

A Work Project, presented as part of the requirements for the Award of a Master's degree in
Management & International Management from the Nova School of Business and Economics.

ANALYSIS OF VIETNAM AS PRODUCTION AND LOGISTICS HUB FOR THE GERMAN
PREMIUM CAR MANUFACTURER AUDI AG

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Abstract (General): This research evaluates Vietnam's potential as a production and logistics hub for Audi, driven by shifting global cost structures and intensifying competition in the premium automotive segment. By analyzing Vietnam's political environment, supplier ecosystem, manufacturing infrastructure, and labor market, the study demonstrates that the country offers significant opportunities for cost-efficient localization and regional market access. While Audi currently relies on imports and lags behind competitors with established local assembly, Vietnam's rapid industrialization, expanding middle class, and accelerating EV adoption signal a strategic window of opportunity. The thesis concludes that Vietnam is poised to become a viable pillar in Audi's ASEAN footprint and recommends a phased localization strategy to capture long-term competitive advantage.

Abstract (Individual Part): A country's political and incentive environment is crucial when assessing it as a potential production location. For a German premium manufacturer such as Audi, key factors include political stability, institutional quality, corruption risks, trade agreement coverage, and sector-specific FDI incentives. Vietnam combines a stable one-party system and an extensive FTA network with a highly favorable incentive regime for high-tech automotive investments, making it politically attractive despite persistent challenges related to judicial independence, transparency, and embedded corruption. Overall, Vietnam offers a moderately strong but institutionally complex setting that can serve as a viable future production and logistics hub for Audi, provided the investment is structured through robust local partnerships and careful risk management.

Keywords: Automotive industry, ASEAN, Vietnam, AUDI AG, premium passenger cars, manufacturing potential, political landscape, automotive supplier ecosystem, manufacturing infrastructure, labor market

Table of Contents

<i>1. Introduction</i>	<i>4</i>
<i>2. Literature Review</i>	<i>7</i>
2.1 General Vietnam Overview	7
2.2 Overview AUDI AG	9
<i>3. Methodology.....</i>	<i>16</i>
<i>4. Vietnam's Automotive Market Structure and Development</i>	<i>20</i>
4.1 Past Market Development.....	20
4.2 Market Outlook and Main Trends	22
4.4 Competitor Overview	25
4.5 Automotive Customer Overview and Buying Behavior	29
4.6 Automotive Infrastructure	31
4.7 Summary and Implications for Vietnam's Automotive Market.....	34
<i>5. Pillar 1: Political Landscape and Incentives for Automotive Manufacturing in Vietnam</i>	<i>37</i>
5.1 Vietnam's FDI Historic Evolution.....	37
5.2 Political Stability and Institutions	39
5.3 Trade Policy and Regional Integration	42
5.4 Current Automotive FDI Incentives	46
5.5 Conclusion & Implications for AUDI AG.....	49
<i>6. Pillar 2: Automotive Supply Chain and Supplier Network in Vietnam</i>	<i>52</i>
6.1 Historical Development of Vietnam's Automotive Industry	52
6.2 Tier 1 - 3 Supplier Presence	54
6.3 Local Content Ratios	56
6.4 Quality of Local Suppliers in Vietnam.....	59
6.5 Supplier Centers and Geographic Hubs.....	60

6.6 Audi's Local Sourcing Strategy and Supplier Fit	64
6.7 Conclusion & Implications for AUDI AG.....	66
7. <i>Pillar 3: Manufacturing Infrastructure and Industrial Hubs in Vietnam</i>	68
7.1 Core Manufacturing Infrastructure Readiness in Vietnam.....	68
7.2 Entry Modes for Automotive Manufacturing in Vietnam: Ready-Built Factory vs. Green- /Brownfield	75
7.3 Availability of Local Manufacturing Partners	77
7.4 Manufacturing in Vietnam: A Brief Cost Comparison	78
7.5 Conclusion & Implications for AUDI AG.....	81
8. <i>Pillar 4: Labor Competitiveness and Workforce Readiness in Vietnam</i>	83
8.1 Workforce Demographics and Labor Market Overview	85
8.2 Wage Dynamics and Labor Cost Competitiveness	86
8.3 Labor Productivity and Efficiency	88
8.4 Skills and Vocational Training System.....	91
8.5 Institutional and Regulatory Environment	93
8.6 Conclusion & Implications for AUDI AG.....	95
9. <i>Overall Conclusion & Recommendation for AUDI AG</i>	97
10. <i>Limitations</i>	100
<i>Bibliography</i>	101
<i>Appendix</i>	129

1. Introduction

1.1 Contextualization of the problem

In 2015, Vietnam occupied a marginal position in the global automotive landscape, with annual vehicle sales of around 150,000 units (IHS Markit, 2023) and production volumes that constituted only a small fraction of established regional hubs such as Thailand or Indonesia. At that time, the notion that a German premium carmaker like Audi would one day build cars in Vietnam might have seemed far-fetched. Fast forward a decade later, the landscape has shifted dramatically. Germany's automotive sector - long anchored by domestic manufacturing - is under intense cost pressure. Rising input and labor costs are eroding competitiveness, forcing rethinking of production footprints. A recent Bain study illustrated the challenge: German carmakers' vehicle development costs are almost four times higher than those of Chinese Original Equipment Manufacturers (OEMs) (Bain, 2025). Slower development cycles add to the burden, but fundamentally, German firms are weighed down by expensive manufacturing locations, concentrating operations and Research and Development (R&D) in high wage countries with around 75% in Germany (Raasch, 2025).

Additionally, China once regarded the world's low-cost workshop has seen wages climb to a point that China is no longer considered a low cost market (Rosemary Coates et al., 2022). By 2022, China's manufacturing labor costs had reached average levels among industrial nations, while Vietnam emerged as the new low-cost manufacturing hub. In 2024, average wages were about €1.6 EUR/hour in Vietnam compared to €7.8 EUR/hour in China. Major manufacturers such as Samsung and Foxconn have shifted production from China to Vietnam to reduce costs. This trend, known as the "China+1" strategy, reflects companies' efforts to diversify production for both cost efficiency and risk mitigation (Tran, 2024).

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For Audi this pressure has not passed without notice. Audi has faced mounting cost headwinds since 2023, which has put significant pressure on its profitability. With a peak in operating profit coming out of the pandemic, with around €7.5 billion EUR in 2022 profits have declined to a low of €3.9 billion EUR also halving the operating margin from 12.2% to 6.0% (see Figure 1). Audi attributed the weak 2024 earnings to “*difficult economic conditions, fierce competition, and expected restructuring expenses*” (Audi Media Center, 2024).

Year	Audi deliveries (cars)	Revenue (bn EUR)	Operating margin	Operating profit (bn EUR)
2024	1,671,218	64.532	6.0%	3.903
2023	1,895,240	69.865	9.0%	6.280
2022	1,614,231	61.753	12.2%	7.550
2021	1,680,512	53.068	10.4%	5.498

Figure 1: Profitability trends Audi - EBIT Margins & Net Income YoY (own illustration; data retrieved from Audi AG, n.d.)

To mitigate these mounting cost pressures and restore competitiveness, Audi - like many global automakers - has been compelled to evaluate alternative production geographies that can deliver significant cost efficiencies without compromising quality. Among the potential destinations, Vietnam has emerged as a particularly strategic option. Over the past decade, Vietnam has transformed from a peripheral manufacturing economy into one of Asia’s fastest-growing industrial hubs, attracting substantial Foreign Direct Investment (FDI) from major automakers. Recent market entrants include Skoda, BMW, Chery, Geely, and Changan, all establishing new manufacturing capabilities in Vietnam (see Deep Dive 1, Figure 29).

In summary, Audi’s profitability challenges reflect a broader shift in the global automotive industry, where rising production costs in traditional centers like Germany drive manufacturers to seek more cost-efficient locations. Vietnam’s rapid industrialization, low labor costs, and growing automotive investments make it an increasingly credible alternative. The entry and expansion of major automotive actors demonstrate that Vietnam has evolved from a peripheral market to an emerging

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regional automotive hub. For Audi, assessing Vietnam as a production and logistics base is therefore a logical step, linking cost efficiency with future growth opportunities.

1.2 Research Gap

Although extensive research has examined Vietnam's automotive industry potential, firm-level technological capabilities, and supply-chain dynamics, a significant gap remains in understanding Vietnam's role as a production and logistics hub for foreign, especially European, OEMs. Existing studies on Vietnam typically address domestic market growth, political landscape, infrastructure, labor markets, and supplier networks in isolation and not tailored towards the automotive industry. While these insights are valuable, they overlook Vietnam's broader strategic advantages as an automotive production center. This research, therefore, integrates these dimensions to provide a comprehensive analysis of the key levers shaping Vietnam's potential as an automotive production and logistics hub for the German OEM manufacturer Audi. The central question guiding this study is:

“To what extent does Vietnam present a strategically viable location for a production and logistics hub within AUDI AG’s global value chain?”

Building on this central question, the research investigates how Audi should position itself in Vietnam as both an emerging automotive market and a strategically viable production and logistics hub, given the company's profitability challenges and the industry's expanding interest in the region as previously highlighted.

1.3 Thesis outline

This research examines Audi's business case for investing in production facilities in Vietnam. The study is structured as follows: First, the research presents a broad overview of Vietnam and its current economic growth. Next, it provides an overview of Audi as a company, including its current

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strategy, existing production facilities, and ongoing activities within the ASEAN region, exploring both the challenges and opportunities Audi faces in ASEAN, synthesized in a SWOT matrix. This is followed by an overview of the Vietnamese automotive market covering sales figures, key market participants, recent market entrants, market growth, consumer behavior, and automotive infrastructure mapped onto a Porter's Five Forces. Lastly, the research examines the four fundamental pillars for FDI decision-making (Political Landscape and Incentives, Supply Chain and Supplier Network, Manufacturing Infrastructure and Industrial Hubs, Labor Market Competitiveness) before concluding with an assessment on how Audi should strategically position itself in Vietnam, where the research utilizes a self-made assessment method based on a radar chart methodology alongside George YIPs globalization framework.

2. Literature Review

2.1 General Vietnam Overview

The Southeast Asian region has experienced remarkable economic growth, with a projected gross domestic product (GDP) growth rate of 4.8% in 2024. This growth is further supported by the region's substantial population of approximately 693 million people in 2024 and a projected annual population growth rate of 0.7% (Worldometer, 2025), positioning Southeast Asia as one of the fastest-growing regions in the world (International Monetary Fund, 2025b).

Figure 2 provides a brief overview of Vietnam, one of the key contributors to Southeast Asia's economic expansion in recent years and a country characterized by strong future growth potential. According to the World Bank Group (2025), Vietnam's GDP reached \$476.4 billion USD in 2024, positioning it as the fourth largest economy in ASEAN, following Indonesia (\$1.4 trillion USD), Singapore (\$547.4 billion USD), and Thailand (\$526.4 billion USD) (The World Bank Group, 2025a).

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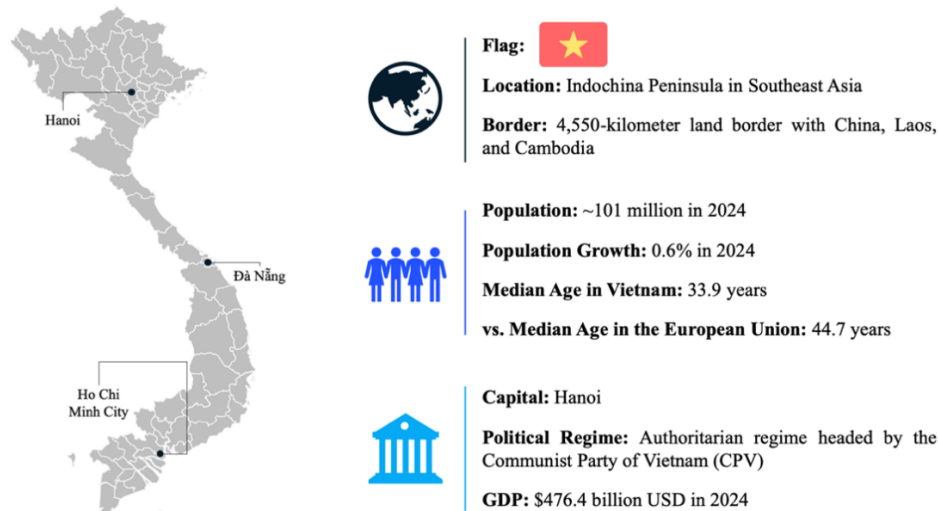


Figure 2: Introduction of Vietnam (own illustration, data retrieved from Cambridge University Press, 2015; Embassy of the Socialist Republic of Vietnam in the USA, 2025; Eurostat, 2025; National Statistics Office, 2025; The World Bank Group, 2025a; World Population Review, 2025)

An examination of Vietnam's GDP growth rates reveals a substantial economic expansion. In 2024, the country's GDP growth rate was recorded at 7.1%, with a projected growth rate of 6.5% for 2025. As can be seen in Figure 3, this indicates a marked deviation from the growth trend observed in Europe and a notable contrast to the growth rates of its ASEAN competitors (International Monetary Fund, 2025a). The primary factors contributing to this growth in recent years include their high export level, increasing FDI, substantial potential for renewable energies, and productivity improvements (OECD, 2025).

The Vietnamese government has set an ambitious target of attaining high-income status by the year 2045. Achieving this objective will necessitate sustaining an average annual GDP growth rate of around 6% over the subsequent years (The World Bank Group, 2025b). According to the IMF, the Vietnamese economy is projected to experience GDP growth rates ranging from 4% to 6% from 2026 to 2030 (International Monetary Fund, 2025a). Connected to the goal of becoming a high-income country, Vietnam initiated the "National Green Growth Strategy" in September of 2012. The primary objectives of this initiative include the promotion of enhanced efficiency in the utilization of natural resources, infrastructure development, the reduction of poverty, and economic

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growth in a sustainable manner (CDKN Asia, 2013). Nevertheless, Vietnam faces several imminent challenges, most notably the severe risks posed by climate change - as one of the most affected countries globally - the slowdown in global trade driven by rising U.S. tariffs, and a gradually aging population (The World Bank Group, 2025b).

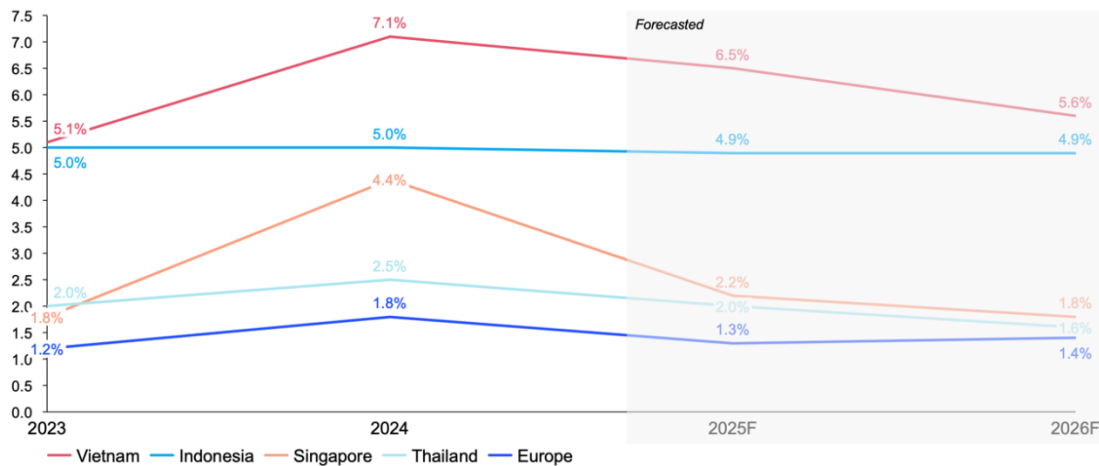


Figure 3: GDP Growth selected Countries (own illustration, data retrieved from International Monetary Fund, 2025a)

2.2 Overview AUDI AG

2.2.1 Audi's history and market positioning

AUDI AG headquartered in Ingolstadt, Germany, is one of the world's leading premium automobile manufacturers and a core brand of the Volkswagen Group (VW). The company's origins date back to 1899, when engineer August Horch founded A. Horch & Cie. in Cologne, laying the foundations for a century of innovation in automotive engineering (Audi AG, 2025a). After leaving his first company due to managerial disagreements, Horch established a new enterprise in 1909, naming it Audi. Figure 4 summarizes Audi's key milestones.

Since the renaming to AUDI AG and the beginning of its rise in the global premium segment, Audi has steadily strengthened its position through innovations such as quattro all-wheel drive, light-weight aluminum constructions, and advancements in safety and aerodynamics. The 1990s and 2000s marked global expansion and model diversification with the A8, A3, TT, and Q-series Sport

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Utility Vehicles (SUVs), strengthening its market position. Today, under the “Vorsprung 2030” strategy, Audi focuses on electrification, digitalization, and sustainability, aiming to sell only fully electric models from 2026 and phase out combustion engines by 2033 (Audi AG, 2024).

History and developments of Audi

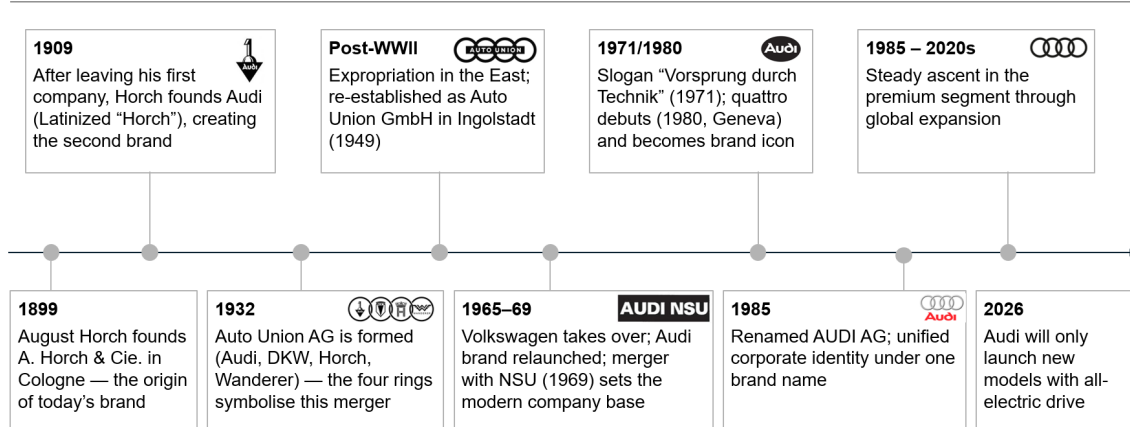


Figure 4: History and developments of Audi (own illustration, data retrieved from Audi AG, 2025)

Audi positions itself as a “global progressive premium brand,” with a strong focus on sustainability, digitalization, and design (Capgemini, 2022). Academic research on luxury car branding underlines that Audi’s image is shaped by innovation, quality, and prestige, differentiating it from competitors through a balance of functional and symbolic attributes (Dhanda & Pareek, 2018). Over time, Audi has evolved from a technically focused manufacturer into a global premium brand positioned alongside BMW and Mercedes-Benz.

2.3.1 Volkswagen Group: Structure, brand hierarchy & strategy

The VW Group is a global automotive conglomerate structured into three brand groups: the Core Volume, Progressive, and Sport Luxury segments, as shown in Figure 5 (Volkswagen Group, 2025). Audi occupies a leading role within the Group as its core premium brand combining brand prestige and technological leadership that underpin VW’s upscale strategy. VW’s organization balances brand autonomy with Group-wide integration through shared technology platforms and joint procurement systems, ensuring both independent brand development and economies of scale. Within

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this structure, Audi acts as a key integrator of innovation and design excellence across the Group's global strategy.



Figure 5: Brands & brand groups within the Volkswagen group (own illustration based on brands and brand groups; only consisting of automotive manufacturing activities of Volkswagen group; other brands include Traton, Cariad, Volkswagen technology group, Volkswagen financial services & Moia)

2.3.2. Integration of Audi into VW production and supply chain architecture

Since joining VW Group in the 1960s, Audi has shifted from largely stand-alone engineering (e.g., early quattro innovations) to deep integration within the Group's industrial system. From the 1990s onward, VW's platform strategy reduced the number of unique architectures, cut development time and cost, and enabled wider model variety. Audi both adopted Group toolkits and led premium architectures, while co-developing the Premium Platform Electric (PPE) with Porsche for next-generation Electric vehicles (EVs) (Volkswagen Group, 2023). This modularization underpins multi-brand production: Audi's can be built in Group plants that also produce VW/Škoda/Porsche vehicles on shared lines, and Audi's own sites (e.g., Győr) supply components - engines and e-drives - across brands.

Procurement is similarly hybrid: Group procurement aggregates global purchasing to secure supply, pricing, and scale synergies for all brands, while Audi maintains selective autonomy for premium-specific content and performance targets. Audi's supplier base is managed against Group standards for quality, human rights, and CO₂, including the S-Rating (supplier sustainability) and a binding Business Partner Code of Conduct (Audi AG, 2025b). Logistics and manufacturing are integrated through VW Group Logistics and the Digital Production Platform (DPP), a shared cloud

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system connecting factories and standardizing data, applications, and AI tools. Audi plants are linked into this network, enabling shared visibility and fast deployment of best practices across brands (Volkswagen Group, 2023). Internally, Audi's "360° factory" strategy aligns with VW's Industry 4.0 systems, linking customer orders to production and suppliers to improve flexibility, lead times, and crisis response, while Audi maintains differentiation through software, design, and chassis tuning on shared platforms (Blackie-Kelly, 2025).

2.3.3 Audi's global footprint: production sites, regional hubs and presence in ASEAN

VW Group operates one of the world's largest automotive manufacturing networks with 112 production facilities across 27 countries. Within this system, Audi maintains a tightly integrated global footprint combining dedicated Audi plants and shared VW Group sites. Official company data lists 21 Audi production locations in 12 countries, though independent research and Blackie-Kelly, 2025 suggest 17 Audi-facilities in 9 countries (see Figure 6).

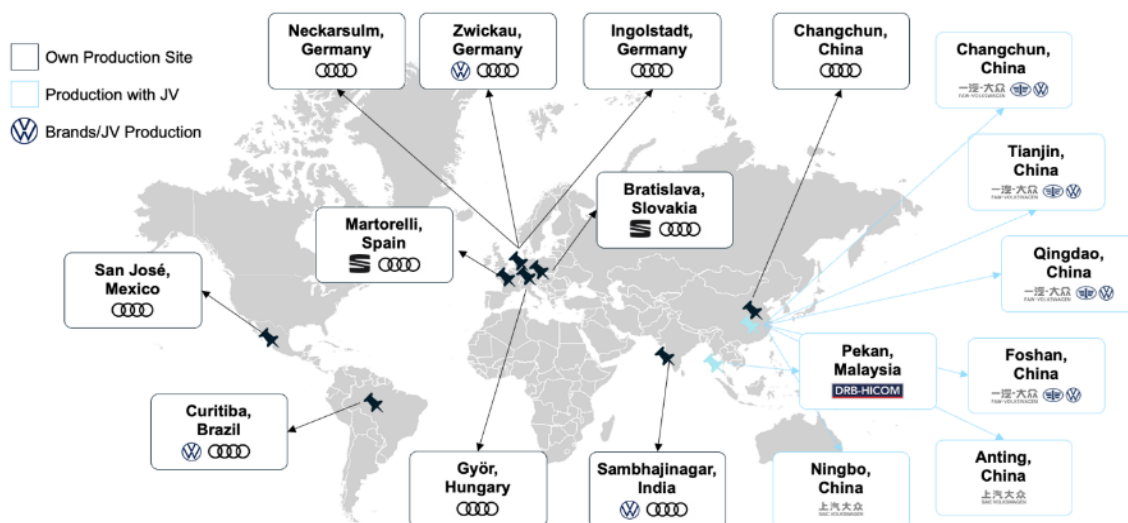


Figure 6: Audi worldwide supply chain overview (own illustration; data retrieved from Christopher Ludwig, 2025)

Audi's manufacturing footprint in ASEAN has historically been limited, especially when compared to premium rivals such as BMW and Mercedes, which have long benefited from local assembly operations in Malaysia, Thailand and Vietnam (Marklines, 2025). For decades, Audi relied

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primarily on imported vehicles or small-scale semi-knockdown assembly through distributors, leaving it at a cost disadvantage in ASEAN where import duties inflated prices (Wijayasinha, 2017). In Thailand, for example, Audi re-entered the market in 2017 through an independent importer, remaining focused on fully built imports. A major strategic shift came in April 2025, when Audi launched local assembly of the Q7 at the DRB-Hicom facility in Pekan, Malaysia, marking its first fully localized project in Southeast Asia (Blackie-Kelly, 2025). The plant, shared with Volkswagen and Porsche, with a target production capacity of 5,000 units annually, enables Audi to lower retail prices, avoid Malaysia's import taxes, and potentially export tariff-free to neighboring ASEAN markets through the ASEAN Trade in Goods Agreement (ATIGA).

Audi's management describes this decision as a key step in building a regional hub strategy, strengthening supply chain resilience, and leveraging Malaysia's established automotive ecosystem and government incentives for energy-efficient vehicle production. Ms. Lehmann further highlights the existing former VW plant and the resulting synergy potential as major reasons for selecting Malaysia as Audi's production location in ASEAN (Appendix 1; I5).

Audi Vietnam operates through Automotive Asia Ltd., the official Audi importer and distributor, in which Pon Holdings holds a majority stake alongside local partners. Following its acquisition of shares in late 2023, Pon assumed full responsibility for Audi's import, sales, and after-sales operations in Vietnam (Lan, 2023). This transition marked a significant new phase in Audi's local development after fifteen years in the market, with Pon bringing international management expertise and expanded investment capacity. Audi currently operates four dealerships and service centers in the country - Audi Hanoi, Audi Đà Nẵng, Audi Ho Chi Minh City, and Audi Tân Bình - providing nationwide coverage and technical support. The brand's Vietnamese lineup includes the Q2, Q3, Q5, Q7, and Q8 SUVs, the A4, A6, A7 Sportback, and A8 sedans, as well as fully electric models

such as the Audi e-tron SUV, e-tron GT, and Vietnam's first RS model, the RS e-tron GT (Audi VN Linkedin, 2025).

2.3.4 Opportunities for Audi in ASEAN

As highlighted, Audi currently maintains a presence in the ASEAN region with sales outlets across all major markets and a manufacturing site in Malaysia. Nevertheless, the region continues to offer substantial opportunities for Audi. With the middle and upper-middle classes expanding rapidly, high- and upper-middle-income households are projected to nearly double from 30 million to 57 million between 2019 and 2030, creating a rapidly growing market for premium vehicles throughout the ASEAN region (Jurgens & Ingilizian, 2020). Increased sales, however, are not the only advantage. There is also considerable potential for cost savings, especially in labor, which will be examined in more detail in the subsequent deep-dive section. Combined with a wide range of foreign trade agreements (FTAs), this provides substantial potential for Audi, whether through regional production and subsequent exports or by directly selling to this fast-growing market. This, along with the additional benefits, will be explored in greater depth within the pillars.

2.3.5 Challenges for Audi in ASEAN

From an Audi perspective the ASEAN region presents considerable market penetration challenges compared to more integrated markets such as the EU. Each ASEAN member state requires differentiated market entry strategies, as the region is characterized by highly diverse government systems, cultures, religions, consumer behaviors, and infrastructure development levels (Tasane & Srun, 2023). This diversity contrasts sharply with the EU's relatively harmonized regulatory and cultural framework, making market penetration significantly more complex and requiring localized approaches rather than standardized regional strategies. Even with the FTAs in the region high localization requirements still present challenges (Kohpaiboon & Jongwanich, 2022). As a result,

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Audi has historically launched local production and full market entry only in those countries where the Volkswagen Group was already established. For example, with the previously mentioned decision to manufacture the Q7 in Malaysia following Volkswagen and Porsche's earlier investment (Appendix 1; I5). This leaves Audi reliant solely on its prestige, brand status, and exclusivity, although these are attributes that as highlighted by A. T. Nguyen and multiple studies resonate deeply within ASEAN's social culture (Kapferer & Valette-Florence, 2021; Appendix 1; I7).

2.3.6 Audi SWOT

To summarize the Audi overview, including the brand's current opportunities and challenges within the region, the SWOT model is utilized as shown in Figure 7. Audi's strengths lie in its strong reputation and consumer connection, supported by a comprehensive product portfolio and deep integration within the Volkswagen Group. Conversely, Audi's weaknesses reflect limited production presence in ASEAN, currently only in Malaysia, and a supply chain heavily centralized in China, resulting in an import-dependent model for most ASEAN markets. This dependency often leads to higher retail prices or compressed margins.

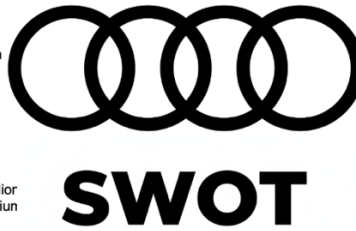
However, substantial opportunities exist in ASEAN's rapidly expanding consumer base and significantly lower labor costs compared to the EU and even China (deeper dive in pillar 4). These advantages enable regional production and export strategies to improve cost competitiveness. The primary threats center on Chinese competitors' growing market penetration, as brands like BYD are increasingly perceived as premium offerings by regional consumers, directly competing with Audi's pricing and positioning. Additionally, ASEAN's regulatory fragmentation presents a critical challenge when selecting market entry strategies. Given these dynamics, Audi must prioritize large, rapidly expanding markets where brand prestige can offset cost disadvantages and regulatory complexity can be managed efficiently.

Strengths

- Strong global reputation as a "progressive premium brand" with technological leadership and design excellence
- Established dealership network across Vietnam (Hanoi, Đà Nẵng, Ho Chi Minh City, Tân Bình) providing nationwide coverage
- Comprehensive product portfolio including premium EVs
- Volkswagen Groups penetration with Skoda

Opportunities

- Rapidly expanding high-income consumer base: Middle and upper-middle-income households projected to nearly double from 30 million to 57 million between 2019 and 2030, creating substantial premium vehicle market growth.
- Significant labor cost savings: ASEAN's lower labor costs compared to established markets enable considerable cost reduction through regional production and export strategies.



Weaknesses

- Historical underinvestment in ASEAN region compared to rivals means late-mover status in establishing production and distribution infrastructure
- Import-based model inflates retail prices relative to locally-assembled premium competitors

Threats

- BYD, Geely, Li Auto, and other Chinese manufacturers offering premium features and comparable quality at substantially lower prices
- Growing Chinese brand recognition and acceptance, particularly among younger, cost-conscious consumers
- Regulatory fragmentation and localization costs: Diverse regulatory frameworks and high localization requirements increase operational complexity and capital deployment.

Figure 7: Porter's SWOT - Evaluation of Audi's current environment in the ASEAN Automotive Market with Focus on the Premium Sector (own illustration)

3. Methodology

To investigate the feasibility and provide an answer to the research question “*To what extent does Vietnam present a strategically viable location for a production and logistics hub within AUDI AG's global value chain?*”, the research utilizes a mixed-methods approach integrating both qualitative and quantitative data from primary and secondary sources (see Figure 8). According to Creswell and Clark, the mixed method approach can be categorized as a method that “*Emphasizes integrating quantitative and qualitative methods within a single study or series of studies to leverage the strengths and mitigate the limitations inherent in each method individually*” (Creswell & Plano Clark, 2023). This approach is adopted as it delivers four principal benefits: triangulation, completeness, enhancement, and explanation. By merging qualitative and quantitative data, the study cross-validates findings to reduce bias and strengthen validity. The integration of multiple data sources also offers a fuller picture of the phenomenon under investigation. Furthermore, qualitative insights can refine quantitative outcomes and vice versa by steering additional data gathering and enriching the overall analysis. Lastly, when one method reveals insights that the other cannot fully account for, their combination yields a deeper, more sophisticated interpretation of the research problem (Bryman, 2006).

Primary Data		Secondary Data	
Qualitative Expert Interviews	Field Research (Pictures etc.)	Databases	Reports / Journal Articles

Figure 8: Research Structure (own Illustration)

3.1 Primary data Collection

At the cornerstone of this research lies the utilization of expert interviews to gather industry and market insights, with a total of 18 interviews conducted with experts from a diverse set of expertise and experience. Interviews were conducted both in person with experts based in Vietnam and online with professionals from the broader ASEAN region. A list of interviewees is provided in Appendix 1, alongside summaries of interview transcripts. Summaries were utilized as interviews were conducted in different languages, necessitating a standard across linguistic contexts. To analyze this newly created qualitative data, Thematic Analysis (TA) was employed. This approach is defined as *“Identifying, analyzing, and interpreting patterns of meaning (‘themes’) within qualitative data”* (Clarke & Braun, 2017). The coding of qualitative data was structured around a single overarching coding scheme, comprised of the core parameters derived from the self-developed radar chart framework (as outlined in the framework section below). This unified coding scheme was applied systematically across all interviews enabling consistent evaluation of interview data against the established framework criteria. The complete coding scheme and its detailed alignment with the framework parameters is presented in Appendix 2. This process of coding and analysis was conducted utilizing QualCoder, A specialized software tool for qualitative data analysis. TA was selected for this research as it provides considerable flexibility, enabling coding categories to be refined and developed iteratively throughout the research process while maintaining consistency with the framework's core parameters.

A total of four interview guides were developed, one for each pillar (Government Incentives, Supply Chain and Local Supplier Network, Manufacturing Infrastructure, and Workforce), detailed in

Appendix 3. The guides employed a semi-structured format, allowing interviewees to discuss pre-defined topics while exploring emerging issues (Bryman et al., 2021). This enabled experts to provide rich, nuanced insights beyond scripted questions. Despite the pillar-specific guides, the semi-structured design, with naturally overlapping questions and themes across guides, allowed us to utilize the unified coding scheme. This consistent framework enabled systematic evaluation of all expert perspectives against the same analytical criteria through TA. Primary fieldwork in Vietnam enabled firsthand observation of the automotive industry landscape. Visual documentation from this research is integrated throughout the analysis.

3.2 Secondary Data Collection

This research broadens its scope by drawing on a wide range of secondary data sources, including academic journals, specialized databases, Newspaper articles, industry reports, and legislative documents from the Vietnamese government, as well as ASEAN policy frameworks and regulatory publications. Academic literature was gathered via platforms such as ResearchGate, JSTOR, and Google Scholar, with articles selected based on recent publication dates and citation counts. Quantitative data were sourced from organizations including the World Bank, International Monetary Fund (IMF), Statista, IHS Markit, Vietnam Automobile Manufacturers' Association (VAMA), Marklines, Mordor Intelligence, and Worldometer. Industry insights were derived from reports published by both international and local consultancies, law firms, newspapers, and business intelligence agencies. While legislative data was collected from governmental websites and law firms. Leveraging these diverse qualitative and quantitative sources provides valuable access to established knowledge, historical trends, macroeconomic indicators, and the regulatory context essential for assessing Vietnam's potential as a production and logistics hub for Audi.

3.3 Frameworks

This research employs established business strategy frameworks, specifically SWOT analysis, Porter's Five Forces, and the YIP framework, alongside a self-developed multi-criteria assessment system based on the Kiviat diagram visualization methodology developed by Kolence and Kiviat (1973), originally intended for analyzing computer system performance across multiple technical dimensions. However, the Kiviat diagram has been widely adapted in business settings for multi-dimensional strategic assessment and is commonly known as a radar chart in business practice (Benedito & Angel, 2014). In this research it is adjusted to systematically evaluate Vietnam's suitability as a production location for Audi across our strategic pillars. SWOT analysis was utilized to synthesize Audi's competitive position and the broader market context in ASEAN. The frame-

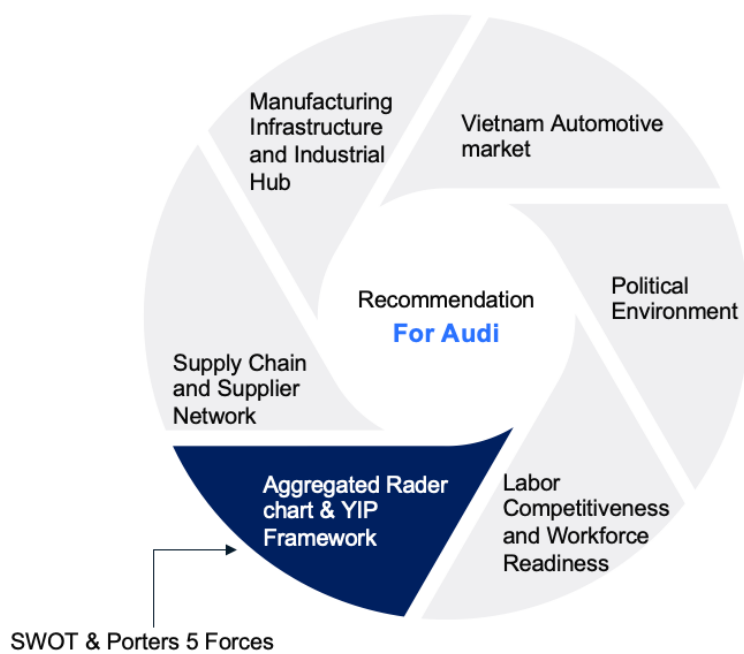


Figure 9: Methodology Overview (Own Illustration)

work is particularly suitable for this analysis as it enables a clear assessment of Audi's advantages and vulnerabilities relative to the ASEAN market. Porter's Five Forces was employed to assess the current Vietnamese automotive market structure and serves as an important analytical tool for understanding industry dynamics and competitive intensity.

The YIP framework is employed to translate our analytical findings into a structured recommendation alongside our radar chart framework, enabling a strategic assessment of Audi's optimal positioning approach in Vietnam. An overview of the methodology can be seen in Figure 9.

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The radar chart framework systematically evaluates Vietnam's suitability as a manufacturing hub through a structured, multi-dimensional approach. The methodology integrates primary and secondary data with insights from expert interviews, databases, and industry reports including comparative regional analysis to assess performance across each pillar and market overview. Each pillar comprises multiple parameters that are directly linked to the coding scheme developed from primary expert interview data. Each parameter is individually scored on a scale of 1 to 5 and then aggregated into pillar-level totals and standardized to a 0-100% scale, enabling direct comparison across all pillars and the market overview. The standardized scores from each pillar and market overview are subsequently consolidated and presented in the recommendations section, providing a holistic, quantified assessment of Vietnam's positioning as a potential manufacturing destination for Audi. This approach ensures that factors are assessed while maintaining analytical transparency and reproducibility. A detailed explanation of each parameter scoring can be found in each pillar while a more in-depth explanation of the framework can be found in Appendix 4.

4. Vietnam's Automotive Market Structure and Development

4.1 Past Market Development

To evaluate whether Audi should establish its own production site in Vietnam, it is essential to analyze the Vietnamese market itself. Among the industrially oriented ASEAN countries, the Vietnamese passenger car market, with 376,000 units of new passenger cars sold in 2024, ranks as the fourth largest after Malaysia, Indonesia, and Thailand (see Figure 10). However, compared to these markets, Vietnam recorded the strongest growth, with an increase of ~22% from 2023 to 2024. In contrast, Thailand and Indonesia experienced declines in passenger car sales in 2024 of 17% and 14%, respectively (PwC, 2025h). Nevertheless, Thailand has shown positive market development in recent months following last year's downturn, according to P. Ziechmann (Appendix 1; I6). Also,

Group Part

H. A. Roche from A&M Vietnam confirms that Thailand currently remains as the main automotive hub in ASEAN, mainly due to their strong developed supplier infrastructure (Appendix 1; I13).

However, to put the actual size of the Vietnamese passenger car market into context, it is also crucial to compare it with the world's leading markets. With around 32 million units sold in 2024, China represents the largest passenger car market globally (Statista Market Insights, 2025a). In comparison, Vietnam's market accounts for only 1.2% of the Chinese market. When compared with Germany, which reached around 3 million sold passenger cars in 2024 and represents a key market for the German OEM Audi, Vietnam's passenger car market also appears relatively small at just 12.5% of the German market size (Statista Market Insights, 2025b). Nonetheless, it is important to note that Western markets are projected to stagnate or even decline by 2030.

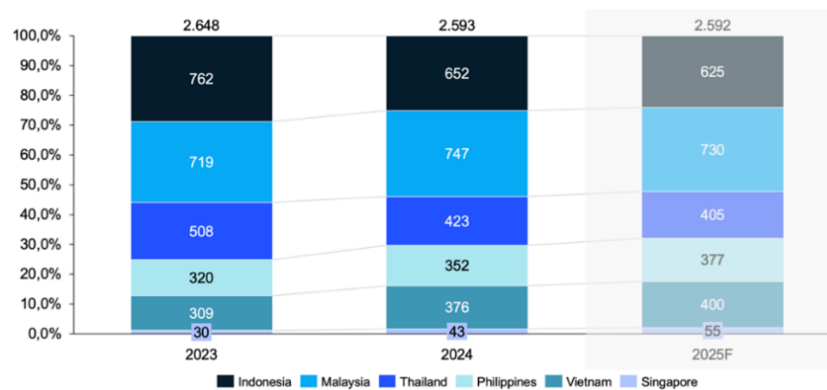


Figure 10: Overview Passenger Car Sales in the ASEAN Region in k units (own illustration, data retrieved from PwC, 2025h)

From a long-term perspective, and based on data from IHS Markit and PwC, the Vietnamese automotive market grew from 142,000 passenger cars sold in 2015 (IHS Markit, 2023) to 376,000 units (PwC, 2025h). In the shorter term, the market has also performed strongly: since the end of Covid-19 (2021-2024), passenger car sales have increased at a Compound Annual Growth Rate (CAGR) of 7.5% (see Figure 11).

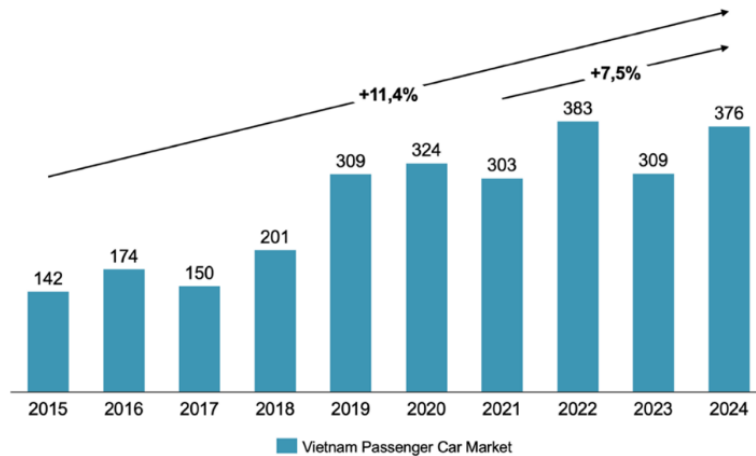


Figure 11: Historical Development of Passenger Cars in Vietnam in k units (own illustration, data retrieved from IHS Markit, 2023 & PwC, 2025h)

One of the key drivers of this growth is the rapid expansion of Vietnam's middle class, which contributed to the country's classification as one of the "Velocity 12" markets by Ogilvy (2016). Recent projections estimate Vietnam's middle class will reach 57 million by 2030, significantly expanding consumer purchasing power and driving demand for premium products (Jurgens & Ingilizian, 2020).

4.2 Market Outlook and Main Trends

4.2.1 Trends in Vietnam's Automotive Market

Based on projected data from IHS Markit, the Vietnamese passenger car market is expected to increase from ~376,000 units sold in 2024 (PwC, 2025h) to around 476,000 units by 2030, assuming a rather conservative growth of the local OEM VinFast (IHS Markit, 2023). Moreover, in its 2025 snapshot, PwC forecasts production volume for light vehicles to rise from 300,000 units in 2024 to around 500,000 units by 2030, reflecting growth of roughly 57% (PwC, 2025g).

According to PwC, the main growth drivers in Vietnam include macroeconomic factors such as strong GDP growth (>7.0%), a declining unemployment rate, and well-controlled inflation. Further drivers are improvements in electronics manufacturing and rising FDIs. Other important trends

Group Part

highlighted by PwC are tax incentives to support the EV transition and the increasing availability of affordable, locally assembled vehicles (PwC, 2025h, p. 34).

A particularly striking development in Vietnam is the growing demand for EVs. The EV share of new passenger car sales rose from around 9% in the first half of 2023 to over 40% in the first half of 2025, equating to ~73,000 EVs sold (PwC, 2025h, p. 35). Mordor Intelligence, 2025 currently values the Vietnamese EV market at \$3.12 billion USD and projects a CAGR of about 19%, reaching more than \$7 billion USD by 2030, underlining the strength of the EV trend.



*Figure 12: Traffic congestion
HCMC (own picture)*

A. Nguyen, founder of Ocoten Engineering, identifies the rise of local OEM VinFast and its own charging infrastructure development - supported by government regulations - as central drivers of this growth. He pointed out that planned “combustion engine-free” zones in cities will automatically force consumers to switch to electric mobility, similar to developments in China (Appendix 1; I7).

This view is also supported by Mordor Intelligence: Government-backed initiatives such as zero import duties for ASEAN-built EVs

or lower charging tariffs are designed to promote EV adoption and help achieve carbon-reduction goals (Mordor Intelligence, 2025). However, B. Koslowski from AHK Vietnam highlights that Vietnam lags far behind China in terms of EV infrastructure, particularly in the rollout of public accessible charging hubs (Appendix 1; I2).

One of the main factors inhibiting market growth identified by the experts is the severe traffic congestion in cities such as Hanoi and Ho Chi Minh City. A real-life example from Ho Chi Minh City is illustrated in Figure 12. B. Koslowski emphasizes that the physical limitations of overloaded

Group Part

streets and insufficient parking spaces, caused by the overwhelming number of motorcycles, restrict further automotive market growth (Appendix 1; I2).

4.2.2 Vietnam's Premium Automotive Market and the Role of German OEM

Audi positions itself as a manufacturer in the premium car segment, according to M. Grethe, sales manager at Audi Singapore. Together with its two main competitors, BMW and Mercedes-Benz, it forms the German premium car segment (Appendix 1; I4).

As can be seen in Figure 13, Since 2018, these three brands have increased their sales volume from around 6,700 units to a projected 9,800 units in 2024, corresponding to a CAGR of 6.4%. This growth is expected to continue beyond 2024, with a projected CAGR of 6.0% until 2030. By then, the three German premium brands are forecasted to reach approximately 13,900 units sold, more than doubling their sales compared to 2018 (see Figure 13).

However, the share of German premium manufacturers in the overall Vietnamese passenger car market has consistently remained between two and three percent (see Figure 13). One of the main reasons why the market share of German premium OEMs is not expected to increase significantly, despite overall sales growth, could be the anticipated market share growth of local OEM VinFast and Chinese competitors, as illustrated in the following competitor analysis (IHS Markit, 2023).

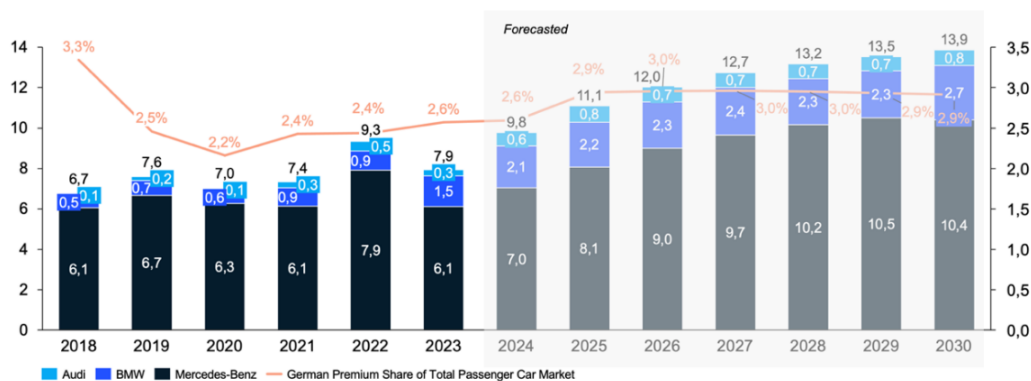


Figure 13: Sales and Market Share Development of German Premium OEM in Vietnam (own illustration, data retrieved from IHS Markit, 2023)

Group Part

When considering the trends of the premium car market in Vietnam, which is a decisive market for Audi, our interviewed experts expressed differing views: A. Nguyen sees clear demand for premium cars in Vietnam, noting that status symbols and prestige remain very important in Vietnamese society. Wealthy Vietnamese individuals seek to display their affluence, which includes purchasing premium cars - primarily German brands. As the country's overall wealth continues to rise, the demand for these goods is likewise expected to accelerate (Appendix 1; I7). M. Grethe sees potential in Vietnam's premium car market. He notes that Vietnam currently has a small wealthy elite and a relatively limited middle class. However, he expects rising GDP per capita and a growing middle class to drive increased car ownership (Appendix 1; I4). In contrast, B. Koslowski sees a negative trend in premium car sales. He attributes this to the government's anti-corruption campaign, which makes wealthy buyers more discreet and reduces market liquidity by curbing illegal activity. As a result, Porsche is reportedly facing declining sales, though he believes this downturn is only temporary (Appendix 1; I2).

4.4 Competitor Overview

According to M. Grethe, Audi regards the German brands BMW and Mercedes as its main competitors in the premium segment. In addition, he identified Lexus, Land Rover/Jaguar, and Volvo as competitors in the ASEAN premium market (Appendix 1; I4).

To assess the competitive landscape for Audi, a price analysis was conducted. In order to include an OEM in the analysis, one of the following criteria must be met: (1) a current market share of over five percent, (2) projected strong market growth in the coming years, (3) classification of the OEM as "premium" according to M. Grethe, or (4) the company's German origin or connection to a German parent company. Based on these criteria, a total of 17 brands were analyzed, originating from Europe (primarily Germany), Vietnam, Japan, Korea, the USA, and China (see Figure 14).

Group Part

To categorize each brand into one of four segments - “Luxury,” “Premium,” “Mid-Range,” or “Entry Market” - three models from each brand’s current Vietnamese portfolio were analyzed in terms of price. For each brand, one lower-priced car, one mid-priced car, and one higher-end car were selected. Whenever possible, both combustion and electric vehicles were considered for each brand. A detailed overview of this price analysis can be found in Appendix 5.

The results of the analysis show that the luxury and premium segments of the Vietnamese car market are primarily dominated by European OEMs. Porsche is positioned as the only luxury OEM, while BMW, Audi, Mercedes, Jaguar/Land Rover, and Volvo occupy the premium segment. The only non-European competitor for Audi in the premium segment is the Japanese manufacturer Lexus, a subsidiary of Toyota (see Figure 14).

Another notable trend in the Vietnamese market is the strong presence of entry-level manufacturers, predominantly from Japan and Korea, alongside the domestic OEM VinFast and the rising Chinese player BYD. This creates a gap in the mid-range segment, currently occupied only by the US-OEM Ford. This suggests that fast-growing entry-level firms such as VinFast and BYD, as well as potentially Skoda, could seek to close this gap in the coming years (see Figure 14).



Figure 14: Price Analysis of the Competitive Landscape in the Vietnamese Passenger Car Market (own illustration, data retrieved from AUDI VN, 2025; BYD Saigon, 2025; Ford Vietnam Limited, 2025; Hyundai TC Motor, 2025; Jaguar Land Rover, 2025; KIA Viet Nam, 2025; Lexus, 2025; Mazda Việt Nam, 2025; Mercedes-Benz Vietnam, 2025; Mitsubishi Motors Corporation, 2025; Porsche Việt Nam, 2025; Skoda Vietnam, 2025; THACO AUTO 2025, 2025; Toyota Việt Nam, 2025; VinFast, 2025; Volvo Car Corporation, 2025; Zigmwheels, 2025)

Group Part

Besides analyzing the price levels of leading brands in the Vietnamese market, it is also crucial to compare the market shares of Audi's core competitors. Within the premium segment, excluding Volvo, which did not publish its sales figures, the German car manufacturer Audi is projected to hold a market share of 5.6% by 2024. With 61.1%, Mercedes-Benz leads the premium segment in Vietnam, followed by BMW (18.1%) (IHS Markit, 2023) and Lexus (13.5%). It should be noted that the Lexus sales data originate from the Vietnam Automobile Manufacturers' Association (VAMA, 2025) rather than IHS Markit, as Lexus is not included in the IHS Markit dataset. One key reason why Mercedes and BMW may hold an advantage over Audi in Vietnam is, according to Koslowski, that both assemble their vehicles locally and benefit from longer market experience, whereas Audi depends exclusively on a costlier import-based strategy (Appendix 1; I2).

An analysis of selected automotive OEMs in Vietnam's passenger car market shows that the market shares of premium manufacturers have remained comparatively stable. Audi, for example, held a market share of approximately 0.1% in 2018 and is projected to reach 0.2% by 2030. Mercedes-Benz is expected to lose 0.8 percentage points (pp.) but will remain the dominant premium player. BMW, by contrast, is projected to gain 0.3 pp. over the same period (see Figure 15). Moreover, Figure 15 clearly illustrates that Audi ranks only third among the German premium OEMs, well behind Mercedes-Benz and BMW. To expand its market share and narrow the gap to its main competitors, Audi will likely require a more ambitious and differentiated Vietnam strategy.

One of the key drivers behind the strong growth of passenger car sales in Vietnam in general is the domestic manufacturer VinFast. After delivering its first vehicles in 2019, the company increased its sales volume to around 88,000 units in Vietnam by 2024, corresponding to a CAGR of 90% since 2019 (Vingroup, 2025, p. 108). As a result, VinFast increased its market share from 1.2% in its first year (IHS Markit, 2023) to over 20% by 2024, based on its annual report and IHS Markit

Group Part

data adjusted with VinFast's actual 2024 sales (see Figure 15). Although no projections are currently available that reflect the company's most recent growth figures, VinFast recently reported having sold over 72,000 EVs globally in the first half of 2025, further underlining this trend (VinFast, 2025b). While Audi does not directly compete with this entry-level domestic brand, the rapid rise of a strong local OEM represents a potential risk for all foreign manufacturers. According to M. Grethe, VinFast has achieved remarkable visibility; however, he assumes that this prominence could be potentially a result of substantial government subsidies. Consequently, its impressive market share does not necessarily reflect organic or sustainable sales growth (Appendix 1; I4).

Another noteworthy development is the rise of Chinese competitors in Vietnam. BYD, already one of the world's largest EV manufacturers, is expected to expand aggressively across ASEAN markets, including Vietnam, in the coming years. According to M. Grethe, the growth of Chinese OEMs represents a major challenge for traditional brands, including premium ones like Audi, as these manufactures offer "premium-like" products at lower prices (Appendix 1; I4). Sales data from IHS Markit support this observation (see Figure 15).

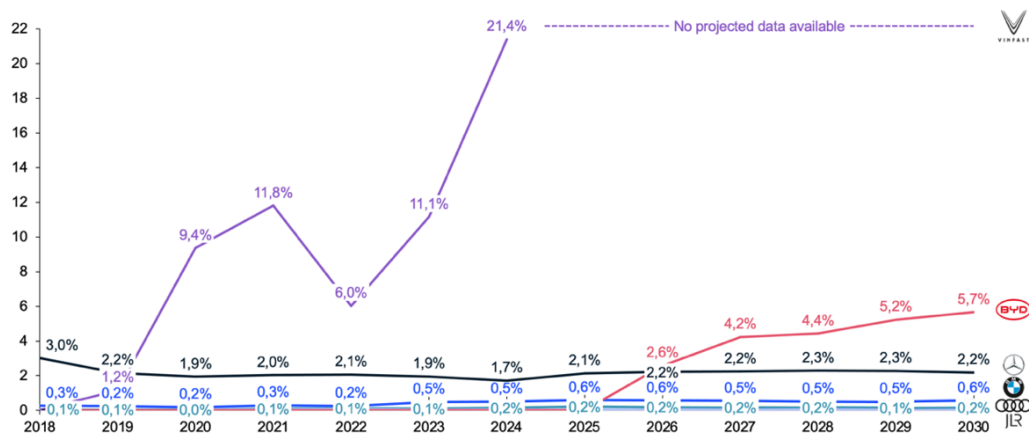


Figure 15: Market Share Development for Selected OEM in Vietnam's Passenger Car Market (data retrieved from IHS Markit, 2023 & Vingroup, 2025)

4.5 Automotive Customer Overview and Buying Behavior

While Vietnam's automotive industry has recorded steady growth, overall car ownership remains low. According to Guotai Junan Research (2025), there are approximately 55 passenger vehicles per 1,000 inhabitants, ranking Vietnam 6th in the ASEAN region behind countries like Malaysia (490/1,000), Thailand (275/1,000), and Indonesia (99/1,000).

According to VietNamNet Global (2025a), roughly 9% of households own a car, ranking among the lowest in the world. Nevertheless, car ownership in Vietnam remains limited but is growing rapidly, underlined by the national ambition to reach 1 million EV sales by 2028, and 3.5 million total EVs by 2040 (Statista, 2022). In major Vietnamese cities, scooters dominate personal transportation, with dedicated scooter and motorcycle lanes visible throughout urban infrastructure as seen in Figure 16.



Figure 16: Everyday traffic in Ho Chi Minh City (own picture)

A KPMG, 2024 study based on a survey of 1,106 respondents shows that young, white-collar professionals earning above the national average represent the core group of new car buyers. For many, vehicles serve as a symbol of achievement and social status. As noted by A. Nguyen, car ownership in Vietnam remains deeply status-driven “*see and be seen*” with German brands such as Audi, BMW, and Mercedes symbolizing success and prestige (Appendix 1; I7). These findings are also supported by the Guotai Junan Research (2025) automo-

tive sector report, which identifies three different consumer groups in the Vietnamese automotive market, safety-focused families, high-income status buyers, and frequent intercity travelers as the three dominant consumer segments.

Group Part

The buying behavior of Vietnamese customers shows an interest shift from classic internal combustion engine (ICE) cars to hybrid and EVs. Utilizing the study from above the 1,106 participants 28% would buy an ICE in the future, while 34% would consider a hybrid car, and 38% a full-EV. As can be seen in Figure 17, younger responders, especially the Gen Z and Millennials (age 25-44), showed the highest interest in EVs. In contrast, Gen X (45-54 years) and older generations showed a higher interest in ICE vehicles, and a lower interest in full-EVs. The results suggest that the electrification trend is mainly driven by younger people who are more open to new technologies, while the older generation values established technologies. As briefly introduced before, this shift to EVs is further reinforced by governmental initiatives.

When evaluating what Vietnamese consumers value in a car, the top core features across all generations are durability (22%), performance (15%), and comfort/interior (12%). The Millennials (35-44 years) also value performance as important with 17%, while the Gen Z values performance and interior & vehicle space as equally important. Following the core features, the second most important are financial factors such as pricing and resale value (see Figure 18).

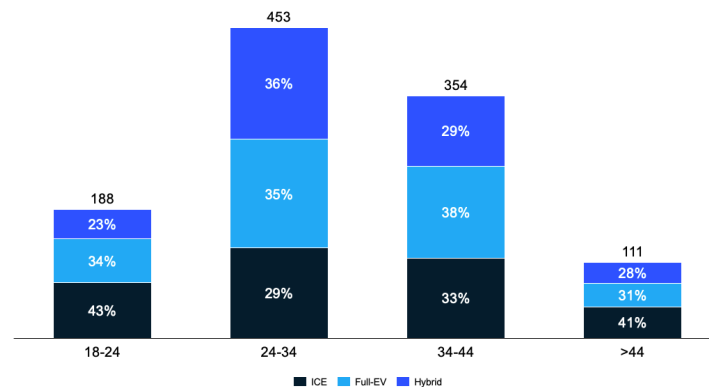


Figure 17: Vehicle Engine Type Preferences by Age Group in Vietnam; $n = 1,106$ (own illustration, data derived from KPMG, 2024)

When it comes to EVs, high power and long range, as well as the extensive charging network, are the most important factors to make them more appealing to all age groups. Furthermore, EVs have

Group Part

not yet reached cost parity with conventional vehicles, making financial support and more competitive pricing essential factors to increase their appeal. (KPMG, 2024)

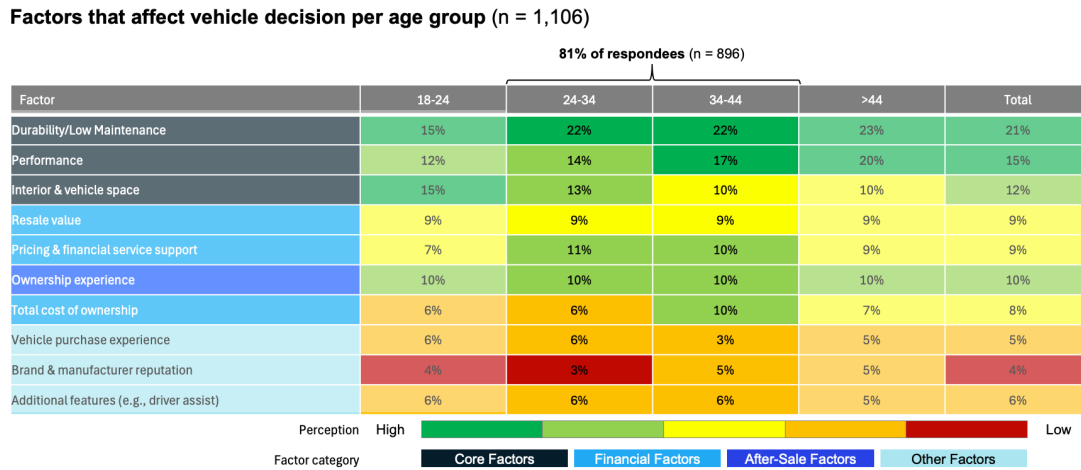


Figure 18: Factors that affect vehicle decision per age group (data retrieved from KPMG, 2024)

The Vietnamese premium car market is evolving from a niche segment into a steadily expanding sector. As highlighted before, German premium brands such as Audi, Mercedes-Benz, and BMW are perceived as clear status symbols, signaling professional success and social prestige, according to A. Nguyen. M. Grethe added that while electrification is still at an early stage, premium EVs are already being positioned as the natural next step for affluent buyers seeking performance, exclusivity, and cutting-edge technology (Appendix 1; I4, I7). This consumer group is closely aligned with the upper-income demographics identified in the KPMG customer study. Premium car buyers prioritize comfort, safety, and advanced technology, with SUVs emerging as the preferred vehicle type due to their space, practicality, and prestige.

4.6 Automotive Infrastructure

Vietnam's ambitious infrastructure development is a cornerstone of its goal to become a high-income, industrialized economy. The national master plan for the 2021-2030 period, with a vision to 2050, outlines comprehensive investments across all infrastructure-related areas, including transport, energy, and logistics networks. According to the plan, the Vietnamese government

Group Part

foresees total infrastructure investments of approximately ₫1.1-1.6 quadrillion VND (approximately €35.7- 51.9 billion EUR) to complete a total of 250 projects across 34 cities and provinces. (NATIONAL ASSEMBLY, 2023)

In 2024, Vietnam had a total road length of 595,125km, of which 26,484km are national roads (including national highways and expressways) (Dezan Shira & Associates, 2024b). The expansion of these roads is a priority for the government to expand the express highway system by 5,000km by 2030, from 1,300km in 2020, to improve connectivity between key ports, industrial hubs, and major urban centers. Furthermore, improved road infrastructure has direct implications for urban drivers and private car owners. Better roads within cities and between urban centers mean shorter travel times, smoother traffic flow, and more predictable driving conditions, which make private car ownership more attractive and practical.

Vietnam continues to expand its transport infrastructure through major projects such as Hanoi's Ring Road 4 and Ho Chi Minh City's Ring Road 3, aimed at improving connectivity and easing congestion (BW industrial, 2024a). However, traffic in large cities remains chronically congested due to rapid urbanization, limited road capacity, and rising vehicle ownership. In Hanoi's inner city, the road density *"is only about 0.74 km/km², while the required value is 6.5-8 km/km²."* (Duc Nguyen & Van Nguyen, 2021). In Ho Chi Minh City, the road density is just 2.41 km/km², below the standard of 10 to 13km/km² (Minh, 2024). This lack of network capacity continues to restrict mobility despite infrastructure expansion.

In addition to intercity mobility, major efforts are underway to alleviate urban congestion through the development of metro systems in Vietnam's largest cities, like the metro line 1 in Ho chi Minh City (see Figure 19) or the Line 2A in Hanoi (Guotai Junan Research, 2025).



Figure 19: Metro line in Ho Chi Minh City (own picture)

By shifting commuters from motorcycles and cars to public transport, these metro systems are expected to reduce traffic density and free road capacity, indirectly supporting more efficient car usage and improving air quality in dense metropolitan areas, according to B. Koslowski (Appendix 1; I2).

Vietnam's fueling infrastructure is already well established, with over 17,000 petrol stations nationwide, ensuring reliable access to conventional fuels, even in rural areas (Statista, 2024c). In contrast, the electric charging infrastructure is in an early stage, with roughly 3,000 public charging stations mainly operated by VinFast/V-Green with an estimated market share of 85% and 150,000 charging ports (Guotai Junan Research, 2025; Reuters, 2024). Importantly, VinFast charging ports can currently only be used by VinFast EVs, as no interoperability or roaming agreements with other OEMs have been established (VinFast, n.d.). Furthermore, if you buy a VinFast vehicle you can charge it for free. This exclusivity limits accessibility for non-VinFast vehicles and poses a barrier for foreign EV manufacturers.



Figure 20: Charging Ports in Phu Quoc (own picture)

B. Koslowski and M. Grethe confirmed this infrastructure gap, noting that charging is currently heavily reliant on private home chargers, with only a limited number of public fast-charging points available, mainly at shopping malls, hotels, urban hubs, and on highways (see Figure 20). This aligns strongly with the demographic profile of current EV buyers, as wealthier households, often living in houses or gated communities, are more likely to have private parking and charging options (KPMG, 2024). Notably, the current price for charging is 3,858

VND/kWh (0.13 EUR/kWh) (V-Green, n.d.), while petrol prices were on average at 23,370 VND/l (0.77 EUR/l) in 2024 (Statista, 2024a).

4.7 Summary and Implications for Vietnam's Automotive Market

To synthesize the findings on the Vietnamese automotive market, a Porter's Five Forces analysis was conducted and is presented in Figure 21 (Porter, 1979). It should be emphasized that the final assessment of each force focuses primarily on the premium car segment, as Audi operates in this category. Insights regarding the broader automotive market - including the entry and mid-market segments - were considered but weighted less heavily.

The evaluation of the new entrant's threat, the bargaining power of buyers, and industry rivalry draws directly on the analyses presented earlier. Vietnam's supplier network and supply chain will be examined in detail in the chapter *"Automotive supply chain and supplier network in Vietnam"*. The assessment of supplier bargaining power shown here refers to that forthcoming analysis.

The threat of substitutes was not explicitly analyzed earlier, although it was addressed indirectly. For the premium segment, the threat of substitution is generally very low, primarily due to status-driven purchasing behavior. Consumers who can afford a premium vehicle in Vietnam are unlikely to switch to alternative mobility options such as public transport or motorcycles. Nonetheless, as previously mentioned, motorcycles and the expanding metro systems in major cities can act as substitute products, particularly for the entry-level segment (see Figure 21).

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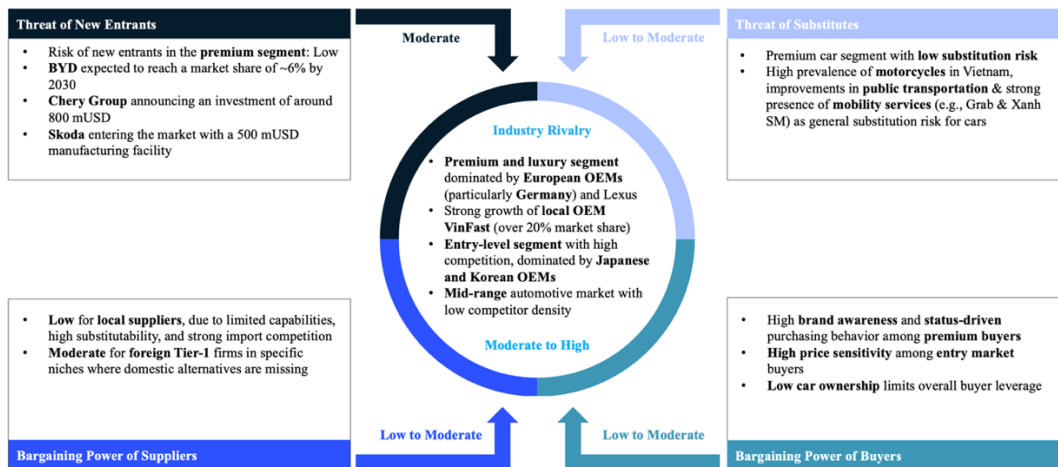


Figure 21: Porter's 5 Forces - Evaluation of Vietnam's Automotive Market with Focus on the Premium Sector (own illustration; data retrieved from Vietnamese Automotive Market Overview & Pillar 2: Supply Chain and Supplier Networks & Porter, 1979)

To further assess the Vietnamese automotive market by quantifying the performance of the key parameters previously analyzed, a radar chart analysis was developed and is presented in Figure 22. The resulting overall score for Vietnam's automotive market is 16 out of 25 points, corresponding to 64%. The methodology underlying this radar chart was outlined in the methodology section and is described in detail in Appendix 4.

(1) **Market Volume (2/5)**: Vietnam recorded 376,000 car sales in 2024 - only 1.2% of China's volume - highlighting the still modest market size.

(2) **Market Growth (5/5)**: Vietnam has recently outpaced both ASEAN and Western markets in automotive growth. This momentum is expected to continue, driven by strong EV adoption and VinFast. The premium segment is also expanding, with German OEMs as key contributors.

(3) **Competition (3/5)**: Competitive intensity differs by segment: the entry-level market is highly fragmented, while mid-range segments have fewer players. In the premium market, German OEMs dominate with Mercedes leading. Still, the rise of VinFast and Chinese brands - mainly in the entry segment - adds pressure across the market.

(4) **Automotive Customers (4/5)**: Vietnamese consumers favor premium brands like Audi, influenced by strong brand awareness and status-driven buying behavior. If financially capable,

Group Part

consumers often purchase premium cars without hesitation. However, the middle class is still developing, and the share of households able to afford cars remains limited.

(5) Automotive Infrastructure (2/5): Vietnam must continue expanding its road and charging network, as current infrastructure lags behind that of mature automotive markets.

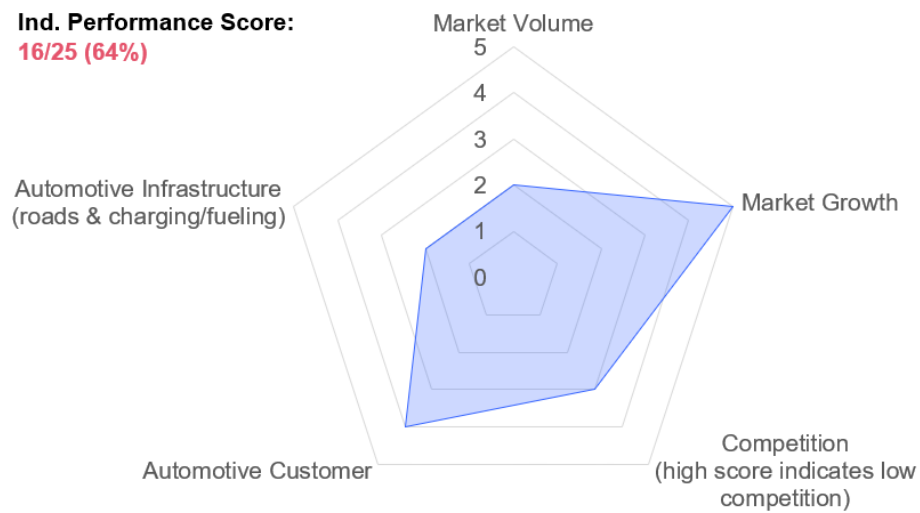


Figure 22: Radar Chart for Evaluating the Vietnamese Automotive Market (own illustration)

5. Pillar 1: Political Landscape and Incentives for Automotive Manufacturing in Vietnam

This pillar provides an in-depth exploration of the political landscape shaping Vietnam's investor climate, with a particular focus on the automotive sector. It examines historical developments, current legislation, and government initiatives to evaluate the overall stability, policy direction, and institutional readiness for attracting and sustaining foreign investments in the automotive industry, such as a potential manufacturing hub for Audi. The political environment has proven to be of central importance in determining FDI decisions, as highlighted by Busse and Hefeker (2007). They argue that the political environment can be conceptualized as an additional risk premium that directly affects the investment decision. This risk premium reflects the potential costs and uncertainties arising from political instability, policy unpredictability, and institutional weakness. Consequently, shifts in government policies, institutional frameworks, and FTAs can fundamentally alter the investment climate. Therefore, given the long-term nature of Audi's potential investment, Vietnam's political stability, predictability, and incentive structure are essential to assessing its strategic viability as a production and logistics hub.

5.1 Vietnam's FDI Historic Evolution

As highlighted earlier, the Vietnamese automotive market is experiencing positive development. However, these developments have not emerged in isolation, rather, the sector has evolved within a specific policy context shaped by decades of FDI inflows and institutional reforms. This began with the 'Doi Moi' reforms in 1986, which slowly opened the country to foreign investment and modernization (Path, 2020). Although the government maintained strict protectionism and trade barriers in the automotive industry until 2005, this stance eventually shifted (T. Phan & Nguyen, 2008).

Subsequent opening, World Trade Organization (WTO) accession, and engagement in FTAs have since built the institutional foundation necessary for the sector's growth today. According to Ikebe (2023), Vietnam's FDI history can be separated into four key phases: 1. Import substitution, 2. Structural reform, 3. Export-oriented FDI, and 4. Making a Leap. The latter two phases (2007-present) represent the most influential phases, as illustrated in Figure 23, both are characterized by significant surges in FDI inflows.



Figure 23: Vietnam FDI (Inflow) Trends during the 4 periods (USD\$ Million) (Data retrieved from Ikebe, 2023)

The first surge followed Vietnam's accession to the WTO in 2007, which granted the country Most Favored Nation (MFN) status among major Western economies. Meaning that other WTO countries are committed to apply the same trade terms to Vietnam as they do to their best trading partners (Horn & Mavroidis, 2001). The second surge, beginning in 2015, is identified by scholars as the "FTA Power" period, characterizing Vietnam's strategic and extensive engagement in bilateral and multilateral FTAs (Ikebe, 2023). This period reflects Vietnam's emphasis on leveraging trade liberalization to attract FDI, particularly through mechanisms such as the European Union-Vietnam Free Trade Agreement (EVFTA), the Regional Comprehensive Economic Partnership (RCEP), and ATIGA. Vietnam's automotive sector specifically benefited from this progressive economic liberalization. Prior to trade liberalization and institutional reforms, the sector remained relatively

underdeveloped and unattractive to foreign investors. However, these policy openings have created a more favorable investment environment and catalyzed increased FDI (Mai, 2022). Nevertheless, scholars and institutions like the WTO increasingly advocate for a "Doi Moi 2.0", a comprehensive reform agenda aimed at modernizing Vietnam's political landscape and substantially strengthening institutional infrastructure (The World Bank, 2025b). These elements, including the roles of FTAs and government incentives, are analyzed in the subsequent sections.

5.2 Political Stability and Institutions

As mentioned earlier, Vietnam's political system is composed of a one-party structure with the CPV as the sole ruling party. The political apparatus operates across three administrative levels following recent reforms (reduced from four levels in 2025). These include: (1) the central government in Hanoi, (2) provincial-level authorities governing 34 provinces and centrally governed municipalities (Reduced from 63), and (3) commune-level administrations at the local level (PwC, 2025i). The distinct functions and responsibilities of each level relevant to FDI are detailed in Figure 24.

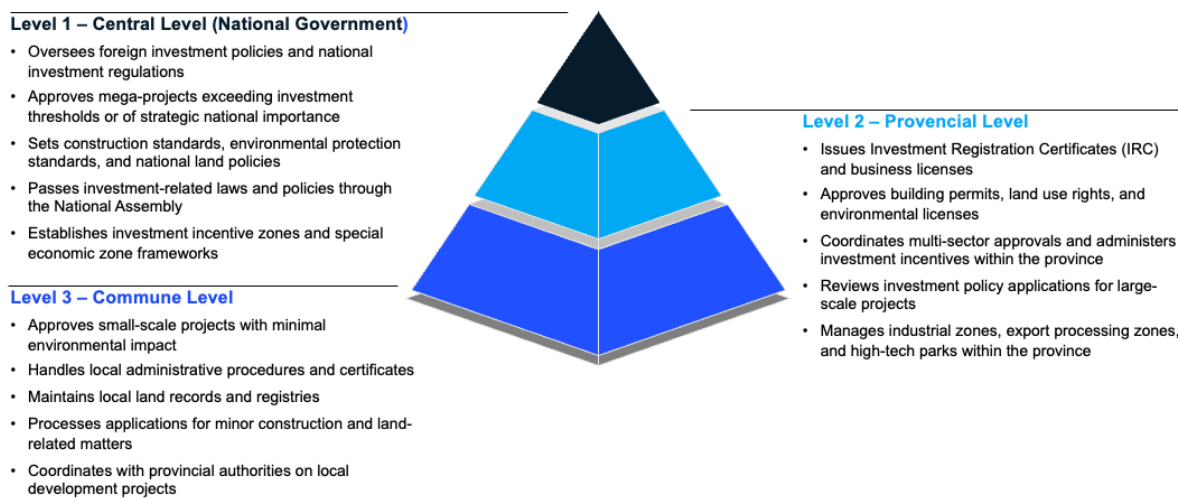


Figure 24: *Vietnam Levels of Government: From an investment perspective* (own illustration; data retrieved from *BW industrial, 2024c; Socialist Republic of Vietnam, 2025; The Investor, 2025; Appendix I; I14, I15*)

It is important to note that all levels and state institutions operate under party direction, providing a highly centralized structure with weak to non-existing separation of power (Lam Quoc & Dang

Viet, 2024; N. A. Nguyễn, 2021). Meaning that the CPV maintains centralized control through the principle of democratic centralism, and that the judicial power is not independent from the executive power (Transparency International, 2024). This lack of separation of powers creates increased complexity, limited visibility, and elevated corruption risks within the system.

Consequently, Vietnam achieved a score of 40 out of 100 on the 2024 Corruption Perceptions Index, placing it 88th among 180 countries, a result reflecting substantial public sector corruption concerns (Transparency International, 2024). Compounding this issue, roughly 30% of companies operating in Vietnam report experiencing bribe requests (The World Bank Enterprise Surveys, 2023). These practices create significant hidden operating costs that negatively impact business efficiency, investment decisions, and compliance expenditures (Maruichi & Abe, 2019).

However, as noted in our field research and by Mr. Rosenbaum from the Royal Danish Embassy, bribery is often deeply embedded in local business culture. It frequently operates as an informal mechanism to expedite administrative processes, whether for facilitating business licenses or accelerating regulatory approvals (Appendix 1; I14, I15). Importantly, this is a regional rather than a uniquely Vietnamese phenomenon. As shown in Figure 25, which details global rankings for corruption, rule of law, and ease of doing business, Vietnam's position on the Corruption Perceptions Index (88th) places it ahead of major regional competitors like Indonesia (99th) and Thailand (107th), though it still trails Malaysia (57th). This indicates that while corruption remains a systemic challenge, Vietnam's relative standing is competitive within the ASEAN context (Transparency International, 2024).

These governance issues create a complex landscape for foreign investors. The limited transparency of policymaking at both central and provincial levels poses particular challenges for market entry. As highlighted by Mr. Hjortshøj from the Royal Danish Embassy, the Vietnamese

administrative system is characterized by significant "*red tape*," where decisions often lack procedural visibility (Appendix 1; I14, I15). This is further reflected in the Ease of Doing Business Report, where Vietnam ranked 70th, significantly behind Thailand (21st) and Malaysia (12th), though ahead of Indonesia (73rd) (The World Bank Group, 2020)

A critical concern for investors is the absence of judicial independence. According to the World Justice Project Rule of Law Index (2025), Vietnam ranks 83rd out of 143 countries globally. The lack of separation between judicial and executive power creates risks in contract enforcement, where courts may favor state interests or politically connected entities (Andersson, 2012). Consequently, navigating this environment effectively is virtually impossible without local expertise, whether through partnerships, joint ventures, or experienced local consultants who understand the intricacies of the administrative landscape (Appendix 1; I14, I15).

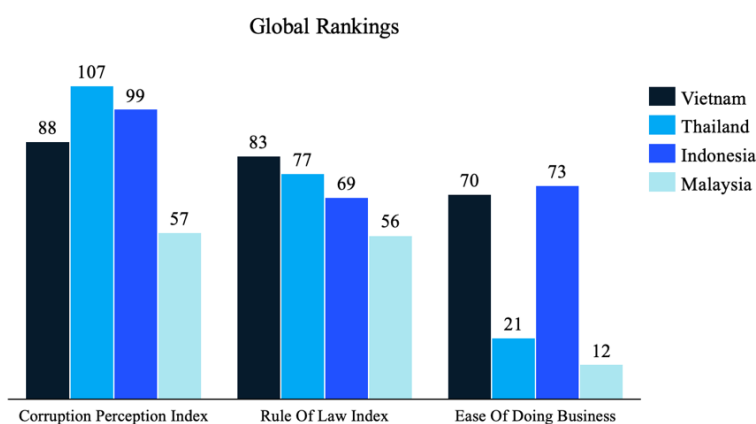


Figure 25: Regional Rankings, Corruption, Rule of law, and Ease of doing business (own illustration; data retrieved from Transparency International, 2024; World Bank Group, 2020; World Justice Project, 2025)

Despite these institutional hurdles, Vietnam has successfully attracted substantial FDI, indicating that its location-specific advantages currently outweigh these governance risks. Furthermore, the investment outlook is strengthening due to sweeping institutional reforms led by General Secretary Tô Lâm, who took office in August 2024 (Lakshmi, 2024). His administration has moved rapidly to address structural bottlenecks, including a governance overhaul that merges 18 ministries into 14 to streamline administration (Lin et al., 2025). This consolidation is designed to eliminate

redundant bureaucratic steps and expedite centralized decision-making. Further, the government is actively modernizing its legal framework to align with international standards and to battle corruption issues as highlighted by Mr. B Koslowski (Appendix 1; I2)

5.3 Trade Policy and Regional Integration

In recent decades, the CPV has increasingly focused on the strategic importance of FTAs in shaping Vietnam's economy. As highlighted in the beginning of this pillar, Vietnam has emerged as a significant beneficiary of trade agreements. The convergence of increased FDI and a proliferation of trade agreements has created a powerful pull factor, positioning Vietnam as a key player in global supply chains (Choi et al., 2021). This factor is made up of Vietnam's engagement in more than 17 FTAs, with 2 additional agreements currently being negotiated, providing access to +60 countries (Appendix 6 for list of FTAs), including some of the world's most important countries for the automotive supply chain such as China, Germany, Japan and South Korea (Coffin, 2024; PwC Vietnam & Vietnam Chamber of Commerce and Industry, 2024). Figure 26 compares Vietnam's FTA landscape with the aforementioned ASEAN automotive leaders and reveals that Vietnam currently holds the highest number of active trade agreements, alongside Indonesia.

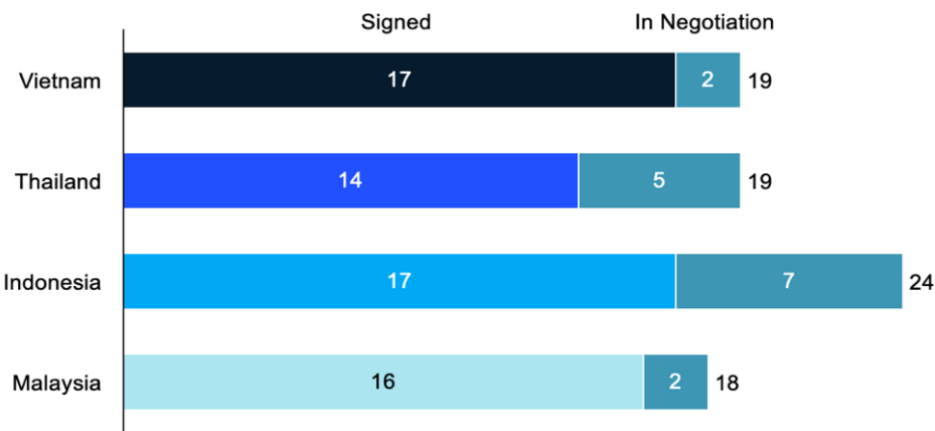


Figure 26: Regional FTA Overview (own illustration; data retrieved from International Trade Administration & U.S. Department of Commerce, 2025; Ismiralda, 2025; Malaysia Ministry of Investment, Trade and Industry, 2025)

The development of Vietnamese FTAs and their benefits are particularly relevant for the automotive market for two key reasons. First, as highlighted is the domestic market currently not large enough to attract manufacturers independently. Consequently, trade agreements are especially important for automotive manufacturers, as they enable production in Vietnam with tariff-free import and export opportunities, for example, through the EVFTA, which provides duty-free access to European markets from 2028 (BW industrial, 2024b). Second, the local supplier network is not sufficiently developed to support full-scale manufacturing. As a result, most manufacturers have adopted the Completely Knocked Down (CKD) model, importing all components for assembly in Vietnam before exporting the finished vehicles or selling them domestically (Williams, 2025; Appendix 1; I6, I7, I12). This structural limitation will be examined further in Pillar 2. According to Ms. T. Nguyen, this CKD approach represents a practical methodology for the early development of the Vietnamese automotive industry (Appendix 1; I1). However, it remains the government's objective to develop and strengthen the local supply chain (Nakajima et al., 2023).

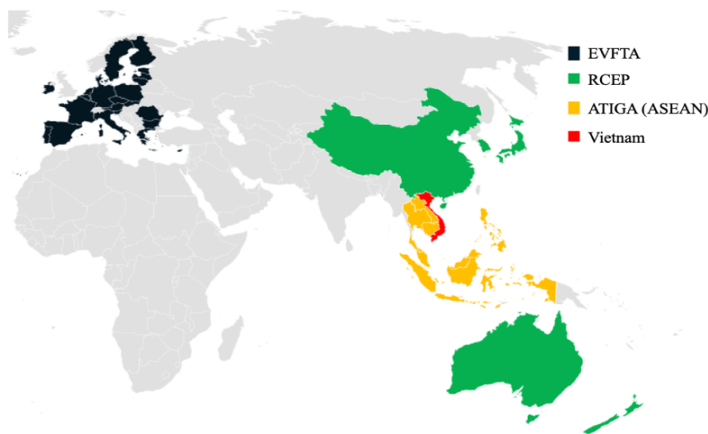


Figure 27: EVFTA, RCEP, ATIGA FTA Overview (own Illustration)

Among Vietnam's numerous FTAs, the EVFTA, ATIGA, and RCEP are particularly significant for automotive manufacturers, as participating countries are central players in the global automotive supply chain and provide access to major automotive markets (Figure 27 highlights countries included in these FTAs).

Furthermore, they are gradually or completely removing import tariffs, allowing firms to benefit from reduced barriers to the importation of inputs and materials

ATIGA is a comprehensive FTA framework for the ASEAN countries and plays a central role in the Vietnamese economy by providing access to major markets in the Southeast Asian region. This agreement is especially important for the automotive sector because it enables tariff-free trade in vehicles and components among member states, allowing companies to sell cars across the entire region provided they comply with the 40% localization requirement (Robin, 2018; Appendix 1; 15). Beyond the sales perspective, ATIGA also enables firms to leverage the existing supplier bases in Thailand and Indonesia, which are considered the most developed automotive production hubs in the region (PwC, 2025h).

Under the **RCEP**, Vietnam participates in a multilateral framework with ASEAN and five regional partners, China, Japan, South Korea, Australia, and New Zealand. The agreement provides for progressive tariff reductions over transition periods that can extend to 20 years, creating expanded opportunities for the automotive supply chain, particularly in the sourcing of components and parts that qualify for preferential treatment (Kimura et al., 2022). Vietnam's Decree No. 129/2022/ND-CP, which implements its RCEP commitments, confirms that many automotive parts and components falls into the immediate or early-stage liberalization groups, meaning that a substantial share of these inputs already face significantly reduced or zero tariffs when origin requirements of 40% are met (Government of Vietnam, 2022). RCEP also introduces, cumulative Rules of Origin, allowing automotive producers to aggregate content from any RCEP member state to qualify for preferential tariffs (Kimura et al., 2022).

Although RCEP and ATIGA overlap geographically and methodically, their tariff structures differ sharply. ATIGA already provides near-complete tariff elimination for intra-ASEAN automotive trade, whereas RCEP assigns longer implementation periods to several sensitive lines, including complete built-up vehicles. As a result, traders can choose between ATIGA and RCEP on a

shipment-by-shipment basis, selecting whichever agreement offers the most favorable combination of duty rates, timelines, and origin rules for the specific product and supply-chain configuration.

The EVFTA mandates the progressive elimination of automotive import tariffs between the EU and Vietnam over a 10-year period, enabling duty-free vehicle imports by 2030 (or earlier for specific categories). To qualify, vehicles must meet a “*Maximum 45% of materials not originating in either Part*” in other words a 55% Regional Value Content (RVC) threshold, which uniquely permits value originating from either Vietnam or the EU to be counted cumulatively (Huyen, 2020). Crucially, however, this 55% requirement is distinct from domestic localization rates, imported zero-tariff CKD vehicles are theoretically limited to the Vietnamese and EU markets and do not automatically qualify for duty-free export to other regions (Huyen, 2020).

While these FTAs strategically incentivize FDI, operational challenges still persist. As noted by Mr. Hjortshøj and Dr. Lehmann, import clearance remains burdensome, as countries differ in how they classify goods as local content, making compliance more complex and burdensome for companies (Appendix 1; I5, I14, I15). An overview of these FTAs can be found in Figure 28.

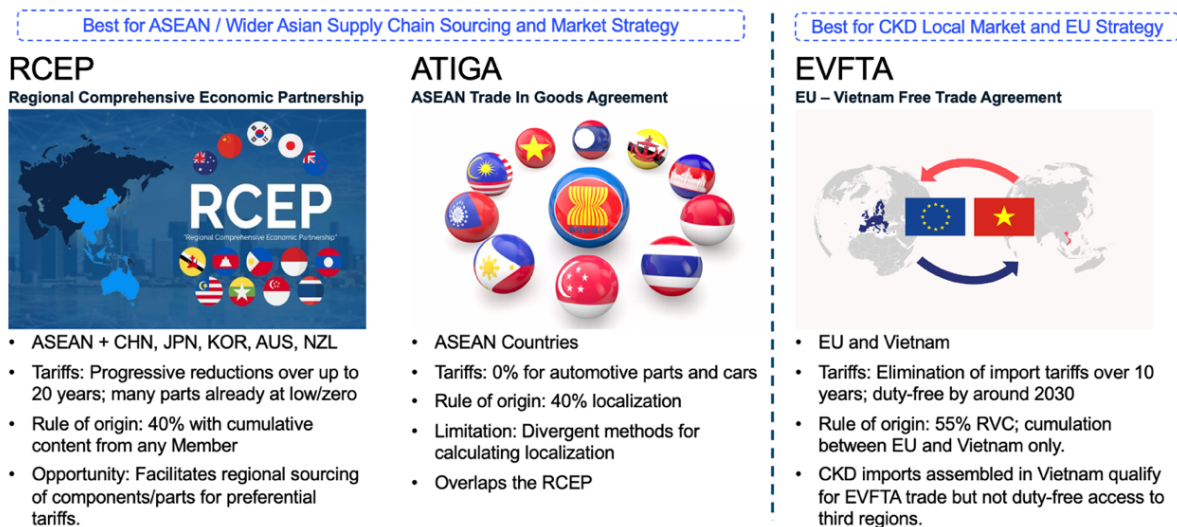


Figure 28: Important FTAs Summary Overview (own Illustration)

From an Audi perspective, these agreements present two distinct strategic paths. The brand could either pursue a European-integration mode, leveraging the EVFTA to import duty-free CKD kits from Europe for local assembly to sell locally or re-export to EU markets. Alternatively, Audi could adopt a regional-integration model, utilizing established ASEAN and RECP member states supply chains to satisfy local content rules, thereby unlocking duty-free access to the broader Southeast Asian market.

5.4 Current Automotive FDI Incentives

As mentioned, the Vietnamese government is highly focused on developing the local automotive sector and, as a result, has implemented a multitude of policies aimed at fostering its growth. These include plans such as the Automotive Industry Development Strategy and the aforementioned National Green Growth Strategy (Dezan Shira and Associates, 2023; Vietnam News, 2024). The development strategy presents a comprehensive framework aimed at building the entire automotive ecosystem (Government of Vietnam, 2014). To achieve this, the CPV has established clear goals for the industry's future in its 2035 plan. This encompasses ambitious targets to have 78% of the domestic market satisfied by locally produced or assembled vehicles (estimated at roughly 1.5 million units), for the local supporting industry to meet minimum 65% of demand, a localization rate of 50-60%, and finally, a target export volume of 90,000 units yearly by 2035 (Government of Vietnam, 2014). Additionally, the strategy aims for 50% of new four-wheeled vehicles to be electric by 2030, rising to 100% by 2050 (Anh, 2024).

To realize these ambitions, the automotive industry has been prioritized as a high-tech sector. This classification grants special treatment for FDI, including industry-wide incentives, benefits, and tax preferences that position the automotive sector as a strategic pillar of Vietnam's economy (T. T. Nguyen, 2025). This classification is, according to Ms. T. Nguyen, of great importance as the sector

would otherwise risk stagnating in burdensome and slow bureaucracy, while this classification provides faster processing times for investment licensing and land clearance (Appendix 1; I1).

Within this extensive framework of governmental incentives, navigating the available support mechanisms presents both opportunity and complexity. However, several key incentives emerge as particularly transformative for a potential manufacturing presence from Audi in Vietnam. 5 key areas warrant consideration:

(1) Import duty exemptions, where a 0% import tax applies to automotive components and resources that cannot be sourced domestically, and machinery for manufacturing or assembly can similarly be imported duty-free (Government of Vietnam, 2023).

(2) Land and real estate incentives, including extended lease terms (up to 50-70 years), reduced or waived land use fees, and flexible payment structures that reduce initial capital requirements (DELCO, 2025).

(3) Expedited investment registration, with eligible high-technology automotive projects receiving Investment Registration Certificate approvals within 15 days compared to 6-12 months under standard procedures, alongside simplified environmental licensing (Xiao, 2025),

(4) Industrial zone tax advantages, where location within high-technology parks and special economic zones provides substantial fiscal benefits. For example, projects within DEEP C's zones are eligible for the Economic Zone Tax Package offering an average 4.35% CIT rate during the first fifteen years of operation, representing substantial saving compared to Vietnam's standard 20% CIT rate (DEEP C, 2020; Appendix 1; I2).

(5) To stimulate Vietnam's EV market, the CPV extended EV registration fee exemptions under Decree 51/2025/ND-CP, creating increased demand for domestically assembled EVs alongside preferential 15% special consumption tax rates compared to 35-50% for conventional vehicles

currently until February 2027 (H. V. Nguyen, 2025; T. T. Nguyen, 2025). However, given the government's strategic aspirations and plans for the automotive sector, these are highly anticipated to continue.

This incentive structure, alongside the FTA framework described previously, has already attracted substantial FDI, as illustrated in Figure 29. Since 2018, Vietnam has attracted 6 new international automotive manufacturers in addition to established players like Hyundai and Mazda. This expansion in production capacity, combined with the rise of domestic producer VinFast, demonstrates the combined effectiveness of the policy incentives and FTAs. Importantly, the figures shown represent total production capacity, however, utilization rates are not publicly available. Additionally, local partners like THACO sometimes share facilities, limiting visibility into actual capacity.

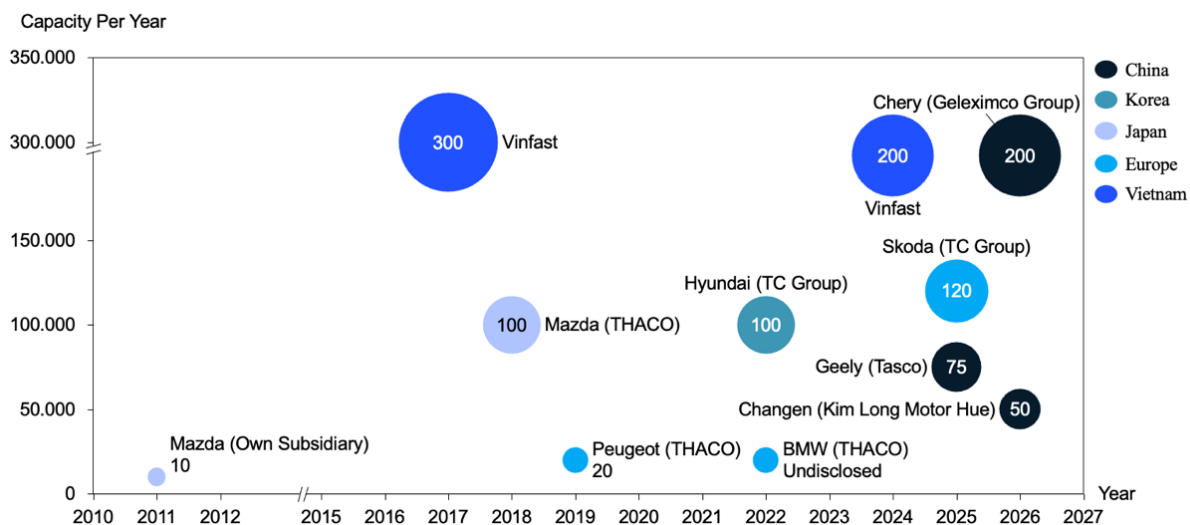


Figure 29: Vietnam Automotive Sector: Market Entry and Capacity Growth 2010-2025 (own illustration; data retrieved from Czech Trade Office in Vietnam, 2025; Duc, 2024; JustAuto, 2020, 2024a, 2024b, 2025; Mazda Newsroom, 2011; Thaco, 2018; Thaco Auto, 2019; VinFast, 2025a)

According to Thi Thuy Trang Phan from Luther Law Firm, Vietnam's political and institutional landscape for automotive investment is structured around two main entry routes: the incorporation of a Vietnamese subsidiary or the acquisition of shares and capital in an existing domestic company (T. T. T. Phan, 2024). This pattern is clearly evident in Figure 29, demonstrating that foreign OEMs entering Vietnam typically partner with established local manufacturers such as THACO, TC

Group, or TASCO. This structural reality is particularly significant because it mitigates the institutional constraints highlighted earlier. Local partners bring expertise in navigating Vietnam's political environment, expertise that foreign automotive manufacturers cannot easily replicate. While market risk certainly motivates partnership-based entry strategies, the regulatory environment itself actively incentivizes collaborative arrangements.

Nevertheless, despite Vietnam's continued success in attracting automotive investment through the highlighted incentive structure and FTA framework, the nation must simultaneously advance its institutional transformation to ensure its competitive positioning and sectoral development. For international investors such as Audi, Vietnam's institutional constraints necessitate business models grounded in local institutional expertise, making local partnerships or contract manufacturing the strategically optimal entry modes, a reality underscored by precedent cases such as Škoda and other global manufacturers that have successfully established operations through partnerships with local enterprises highlighted in Figure 29.

5.5 Conclusion & Implications for AUDI AG

This pillar sought to provide an overview of the political environment and incentive structure currently available for the Vietnamese automotive sector in order to partly provide an answer to the research question. Utilizing our Radar chart methodology (Figure 30) as an assessment tool for the above-analyzed factors, the following parameters were assessed: **(1) Incentive structure, (2) Political stability, (3) Corruption, (4) State Institutions, and (5) Trade Agreements (FTAs)**. To provide a systematic basis for assessing Vietnam's political position relative to ASEAN counterparts and contextualizing its attractiveness to automotive FDI, each dimension is evaluated below.

(1) Incentive structure (4/5): Vietnam's incentive structure creates a strong competitive environment through six principal mechanisms: import duty exemptions, extended land leases (50-70 years), expedited registration (15 days vs. 6-12 months), industrial zone tax advantages (4.35% effective CIT), and EV registration exemptions. These have attracted eight international manufacturers since 2018, including Skoda and Chery Group. Policy continuity beyond 2027 remains uncertain, and compliance complexity persists as a minor drawback.

(2) Political stability (3/5): The CPV maintains stable, predictable governance with consistent policy direction toward economic development. Recent reforms under General Secretary Tô Lâm (ministry consolidation, legal modernization) demonstrate institutional adaptability. Vietnam's robust FDI trajectory indicates stable policy commitment to investment attraction. However, the decision-making process operates behind administrative opacity ("red tape"), making individual policy outcomes difficult to anticipate. As highlighted by Mr. Hjortshøj and Mr. Rosenbaum, the most predictable aspect of Vietnam's government system is its unpredictability at the operational level, though decisions consistently align with national interests (Appendix 1; I14, I15).

(3) Corruption (2.5/5): Vietnam's CPI score of (88th globally) with 30% of companies reporting bribery requests reflects governance concerns. However, corruption in Vietnam is comparable to regional peers (Thailand 34th, Indonesia 37th) and better than the regional average. Bribery operates as an embedded informal system rather than opportunistic corruption (Transparency International, 2024).

(4) State Institutions (2.5/5): Institutional framework quality lags regional peers. Weak separation of powers, non-independent judiciary, and administrative opacity create operational friction. Vietnam ranks 70th in Ease of Doing Business (vs. Thailand 21st, Malaysia 12th). Foreign investors require local partnerships or expertise to navigate complexity.

(5) Trade agreements (5/5): Vietnam's 17+ FTAs with 60+ countries provide exceptional market access, particularly through EVFTA, RCEP, and ATIGA. Critical supply chain partners (China, Germany, Japan, South Korea) are included. This FTA architecture creates two distinct strategic entry pathways for Audi: A European-integration model leveraging EVFTA duty-free access to EU markets, or a regional-integration model utilizing ASEAN and wider Asian supply chains via a combination of RCEP and ATIGA. Vietnam ranks among the leading ASEAN nations in FTA coverage, ahead of Thailand and Malaysia, reinforcing competitive positioning in regional supply chain integration.

Vietnam's political and incentive environment for automotive manufacturing presents a moderately strong investment landscape. While the country's trade agreement portfolio and incentive structure create compelling advantages, institutional constraints, particularly limited judicial independence, administrative lack of transparency, and moderate corruption, require foreign investors to operate through structured local partnerships.

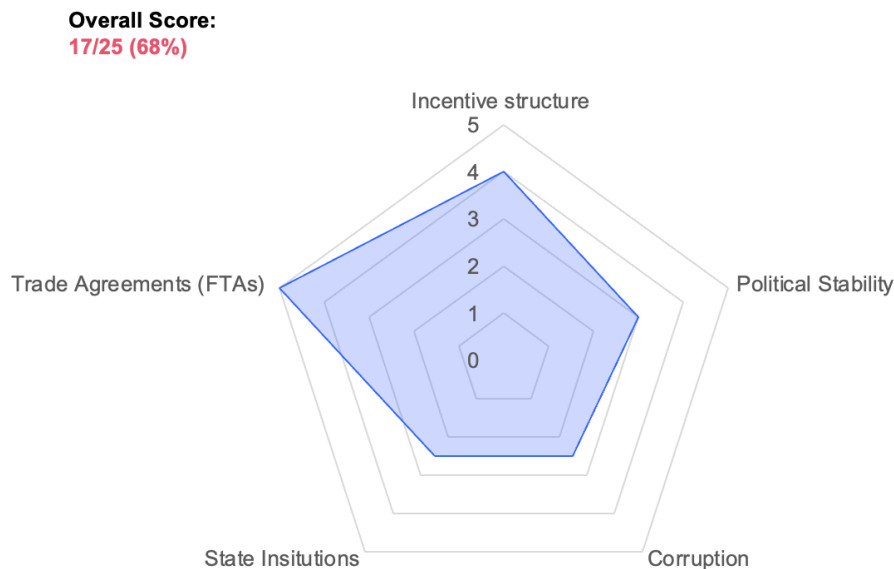


Figure 30: Radar Chart - Overall Assessment of Vietnam's Political Environment and Incentive structure (own Illustration)

6. Pillar 2: Automotive Supply Chain and Supplier Network in Vietnam

The previous pillar showed that Vietnam has created an increasingly attractive environment for automotive investors through extensive incentives, industrial policies, and a broad network of FTAs. However, as repeatedly emphasized in the expert interviews, government incentives alone are not sufficient, premium manufacturing ultimately depends on the strength and capability of the local supply chain. For a company such as Audi, long-term feasibility is determined not only by policy support but by whether Vietnam’s supplier network can deliver the required depth, quality, and technological sophistication. The following section therefore analyzes the structure and maturity of Vietnam’s automotive suppliers from the past to today and future outlook to assess the country’s true readiness as a potential production location for the future. Before assessing Vietnam’s current supplier ecosystem, it is important to outline briefly how the country’s automotive industry has developed over time, as the structure and capability of today’s supply chain are direct outcomes of earlier industrial strategies, assembly models, and policy shifts.

6.1 Historical Development of Vietnam’s Automotive Industry

Vietnam’s automotive industry has progressed through four distinct phases, each shaping the depth and capabilities of the supplier base observed today as illustrated in Figure 31.

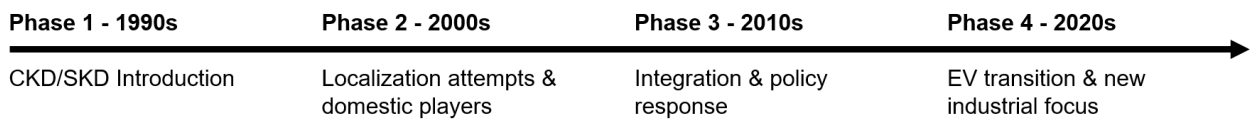


Figure 31: Key phases of Vietnam’s automotive and supplier industry (own illustration, data retrieved from Hoang Hiep, 2025)

Phase 1 began in the early 1990s, when Decree 53/NĐ-CP identified the sector as strategic and enabled the formation of joint ventures with global automakers. Companies such as Toyota, Ford, and Mercedes-Benz established CKD/SKD assembly operations, where CKD and SKD (Semi Knocked Down) involve importing disassembled vehicle kits, either fully or partially broken down,

for basic local assembly, resulting in minimal local input. (Hiep, 2025). As a consequence, the supplier landscape during this period was extremely shallow: local firms were limited to simple parts such as glass, seats, or tires, while no meaningful Tier 2 or Tier 3 base existed and virtually all high-value systems were imported. **Phase 2** began in the 2000s saw the emergence of the first domestic manufacturers. THACO, founded in 1997, developed its Chu Lai industrial complex and began building a more integrated local parts ecosystem, while another domestic attempt-Vinaxuki-failed due to limited scale and capital (Hiep, 2025). Despite growing assembly capacity, supplier development remained narrow as CKD/SKD was still the dominant assembly method. **Phase 3** unfolded in the 2010s as Vietnam deepened global integration through the aforementioned WTO accession and ASEAN agreements. Tariff reductions under ATIGA, reaching 0% for ASEAN-made vehicles in 2018, intensified competitive pressure from Thailand and Indonesia (Schröder, 2017). In response, the government introduced measures such as Decree 116 (2017) and Decree 57 (2020) to support local production (Hiep, 2025). Supplier numbers expanded, but the ecosystem remained dominated by foreign-invested Tier 1 firms, with limited progress in developing domestic Tier 2/3 capabilities. The current **Phase 4**, beginning in the 2020s, is defined by Vietnam's pivot toward electrification and the rapid rise of VinFast. Strong EV incentives as described before such as reduced special consumption tax, registration fee exemptions, and 0% import duties, has created a favorable environment for EV production (H. V. Nguyen, 2025). As a result, Vietnam's total number of suppliers grew rapidly, with a clear trend toward further growth in EV-related components. Tariff reductions under ATIGA, reaching 0% for ASEAN-made vehicles in 2018, intensified competitive pressure from Thailand and Indonesia (Schröder, 2017).

This historical trajectory, characterized by prolonged CKD/SKD dominance, slow localization, and a late pivot to EV technologies has produced a supplier base that is still shallow, uneven, and

heavily reliant on foreign-invested firms. As several experts emphasized, Vietnam “*never built a full supply chain during the ICE era because Thailand and Indonesia already had complete ecosystems*” (Appendix 1; I14). Likewise, Bosch’s Mr De Jong described today’s ecosystem as “*still in a very beginning phase,*” while Dr. Susanne Lehmann (Audi Malaysia) noted that most domestic firms “*have assembled what Japan or Korea designed, without real R&D*” (Appendix 1; I12, I10, I15). Against this backdrop, the following section maps the current structure of Vietnam’s automotive supplier ecosystem in detail.

6.2 Tier 1 - 3 Supplier Presence

Automotive suppliers are globally organized into tiers (See figure 32) to efficiently manage a complex supply chain that may include as many as 30,000 individual parts per vehicle (Gresham, 2025).

Tier 1 suppliers deliver major vehicle systems or components directly to OEMs, such as engines,

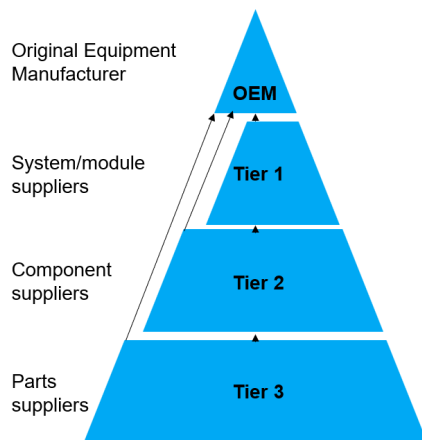


Figure 32: Tier system in Automotive

transmissions, interiors, or battery packs. They typically retain

in-house design and engineering capabilities and ensure the full functional quality of their products (Nakajima et al., 2023). Tier

2 suppliers produce smaller sub-components or assemblies - such as fasteners, molded plastics, or wiring connectors - that

feed into Tier 1 systems. They usually specialize in specific

processes and rely on Tier 1 firms for design specifications and

final integration. Tier 3 suppliers form the base of the supply chain, providing raw materials or

basic fabricated items such as steel, plastics, or rubber; these firms focus on material production rather than product design (Gresham, 2025). This hierarchical structure allows OEMs to streamline

quality management by working directly with a limited number of Tier 1 partners, who then coordinate

with Tier 2 and Tier 3 vendors. Academic literature consistently shows that Tier 1 suppliers

hold the most advanced technology and closest OEM relationships, while Tier 2 & 3 firms have limited capabilities and mainly serve upstream tiers (Nakajima et al., 2023). In practice, a supplier's classification depends on both its direct customer (OEM vs. another supplier) and its value contribution, from full system integration to basic material.

Vietnam is estimated to have a relatively small and underrepresented base of Tier 1-level suppliers supporting domestic vehicle assembly (Sancia, 2024). However, only a subset of these is deeply integrated into OEMs; most local Tier 1s focus on low-tech components such as wire harnesses, batteries, seats, and bumpers (Vietnam News, 2021). This aligns with expert input from Patrick Ziechmann, who emphasized that Vietnam's Tier 1 base remains *“much smaller and substantially less diversified than Thailand's, which benefits from decades of Japanese-led supplier development”* (Appendix 1; I6). Higher-value parts, particularly powertrain and electronic systems, remain heavily imported. Toyota Boshoku, Yazaki, Lear Corporation, and Sumitomo are major foreign Tier 1 suppliers in Vietnam, producing seats, wire harnesses, and interiors for OEMs like Toyota, Ford, and Hyundai. (T. Nguyen, 2025).

Tier 2 suppliers (2estimated at 100-150 firms) form a significantly thinner layer of Vietnam's supply base. These firms typically specialize in single-process manufacturing such as plastics molding, stamping, bracket fabrication, or cable assembly (Vietnam News, 2021). Their operations are largely “build-to-print,” meaning they manufacture according to specifications provided by Tier 1s or OEMs. Bosch's Mr De Jong highlighted that Vietnam's Tier 2 firms generally lack independent testing, product validation, and engineering capabilities, making them suitable for cost-driven parts but not for complex modules (Appendix 1; I10). As a result, Tier 2 integration into OEM supply chains remains limited, with most output flowing to Tier 1 firms rather than directly to automakers (Nakajima et al., 2023).

Tier 3 suppliers constitute the weakest segment of Vietnam's supply chain. Automotive-grade steel, engineering polymers, specialty aluminum alloys, microchips, and EV-related input materials (such as copper foil, electrolytes, and separator films) are almost entirely imported (H. Nguyễn & Thanh, 2025). Domestic production is concentrated in low-value materials such as natural rubber, lead, and basic glass. Mr. Vu emphasized that even with strong EV-focused industrial policy, upstream materials and battery inputs *"still depend almost completely on China,"* limiting Vietnam's ability to localize beyond basic fabrication (Appendix 1; I12). This thin Tier 3 base limits Tier 2 upgrading, as advanced manufacturing requires reliable access to higher-quality local materials.

In sum, illustrated in Appendix 7, Vietnam's supplier structure remains shallow: Tier 1 is dominated by foreign-invested firms, Tier 2 is narrow and process-focused, and Tier 3 is heavily import-dependent. Prof. Martin Schröder noted that the absence of strong domestic materials base and sustained supplier development *"prevents local firms from moving beyond simple manufacturing tasks"* (Appendix 1; I9). Strengthening all three tiers by technical upgrades, capability building, and integration into global development is essential to improving localization and supply chains.

6.3 Local Content Ratios

Vietnam's automotive industry still faces fundamental challenges in achieving deep localization. Despite a growing production base, average local content remains low, with most passenger cars reaching only 12-20% localization, far below aforementioned targets and well behind Thailand, where rates exceed 80% for many segments (Medina, 2025). Experts stress that this gap is structural. Mr. Doten (PwC) noted that recent growth is *"strong but heavily driven by VinFast,"* rather than by a broad supplier ecosystem, while Dr. Lehmann emphasized that meeting ASEAN's 40% local content requirement (desired to reach for FTA) is *"theoretically possible but practically difficult"* due to fragmented rules and inconsistent recognition (Appendix 1; I8, I5).

Localization also varies sharply by component category (See figure 33). An analysis of 578 suppliers active in Vietnam (MarkLines) shows the highest localization in body parts (27%), exterior components (21%), chassis parts (14%), and interior trim (11%), all relatively low-tech and labor-intensive. In contrast, localization in higher-tech domains remains minimal: ICE powertrains reach 10%, electric powertrains 5%, and electronics and telematics 2-8%. This pattern aligns with expert views from Mr. Vu and Mr. De Jong, who noted that Vietnam’s localization is “*mainly in stamping, plastics, and harnesses,*” while advanced components remain imported (Appendix 1; I12, I10).

Electric powertrain	ICE Powertrain	Driveline parts	ADAS & Telematics	Electrical parts	Climate Control	Interior parts	Exterior parts	Chassis parts	Body parts	General parts
5%	10%	25%	8%	2%	4%	11%	21%	14%	27%	12%

Figure 33: Localization rate - # of Vietnamese originated suppliers/ total suppliers active in Vietnam) (own analysis data retrieved from Marklines data and supplier websites) // detailed analysis in Appendix 8 for country origin of suppliers)

These figures reflect Vietnam’s limited domestic capacity in advanced materials, electronics, and precision machining. The same data shows that most localized suppliers originate from Japan (e.g., Denso, Toyota Boshoku), South Korea (e.g., Hyundai Mobis), and Taiwan, which dominate sourcing for ICE powertrains, general mechanical systems, and some electrical components. Vietnamese suppliers are most active in general parts, body panels, and interior systems, but their reach into high-value segments remains marginal (Marklines, 2025). Prof. Schröder noted that this reflects “*capability bottlenecks in Vietnam’s supplier base, particularly in materials, testing, and production engineering,*” which prevent local firms from moving into higher tiers (Appendix 1; I9).

The underlying cost-quality trade-offs are visible in what becomes localized. Low-complexity, bulky, or labor-intensive parts such as seats, wire harnesses, plastic bumpers, dashboards, and window glass are commonly produced domestically, benefiting from Vietnam’s low labor costs, plastics and textile industries, and proximity to final assembly. Toyota Motor Vietnam sources over 1,000 local components for the Vios, achieving over 40% localization, while THACO has vertically integrated production at Chu Lai with 40-70% localization for select models (T. Nguyen, 2025).

Mr. Nguyen confirmed that these categories align with Vietnam's current strengths, noting that *"local suppliers perform well on simpler, labor-intensive parts where quality requirements are stable"* (Appendix 1; I7). However, critical high-value components, such as engines, transmissions, electric motors, inverters, battery cells, electronic control units (ECUs), and advanced driver assistance system (ADAS) systems, are still overwhelmingly imported. This dependency stems from the high upfront investment, technical expertise, and production volume required to achieve economies of scale. Even VinFast, Vietnam's flagship EV manufacturer, while claiming up to 60% localized content in its VF8 and VF9 models, still imports key EV components such as lithium-ion battery cells, electric drivetrains, and advanced controllers from foreign suppliers (Such as CATL and Samsung SDI) with domestic efforts focused on assembling battery packs rather than manufacturing the cells themselves but with efforts to localize manufacturing through acquired sister group VinES (Vu, 2023). Mr. Vu explained that Vietnam can *"localize the body and simpler structures, but core powertrain technologies remain foreign because they require decades of accumulated know-how"*. David Will (Dräxlmaier) added that many global OEMs maintain fixed global supplier lists, making it *"almost impossible for new Vietnamese suppliers to enter high-value categories without long-term co-development partnerships"* (Appendix 1; I12, I11).

A comparison with Thailand underscores Vietnam's position. Thailand began localization decades earlier, combining strict content rules with targeted incentives and large-scale FDI. Today, it hosts more than 3,000 suppliers, produces internal combustion engines, and has begun localizing EV battery modules (Medina, 2025). Mr. Vu and Mr. Ziechmann described Thailand as *"the Detroit of Asia,"* benefiting from 30 years of Japanese-led supplier development - advantages Vietnam has not yet matched (Appendix 1; I12, I6). Although Vietnam still lacks the depth needed for a fully competitive, vertically integrated automotive industry, the trajectory is increasingly positive. The

rise of VinFast and supportive government policies are accelerating capability development and gradually narrowing the regional gap. According to Dr. Lehmann, Vietnam's "*pushy and hard-working culture resembles China 15-20 years ago*," indicating strong long-term potential for industrial upgrading (Appendix 1; I5).

6.4 Quality of Local Suppliers in Vietnam

In terms of supplier quality, Vietnam is steadily strengthening its capabilities, though it still lags behind regional leaders such as Thailand. Vietnam currently has 7,762 firms certified under International Organization for Standardization (ISO) 9001, covering 10,739 sites. This certification is a key indicator of structured quality management systems and is a fundamental requirement for most major OEMs worldwide (Figure 34). Thailand, by comparison, has more than 12,149 certified firms representing 19,554 sites. Germany, which was once a global leader in this area, has recently seen a decline in certifications as many companies' close locations and shift operations abroad. Notably, Vietnam has shown strong quality-improvement dynamics in recent years. Between 2020 and 2024, the number of certified firms grew from 4,207 to 7,762, an 84.5% increase - while Thailand expanded from 9,240 to 12,149 certifications, a comparatively modest 31.5% (IAF, 2025).

This gap partly reflects Thailand's longer-standing industrial base but also underscores Vietnam's late start in cultivating a certification culture. According to expert Mr. Nguyen, ISO 9001 is now "increasingly required" to operate in high-tier supply chains, with government auditors enforcing compliance similar to German standards like TÜV or Dekra (Appendix 1; I7). Vietnam's Logistics Performance Index (LPI) score reached 3.3 in 2023, just behind Thailand's 3.5 (The World Bank, 2023b). While not a direct measure of product quality, the LPI reflects the reliability of logistics systems that support timely, damage-free delivery, an essential component of supplier performance.

Dr. Lehmann highlighted that in ASEAN, “*logistical reliability varies enormously between countries, and Vietnam still faces bottlenecks in material flows and port processes*” (Appendix 1; I5).

Vietnam currently has 899 facilities certified to IATF 16949, the global automotive quality-management standard required by most international OEMs, compared with Thailand’s 2,017 (IATF, 2025). Foreign Tier 1 firms meet global standards, but many domestic Tier 2 and 3 suppliers still rely on build-to-print models with limited process control. Experts and research agree quality is improving quickly, but not yet enough to support high localization of advanced components across all OEMs (Detailed comparison between Vietnam and Thailand in Appendix 9).

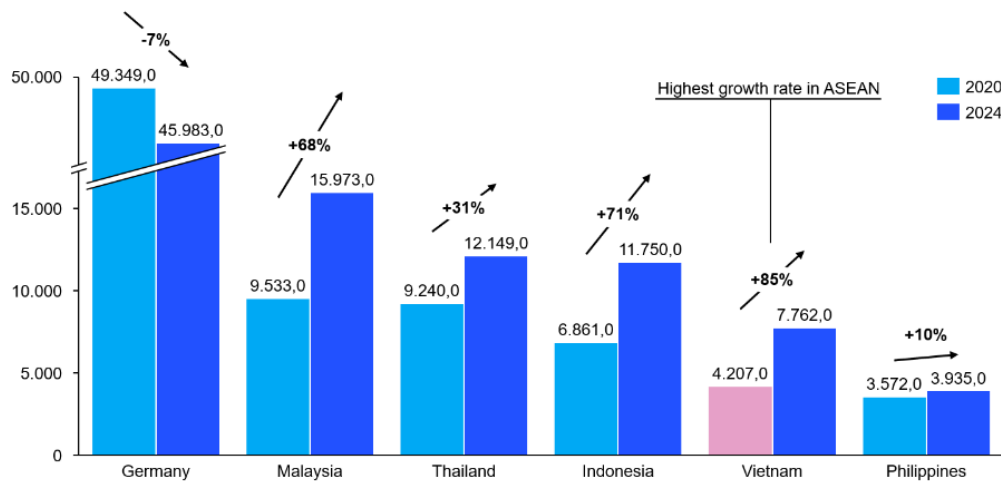


Figure 34: ISO 9001 - quality certificate improvement (own analysis, data retrieved from IAF, 2025)

6.5 Supplier Centers and Geographic Hubs

Vietnam’s automotive supplier network remains modest in scale compared to regional peers, particularly given its large and growing population. As of 2024, the country is home to approximately 578 automotive suppliers, of which only 24 are among the global top 100 suppliers by annual revenue (Own analysis based on Berylls, 2024, detailed analysis in Appendix 10).

This equates to roughly 5.7 suppliers per million inhabitants, compared to 43.7 per million inhabitants in Thailand, which hosts 3,127 suppliers with a population of around 71 million (See figure 35). Vietnam also trails in assembly infrastructure, with only 28 OEM plants and an estimated 1.3

million units of annual production capacity, versus Thailand’s 63 OEM plants and 3.4 million units (Own analysis based on Marklines, 2025).

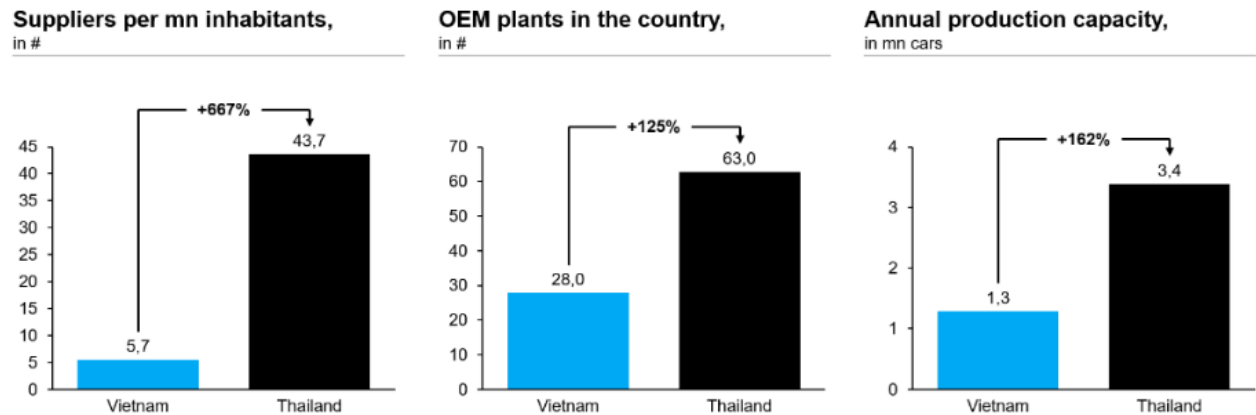


Figure 35: Comparison between supplier KPIs between Vietnam and Thailand (own illustration)

Vietnam’s supplier activity is concentrated across three primary geographic clusters that align with broader industrial zones: the northern cluster (Hà Nội, Vĩnh Phúc, Hải Dương, Hải Phòng), the central cluster (Quảng Nam, Đà Nẵng, Hà Tĩnh), and the southern cluster (Hồ Chí Minh City, Đồng Nai, Bình Dương). Each region has developed a distinct profile in terms of supplier density, investment levels, and industrial specialization (Appendix 11). According to Mr. Nguyen, this regional division reflects a “*natural evolution of FDI patterns*,” with suppliers following large OEMs and infrastructure availability (Appendix 1; I7 & **Appendix 12 for interactive supplier/OEM map**).

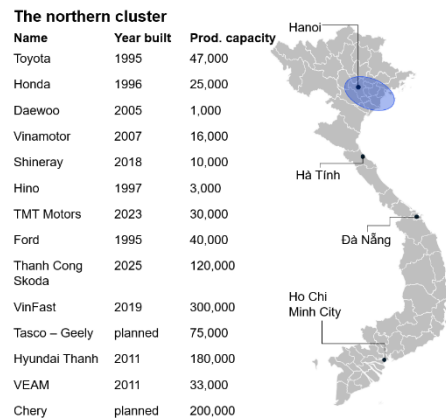


Figure 36: The northern automotive cluster

The northern cluster (See figure 36) has emerged as Vietnam’s most advanced hub, especially in supporting electric vehicle (EV) production and export-oriented supply chains. Key assembly operations include Toyota and Honda in Vĩnh Phúc, Ford in Hải Dương, and VinFast’s large-scale complex in Hải Phòng with a 300,000-unit capacity. In 2024, VinFast began constructing a second EV factory in Hà Tĩnh with a 200,000-unit capacity (VinFast, 2025a). These investments are complemented by the DEEP C industrial

zones, which provide proximity to Lạch Huyện deep-sea port, allowing efficient inbound and outbound logistics (DEEP C, 2020). Mr. Vu described northern Vietnam as the country’s “*true EV industrial center*,” with suppliers locating near VinFast to reduce logistics costs and meet localization targets (Appendix 1; I12). The region has attracted major Tier 1 suppliers such as ZF Group (chassis), Lear Corporation (interiors), and AAPICO Hitech (metal body parts), many positioned in or near VinFast’s Hải Phòng facility. New EV-oriented entrants such as Hyundai and Chery are also targeting the north. The region further hosts established commercial vehicle plants, including Vinamotor and Shineray in Hà Nội (Marklines, 2025).

The central cluster

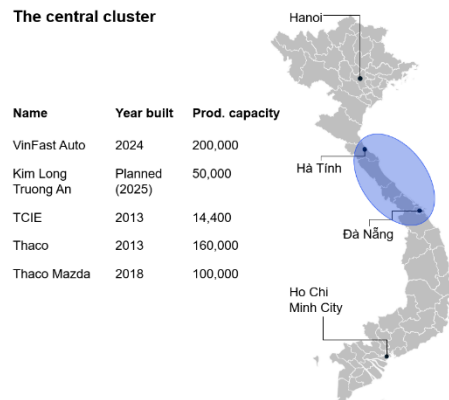


Figure 37: The central automotive cluster

The central cluster (See figure 37) is anchored by THACO, which operates an integrated manufacturing complex in Chu Lai (Quảng Nam). THACO assembles vehicles for Mazda, Kia, and Peugeot and maintains an extensive on-site supplier ecosystem producing body panels, bumpers, seats, glass, and commercial vehicle engines (Own analysis based on Marklines, 2025). While primarily inward-focused, supporting THACO’s own production, the cluster aims to expand as a regional supplier to ASEAN markets (T. T. Nguyen, 2025). Mr. De Jong noted that the central region remains “*important but less internationally integrated*,” as most suppliers are tied to THACO’s vertically integrated model, limiting spillovers to global OEMs (Appendix 1; I10). The presence of Đà Nẵng and Hà Tĩnh further supports the emerging central logistics corridor.

The southern cluster

Name	Year built	Prod. capacity
Mercedes Benz	1995	6,000
Isuzu	1995	12,000
Suzuki	1995	6,000
Mitsubishi	1994	9,000
Mekong Auto	1991	7,000
Daehan Motors	2015	20,000



Figure 38: The southern automotive cluster

The southern cluster (See figure 38) reflects Vietnam’s early ICE-vehicle investment during the mid-1990s, centered on ICE-OEMs such as Mitsubishi, Mercedes-Benz, and Ford. These assembly plants are relatively small, with capacities of 5,000-12,000 units annually (Marklines, 2025). While full vehicle assembly has declined, the south remains a base for component and Tier 2/3 suppliers. Bosch operates a high-precision push-belt plant in Đồng Nai for export, and Yazaki produces wiring harnesses in Bình Dương. Local tire makers such as Casumina (Biên Hòa) and DRC (Đà Nẵng) remain active, particularly in truck and motorcycle segments. The region benefits from a strong motorcycle parts base that is gradually expanding into automotive components. Mr. Will emphasized that many southern suppliers “possess good production discipline but lack the advanced quality systems required for automotive electronics or powertrain parts”. Nevertheless, major OEM activity is limited, and the south increasingly functions as a support and export node for northern and central clusters, as Mr. Ziechmann highlighted (Appendix 1; I11, I6).

Vietnam’s regional supplier structure thus reflects both historical development and evolving industrial policy. The north is increasingly dominant due to port access, EV-oriented investment, and strong FDI inflows. The central region is smaller but strategically important through THACO’s localized supply model. The south, once Vietnam’s assembly center, now plays a supportive role in parts manufacturing and exports, leveraging Bosch, Yazaki, and its motorcycle heritage. Prof. Schröder noted that decentralization improves resilience but warned that “capability upgrading is uneven across regions,” with northern firms advancing fastest (Appendix 1; I9).

6.6 Audi's Local Sourcing Strategy and Supplier Fit

The preceding analysis has mapped Vietnam's supplier landscape, identified key component categories and regional hubs, and highlighted the country's reliance on imported systems. To evaluate

Simplified local manufacturing capabilities of Vietnamese suppliers with value adding steps to final car

Value-add level:  Low  Medium  High	
Locally produced	Imported
  Pressed metal parts	  Engines
  Plastic injection parts	  Forged components
  Surface painting & finishing	  Seat foams
  Basic rubber components	  Safety-critical components
  Electrical assemblies (Samsung, LG)	  Advanced control modules
  Body stamping and welding	  High-tech R&D and validation

Source: Own analysis based on expert interviews and Marklines data

22

Figure 39: Simplified local manufacturing capabilities of Vietnamese suppliers with value adding steps to the final car (data retrieved from expert interviews)

for scale-up based on policy efforts, local champions, and foreign investment trends. Expert interviews consistently reinforced these structural gaps; as Mr. Vu noted, even Vietnam's most advanced OEMs *"still rely heavily on imported core systems,"* underscoring current limitations for Audi if it sought to source locally (Appendix 1; I12). Vietnam's supply chain is expanding but remains underdeveloped compared to regional leaders such as Thailand. As outlined earlier, Vietnam's localization remains concentrated in low-tech parts, while high-value systems continue to rely on imports (See figure 39). Most experts agreed that local suppliers can manage simple components but lack the engineering, testing, and materials capabilities required for complex modules, which limits Vietnam's suitability for vertically integrated premium manufacturing. For Audi, Vietnam's underdeveloped supplier landscape poses a significant challenge. The company's global supply network encompasses thousands of suppliers, yet very few are based in Vietnam. Analyzing Marklines data indicates that Audi works with roughly 2,267 suppliers worldwide, but only four of those are in Vietnam and actively supply parts for its global supply chain. Overall ASEAN is underrepresented in Audis supply chain

Vietnam's suitability as a production and logistics base for Audi, it is essential to assess the maturity of the supply chain, gaps in high-value component production, and the potential for scale-up based on policy ef-

with only 16 suppliers there compared to East Asia (China, Japan, Korea and Taiwan) with 623 suppliers' total. Across ASEAN, Audi has only 16 suppliers, compared with 623 in East Asia. Major global suppliers such as Bosch, Denso, and ZF do operate manufacturing facilities in Vietnam but are not integrated into Audi's current sourcing network (Marklines, 2025). This small footprint reflects Vietnam's overall low localization rates: only about 10-20% of typical vehicle components are produced domestically. Even long-established OEMs have limited Vietnamese suppliers—for example, Toyota Vietnam works with 60 suppliers, of which only 13 are local firms. In short, the pool of qualified, Audi-ready suppliers in Vietnam is extremely limited (Williams, 2025). This aligns closely with insights from Dr. Susanne Lehmann, who stated that the VW Group is “*very cautious about adding suppliers from fragmented markets with uneven quality regimes,*” which helps explain Audi's minimal sourcing footprint in Vietnam (Appendix 1; I5).

Onboarding new local suppliers would also be slow and resource intensive. Premium OEMs such as Audi enforce strict technical and compliance standards, e.g., the mandatory sustainability and ethics audit (“S-Rating”) and adherence to IATF 16949 (Audi AG, 2025b). Qualifying a new supplier requires extensive vetting, audits, and test runs. The VW Group keeps its supplier base deliberately small to protect quality, making it reluctant to add unfamiliar firms. Interviews indicate that automakers in Vietnam struggle to find capable sub-suppliers. Academic work similarly shows OEMs strongly prefer suppliers with full design and engineering capabilities, resorting to “build-to-print” vendors only when necessary, a sign of the “*relatively undeveloped nature of the Vietnamese automotive supplier industry*” mentioned by Dr. Lehmann (Schröder, 2017). Mr. De Jong and Mr. Will emphasized this challenge: De Jong noted that even Tier 1s “*struggle to find capable Tier 2 and Tier 3 partners,*” while Mr. Will highlighted that premium OEMs often work with fixed global supplier lists, making onboarding new Vietnamese firms “*a multi-year process at best*”

(Appendix 1; I5, I10, I11). This suggests Audi would have to rely mainly on its existing global suppliers (especially those already operating in Vietnam or the ASEAN region) rather than onboarding many new firms from scratch.

Overall, Vietnam's supplier landscape is not yet sufficiently developed to meet Audi's premium manufacturing needs. Limited high-value local production and a very small pool of existing qualified suppliers would make achieving meaningful localization extremely difficult.

6.7 Conclusion & Implications for AUDI AG

To structure the implications for Audi, the maturity of Vietnam's supplier ecosystem is evaluated across five key parameters that determine its suitability for premium automotive manufacturing. These parameters **(1) supplier depth, (2) high-tech capability, (3) low-tech capability, (4) supplier quality and (5) Audi ecosystem**, provide a systematic basis for assessing Vietnam's current position relative to other ASEAN countries and Audi's global requirements (See figure 40).

(1) Supplier depth (3/5) is limited by scale, 578 suppliers versus far larger ecosystems in Thailand, Malaysia, and Indonesia, and by regional imbalance, with only the North reaching international competitiveness. Experts agree Vietnam is still catching up from a much smaller base, with supplier density well below ASEAN benchmarks. **(2) High-tech capability (1.5/5)** is the most significant structural bottleneck. Vietnam has only 138 high-tech suppliers, far fewer than Thailand or Indonesia, and still cannot produce engines, transmissions, battery cells, ADAS systems, high-voltage electronics, or high-strength materials domestically. Experts note that even VinFast must import key EV systems, underscoring the absence of an advanced-technology supplier base. **(3) Low-tech capability (4/5)** is Vietnam's strongest dimension. The country has 356 low-tech suppliers and robust vertically integrated clusters such as THACO Chu Lai, far more than the Philippines and close to Malaysia. Experts note Vietnam's particular strength in simpler, labor-intensive

components supported by well-developed plastics, textiles, and metal-forming industries. **(4) Supplier quality (3/5)** remains below ASEAN leaders but is improving fastest. ISO 9001–certified firms rose 84.5% from 2020 to 2024, indicating a maturing quality culture and growing ISO requirements across supply chains. Vietnam’s LPI score (3.3) is close to Thailand’s (3.5), showing logistical progress despite bottlenecks. However, IATF 16949 adoption is limited, and many suppliers still lack the testing and process-control capabilities premium OEMs require. Overall, the quality base is not yet fully developed but shows ASEAN’s strongest upward trajectory. **(5) Audi ecosystem (1.5/5)** is the weakest dimension. Audi sources from only four suppliers in Vietnam, and ASEAN provides just 16. Premium OEMs remain reluctant to onboard new suppliers, and experts agree that integrating Vietnamese firms would be a multi-year process due to rigid global approval systems. However, if Vietnam leverages China’s supplier base of 481 Audi-approved firms and its favorable trade agreements, attractiveness would increase (Marklines, 2025).

Despite current limitations, Vietnam’s outlook is strong. With a **52% readiness score** and rapid

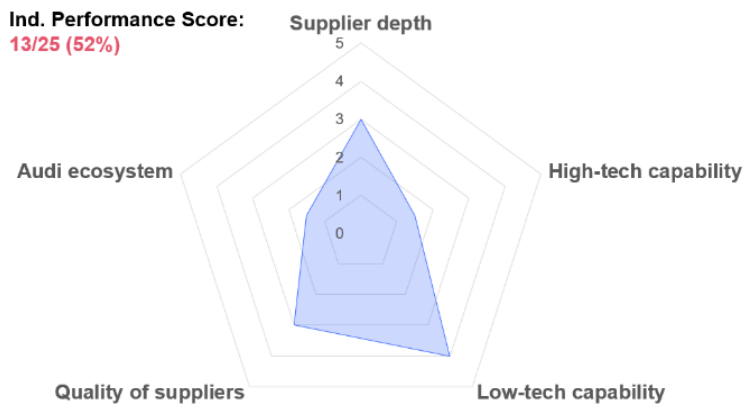


Figure 40: Radar Chart - Overall assessment of Vietnam's supplier perspective (own illustration)

progress, the expanding EV clusters in the North, improving certification adoption, and leveraging domestic anchors like VinFast and THACO. Several experts liken Vietnam to China “15 years ago”, dynamic, fast-growing, and committed.

7. Pillar 3: Manufacturing Infrastructure and Industrial Hubs in Vietnam

Over the last years, the global automotive manufacturing landscape has changed significantly. Besides the rise of China, there has been a pronounced increase in automotive production across developing countries such as Mexico, Thailand, and Vietnam. This shift of automotive production toward developing regions is largely driven by the increasing complexity of vehicle manufacturing, which demands stronger local market presence and lower production costs (UNCTAD, 2024).

In order to establish production in a developing country, an appropriate manufacturing infrastructure in this country is essential. According to Magna, a leading Canadian mobility technology company operating 338 manufacturing facilities, production infrastructure is one of the key factors to consider when selecting a location for a manufacturing site (Kleindienst, 2022).

Among the experts interviewed, several aspects were highlighted as crucial from a manufacturing infrastructure perspective when selecting a production hub for an OEM. A. Karlin, for example, highlighted cost-related factors and sustainability aspects such as wastewater management and the use of renewable energy. B. Koslowski, underlined the significance of industrial zones, particularly those offering ready-built-factories (RBFs). A. Nguyen mentioned the importance of the existence and development of ports, airports, and road networks (Appendix 1; I2, I3, I7).

7.1 Core Manufacturing Infrastructure Readiness in Vietnam

7.1.1 Energy Supply and Reliability

Vietnam's total energy supply (TES) reached 4.3 exajoules (EJ) in 2023. With this, Vietnam accounted for 0.7% of the world's total energy supply. To put this into perspective, China has the worldwide highest TES at around 168 EJ. The TES of a country generally includes all energy produced or imported, minus the energy that is exported or stored (IEA, 2025b).

As shown in Figure 41, renewable energies account for only 19% of Vietnam's total energy mix, while the remaining 81% come from conventional sources, with coal being the dominant source. However, within domestic energy production, which represents ~61% of the total energy supply, the share of renewables is with 32% considerably higher (see Figure 41).

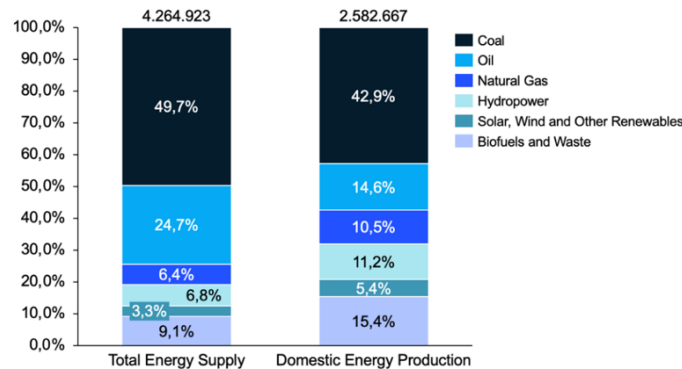


Figure 41: Total Energy Supply and Domestic Energy Production in Vietnam by Sources in 2022; in TJ (own illustration, data retrieved from IEA, 2025a)

Historically, Vietnam was an energy-exporting country. However, as shown in Appendix 13, since 2015 the country has become increasingly dependent on energy imports due to strong industrial development, with most imports coming from fossil energy sources (IEA, 2025a).

Vietnam has ambitious goals to transform its energy supply and consumption toward a higher share of renewable energy to achieve a net-zero society by 2050. To reach this target, the country has developed the Orientation for National Energy Development Strategy. Within this framework, Vietnam has set the goal of raising the share of renewables in the total primary energy supply (TPES) to 25-30% by 2045. According to the Viet Nam Energy Outlook Report, this transition would result in a significant reduction in fossil fuel imports and an increased focus on solar and wind energy. The report also projects that Vietnam's TPES will rise to 7.4-8.1 EJ by 2050 (Viet Nam Ministry of Industry and Trade & Danish Energy Agency, 2024, p. 20ff.).

Among the interviewed experts, the growing focus of the Vietnamese government on renewable energy was viewed from different perspectives. B. Koslowski confirmed that Vietnam is committed

to achieving net zero by 2050. He observed a strong regional emphasis on photovoltaic (PV) and battery storage expansion. In contrast, A. Karlin offered a more critical perspective on the government's approach to renewable energy. While she acknowledged that 30-40% of Vietnam's domestic energy production currently originates from renewables, she emphasized that most initiatives are driven by FDIs rather than by the Vietnamese government or local investors. Karlin stated that current energy policy still prioritizes energy availability over sustainability, largely due to rapidly increasing demand (Appendix 1; I2, I3).

An increase in the use of renewable energy sources is not only crucial from an ecological perspective, but also in terms of energy reliability in Vietnam. According to our expert A. Nguyen, the country's energy supply is sufficiently stable for industrial production, although it is not yet at the same advanced level as in regions such as Europe (Appendix 1; I7). Vietnam is currently facing the challenge of rapidly increasing energy demand, driven by the industrialization of the country. It is projected that the current electricity demand of 251 terawatt hours (TWh) (2023) will rise to 425 TWh by 2030 and 740 TWh by 2040 (Viet Nam Ministry of Industry and Trade & Danish Energy Agency, 2024, p. 30f.). However, also according to the findings of the Viet Nam Energy Outlook Report, the country is well-prepared to meet this growing demand (Appendix 14), indicating that the Vietnamese energy system is considered reliable enough from a production perspective (Viet Nam Ministry of Industry and Trade & Danish Energy Agency, 2024, p. 46).

7.1.2 Water Supply & Water Pollution

Besides having reliable energy sources, a stable water supply and appropriate wastewater treatment are important for the manufacturing sector. In Vietnam, the total annual exploitable water resources of around 867 billion cubic meters consist mainly of surface water sources (around 97%) resulting from major rivers such as the Cuu Long or Red-Thai Binh River, with only 3% coming from

groundwater (Pham Quy et al., 2023, p. 5ff.). In comparison, the water demand in 2022 was about 117 billion cubic meters per year, corresponding to roughly 13.5% of the total annual exploitable water resources. According to the Synthetic Report on the National Master Plan for Water Resources, this demand is expected to increase to around 131 billion cubic meters per year by 2050. Of the total water demand in 2022, approximately 8% (around 9 billion cubic meters) was related to industrial use, including water for manufacturing (Pham Quy et al., 2023, p. 7f.).



Figure 42: Flooding in Ho Chi Minh City (own picture)

According to our expert A. Nguyen, the water supply in Vietnam is generally reliable, particularly within designated industrial zones (Appendix 1; I7). However, the report by Pham Quy et al. (2023) highlights several challenges concerning Vietnam's future water security. As one of the countries most affected by climate change, Vietnam's water resources have been significantly impacted. Increasingly frequent extreme weather events, such as floods (see Figure 42) and droughts, have led to greater fluctuations in the annual discharge of Vietnam's rivers compared to the past, which in turn negatively affects the water supply (Pham Quy et al., 2023, p. 13f.). Another major challenge Vietnam faces regarding its water supply is the issue of water pollution. According to B. Koslowski, there is a clear trend of increasing pollution in rivers, canals, and beaches across Vietnam. He believes this not only harms the natural environment but also negatively impacts the country's attractiveness for FDIs, especially from Europe. Koslowski also refers to Vietnam's Extended Producer Responsibility (EPR) policy, describing it as a step in the right direction, although enforcement remains too weak (Appendix 1; I2). Vietnam's EPR is part of the Environment Protection Law introduced in 2022 and aims to make companies responsible for recycling a certain portion of their products (Huld, 2024).

A. Karlin identifies the same issue but is even more specific regarding challenges in the manufacturing sector. She states that water quality is inconsistent and often unsuitable for direct use in production processes. Consequently, manufacturing companies must install in-house purification and wastewater treatment systems (Appendix 1; I3).

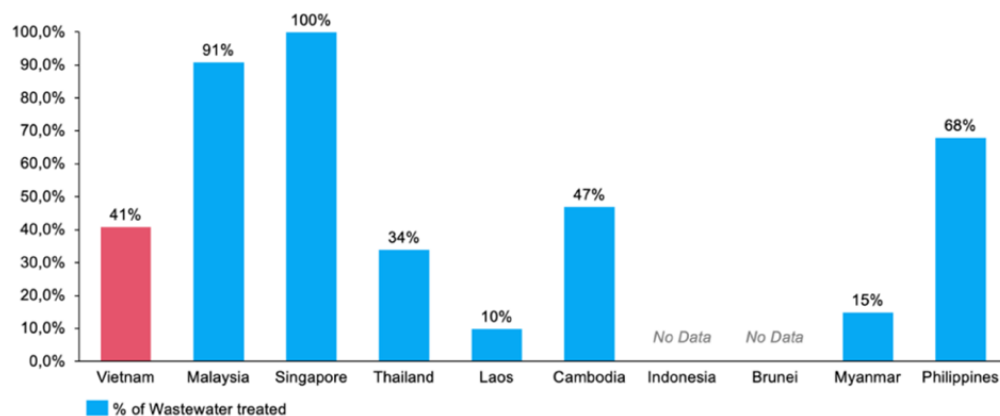


Figure 43: Overview of Wastewater Treatment in the ASEAN Region (own illustration; data retrieved from United Nations, 2025)

As illustrated in Figure 43, the wastewater treatment rate in Vietnam is only about 41%, which is relatively low compared to leading ASEAN competitors (United Nations, 2025). However, within industrial zones, the share of wastewater treatment systems meeting high environmental standards is already at 89% (Pham Quy et al., 2023, p. 9).

7.1.3 Transportation Networks

Based on information from the Global Infrastructure Hub, supported by the World Bank, Vietnam's infrastructure quality index stands at 66, with infrastructure investment amounting to 6.3% of its GDP as of 2019. While Vietnam's current infrastructure quality is rather below average compared to other ASEAN competitors, its infrastructure investment is among the highest in the region (see Figure 44). This assessment is also supported by expert A. Karlin, who states, *"(...) Vietnam is still at a lower level in terms of infrastructure. But the pace of development and improvements is very fast and should be acknowledged."* (Appendix 1; I3).

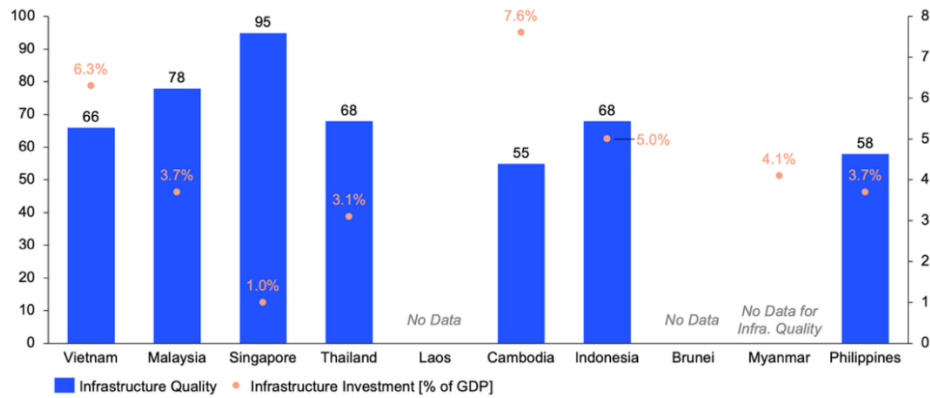


Figure 44: Infrastructure Quality vs. Infrastructure Investment in the ASEAN Region as of 2019 (own illustration; data retrieved from Global Infrastructure Hub, 2025)

According to recent data from BW Industrial, ~50% of Vietnam's current infrastructure investments are allocated to road development. Expansion efforts can also be observed in rural areas (see Figure 45). Maritime accounts for 49%, while rail and air transportation represent only 1% of total investment. (BW industrial, 2024a)



Figure 45: Street Works in Vietnam's Rural Areas: Mũi Nè (own picture)

A. Karlin confirmed that the Vietnamese government places significant emphasis on improving expressways, ring roads, and inter-provincial highways specifically serving industrial hubs (Appendix 1; I3). Of particular interest are infrastructure investments around industrial parks in Northern Vietnam, as this area offers several advantages for FDIs. Among the largest road projects completed in recent years are

Provincial Road No. 155, the Tuyen Quang - Phu Tho Expressway, and the Mai Son - National Highway 45 Expressway - all developed with the aim of improving connectivity between industrial parks and production hubs (Chi Tran & Nguyen Hanh, 2024).

Furthermore, Vietnam is also investing in seaports and airports, which are both vital for the industrial supply chain as well as passenger mobility. The country aims to handle between 1,140 and 1,423 million tons of cargo annually by 2030, including 38-47 million Twenty-foot Equivalent

Units (TEUs) of containerized goods (Ministry of Industry and Trade, 2021). Key priorities, according to A. Karlin, include the expansion of the Hai Phong Port in the north (Appendix 15) and the Cai Mep-Thi Vai Port in the south (see Figure 46 & Appendix 1; I3).

In aviation, Vietnam plans to increase the total number of airports from 22 to 30 by 2030, ensuring that 97% of the population has airport access within 100 kilometers (International Trade Administration, 2024; PwC, 2024). The centerpiece of this development is the Long Thanh International Airport (see Figure 46), which will handle up to 100 million passengers annually, thereby easing congestion at Tan Son Nhat Airport (Dezan Shira & Associates, 2024b).

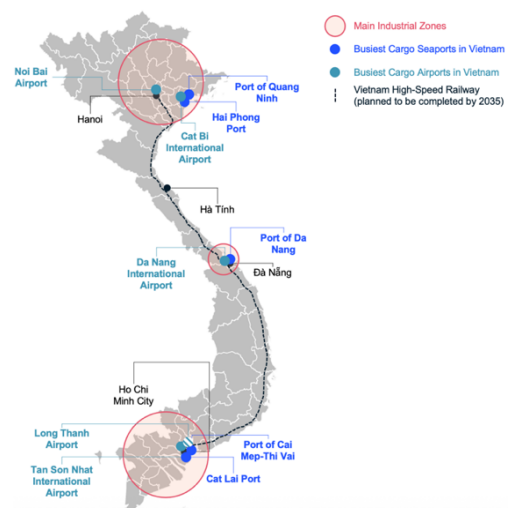


Figure 46: Main Industrial Zones, Airports, Sea-ports, and High-Speed Railway in Vietnam (own illustration, data retrieved from Beacon Technologies Ltd., 2025; Clark, 2024; Fastrans, 2025)

Vietnam's 3,143 km railway network is also set for modernization. This includes the construction of nine new routes, and the ambitious north-south high-speed railway (see Figure 46), to be completed by 2035, that will reduce travel time between Hanoi and Ho Chi Minh City from 30 to 5 hours (Dezan Shira & Associates, 2024a; NATIONAL ASSEMBLY, 2023).

Figure 46 illustrates that all major seaports and airports in Vietnam are already located in close proximity to the country's main industrial zones. Moreover, the planned high-speed railway will enhance connectivity by providing a fast link between the industrial zones from north to south (Beacon Technologies Ltd., 2025; Clark, 2024; Fastrans, 2025).

Although Vietnam has ambitious infrastructure development plans, H. Roche, views the current state of Vietnam's transportation infrastructure rather critically. He states, "People sometimes say Vietnam has "perfect infrastructure," but that's misleading. Maybe some roads are fine, but the

logistics processes behind them are inefficient” (Appendix 1; I13). With this, he emphasizes that the problem lies less in the physical infrastructure itself and more in the inefficiencies within the underlying processes.

7.2 Entry Modes for Automotive Manufacturing in Vietnam: Ready-Built Factory vs. Green-/Brownfield

7.2.1 Industrial Zones: Overview, Infrastructure, and Outlook

Several of our interviewed experts agree that Vietnam’s industrial zones provide state-of-the-art basic infrastructure, including RBFs. Koslowski, Karlin, and A. Nguyen confirm that the road infrastructure, as well as water and energy supply, are robust, well-developed, and typically included as part of agreements between companies and industrial zone partners. Koslowski also mentioned the availability of independent energy and water infrastructure, combined with renewable power sourcing in certain areas. P. Ziechmann from PwC highlighted the strong connectivity of Vietnam’s industrial zones to nearby ports, which makes them highly attractive for assembly factories. This is also illustrated in Figure 46 (Appendix 1; I2, I3, I6, I7).

According to Vietnam Briefing by Dezan Shira & Associates, the Vietnamese government plans and anticipates significant growth in its industrial zones. By 2030, approximately 221 new industrial zones are expected to be established. This expansion aims not only to increase capacity but also to improve the geographical distribution of industrial parks across the country - reducing the current concentration in the northern and southern regions (Vu Nguyen, 2025).

7.2.2 Ready-Built Factory vs. Greenfield Approach & Strategy of German OEMs

Industrial zones usually provide ready-to-use production spaces, pre-equipped with all necessary facilities and infrastructure, which can be leased by firms. These RBFs include dedicated

production lines and largely independent water and energy infrastructure (Appendix 1; I2, I7 & VALO Vietnam, 2025). Compared to establishing one's own production site from scratch, referred to in the following as "Greenfield Approach", RBFs offer certain advantages (see Figure 47).

Our interviewed experts A. Nguyen, A. Karlin, and B. Koslowski compared RBFs with the conventional greenfield approach across several categories, as visualized in Figure 47. The detailed comparison presented in the figure highlights that RBFs are generally less suitable for long-term investments and large-scale OEMs such as Audi. This is primarily due to the annually increasing leasing costs, the limited degree of operational control, and the more specific requirements, for which the standardized solutions provided by RBFs may not be fully appropriate (see Figure 47).

	Ready-Built-Factories	Greenfield Approach (w/o local partner)
Investment Costs	 Low initial investment cost; Infrastructure and land already available	High upfront investment for land acquisition & full build-costs
Leasing / Rent costs	Rent costs of ~4-6 USD/m ² /month with an annual increase of 5-7%	 Lower long-term rent or leasing costs
Setup Time	 Fast - government pre-approved; implementation within 8-12 months	Long - complex and time-consuming approval process
Flexibility	 High flexibility for expansion and relocation	Low flexibility - tied to owned land
Government Process	 Streamlined through IP management and pre-approvals	Complex - restrictions on foreign land ownership and lengthy approval processes (depending on investor nationality)
Level of Control / Individuality	Limited control - company is not the property owner	 Full control - company owns both land and facilities
Use Case	Ideal for new foreign entrants; Smaller company size	 Long-term investments; More specific requirements; Large scale OEMs needing full control

Figure 47: Ready-Built-Factories vs. Greenfield - Overview (own illustration; data retrieved from Appendix 1; I2, I3, I7)

As outlined in *Pillar 2: Supply Chain & Supplier Network*, other German automotive OEMs such as BMW have not relied on RBFs or a standard greenfield approach for their assembly operations. Instead, they have formed partnerships with local firms, choosing joint ventures or so-called "partner plants," which effectively represent greenfield or brownfield projects developed together with domestic partners. According to Koslowski, Roche, and Karlin, this collaborative model is the most suitable entry strategy for foreign automotive OEMs seeking to establish their own production facilities in Vietnam (Appendix 1; I2, I3, I13).

7.3 Availability of Local Manufacturing Partners

Another central aspect to consider when evaluating the establishment of a production site in a new country is the availability of suitable production partners. According to A. Karlin, it is important to distinguish between companies that specialize in operating the production for automotive OEMs through joint venture or contract manufacturing models, and those that focus solely on planning and constructing manufacturing facilities as part of their projects (Appendix 1; I3).

Figure 48 provides an overview of domestic companies mentioned as potential collaboration partners for producing in Vietnam. Thaco Group and TC Motor were repeatedly highlighted by several experts, as they serve as official partners for a number of foreign automotive OEMs in Vietnam – including German firms like BMW. It is also important to note that Škoda belongs to the Volkswagen Group, just like Audi, which makes TC Group an especially relevant option for a partnership (Volkswagen Group, 2025). Consequently, these two companies can be seen as having the highest potential for cooperation with Audi (Appendix 1; I2, I3, I13).

Company Name	Categorization	Main Projects & Clients	Company Origin	Potential for Audi
THACO / Truong Hai Group	Automotive contract manufacturer	Production/ Assembly for Kia, Mazda, Peugeot & BMW		
SAMCO	Automotive contract manufacturer	Production/ Assembly for Isuzu, Hino, Maz; Joint Venture with Mercedes-Benz		
TC Motor	Automotive contract manufacturer	JV with Hyundai; Production/ Assembly for Skoda; Distributor for GAC		
Hoa Binh Construction Group	General production site developer	Industrial production site developer; Projects like "Vung Tau Crown Beverage Packaging"		
Becamex IDC	General production site developer	Industrial parks "Binh Phuoc", "Binh Thuan" & "Binh Dinh" in Southern Vietnam		
CDC JSC	General production site developer	Specialized on office buildings, hotels & cargo terminals like at Cat Bi Airport		
Ha Anh Industrial Development JSC	General production site developer	Not available		

Figure 48: Overview selected Manufacturing Partners in Vietnam (own illustration; data retrieved from Appendix 1; I2, I3, Becamex Group, 2025; CDC Jsc., n.d.; Hoa Binh Construction Group, n.d.; SAMCO, 2025; TC Group, 2025; Thaco Group, 2025)

Although SAMCO is partnered with the German OEM Mercedes, its potential as a partner for Audi is limited due to its primary focus on bus and truck manufacturing (SAMCO, 2025). Other companies more known for establishing production or industrial facilities, may offer benefits for smaller

or less specialized firms; however, they are less suitable for large foreign OEMs. Consequently, the potential of these companies for Audi is relatively low (see Figure 48).

7.4 Manufacturing in Vietnam: A Brief Cost Comparison

7.4.1 Cost Comparison: Investment Costs

When comparing Vietnam with other countries from an investment cost perspective, one of the most significant cost categories are land costs. According to Roche, land acquisition costs in Vietnam are comparatively low. Karlin adds that the main cost advantage for land in Vietnam lies in the industrial parks, where the land leasing model is significantly cheaper than acquisition of land. This is primarily because land acquisition for foreign investors in Vietnam is strictly regulated by the government, resulting in lengthy approval processes (Appendix 1; I3, I13).

Figure 49 illustrates that, when comparing actual land acquisition and leasing prices among the selected automotive-focused countries, land prices in Vietnam, China, and Thailand are significantly lower than those in Germany. Among the three Asian countries, no huge difference in price per square meter could be identified. However, it should be noted that the presented figures are indicative, as land prices vary strongly across regions within each country. All values in Figure 49 were converted from local currencies into euros using the exchange rate as of November 4, 2025.

Regarding construction costs - another relevant investment cost category - A. Karlin indicated that construction costs in Vietnam are generally approximately 30% lower than in Germany. Even more noteworthy, she emphasized that, due to a strong local partner network, construction quality is comparable to, or even exceeds, that in Germany. A. Karlin recently built and opened an automotive and electronics testing laboratory in northern Vietnam (Appendix 1; I3).

7.4.2 Cost Comparison: Operating Costs

According to the benchmark from A. Karlin's company, Vinso, total operating costs, including energy, labor, maintenance, and general operations, are ~40% lower in Vietnam compared to her operations in Germany. H. Roche likewise confirms that operating costs are generally lower in Vietnam. However, he also notes that the CKD production model usually used by German OEMs in Vietnam accounts for just 10-20% of total production costs, thereby limiting the overall savings potential (Appendix 1; I3, I13).

A central cost component within manufacturing infrastructure operating costs is electricity and water consumption. Accordingly, Figure 49 provides an overview of typical electricity (in EUR per kWh) and water consumption prices (in EUR per cubic meter) for industrial use in selected countries. It should be noted that the water consumption figures include only the basic water fee and do not account for wastewater charges, which would particularly affect water prices in Germany.

				
Electricity Prices (€/KWh)	0.04 – 0.12 (off-peak vs. peak for manufacturing)	0.16 – 0.18 (Industrial electricity price with and w/o tax)	0.08 (Industrial power rate 2024)	0.07 – 0.12 (depending on voltage level and peak)
Water Consumption (€/m ³)	0.43 – 0.45 (Clean water price for material production in 2023)	1.83 (includes basic fee & cubic meter fee; no wastewater charge; year 2022)	0.73 (water prices for industry and commerce in Shanghai)	0.48 – 0.93 (Depending on region and tariff rate)
Land prices (€/m ²)	119.0 – 152.1 (rental prices of land in industrial zones north vs. south)	155.0 – 780.0 (acquisition price for industrial real estate in Munich; city vs. urban area; 2025)	107.1 (industrial land price 105 city avg., 2021)	41.0 – 125.3 (Based on industrial real estate that is open for sale in different regions)

Figure 49: Cost Comparison between selected Industrial Countries: Electricity, Water & Land (own illustration; data retrieved from AllProperty Media Co. Ltd., 2025a, 2025b; BDEW; Bundesverband der Energie-Abnehmer, 2025; BINH DUONG WATER - ENVIRONMENT JOINT STOCK COMPANY, n.d.; CEIC Data, an ISI Emerging Markets Group Company, n.d.; Daniel Slotta, 2025; German Property Partners et al., 2025; Provincial Electricity Authority, 2023; Provincial Waterworks Authority, n.d.; Shanghai Municipal People's Government, n.d.; Statistisches Bundesamt, n.d.; VietNamNet Global, 2025; Vu Nguyen, 2025)

Regarding electricity, it must be considered that rates vary significantly between off-peak and peak hours. Nevertheless, across the observed countries, Germany exhibits the highest electricity costs for industrial use, while the Asian countries show considerably lower rates. When examining water consumption costs, it should be acknowledged that prices differ by region and tariff structure; hence, the presented figures should be viewed as indicative. The overall pattern is clear, though:

water prices in Germany are higher than in the other countries. In addition, Vietnam's industrial water prices are the lowest among all observed countries (see Figure 49).

According to the European Automobile Manufacturers' Association (ACEA), the energy used to produce a car in the EU is 2.44 megawatt-hours (MWh). However, when comparing this figure with Sato and Nakata, who state that producing a car uses 62 gigajoules (GJ), or about 17.22 MWh, it becomes clear that the ACEA figure of 2.44 MWh applies only to part production and assembly (ACEA - European Automobile Manufacturers' Association, 2024a; Sato & Nakata, 2020).

Assuming that the entire energy required for car production comes from electricity and applying each country's average electricity price (see Figure 49), the savings potential for a German OEM such as Audi when producing a car in Vietnam instead of Germany amounts to ~€219.6 EUR per vehicle (see Figure 50). To put this into perspective, if Audi were to reach an annual sales level in Vietnam comparable to that of its main competitor, Mercedes-Benz (IHS Markit, 2023), the company would benefit from cost advantages of approximately €1,772,172 EUR per year solely through electricity savings when producing its vehicles in Vietnam. Based on Audi's currently projected sales level of 807 units in 2025 according to IHS Markit (2023), the cost benefits would amount to €177,217 EUR.

The total amount of water needed for the production process of a car in the EU - limited to part production and assembly - amounts to 2.84 cubic meters in 2023 (ACEA - European Automobile Manufacturers' Association, 2024b). Although water costs per produced car in Germany are more than four times higher than in Vietnam, the savings per car amount to only around €3.9 EUR in Vietnam compared to production in Germany due to increasing efficiency of production processes, making these savings negligible in comparison to electricity cost differences (see Figure 50).

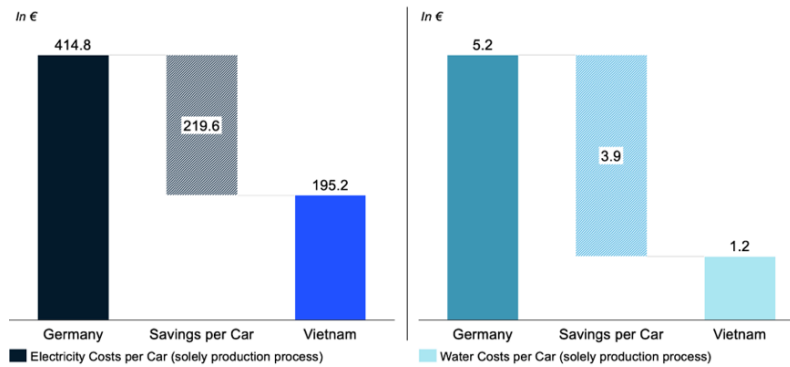


Figure 50: Electricity and Water Costs per Produced Car: Germany vs. Vietnam (in EUR) (own illustration; data retrieved from ACEA - European Automobile Manufacturers' Association, 2024; ACEA - European Automobile Manufacturers' Association, 2024; BDEW; Bundesverband der Energie-Abnehmer, 2025; BINH DUONG WATER - ENVIRONMENT JOINT STOCK COMPANY, n.d.; Daniel Slotta, 2025; Provincial Electricity Authority, 2023; Provincial Waterworks Authority, n.d.; Sato & Nakata, 2020; Shanghai Municipal People's Government, n.d.; Statistisches Bundesamt, n.d.; VietNamNet Global, 2025)

Appendix 16 additionally compares Vietnam's electricity and water costs per produced car with those of other leading automotive markets in Asia. It becomes clear that Vietnam also outperforms its ASEAN competitor Thailand and is at least on the same level as China.

Appendix 17 provides the detailed calculations underlying the cost comparison of electricity and water expenses, as well as the central assumptions used. Considering that most foreign OEMs producing in Vietnam apply a CKD approach, Appendix 17 also offers an indication of the cost calculation that focuses solely on assembly. According to Sato & Nakata, 2020, the assembly stage accounts for approximately 41% of the total energy consumed within the production process itself – excluding mining and material production. Assuming that this share of energy consumption for assembly also applies to water consumption, the total cost savings from carrying out assembly in Vietnam instead of Germany would amount to €90.8 EUR per car (Appendix 17).

7.5 Conclusion & Implications for AUDI AG

Figure 51 presents the radar chart that evaluates Vietnam's manufacturing infrastructure. Based on the applied scoring methodology, Vietnam's manufacturing infrastructure achieves **32** out of a possible **40** points, corresponding to a score of **80%**. The methodology used to construct the radar chart and calculate the final score is described in detail in Appendix 4.

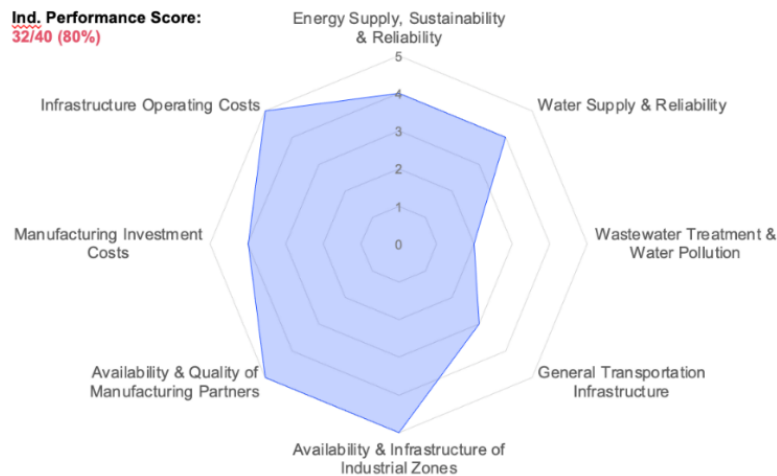


Figure 51: Radar Chart - Overall Assessment of Vietnam's Manufacturing Infrastructure (own illustration)

(1) **Energy Supply (4/5):** Reliable overall supply with a high renewable share and multiple green-energy initiatives; however, Vietnam still relies heavily on fossil fuel imports.

(2) **Water Supply (4/5):** Water resources are sufficiently large and reliable for industrial demand, though climate change poses a future risk.

(3) **Wastewater Treatment (2/5):** The wastewater treatment rate remains low at 41%, contributing directly to pollution of beaches, canals, and rivers.

(4) **Transportation Infrastructure (3/5):** Current infrastructure remains below the ASEAN average (index 66), but major investment programs are underway.

(5) **Industrial Zone Infrastructure (5/5):** Industrial zones offer state-of-the-art facilities with strong connectivity to major ports and airports.

(6) **Manufacturing Partners (5/5):** Vietnam provides an experienced production environment with strong FDI- and automotive-oriented partners such as Thaco and TC Group.

(7,8) **Investment Costs (4/5) & Operating Costs (5/5):** Investment costs are significantly lower than in Germany. Operating costs remain low even compared with Thailand and China.

Considering the overall score of 80%, and focusing solely on Vietnam's production infrastructure, the establishment of an Audi-owned production site in the country would appear well-justified.

8. Pillar 4: Labor Competitiveness and Workforce Readiness in Vietnam

Labor constitutes one of the most decisive factors in shaping the global geography of automotive production (Cody, 2015). For OEMs such as Audi, the availability, cost, and quality of labor are not merely operational considerations but also strategic determinants that influence competitiveness, localization depth, and long-term scalability (Francois et al., 2023; Nakajima et al., 2023). In a highly cost-sensitive industry where production networks are becoming increasingly globalized, labor markets are crucial to achieving both operational efficiency and long-term flexibility. As production processes become more complex and integrated, OEMs evaluate labor markets not only through cost structures but also through workforce availability, education and training systems, and institutional environments (Chin & Liu, 2014) that support stable industrial development.

Labor costs remain the single largest cost driver in automotive production, with 65% to 70% of the total conversion cost (Hirsch et al., 2025). This cost dimension is relevant for Audi, particularly in the context of the current production footprint. According to Hirsch et al., (2025), Germany's labor cost per vehicle amounts to \$3,307 USD, significantly higher than other production countries like China (\$597 USD), Japan (\$769 USD), South Korea (\$789 USD), and the United States (\$1,341 USD). As a German premium OEM, Audi's domestic production is in one of the most cost-intensive labor environments globally (see Figure 52). This structural reality underscores why labor market considerations play a central role in strategic location decisions and why regions with favorable skill-to-cost ratios are increasingly attractive for global automotive manufacturing.

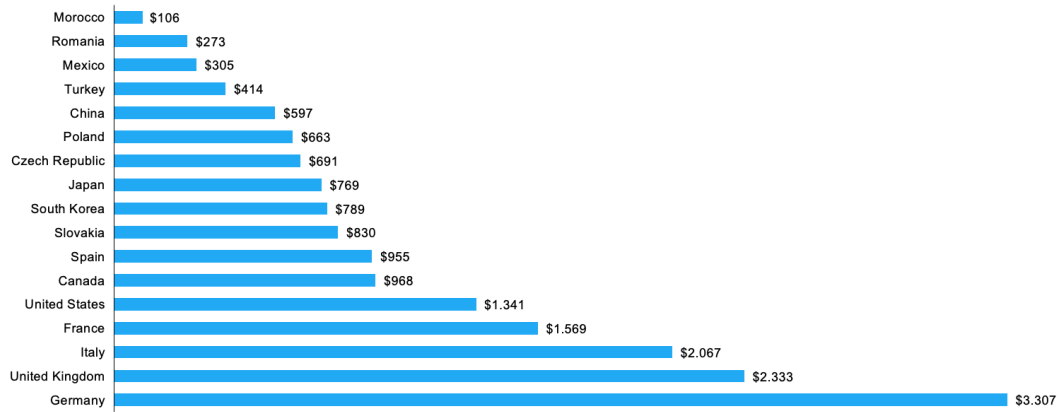


Figure 52: Labor Cost per vehicle by country (data retrieved from Hirsch et al., 2025)

Beyond pure cost considerations, labor market competitiveness is shaped by several additional dimensions that are critical for automotive manufacturing and choosing a suitable production location. These include the availability of a large and sufficiently trained workforce, the quality of technical and vocational training, as well as the overall productivity and adaptability of the labor pool (Jett, 2019). Furthermore, Jett (2019) states that institutional and policy factors, such as labor relations, employer stability, labor unions, and the efficiency of administrative processes, play an important role in where a production plant should be localized.

For AUDI AG, these labor-related factors are a central point to evaluate in a localization strategy for a future new production site. As a premium manufacturer, Audi must remain cost-efficient while also ensuring high production quality standards. As highlighted by Hirsch et al., (2025), Euro premium manufacturers (such as Audi, Mercedes, and BMW) face higher labor cost per vehicle, with \$2,232 USD compared to EV-only (\$1,660 USD), mainstream models (\$880 USD) & Chinese car manufacturers (\$585 USD), which is mainly driven by strong labor unions and strict regulations on working hours (see Figure 53). *“To maintain attractive margins, the target labor cost per vehicle for Euro premiums should be closer to \$1,500 - 33% lower than the current average.”* (Hirsch et al., 2025).

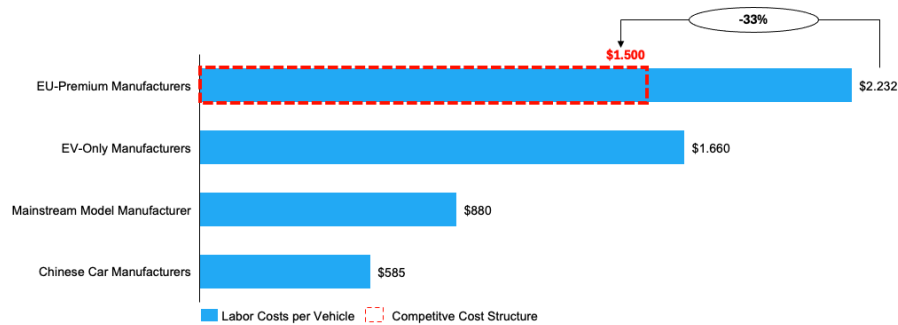


Figure 53: Automaker archetypes based on labor cost per vehicle (data retrieved from Hirsch et al. 2025)

In this context, emerging economies in the ASEAN region, notably Vietnam, offer a compelling labor market profile characterized by a young workforce, competitive wage levels, and ongoing investments into vocational training (OECD, 2025). These developments strengthen the country's position as a potential production hub capable of complementing Audi's existing manufacturing network.

To assess Vietnam's labor market in a structured and transparent manner, this chapter is organized into five analytical sections. The first examines demographic trends and labor market characteristics, followed by an analysis of wage dynamics and labor productivity. The third section evaluates skill availability and the vocational training system, while the fourth reviews the institutional and regulatory environment. The final section synthesizes these dimensions to provide a comprehensive assessment of Vietnam's strategic competitiveness as a potential production location for Audi.

8.1 Workforce Demographics and Labor Market Overview

Vietnam's demographic structure represents one of its most significant comparative advantages in the context of industrial and economic development, as well as foreign investment. With a population of around 100 million, ranking Vietnam among the top 15 most populous countries worldwide, and third in the ASEAN region behind the Philippines and Indonesia, Vietnam benefits from a broad labor base (Liao, 2024). The country is currently in a demographic-dividend phase, with roughly 67% of the population of working age (15-64). This favorable age structure supports a

broad and stable labor supply and is expected to persist until 2042, which supports industrial expansion and attracts labor-intensive and export-oriented investments (Liao, 2024).

The median age of 32.9 years reflects a young and adaptable workforce with a long productive horizon (Worldometer, 2025). The labor force participation was estimated at roughly 68% in 2024, with 77% being male and 61% being female, according to the General Statistics Office of Vietnam (2025). This indicates a relatively strong labor market engagement. Industry employs around 31% of the workforce, compared to 33% in agriculture 36% in service (The World Bank, 2025a). Industrial employment is concentrated in economic hubs such as Ho Chi Minh City, Binh Duong, Dong Nai, and Hanoi, enabling efficient access to large labor pools for foreign OEMs. According to Alex Bischoff, labor availability remains strong, while B. Koslowski notes that larger operations in peripheral regions, such as central Vietnam, face recruitment due to intense competition for skilled workers (Appendix 1; I2, I16).

Despite these advantages of a young workforce, the demographic window is time-bound. As the working-age population is expected to peak around 2042, Vietnam risks entering the middle-income trap, a stage where economies can no longer compete with low-wage economies nor yet with high-income nations on innovation. These countries get stuck between a “*GDP per capita in the range of \$1,136 to \$13,845.*” (The World Bank, 2024). To avoid this, Vietnam must continue investing in vocational training, technical education, and workforce upskilling to sustain competitiveness.

8.2 Wage Dynamics and Labor Cost Competitiveness

Over the past decade, Vietnam’s average monthly wages have risen steadily by roughly 8-10% annually, driven by sustained GDP growth and increasing industrialization (Vietnam Briefing, 2025a). The manufacturing wage is between \$200-\$300 USD per month and steadily rising due to

strong labor demand (Appendix 1; I7). In 2025, the national average reached ₫8.3 million VND ($\approx$ €272 EUR), up from ₫7.7 million VND ($\approx$ €252 EUR) in 2024 (Statista, 2025). Despite these increases, Vietnam remains among the lowest-cost labor markets in Southeast Asia, well below Thailand ($\approx$ €413 EUR) (Trading Economics, 2024b), Indonesia ($\approx$ €648 EUR) (emleyo, 2025), Malaysia ($\approx$ €638 EUR) (Trading Economics, 2024a), and the Philippines ($\approx$ €660 EUR) (Remote People, 2024) in 2024. However, B. Koslowski adds that official data often underscores income due to overtime or informal work in Vietnam (Appendix 1; I2).

Within Vietnam, wages vary considerably by region and economic structure. Urban workers in Hanoi and Ho Chi Minh City earned on average ₫10.4 million VND (€343 EUR) per month compared to ₫8.4 million VND (277 EUR) in rural areas, a 24% wage gap (Vietnam Briefing, 2025a). State-owned enterprises pay ₫10.9 million VND per month, compared to foreign-invested enterprises with ₫9.3 million VND, and private domestic firms at ₫8.1 million VND, illustrating the importance of location and ownership structure in production-cost planning.

Beyond base wages, total employment costs in Vietnam comprise mandatory social, health, and unemployment insurance contributions. As of 2025, the combined statutory contribution rate amounts to approximately 32 % of gross salary, of which 21.5 % is borne by the employer (17.5% social, 3% health, and 1% unemployment insurance) and 10.5% by the employee (8% social, 1.5% health, and 1% unemployment insurance) (Russin & Vecchi, 2024). In addition, employees are subject to personal income tax (PIT), which for average monthly earnings of ₫8.3 million VND typically amounts to around 10 % (PwC, 2025f).

Figure 54 illustrates total labor cost per employee in Vietnam versus selected ASEAN peers, China, and Germany. Even after accounting for mandatory payments, Vietnam remains among the most

cost-efficient labor markets in the region. For AUDI AG, this cost structure strengthens the case for labor-intensive production activities.

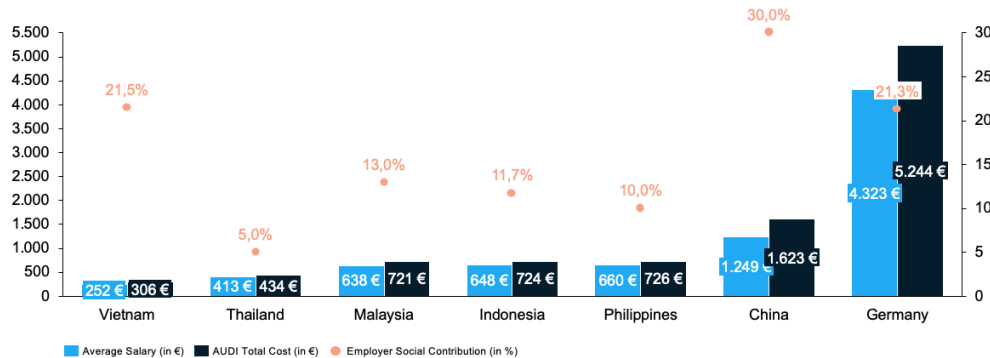


Figure 54: Comparative Overview of Wages, Employer Social Contributions, and Total Labor Costs in Selected ASEAN Countries, China, and Germany in 2024 (own illustration; data retrieved from emleyo, 2025; PwC, 2025a, 2025a, 2025b, 2025c, 2025d, 2025e, 2025f; Remote People, 2024; Russin & Vecchi, 2024; Social Security System Philippines, n.d.; Statistisches Bundesamt, 2023; Trading Economics, 2024a, 2024b, 2025)

It should be emphasized that these figures are indicative and may not reflect sector-specific or median wages. Social contribution rates also vary by region, enterprise type, and employment category; therefore, they should be interpreted as comparative benchmarks rather than precise estimates.

8.3 Labor Productivity and Efficiency

While wage levels determine immediate cost competitiveness, a comprehensive assessment must also consider labor productivity, the value created per hour (McKinsey, 2025). In the long run, rising wages require corresponding productivity gains to sustain competitiveness, as higher output per worker reflects both human-capital quality and technological capability (ILOSTAT, 2025; Lazear, 2019).

According to ILOSTAT (2025) Vietnam's labor productivity reached approximately €10.8 EUR purchasing power parity (PPP) per hour worked in 2024. Well below Thailand (€16.2 EUR/hour) and Malaysia (€26.7 EUR/hour), and far below Germany's €70.6 EUR/hour (ILOSTAT, 2025). Interview evidence confirms that gaps in vocational training and engineering practical capability

remain the main bottlenecks for productivity growth (Appendix 1; I13). Figure 55 illustrates the differences productivity differences.

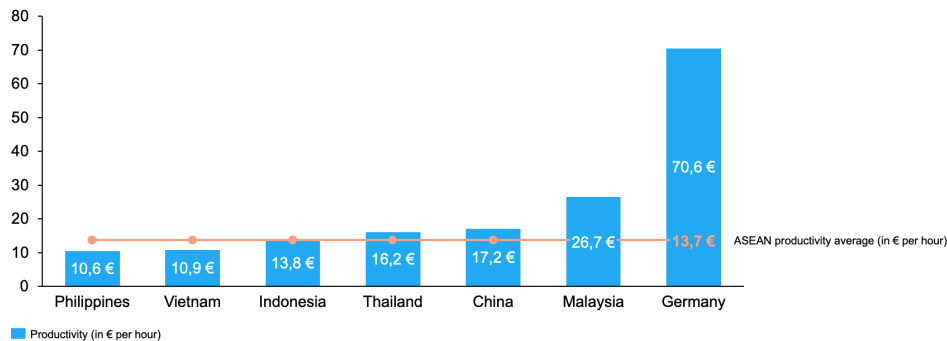


Figure 55: Labor Productivity per Hour in Selected ASEAN and Benchmark Countries in (EUR, 2024) (data retrieved from ILO-STAT, 2025 expressed as GDP per Hour worked. Values originally in USD and converted to EUR with exchange rate of 1 EUR = 1.14 USD)

Even though Vietnamese workers produce less output per hour than their German counterparts, productivity alone does not define cost efficiency. To capture the relationship between productivity and wages, Unit Labor Cost (UCL) can be calculated as the ratio of average labor cost per hour to productivity per hour (see Figure 56).

$$UCL = \frac{\text{Labor Cost per Hour}}{\text{Output per Hour}}$$

Figure 56: Own illustration showing the formula for calculating Unit Labor Costs (UCL)

Assuming 160 working hours per month, total labor costs (Figure 58) yield in Germany, with an estimated labor cost of €32.77 EUR/hour and an output of €70.6 EUR/hour, the resulting ULC equals 0.46, meaning roughly 46 cents of labor cost is required to produce one euro of output.

Vietnam with an average labor cost of €1.91 EUR and an output of €10.9 EUR, the ULC is approximately 0.18, or 18 cents of labor cost per euro output. This ratio reflects the country's labor-intensive production environment, characterized by extensive manual work and relatively low automation levels, as illustrated in Figure 57. Despite Vietnam's lower absolute productivity, the countries' substantially lower labor costs result in a more favorable cost-productivity ratio compared to Germany. This is further strengthened by B. Koslowski who describes the Vietnamese people as

hardworking and productive (Appendix 1; I2) while S. Schwemin adds that especially the younger generation is very solution-orientated (Appendix 1; I17).



Figure 57: Workers creating stools out of cement by hand (own picture)

Figure 58 compares UCLs across ASEAN peers: Thailand (0.17) and Malaysia (0.17) currently achieve the most favorable balance between wages and output, followed closely by Vietnam (0.18). In contrast, Indonesia (0.33) and the Philippines (0.43) show higher cost-productivity ratios. Interestingly, China has the highest UCL when looking at macroeconomic data, making it less efficient in terms of costing 59 cents for every 1 EUR output. In contrast, Roche states that China has a very high level of automa-

tion and efficiency in automotive production (Appendix 1; I13), with A. Nguyen noting that Vietnam can now match Chinese production prices for the first time (Appendix 1; I7), indicating China has a high UCL when looking at manufacturing.

Overall, Vietnam's low labor costs continue to offset its lower productivity, securing competitiveness for labor-intensive manufacturing. The UCL figures are our own calculations (See Appendix 18) based on public macro data and thus indicative. Values can vary across sectors, especially in technology-intensive manufacturing. Sustaining this advantage will require continued improvements in skills, education, and process efficiency. The next chapter examines these aspects in detail.

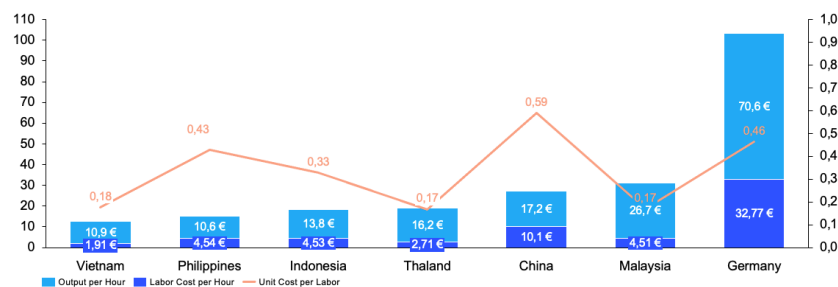


Figure 58: Unit labor costs based on output per hour and labor cost per hour in selected ASEAN and benchmark countries (own calculation; data retrieved from ILOSTAT, 2025 productivity data and average monthly wages converted to hourly labor costs with monthly wage divided by 160)

8.4 Skills and Vocational Training System

Vietnam's reliance on low-skilled labor has supported export growth and job creation in labor-intensive industries such as textiles, footwear, and basic assembly, but limits movement into high-value manufacturing. According to the World Bank Group (2024), only 5% of Vietnam's manufacturing workforce is currently classified as high-skilled, and merely 10% of the population holds a bachelor's degree. Mr. Roche explained that low wages and motivation are offset by persistent gaps in vocational training and practical engineering capabilities (Appendix 1; I13, I18).

According to the General Statistics Office of Vietnam (2024), the skill composition of Vietnam's workforce remains a key structural limitation, with 27.2% having received formal training. This imbalance is reflected in stark regional disparities: the Red River Delta records the highest share of trained workers at 37.8 percent, whereas the Mekong River Delta and Central Highlands lag behind with just 15.3 percent and below 8 percent of workers holding a university degree. The concentration of trained labor in Hanoi (50.8 percent) and Ho Chi Minh City (36 percent) further highlights the dominance of urban centers in skill development. This is also highlighted by A. Nguyen who confirmed that the strongest engineering universities are concentrated in Hanoi (Appendix 1; I7). In contrast, only 18 percent of rural workers have undergone training. Overall, the data underscore that while Vietnam's workforce is young and abundant, its technical qualification structure remains heavily urban-biased and regionally fragmented, posing challenges for industrial expansion beyond major hubs (Appendix 1; I2, I13).

To overcome these structural constraints, Vietnam has placed strong emphasis on upgrading its vocational training system and higher education network to align workforce qualifications with the demands of modern industry (Pham Van, 2024). Vietnam's vocational education and training (VET) system is administered by the Ministry of Labor, Invalids, and Social Affairs (MOLISA)

through its Directorate of Vocational Education and Training (DVET). The system currently includes over 1,888 vocational and technical institutions nationwide (VietNamNet Global, 2023). Despite this extensive network, training quality and market relevance remain uneven (Appendix 1; I2). Many institutions still focus on theoretical knowledge and rely on outdated equipment, while practical training and digital skills development remain limited (VietNamNet Global, 2023). Firms such as United Potteries Saigon compensate by running company-specific in-house training program to ensure quality and close gaps in the national system (Appendix 1; I16). The same approach is used by Bosch with own in-house training centers according to T. Aulig due to limited public vocational training (Appendix 1; I18).

The National Vocational Education Development Strategy (2021-2030) to modernize training infrastructure, enhance teacher quality, and strengthen cooperation with enterprises. The plan aims to raise the share of certified workers to 35-40 percent by 2030 and attract more high-school graduates into vocational tracks (MOLISA, 2022). A flagship initiative within this agenda is the German Vietnamese TVET Programme, jointly implemented by MOLISA and Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ), which introduces competency-based curricula and dual-training models aligned with German standards. Focusing on mechanical engineering, electronics, and automotive technology (Deutsche Gesellschaft für Internationale Zusammenarbeit, 2024).

According to educationfair.net (n.d.) there are currently 386 universities institutions in Vietnam, though only Duy Tan University ranks in the global 500 rankings (QS World University Rankings, 2025). A. Nguyen mentions that engineering graduates from Hanoi are theoretically strong and fast learners but still require mentoring to apply theory in practice (Appendix 1; I7). T. Aulig supports and highlights this observation, emphasizing that while Vietnamese graduates possess solid academic foundations, they often lack critical thinking and problem-solving abilities due to limited

practical exposure in the current education system (Appendix 1; I18). University-industry collaboration remains weak, with many programs emphasizing theory rather than practical, enterprise-ready skills (T. T. D. Nguyen et al., 2025).

The gap between theory to practical transfer of knowledge is also highlighted by industry experts (Appendix 1; I7, I13, I18). Vietnam allocates around 3.5 to 4 percent of GDP to education (2018 to 2023), similar to regional peers (Statista, 2024b). But R&D investment remains low with 0.4% of GDP in 2023, ranking the country currently 66th worldwide, compared to neighboring countries such as Malaysia (1%), China (2.54%), and South Korea (4.6%) (Rödl & Partner, 2025). Also, Roche mentioned that Vietnam still has limited R&D and managerial capacities (Appendix 1; I13).



Figure 59: Labor Work in Vietnam (own picture)

Figure 59 illustrates Vietnam's labor-intensive manufacturing environment, where manual craftsmanship continues to play a central role in production processes. Overall, Vietnam's education and training systems have expanded but continue to struggle with skill alignment, research capacity, and enterprise collaboration, core determinants of long-term productivity and competitiveness. The next section examines how institutional and regulatory frameworks shape labor-market dynamics.

8.5 Institutional and Regulatory Environment

Vietnam's labor market is governed by the Labor Code (2019, effective from 2021), which harmonizes domestic labor standards with international practices and increases flexibility for employers. (The National Assembly, 2019) Two principal contract types exist. Indefinite-term and definite-term contracts (up to 36 months, renewable once). The code maintains a maximum working week

of 48 hours and allows overtime up to 40 hours per month and 200 hours per year, extendable to 300 hours in selected industries such as manufacturing and energy. The minimum wage system is region-based, reflecting cost-of-living differences across four wage zones, ranging from ₫3.7 million VND (€121 EUR) in rural areas to ₫5.31 million VND (€176 EUR) in major cities (Vietnam Briefing, 2025c). Interview evidence indicates that dismissal remains complex for companies. While it is almost impossible to fire employees, the employer often has to negotiate a “*golden handshake*” to end employment (Appendix 1; I2, I17).

In addition to wage and hour provisions, the Labor Code emphasizes worker protection and social inclusion. The retirement age is gradually increasing to 62 years for men (by 2028) and 60 years for women (by 2035). The code prohibits workplace discrimination based on gender, race, disability, or health status and includes specific provisions for female employees, such as maternity protection, breastfeeding breaks, and menstrual leave. Employers contribute 21.5 percent of an employee’s gross salary to social, health, and unemployment insurance schemes, while employees contribute 10.5 percent, which according to A. Nguyen aligns with western standards (Appendix 1; I7). Employees are entitled to a minimum of 12 days of paid annual leave, with an additional day granted for every five years of service, and 11 public holidays each year. Sick leave is covered by the social insurance system, giving employees 30-60 days of paid absence per year, usually compensated at 75 percent of their salary (The National Assembly, 2019). A. Nguyen adds that younger generations increasingly take “*sad leaves*” to prioritize mental health. (Appendix 1; I7).

The 2024 Trade Union Law, effective July 2025, extends union membership rights to foreign employees and broadens enterprise-level unions. However, unions remain largely state-aligned and hold limited influence over managerial decisions (Vietnam Briefing, 2025b). Progress towards independent representation, envisioned in the EU-Vietnam FTA, remains low (Appendix 1; I2). In

practice, companies emphasize that constructive relationship with local unions remain essential to sustain mutual trust and prevent conflicts (Appendix 1; I16).

8.6 Conclusion & Implications for AUDI AG

Figure 60 presents the radar chart evaluating Vietnam's labor environment across five dimensions: labor cost competitiveness, workforce availability, skills and vocational training, labor productivity, and the regulatory labor framework. Based on the applied scoring methodology, Vietnam achieves **19 out of 25 points**, corresponding to a **performance score of 76%**. The methodology used to construct the radar chart and determine the individual ratings is described in Appendix 4.

(1) Labor Cost Competitiveness (5/5): The results confirm that Vietnam offers high overall labor competitiveness, primarily driven by its exceptionally low labor costs and favorable demographic structure. Labor cost competitiveness, as total employment costs remain among the lowest in Southeast Asia, approximately €306 EUR per month compared to €5,244 EUR in Germany. This cost structure could support Audi in achieving the targeted 33 percent labor-cost reduction from \$2,232 USD to \$1,500 USD per vehicle, as identified by (Hirsch et al., 2025).

(2) Workforce availability (4/5): Reflecting the country's demographic strength. Vietnam's population of nearly 100 million provides a large and young labor pool, with roughly 67 percent in working age. However, the concentration of qualified labor in urban and industrial centers slightly constrains the availability of skilled workers in peripheral regions, preventing a maximum score.

(3) The skills and vocational training system (2/5): remains the main structural limitation. Only 27% of the workforce has received formal training, and the gap between theoretical education and practical skills continues to constrain productivity. Experts emphasized that while initiatives such as the National Vocational Education Development Strategy and the German-Vietnamese TVET Program are improving training quality, progress remains gradual (Appendix 1; I7, I13, I16).

(4) Labor productivity (4/5): Although output per hour worked remains moderate at €10.8 EUR, lower than in Thailand (€16.2 EUR) and Malaysia (€26.7 EUR), Vietnam's overall cost-productivity balance remains favorable. The country's Unit Labor Cost (ULC) stands at €0.18 EUR, meaning that only 18 cents of labor cost is required to generate €1 EUR of output. This indicates that, despite its lower absolute productivity, Vietnam maintains a strong efficiency advantage through low labor costs, justifying a rating of four.

Regulatory labor framework (4/5): Reflecting a stable and predictable environment. Despite rigid dismissal rules, Vietnam's industrial relations remain cooperative and low in conflict frequency (Appendix 1; I2). The new Trade Union Law expands consultation rights while maintaining state alignment, preserving an employer-friendly balance.

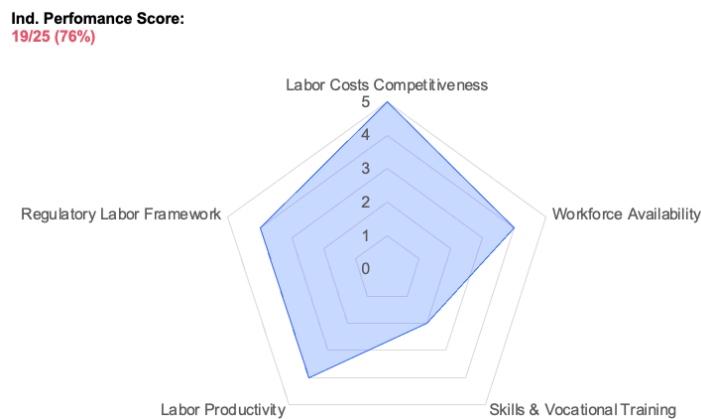


Figure 60: Radar Chart - Overall Assessment of Vietnam's Labor Competitiveness and Workforce Readiness (own illustration)

From the perspective of the labor pillar, Vietnam's overall conditions justify the establishment of a production site from a workforce and cost standpoint. The country combines exceptional labor cost competitiveness, a large and youthful workforce, a good overall productivity ratio when taking UCL into account, and a stable institutional framework, all of which create favorable conditions for labor-intensive and component-based manufacturing activities. However, the depth of technical skills and quality of vocational training suggest that high-value manufacturing or R&D operations would not yet meet the standards of Audi's European facilities

9. Overall Conclusion & Recommendation for AUDI AG

This research sought to answer the research question: “*To what extent does Vietnam present a strategically viable location for a production and logistics hub within AUDI AG’s global value chain?*”

By analyzing Vietnam’s automotive market alongside our 4 strategic pillars, Political Landscape, Supplier Network, Manufacturing Infrastructure, and Labor Market, this thesis derives a clear verdict. Vietnam exceeds the threshold of 50% for each pillar, with an overall score of 68% confirming it is a strategically viable but configuration-dependent location for Audi (see Figure 61).

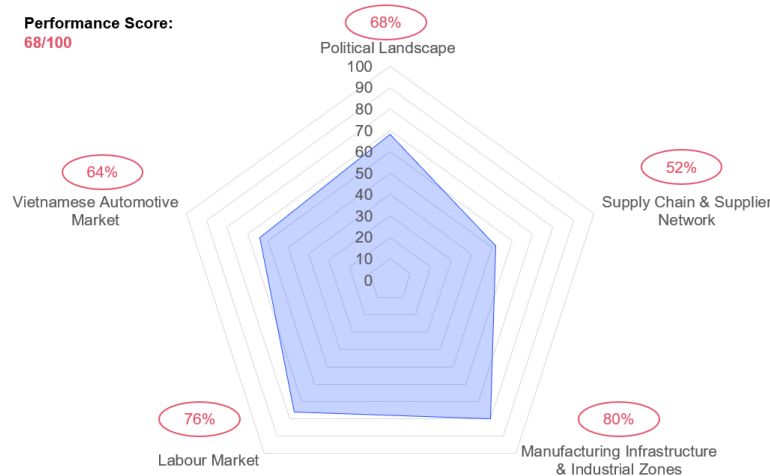


Figure 61: Radar Chart - Overall assessment of Vietnam’s suitability as Production Site for Audi (own illustration)

A detailed examination using Yip’s globalization drivers was also conducted, with full analysis available in Appendix 19; this overall framework confirmed that Vietnam’s governmental, cost, and long-term market drivers strongly support a selective production footprint.

The **Vietnamese automotive market** scores **64%**. While still modest in size, it is one of the fastest growing markets in ASEAN, driven by an increasing middle class, an uprising local OEM, and strong EV momentum. This creates a solid long-term demand base for Audi, even if short-term premium volumes remain limited. Moreover, a status-driven consumer mindset and high brand awareness further strengthen the market environment for premium OEMs.

Group Part

The **political landscape** scores **68%**, reflecting Vietnam's attractive incentive regime and one of the world's densest trade agreement networks (EVFTA, RCEP, ATIGA), which together provide substantial advantages and broad import / export access. Structural risks remain in the form of administrative opacity and inconsistent regulatory enforcement.

The most challenging pillar is the **supplier network**, scoring **52%**. Although Vietnam's supplier base is expanding and improving, evidenced by an 84.5% increase in ISO 9001 certifications since 2020, it remains significantly less mature than Thailand's. Strengths lie in labor-intensive, low-tech components (plastics, harnesses, interiors, metal parts), while high-value systems such as power-trains, batteries, ADAS, and HV electronics are largely absent. Vietnam is therefore not yet ready for deep localization of premium models but is well suited for CKD assembly with imported high-tech components.

In contrast, **manufacturing infrastructure** scores **80%**. Vietnam, particularly the Hanoi–Hai Phong corridor in the North, offers modern industrial zones with state-of-the-art facilities, competitive energy and land costs, and robust transportation connections via deep-sea ports, airports, and expressways. The region already hosts major OEMs, including the local champion VinFast and global Tier-1 suppliers, highlighting its readiness for export-oriented automotive production. In addition, Vietnam benefits from experienced FDI- and automotive-oriented manufacturing partners, which are crucial for foreign automotive OEMs seeking to produce in the country.

The **labor market** scores **76%**, supported by a young workforce, strong labor-cost competitiveness, and a favorable cost-productivity ratio. Although practical skills remain uneven and only around 27% of workers have formal training, the availability of semi-skilled labor and expanding vocational programs make the country well suited for assembly-focused operations, while high-value manufacturing remains limited.

Group Part

Based on Vietnam's overall score of ~68% and the positive assessment of four of the five pillars, this thesis recommends that Audi enter Vietnam through a CKD-based production model in partnership with an established local manufacturer. Given the country's still-limited supplier depth, particularly for high-value components, a CKD approach is the most viable way to bypass these constraints while ensuring Audi's quality standards. This strategy is fully aligned with how other German premium OEMs operate in Vietnam; both Mercedes-Benz and BMW rely on CKD assembly with local partners or joint ventures to successfully manage the same supply-chain limitations. Northern Vietnam, especially the Hanoi-Hai Phong corridor, represents the optimal location for Audi. The region offers the country's strongest industrial infrastructure, modern export-oriented zones, and excellent port access, while also benefiting from close proximity to China for importing high-tech components not available locally. In addition, Vietnam's supplier base is increasingly shifting northward, clustering around VinFast's facilities, which has become the gravitational center for new Tier-1 and Tier-2 investments. This concentration further strengthens the region's suitability as an automotive hub.

A key advantage for Audi lies in synergies with Skoda, which has already established CKD production in the North through its partnership with TC Group. Because both Skoda and Audi share the Volkswagen Group's MQB platform, co-location can offer substantial benefits: shared inbound logistics, overlapping supplier bases, and potential economies of scale in non-brand-critical modules. Several Audi models operate on MQB architectures, such as the Audi A3, Q2, and certain variants of the Q3, making Vietnam an ideal location to leverage cross-brand platform efficiencies within the VW Group. Audi should therefore begin with a CKD-heavy configuration, importing high-value systems such as powertrains, batteries, HV electronics, and ADAS modules, while localizing labor-intensive, lower-complexity components where Vietnam already demonstrates

competitiveness. As the supplier base around VinFast and Skoda continues to mature, Audi can gradually expand localized content. By pursuing this phased CKD strategy, supported by Skoda synergies, MQB platform overlap, and the region's increasingly concentrated supplier base, Audi can establish a competitive and future-proof manufacturing presence in Vietnam while effectively managing the limitations of the local supply chain.

10. Limitations

This research is naturally subject to limitations. First, while the study employs a mixed-methods approach, primary data collection was restricted to qualitative expert interviews and field observations from Vietnam, whereas quantitative analysis relied exclusively on secondary sources. This influences our radar framework; the assessment relies heavily on our expert insights and regional comparisons, lacking a deeper, quantitative dataset. Second, the radar chart assumes equal weighting for all pillars. In practice, Audi would likely assign differential weights to align with specific priorities and regional strategy. Third, the research did not deeply investigate operational synergies with the wider Volkswagen Group or Audi's specific internal supply chain requirements. Consequently, the findings reflect broad strategic positioning rather than detailed logistical planning. Fourth, data collection was constrained by limited access to key industry incumbents. Despite outreach to multiple established actors within the Vietnamese market (e.g., Thaco, Skoda), formal interviews could not be secured. Fifth, practical constraints, including the fixed research period and page limitations, necessitated a broad strategic focus rather than exhaustive technical analysis. Finally, the findings rely on scenario-based assumptions that inherently involve uncertainty. No financial feasibility modeling (e.g., ROI or cost simulations) was included; therefore, the recommendations serve as a strategic compass rather than a precise economic validation. Future research should address these limitations.

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Appendix

Appendix 1: Experts Interviews – Summary Table

#	Name	Position	Company	Short Description	Link
I1	Tien Nguyen	Associate, Business Intelligence	Dezan Shira & Associates	Local business entry consultant with a focus on the automotive sector	Click Here
I2	Björn Koslowski	Deputy Chief Representative	Delegation of German Industry and Commerce in Vietnam	Promoting economic exchange between Vietnam and Germany by advising and supporting in partner/location search, sourcing, and personnel recruitment etc.	Click Here
I3	Angelina Karlin	Managing Director and Founder	Vinso Global Ltd.	Operates automotive engineering services and testing laboratories in Germany and Vietnam	Click Here
I4	Maximilian Grethe	Regional Sales Manager, ASEAN Region	Audi Singapore Pte Ltd	Responsible for sales planning, logistics, order intake, product and price management for whole Southeast Asia	Click Here
I5	Dr. Susanne Lehmann	Managing Director	Volkswagen Group (Malaysia)	Responsible for the entire ASEAN region for AUDI AG and recently oversaw the launch of their first manufacturing footprint in Malaysia.	Click Here
I6	Patrick Oliver Ziechmann	Head Of Automotive center of Excellence ASEAN	PwC Germany	Senior Partner at PwC for Deals in Southeast Asia and member of the German-Malaysian Institute's Industry Advisory Council, focused on transformation, restructuring, and automotive strategy in the ASEAN region.	Click Here
I7	Anh Tuan Nguyen	CEO and Founder	OCOTEN Engineering Co. Ltd.	Advising German and international automotive clients in engineering questions; Work experience in the German automotive industry.	Click Here
I8	Keith Doten	Director	PwC Vietnam	Director of Deals Strategy at PwC Vietnam, advising clients on market entry, growth, and transaction strategies across Southeast Asia.	Click Here
I9	Prof. Martin Schröder	Associate Professor	Ritsumeikan University	Academic expert on global value chains and the automotive industry, with extensive research and publications on supply chain infrastructure in ASEAN and Vietnam, including the shift to electric vehicles and digitalization.	Click Here
I10	André de Jong	Managing Director	Bosch Vietnam	Managing Director of Bosch Vietnam and ASEAN Business Unit Head electrification, leading growth and solutions in mobility, including components and technologies for motorcycles and emerging electric vehicle platforms.	Click Here
I11	David Will	Plant Manager / General Director	Draexlmaier Vietnam	General Director of DRÄXLMAIER Vietnam and board member of the German Business Association (GBA) Vietnam, leading the company's rapid expansion and operational excellence within Vietnam.	Click Here

I12	Pham Van Vu	Country Sales Manager (Vietnam) at ZF Asia	ZF Vietnam	Country Sales Manager for ZF in Vietnam, driving business development and market growth while working closely on the strategic partnership between ZF and VinFast to advance Vietnam's automotive supply chain and mobility ecosystem.	Click Here
I13	Hoai Anh Roche	Director	Alvarez & Marsal Vietnam	Advising clients in growth strategy, cost optimization, operational improvement, and corporate finance; Previously working as manager at Grab	Click Here
I14	Lasse Pedersen Hjortshøj	Head of Economic Diplomacy and Trade	The Royal Danish Embassy in Hanoi	Leads the consulting arm of the Danish embassy, helping Danish companies navigate the political environment in Vietnam	Click Here
I15	August Rosenbaum	Commercial Advisor	The Royal Danish Embassy in Hanoi	Working in the consulting arm of the Danish embassy, helping Danish companies navigate the political environment in Vietnam	Click Here
I16	Alexander Bischoff	Owner & Former Board and Chair member of GBA and EuroCham	United Potteries Saigon	+25 years of work experience in Vietnam; Investor in the Vietnamese market, CEO, and former political representative involved in strengthening Germany x Vietnam relations.	Click Here
I17	Rolf Schweimin	Operations Manager	United Potteries Saigon	Logistics and operations expert with over 10 years of work experience in Vietnam	Click Here
I18	Prof. Dr. Thomas Aulig	Vice President	Vietnamese German University (VGU) Vietnam	Vice President of the Vietnamese-German University (VGU) with extensive experience in higher education management and international collaboration, fostering German-Vietnamese partnerships in technical education and industry-oriented research.	Click Here

Appendix 2: Coding Scheme

Primary Code	Secondary Code
Government	Trade Agreements (FTAs)
	Incentive Structure
	Political Stability
	Corruption
	State Institutions
Supply Chain and Local Supplier Network	Supplier depth
	Localization & local content ratios
	Supplier quality
	Supplier clusters
	Supplier technology readiness
	Local champions (VinFast & THACO)
Manufacturing Infrastructure	Energy Supply, Sustainability & Reliability
	Water Supply & Reliability
	Wastewater Treatment & Water Pollution
	General Transport Infrastructure
	Availability & Infrastructure of Industrial Zones
	Availability & Quality of Manufacturing Partners
	Manufacturing Investment Costs
	Infrastructure Operations Costs
Workforce	Labor Cost Competitiveness
	Workforce Availability
	Skills & Vocational Training
	Labor Productivity
	Regulatory Labor Framework
Automotive Market	Market Volume
	Automotive Infrastructure
	Automotive Customers
	Competition
	Market Growth

Appendix 3: Interview Guides

Pillar	Link
(1) Political Landscape and Incentives for Automotive Manufacturing in Vietnam	Click Here
(2) Automotive supply chain and supplier network in Vietnam	Click Here
(3) Manufacturing Infrastructure and Industrial Hubs	Click Here
(4) Labor Competitiveness and Workforce Readiness in Vietnam	Click Here

Appendix 4: Assessment methodology of the radar charts for evaluating the deep-dive pillars

To structure and evaluate the findings from the analysis, a radar chart is applied. A radar chart can be used to relate multiple parameters, each mapped to a specific axis. Although each axis represents a different dimension, radar charts unify all parameters into a single metric.

Assessment Framework Methodology

The framework used to evaluate the performance of each pillar in relation to the research question follows a three-step calculation process:

(1) Assigning a performance score to each dimension within a pillar

Each parameter is assigned a performance score on a scale from 1 to 5. This score reflects Vietnam's current performance in the respective parameter and is derived from the collected and analyzed primary and secondary data. It should be noted, however, that the score provides an indicative assessment based on available insights rather than an absolute or definitive evaluation.

(2) Calculating the total performance score of each pillar

The total performance score for each pillar is obtained by summing all parameter-level ratings (each ranging from 1 to 5). The resulting score represents the overall performance of the pillar, where higher values indicate stronger performance.

$$\text{Total Pillar Performance Score} = \sum \text{Performance Score per Dimension}$$

(3) Determining the pillar performance ratio and standardized value

The performance ratio of each pillar is calculated by dividing its total performance score by the maximum possible score. The maximum possible score is defined as the number of parameters multiplied by the maximum rating of 5. This ratio indicates how well Vietnam performs in a given pillar, expressed as a value between 0% and 100%, and reflects how close the actual score is to the theoretical maximum.

This standardized ratio subsequently allows for a direct comparison of the pillars, as all values lie on a uniform scale from 0% to 100%.

$$\text{Max Pillar Score} = \# \text{Dimensions} * 5$$

$$\text{Pillar Performance Ratio} = \frac{\text{Pillar Total Performance Score}}{\text{Max Pillar Score}}$$

Assessment Scoring Methodology

A score of 1 indicates that the respective dimension is at the lowest possible level compared with the other countries considered. A score of 2 reflects a slightly better level, though still characterized by more disadvantages than advantages. A score of 3 represents a balanced performance with an equal mix of advantages and disadvantages derived from the interviews and secondary data. A score of 4 indicates that experts and secondary sources generally view this dimension as a strong advantage for the country, albeit with some remaining drawbacks. A score of 5 is assigned only when the dimension displays exclusively positive characteristics, positioning the country as a global leader in that area.

All scores derived from this framework should be interpreted as evidence-informed estimates rather than absolute quantitative measures. Scores are grounded in qualitative expert interviews and

secondary source analysis, which inherently introduce interpretive elements. The performance assessments, while rigorously applied, reflect researcher judgment regarding Vietnam's performance in each parameter. Therefore, the resulting scores represent reasoned evaluations of complex phenomena rather than objective measurements.

Appendix 5: Price Analysis of selected OEMs in the Vietnamese Passenger Car Market

Source: Own illustration; data retrieved from AUDI VN, 2025; BYD Saigon, 2025; Ford Vietnam Limited, 2025; Hyundai TC Motor, 2025; Jaguar Land Rover, 2025; KIA Viet Nam, 2025; Lexus, 2025; Mazda Việt Nam, 2025; Mercedes-Benz Vietnam, 2025; Mitsubishi Motors Corporation, 2025; Porsche Việt Nam, 2025; Skoda Vietnam, 2025; THACO AUTO 2025, 2025; Toyota Việt Nam, 2025; VinFast, 2025; Volvo Car Corporation, 2025; Zigmwheels, 2025.

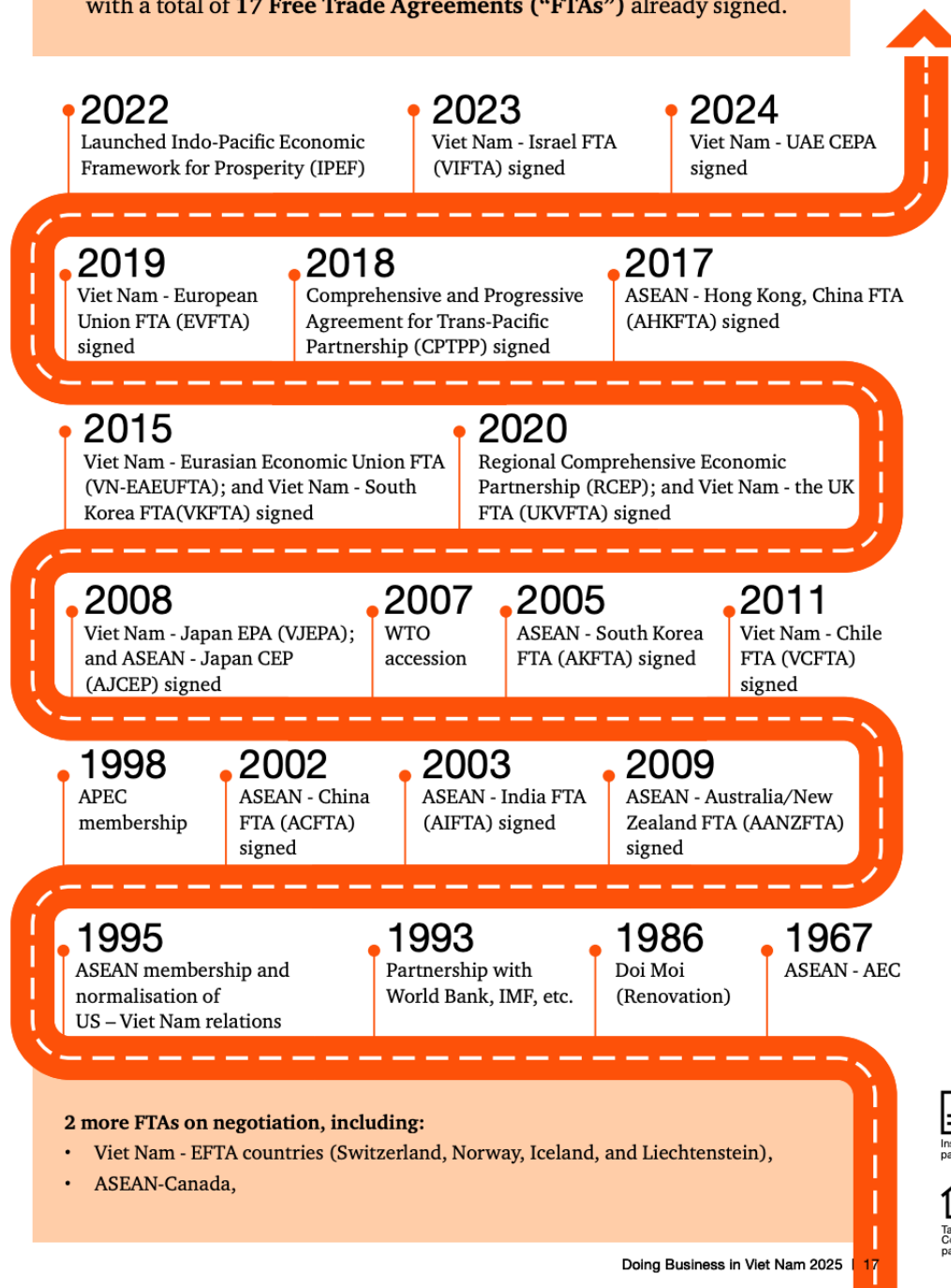
Brand	Product 1 (medium)	Price 1 (in VND)	Product 2 (higher class)	Price 2 (in VND)	Product 3 (lower class)	Price 3 (in VND)	Price Range	Categorization
Audi	Audi A5	2.199.000.000	Audi Q6 e-tron	3.199.000.000	Audi Q2	1.590.000.000	1.5 bn - >4.0 bn VND	Premium
BMW	BMW 5 Series	2.589.000.000	BMW X5	3.814.000.000	BMW 3 Series	1.599.000.000	1.5 bn - >4.0 bn VND	Premium
Mercedes	E-Class	2.090.000.000	EQE SUV	3.555.000.000	C-Class	1.599.000.000	1.5 bn - >4.0 bn VND	Premium
Land Rover/Jaguar	Jaguar XF	2.640.000.000	New Defender	3.520.000.000	Jaguar XE	2.310.000.000	2.0 bn - >4.0 bn VND	Premium
Lexus	ES 250	2.620.000.000	NX 350h	3.420.000.000	-	-	2.5 bn - >4.0 bn VND	Premium
Volvo	XC 60	2.279.000.000	XC 90	4.370.000.000	XC40	1.820.000.000	1.5 bn - >4.0 bn VND	Premium
VinFast	VF7	799.000.000	VF9	1.499.000.000	VF5	529.000.000	0.4 bn - 1.5 bn VND	Entry / Mass Market
Toyota	Corolla Altis	725.000.000	Fortuner	1.055.000.000	Vios	458.000.000	0.4 bn - 1.5 bn VND	Entry / Mass Market
Hyundai	Tucson	769.000.000	Palisade	1.469.000.000	Elantra	599.000.000	0.4 bn - 1.5 bn VND	Entry / Mass Market
Kia	K5	849.000.000	New Carnival	1.299.000.000	K3	584.000.000	0.4 bn - 1.5 bn VND	Entry / Mass Market
Ford	Everest	1.099.000.000	Mach-E	2.499.000.000	Territory	762.000.000	0.7 bn - 2.5 bn VND	Mid-Range
Porsche	Taycan	4.620.000.000	Panamera	6.420.000.000	Macan	3.350.000.000	3.0 bn - >6.0 bn VND	Luxury
Mitsubishi	New Xpander	659.000.000	New Pajero Sport	1.130.000.000	Xforce	599.000.000	0.4 bn - 1.5 bn VND	Entry / Mass Market
Honda	Civic	789.000.000	Accord	1.320.000.000	City	499.000.000	0.4 bn - 1.5 bn VND	Entry / Mass Market
Skoda	Kushaq Style	649.000.000	Kodlian Premium	1.450.000.000	Slavia Active	468.000.000	0.4 bn - 1.5 bn VND	Entry / Mass Market
BYD	Seal	1.190.000.000	Sealion 8	1.596.000.000	Atto 2	669.000.000	0.7 bn - 1.6 bn VND	Entry / Mid-Range
Mazda	Mazda 6	769.000.000	Mazda CX-8	949.000.000	Mazda 2	418.000.000	0.4 bn - 1.5 bn VND	Entry / Mass Market

Appendix 6: Vietnam FTAs

Source: (PwC Vietnam & Vietnam Chamber of Commerce and Industry, 2024)

The integration journey milestones

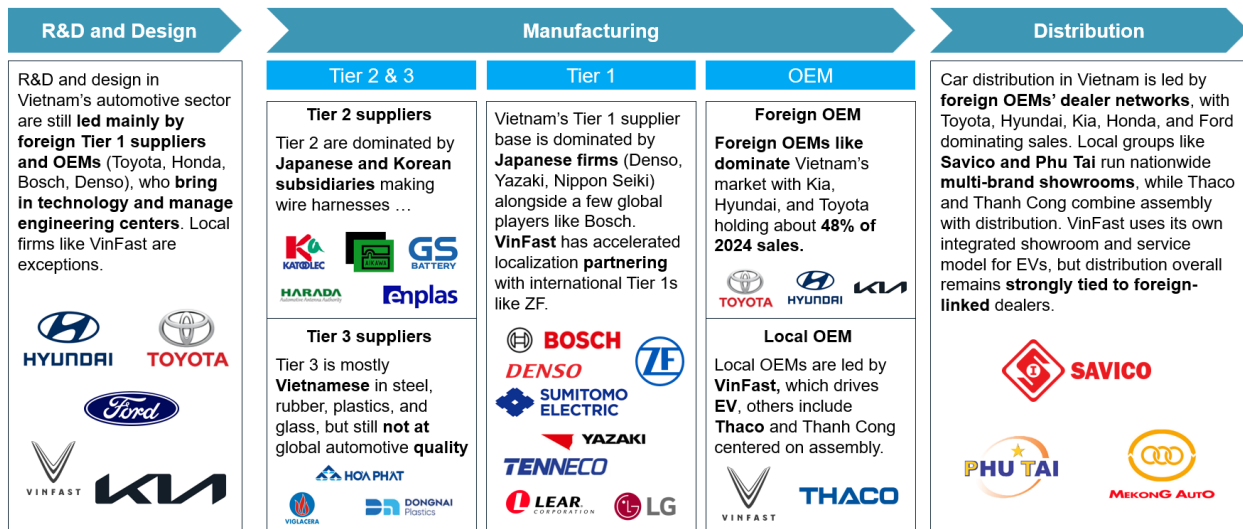
Viet Nam is firmly on the path of global economic integration, with a total of 17 Free Trade Agreements (“FTAs”) already signed.



Appendix 7: Summary of automotive supply chain in Vietnam with characteristics along the different steps within

Automotive industry supply chain in Vietnam relies heavily on imported inputs especially from Japan and Korea

Non-exhaustive



Appendix 8: Localization rate (# of Vietnamese originated suppliers/ total suppliers active in Vietnam) – own analysis based on Marklines data and supplier websites

Localization	Electric powertrain	ICE Powertrain	Driveline parts	AD ADAS Telematics	Electrical Electronic parts	Climate Control	Interior parts	Exterior parts	Chassis parts	Body parts	General parts
Korea	7	12	0	11	38	3	8	4	6	8	13
Austria	0	0	1	0	0	0	1	1	0	0	0
United States	0	0	0	2	7	1	6	0	2	0	3
China	4	1	0	4	10	1	7	2	3	1	1
Japan	7	73	2	13	126	12	26	11	39	4	88
India	0	3	0	0	4	0	2	3	0	3	1
Vietnam	1	12	2	3	5	1	8	7	10	7	18
Germany	0	1	0	0	3	0	1	1	1	1	4
Spain	0	0	0	1	2	0	1	0	0	0	2
Malaysia	0	1	0	0	2	1	2	0	2	0	1
Taiwan	1	10	3	5	10	3	8	4	6	2	18
Switzerland	0	0	0	0	1	0	0	0	0	0	0
Thailand	0	1	0	0	0	0	1	0	0	0	2
Israel	0	0	0	1	0	0	0	0	0	0	0
France	0	1	0	0	0	1	0	0	0	0	1
Singapore	0	0	0	0	0	0	0	0	0	0	0
United Kingdom	0	0	0	0	1	0	0	0	0	0	0
	20	115	8	40	209	23	71	33	69	26	152
Localization rate	5%	10%	25%	8%	2%	4%	11%	21%	14%	27%	12%

Appendix 9: Comparison between Vietnam and Thailand (Own analysis based on Marklines)

Metric	 Vietnam	 Thailand
Total suppliers	578	3,146
Suppliers per mn inhabitant	5.7	43.7
Audi suppliers	4	6
High-tech suppliers	138	851
Low-tech suppliers	356	1,571
OEM plants	28	63
Production capacity	~1.3 million	~3.4 million
ISO certified firms	7,762	12,149
IATF 16949 facilities	899	2017
LPI	3.3	3.5

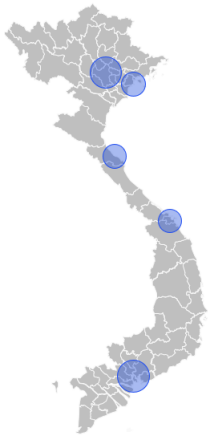
Appendix 10: Analysis of top 100 automotive suppliers by revenue who are present in Vietnam based on own analysis of supplier websites and (Berylls, 2024) for biggest suppliers

Out of the 100 biggest automotive suppliers 26 are active in the Vietnamese automotive landscape

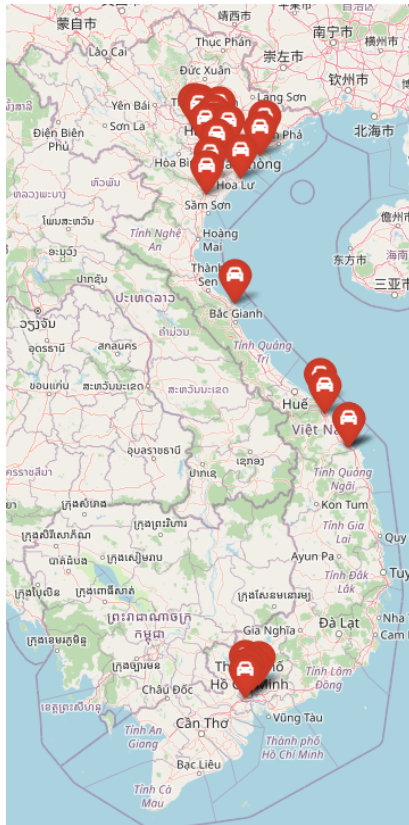
Player	2024 global rank	Country of origin	2024 revenue, EUR m	Player	2024 global rank	Country of origin	2024 revenue, EUR m
Bosch	1		55.795	Toyota Boshoku	28		11.774
Denso	2		42.522	LG Electronics	46		7.198
ZF Friedrichshafen	6		38.097	Sumitomo Rubber	51		6.386
Lear	13		21.532	Toyoda Gosei	53		6.303
Bridgestone	15		21.414	Samsung SDI	59		5.547
Schaeffler	16		19.651	Dräxlmaier	61		5.5
Tenneco	18		17.381	Fuyao	68		5.04
Goodyear	19		16.975	Yokohama Rubber	77		4.208
Sumitomo Electric	20		16.495	Grupo Antolin	78		4.191
Yazaki	22		13.174	Sailun	80		4.084
Astemo	24		12.746	Tokai Rika	87		3.711
Panasonic	25		12.439	Visteon	90		3.572
Motherson Group	26		12.051	Sumitomo Riko	93		3.483

Appendix 11: Comparative summary of regional clusters

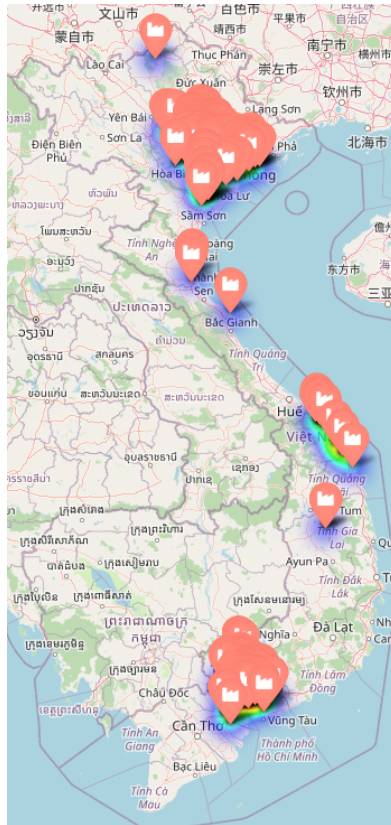
Comparative summary of regional clusters

	Region	Core locations	Key features
	North	Hà Nội, Vĩnh Phúc, Hải Dương, Hải Phòng	EV manufacturing hub; major OEMs (VinFast, Toyota, Honda, Ford); strong Tier 1 presence; port access; Commercial vehicle hub in Hanoi
	Central	Chu Lai (Quảng Nam), Hà Tĩnh, Đà Nẵng	Led by THACO; vertically integrated complex; some export ambitions; early-stage EV involvement including VinFast plant
	South	Hồ Chí Minh City, Đồng Nai, Bình Dương	Legacy ICE assembly; Tier 2/3 export suppliers (Bosch, Yazaki); motorbike-to-auto component transition

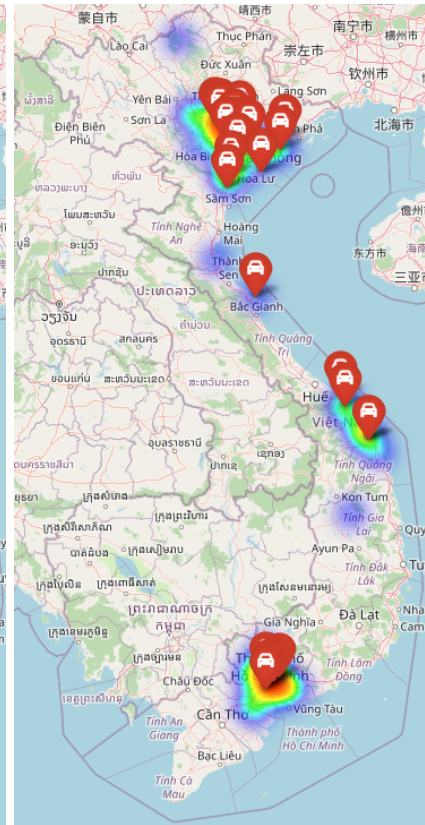
Appendix 12: Automotive suppliers follow OEMs (interactive map can be accessed via following link: kevinfeld00.github.io/Interactive-map/) Own analysis based on Marklines data and press search



OEMs in Vietnam



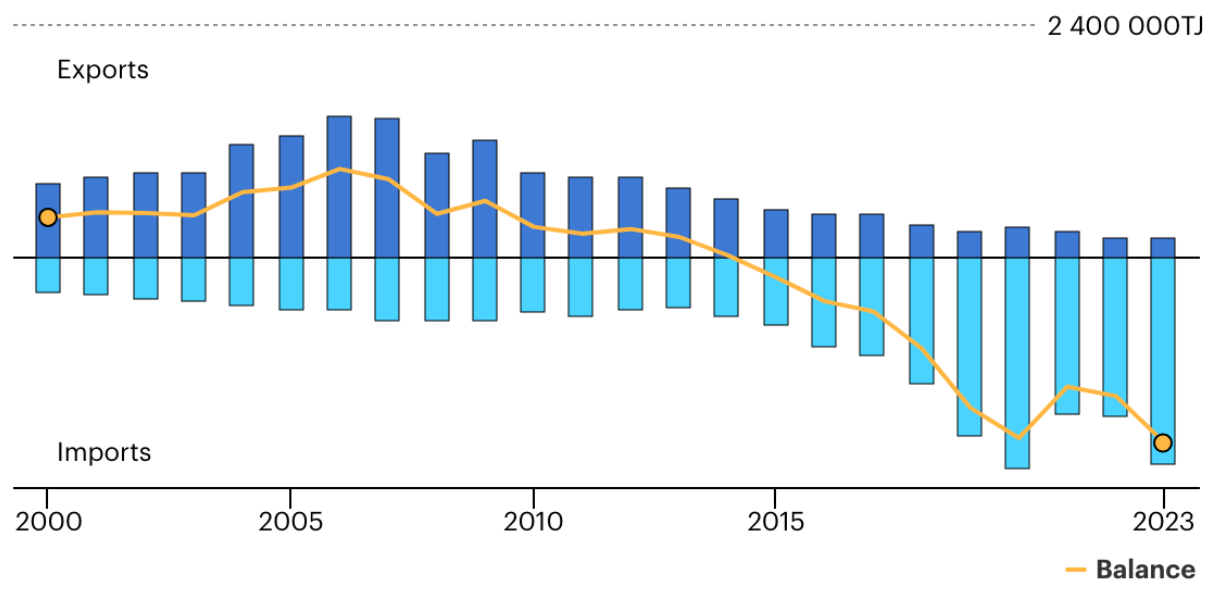
Suppliers in Vietnam



Automotive clusters

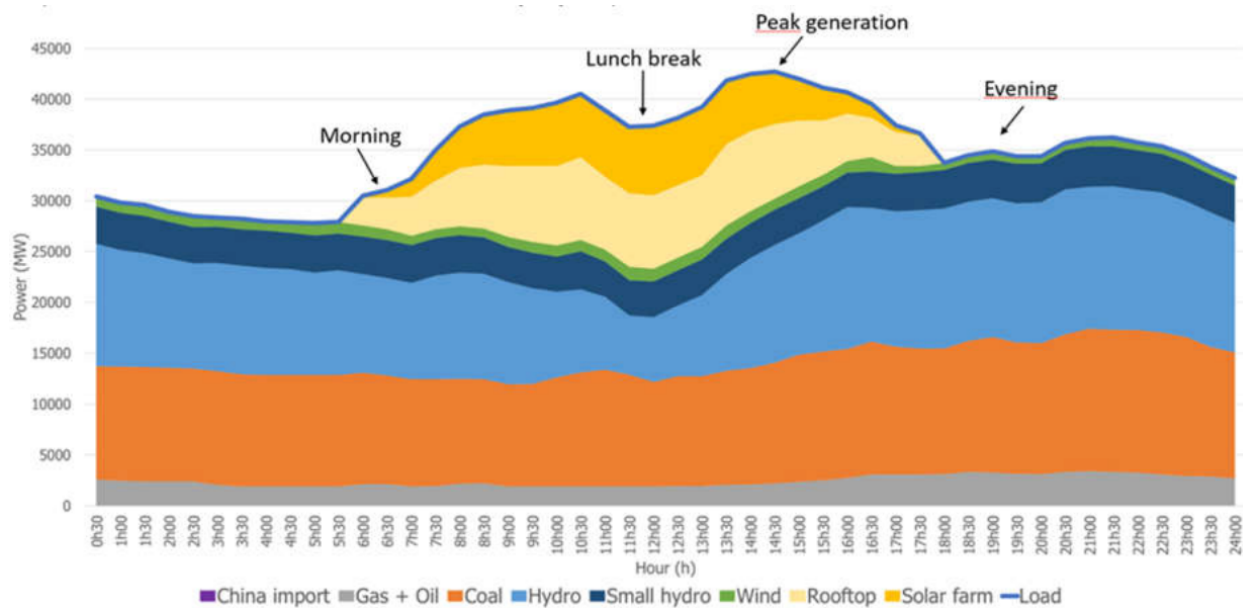
Appendix 13: Trade in energy, Vietnam – Yearly Development from 2000 to 2023 in TJ

Source: Adapted from IEA, 2025a



Appendix 14: Power generation and demand on a summer day in 2023 (NLDC)

Source: Adapted from Viet Nam Ministry of Industry and Trade & Danish Energy Agency, 2024



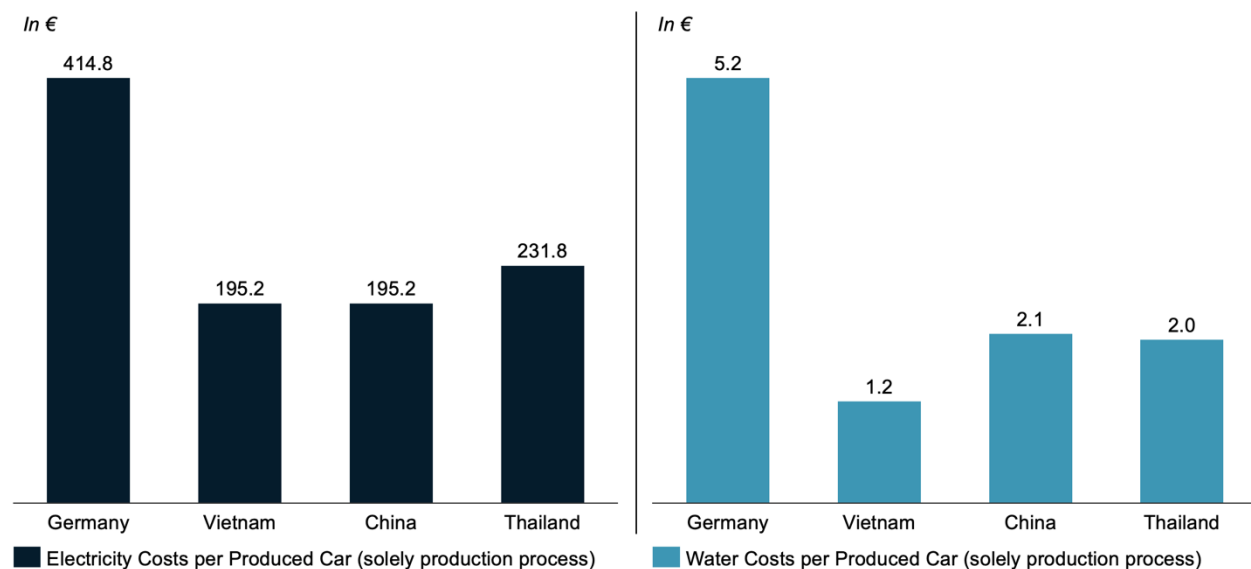
Appendix 15: Picture of Hai Phong Port, Vietnam

Source: Own picture, captured in person



Appendix 16: Cost comparison across selected automotive countries for electricity and water costs per produced car (in €)

Source: Own illustration, data retrieved from ACEA - European Automobile Manufacturers' Association, 2024; ACEA - European Automobile Manufacturers' Association, 2024; BDEW; Bundesverband der Energie-Abnehmer, 2025; BINH DUONG WATER - ENVIRONMENT JOINT STOCK COMPANY, n.d.; Daniel Slotta, 2025; Provincial Electricity Authority, 2023; Provincial Waterworks Authority, n.d.; Sato & Nakata, 2020; Shanghai Municipal People's Government, n.d.; Statistisches Bundesamt, n.d.; VietNamNet Global, 2025.



Appendix 17: Detailed calculation to cost comparison across selected automotive countries for electricity and water costs per produced car

Source: Own illustration, data retrieved from ACEA - European Automobile Manufacturers' Association, 2024; ACEA - European Automobile Manufacturers' Association, 2024; BDEW; Bundesverband der Energie-Abnehmer, 2025; BINH DUONG WATER - ENVIRONMENT JOINT STOCK COMPANY, n.d.; Daniel Slotta, 2025; Provincial Electricity Authority, 2023; Provincial Waterworks Authority, n.d.; Sato & Nakata, 2020; Shanghai Municipal People's Government, n.d.; Statistisches Bundesamt, n.d.; VietNamNet Global, 2025.

Electricity Cost Overview (in €)

Total energy used to produce car in Europe (in kWh):	2.440,0
Share of assembly vs. part production	41%
Electricity costs in Germany (€/KWh):	0,2
Electricity costs in Vietnam (€/KWh):	0,1
Electricity costs in China (€/KWh):	0,1
Electricity costs in Thailand (€/KWh):	0,1
Electricity costs per car in Germany:	414,8
Electricity costs per car in Vietnam:	195,2
Electricity costs per car in China:	195,2
Electricity costs per car in Thailand:	231,8
Electricity costs per car in Germany - assembly only:	168,5
Electricity costs per car in Vietnam - assembly only:	79,3
Electricity costs per car in China - assembly only:	79,3
Electricity costs per car in Thailand - assembly only:	94,2
Electricity costs savings Germany vs. Vietnam:	219,6
Electricity costs savings Germany vs. Vietnam (assembly):	89,2

Notes/Assumptions:

- Solely the production process; no raw material sourcing
- Whole energy used stems from electricity

Water Cost Overview (in €)

Total water used per one car produced (in m3)	2,8
Share of assembly of total production	41%
Water costs in Germany (€/m3):	1,8
Water costs in Vietnam (€/m3):	0,4
Water costs in China (€/m3):	0,7
Water costs in Thailand (€/m3):	0,7
Water costs per car in Germany:	5,2
Water costs per car in Vietnam:	1,2
Water costs per car in China:	2,1
Water costs per car in Thailand:	2,0
Water costs per car in Germany - assembly only:	2,1
Water costs per car in Vietnam - assembly only:	0,5
Water costs per car in China - assembly only:	0,8
Water costs per car in Thailand - assembly only:	0,8
Water costs savings Germany vs. Vietnam:	3,9
Water costs savings Germany vs. Vietnam (assembly):	1,6

Notes/Assumptions:

- Share of energy use for assembly = Share of water use for assembly
- Solely the production process; no raw material sourcing

Appendix 18: Calculation table of Audi's total cost per employee per month and Unit Cost per Labor (showing the input needed to generate €1 EUR of output)

Table 1: Total Labor Costs and After Tax Income				
Country	Base Salary (EUR)	Employer Contribution (%)	Employer Contribution	Costs for Audi (monthly)
Vietnam	252 €	21,50%	54,18 €	306,18 €
Thailand	413 €	5,00%	20,65 €	433,65 €
Malaysia	638 €	13,00%	82,94 €	720,94 €
Indonesia	648 €	11,74%	76,08 €	724,08 €
Philippines	660 €	10,00%	66,00 €	726,00 €
Germany	4.323 €	21,30%	920,80 €	5.243,80 €
China	1.094 €	30,00%	328,20 €	1.422,20 €

Table 2: Unit Labor Costs			
Country	Output per Hour	Labour Cost per Hour	UCL
Vietnam	10,9 €	1,91 €	0,18
Thailand	16,2 €	2,71 €	0,17
Malaysia	26,7 €	4,51 €	0,17
Indonesia	13,8 €	4,53 €	0,33
Philippines	10,6 €	4,54 €	0,43
Germany	70,6 €	32,77 €	0,46
China	17,2 €	8,89 €	0,52

Note:

Total Monthly Labor Cost = Base Salary + Employer Contribution

Labor Cost per Hour = Total Monthly Labor Cost ÷ 160 hours

UCL = Labor Cost per Hour ÷ Output per Hour

Source: Own calculation based on ILOSTAT (2025), Statista (2024), and labor statistics. Currency converted at 1 USD = 1.14 EUR. Sources for salary and contributions can be found in the main body under figure 53 & 52

Appendix 19: Yip's globalization framework

Source: Own illustration.

