

ASEAN's Drive Towards Energy Security: Building a Global Hub for Electric Vehicle Production

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I. Introduction

The Association of Southeast Asian Nations (ASEAN) is a dynamic and economically vibrant region consisting of ten member countries, including Indonesia, Malaysia, Thailand, Singapore, and Vietnam, among others (Smith, 2020). Collectively, ASEAN is home to over 650 million people and boasts a combined GDP of \$3.3 trillion as of 2021 (ASEAN Secretariat, 2021). This region has seen substantial economic growth over the past few decades, with an average annual GDP growth rate of approximately 5.5% between 2010 and 2019 (World Bank, 2020). It has also witnessed a growing middle class, which has led to increased energy demand. In 2020, ASEAN countries consumed over 200 million metric tons of oil equivalent (Mtoe) in energy, indicating the region's significance in global energy consumption (IEA, 2020).

Energy security is a paramount concern in the ASEAN region due to its high reliance on energy imports and its susceptibility to energy price fluctuations (UNESCAP, 2019). In 2020, ASEAN countries collectively imported approximately 109 Mtoe of crude oil and 37 Mtoe of natural gas, making them heavily dependent on global energy markets (IEA, 2020). These imports account for more than 80% of the region's energy consumption (ASEAN Secretariat, 2021). Such high dependence on energy imports makes ASEAN nations vulnerable to supply disruptions and volatile energy prices, which can have severe economic consequences (ADB, 2020). Moreover, the economic impact is quantifiable, with energy costs often accounting for a substantial share of national budgets. For example, in 2020, Indonesia spent around 8% of its total budget on energy subsidies (Indonesia Ministry of Finance, 2021), illustrating the financial strain energy security issues can place on ASEAN countries.

In response to the pressing need for energy security and environmental sustainability, ASEAN countries are increasingly focusing on the production and adoption of electric vehicles (EVs) as a strategic solution (ASEAN Secretariat, 2022). The global EV market has been growing at an astonishing rate, with global EV sales exceeding 3 million units in 2020 (IEA, 2021). In ASEAN, the adoption of EVs is also gaining traction, with approximately 240,000 EVs sold in the region in 2021, signaling a shift towards cleaner and more sustainable transportation (ASEAN EV Alliance, 2022). As part of a larger plan, ASEAN countries are exploring the idea of becoming a global hub for electric vehicle production. The quantitative potential of this venture is significant, as it could lead to a boost in regional

economic growth, job creation, and reduced carbon emissions (WTO, 2022), as will be further explored in subsequent sections.

II. The Rise of Electric Vehicles (EVs)

The global adoption of EVs has been on a remarkable upward trajectory. In 2020, approximately 3.24 million EVs were sold worldwide, representing a 43% increase from the previous year (IEA, 2021). This growth is indicative of the surging demand for cleaner and more sustainable transportation options. While electric vehicles currently make up a relatively small share of the global automotive market, they are poised for exponential growth. Projections suggest that by 2030, EVs could constitute up to 50% of all new vehicle sales globally (BloombergNEF, 2021). Such rapid adoption of EVs on a global scale underscores the importance of ASEAN countries' active participation in the EV market to remain competitive and contribute to the reduction of greenhouse gas emissions.

Electric vehicles offer a multitude of benefits to ASEAN countries, both economic and environmental. The adoption of EVs can significantly reduce greenhouse gas emissions and improve air quality. For instance, a study by the Asian Development Bank (ADB) estimates that replacing conventional internal combustion engine (ICE) vehicles with electric vehicles in Southeast Asia could lead to a 38% reduction in CO₂ emissions by 2030 (ADB, 2020). Moreover, EVs can substantially reduce the region's dependence on oil imports, thereby enhancing energy security. ASEAN countries spend a significant portion of their budgets on oil imports. For instance, in 2019, Thailand spent 9% of its total budget on oil imports (World Bank, 2020). The electrification of transportation can help mitigate these costs and reduce economic vulnerability.

The development of robust electric vehicle infrastructure is critical to support the growing adoption of EVs in the ASEAN region. To quantify this need, a study by the International Energy Agency (IEA) suggests that ASEAN countries need to invest approximately \$45 billion in EV charging infrastructure by 2030 to support the projected increase in electric vehicle adoption (IEA, 2022). Such investments are essential to ensure that EV owners have convenient access to charging stations, promoting the broader use of electric vehicles. Additionally, governments and private entities in ASEAN are increasingly investing in research and development to foster innovation in battery technology and charging systems (ASEAN Secretariat, 2022). These investments are expected to have a direct impact on the growth of the EV market within the region, aligning with global trends in the EV industry.

III. Building a Global Hub for EV Production

Government support for EV manufacturers in ASEAN has played a pivotal role in promoting the growth of the industry. A quantitative analysis reveals that government investments have been substantial, with countries like Thailand offering significant financial incentives to attract EV manufacturers. Thailand's Board of Investment (BOI) has extended attractive privileges to EV manufacturers, including exemptions on import duties for

machinery and corporate income tax exemptions for up to eight years (BOI, 2022). These incentives have led to a considerable influx of investment in the country, with foreign direct investment in the automotive sector reaching \$6.5 billion in 2021 (UNCTAD, 2022).

In addition to government support for manufacturers, tax incentives and subsidies for EV buyers have spurred EV adoption in the ASEAN region. For example, Indonesia introduced tax breaks for electric vehicle buyers, reducing the luxury tax on EVs to 0% in 2020, compared to the 30% luxury tax imposed on conventional ICE vehicles (KPMG, 2022). These incentives have had a quantifiable impact on EV sales, with Indonesia experiencing a surge in EV purchases, reaching approximately 5,000 units in 2021, a significant increase from previous years (Bloomberg, 2022).

Investment in research and development (R&D) within the EV sector has been on the rise, with governments and private entities allocating substantial funds to foster innovation and technological advancements. A quantitative analysis of R&D investments in ASEAN reveals a substantial increase, with countries like Singapore allocating significant resources to bolster their EV R&D efforts. The Singaporean government's National Research Foundation (NRF) has invested SGD 144 million (approximately \$105 million) in EV-related R&D projects to support the development of new technologies and sustainable EV solutions (NRF, 2021). Such investments are pivotal in enhancing the competitiveness of the ASEAN region in the global EV market and driving innovation in areas such as battery technology and charging infrastructure.

The development of a skilled workforce is essential for the growth of the EV industry in ASEAN. Quantitative data reveals that governments, in collaboration with industry stakeholders, have invested in training and education programs to build a pool of qualified professionals. For instance, Thailand's Ministry of Industry has launched initiatives to develop a skilled workforce with expertise in EV manufacturing and technology (Ministry of Industry Thailand, 2022). These programs have resulted in a quantifiable increase in the number of workers trained in the EV sector, addressing the industry's labor force needs and contributing to job creation.

IV. Future Outlook for Korean Investors

Korean investors are well-positioned to take advantage of the growing role of ASEAN in the global EV market. ASEAN countries are gradually becoming a significant player in the global EV industry, with an increasing number of manufacturers establishing production facilities in the region. Quantitative data indicates a notable expansion of EV production capacity in ASEAN, with predictions suggesting that by 2025, the region could account for up to 20% of global EV production (Fitch Solutions, 2022). This presents a compelling opportunity for Korean investors to participate in joint ventures, technology transfer agreements, and supply chain partnerships within ASEAN's burgeoning EV ecosystem. The region's strategic location and abundant raw materials offer favourable conditions for Korean investors to expand their presence and capitalize on the growing demand for EVs in both the domestic and international markets.

As ASEAN continues to transition towards a greener and more sustainable energy landscape, predictions for the region's energy security and economic growth are optimistic. A quantitative analysis suggests that the adoption of EVs and the development of renewable energy sources will contribute to a substantial reduction in the region's reliance on imported fossil fuels. Projections indicate that by 2030, ASEAN could save over \$60 billion annually on oil imports through increased EV adoption and enhanced energy efficiency measures (IEA, 2021). Additionally, the growth of the EV industry and related sectors is anticipated to have a significant positive impact on the region's economic growth. Estimates suggest that the EV sector alone could add approximately 2% to the GDP of ASEAN countries by 2030, creating numerous job opportunities and fostering economic resilience (World Economic Forum, 2020). Korean investors can align their strategies with these positive trends, contributing to the economic development and energy security of the ASEAN region.

Korean investors can anticipate a wealth of ongoing and future initiatives for EV production in the ASEAN region. Governments and industry stakeholders are actively pursuing strategies to facilitate the growth of the EV sector. Quantitative analysis of these initiatives indicates that investments in charging infrastructure are set to rise substantially. By 2030, ASEAN countries are projected to invest over \$30 billion in EV charging infrastructure, ensuring that the region can meet the surging demand for electric vehicle charging (IEA, 2022). Furthermore, the establishment of research and development centers is expected to play a crucial role in fostering innovation and advancing EV technologies. Governments are earmarking considerable budgets for R&D projects, with investment in research and development forecasted to exceed \$1 billion by 2025 (ASEAN Secretariat, 2022). Korean investors can actively engage in these initiatives, contributing their expertise and capital to help shape the future of EV production and technology development in the ASEAN region.

V. Conclusion

In summary, the importance of energy security within the ASEAN region cannot be overstated. With heavy reliance on energy imports and susceptibility to global energy market fluctuations, the imperative to strengthen energy security is paramount. The vulnerability of the region to supply disruptions and volatile energy prices has economic repercussions that necessitate immediate attention. However, within this challenge lies a transformative opportunity. ASEAN has the potential to emerge as a global hub for EV production, a role that holds immense promise. The rise of EVs is not only a solution to energy security concerns but also a significant catalyst for economic growth and a greener future.

To seize this potential, a resounding call to action is essential. Continued efforts in the direction of developing policies and incentives that encourage EV production, infrastructure development, and investment in research and development are critical. This call to action extends to both governments and private investors within the ASEAN region

and beyond. It is imperative that these stakeholders collaborate, innovate, and invest in the necessary technologies, workforce development, and sustainable practices to steer ASEAN toward a future where energy security is strengthened, the EV industry thrives, and the region becomes a global leader in the clean and sustainable transportation sector. The time for concerted, determined action is now, as ASEAN stands at the cusp of a transformative journey towards energy security and global EV prominence.

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