target support, especially for workers with limited time or resources.

→ **Creating a Worker Transition Fund:** A dedicated financial mechanism should be established to support workers affected by job displacement or occupational risks, with particular attention to subcontracted and informal labour.

→ **Strengthening Labor Standards Enforcement:** International organization representatives emphasized the need to reinforce compliance with labour and human rights standards, and to raise local value-added thresholds in investment policy.

Workers emphasized:

- → **Reassessing EV Import and Incentive Policies:** Participants urged a review of government policies that promote EV imports, warning that such incentives may disadvantage local manufacturing and reduce domestic employment opportunities.

- → **Strengthening Labor Rights Protections:** The lack of trade unions in companies owned by foreign investors was identified as a major barrier to upholding labour standards. Stronger legal protections and monitoring mechanisms are needed, particularly in subcontracted settings.

- → **Developing an E-Waste Management Policy:** As EV adoption increases, participants highlighted the lack of readiness to manage electronic waste derived from the manufacturing process. A comprehensive policy is necessary not only to protect the environment but also to create jobs in recycling and waste management.

- → **Linking Investment Incentives to Labor Practices:** Participants proposed tying BOI tax incentives to fair labour practices, such as requiring a minimum proportion of Thai hires and disqualifying companies with labour rights violations.

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Dr Kiriya serves on Thailand's 20th National Labour Development Advisory Council, appointed as an expert in the tripartite labour policy dialogue. Her research focuses on labour market dynamics and the economics of migrant workers. She was among the first Thai scholars to explore the concept of Just Transition in the automotive industry, emphasizing the need for socially equitable climate policies that consider workers' welfare.

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