

THE SECOND-GENERATION ASIAN TIGERS: SPECIFIC POLICIES TO STIMULATE TRADE IN ENVIRONMENTAL GOODS¹

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Abstract: The five countries considered the Asian Tigers of the second generation, namely Malaysia, Indonesia, Thailand, the Philippines and Vietnam, have embarked on ambitious policies to achieve carbon neutrality in the next decades. Among these policies, those influencing trade have the potential to further green their economies. The index of comparative advantage in environmental goods and also trade in environmental goods as a share of total exports indicate that Malaysia is better prepared for export than the other four, while Thailand, Indonesia, and Vietnam are more inclined towards imports of environmental goods. Even if trade data do not reflect the trade flows of recent years, the available information emphasizes evident progress in the case of Malaysia, as well as new strategies and policies for a sustainable future for all the countries analysed.

Key-Words: trade in environmental goods, comparative advantage in environmental goods, sustainable trade policies, second-generation Asian Tigers

JEL Classification: F10, F13, F18

1. Introduction

Three decades ago, it started the debate between environmentalists and the trade community (specialists, exporters, importers) regarding the impact of trade liberalization on environmental quality. Environmentalists state that trade liberalization exacerbates environmental issues as it leads to more production, more resource depletion, and more pollution (Thompson & Strohm, 1996; Neumayer, 2000). By contrast, the trade community points to the increases in income due to trade and simultaneously to increases “in the demand for environmental quality that typically accompany higher income” (Thompson & Strohm, 1996). The reconciliation between international trade and the environment has not been achieved yet.

It is evident that trade is accompanied by both positive income effects and negative effects from economic expansion, but whether the balance is positive or negative has not been demonstrated. It is obvious that it is necessary to reconcile two values that are “absolutely essential to the well-being of mankind: protection of the environment and international free trade” (Schoenbaum, 1997).

The Asian Tigers of the second generation - Malaysia, Indonesia, Thailand, the Philippines and Vietnam (AT-5) – are a relevant case study to demonstrate this reconciliation. Trade in environmental goods (EGs) supports national efforts for the just energy transition towards a green economy. Simultaneously, specific measures to stimulate the economy through green technology, to boost sustainable industries, and significantly reduce pollution are an evident impetus to trade in EGs, which generates a virtuous circle.

2. Literature review

The current increase in trade in EGs is part of the solution and also a new argument in favor of more positive effects generated by trade liberalization than negative effects. That is why the opportunity to relaunch negotiations to liberalize trade in environmental goods (started in 2014 under the auspices of the World Trade Organization WTO, but stalled in 2016) is more important than ever.

¹ This paper further capitalizes on the author’s doctoral thesis “The place and role of the Asian Tigers in international trade at the end of the 20th century and the beginning of the 21st century”. It is also a part of the author’s contribution to the study “International trade in environmental goods and services”, coordinators Claudia Baicu and Georgeta Ilie, Institute for World Economy, Romanian Academy, 2024.

“Environmentally friendly goods” are defined as products that are “designed to use fewer resources or emit less pollution than their traditional counterparts” (UNCTAD, 2023). Even if their shares in global trade and GDP are still low (IMF, 2024a), one can remark the rapid increase of trade flows and the expanding role of the state in environmental policy, stimulating the adoption of environmental technologies and joint bilateral, regional and international cooperation initiatives (WTO, 2023).

The AT-5 have distinguished themselves as active promoters of sustainable trade policies. Either individually or as part of the Association of Southeast Asian Nations (ASEAN) or as signatories of bilateral trade agreements, they adopted specific measures to stimulate trade in environmental goods. However, opening up in the multilateral framework of the World Trade Organization (WTO) is the best way to invigorate trade in EGs. Bacchetta et al. (2022) and WTO (2022) underscore that environmental goods continue to face significant trade barriers. This trade accounted only for around 4.4% of global trade in 2020. Tariffs applied on an illustrative list of environmental goods range from around 1.4% in high-income countries (none of the AT-5 countries belongs to this category) to 7.3% in low-income countries, while non-tariff measures for environmental goods are substantial and tend to be higher for high-income countries than for middle- and low-income countries.

Among the general priorities of the AT-5 it stands out that of developing capacity for production of EGs and trade in EGs, especially related to decreasing pollution, sustainable battery production and even electric vehicles (particularly in Indonesia and Thailand), access to clean water and sanitation, waste management and recycling (International Trade Administration, 2024).

This paper focuses on specific measures adopted by AT-5 in order to stimulate the green transition, with impact on trade in environmental goods. As this is a heterogeneous group, policies implemented differ from country to country and in spite of similarities, the effects are not the same. Indonesia is the largest economy of the group, with a GDP in current prices of around USD 1,475 billion (ranking the 16th worldwide), followed at a great distance by the others with sizes between USD 445-550 billion: Thailand, the Philippines, Vietnam and Malaysia (IMF, 2024b). Four of the AT-5 are among the first 20 countries in the hierarchy according to population size: Indonesia (4th), the Philippines (14th), Vietnam (16th) and Thailand (20th), while Malaysia is only the 44th. The paper presents also the situation of trade flows in EGs, the index of the comparative advantage in EGs and also trade in EGs as share of total exports and imports for AT-5. International organizations such as the Asia-Pacific Economic Cooperation (APEC), or the Organization for Economic Cooperation and Development (OECD) together with Eurostat endorsed various lists of EGs for trade liberalization. The OECD-Eurostat list was completed in 1998 and published in 1999, with EGs being divided into three groups: A. Pollution Management, B. Cleaner Technologies and Products and C. Resources Management (Steenblik, 2005). Negotiations for the Environmental Goods Agreement under the auspices of the WTO started in 2014, however they collapsed in 2016 as it could not be reached a compromise on the EGs definition. None of the AT-5 was among the 18 participants representing 46 members of the WTO, in contrast to the first four Asian Tigers (Hong Kong-China, Korea, Singapore and Taiwan-China), which took part in the negotiations. The AT-5 countries are members of the APEC and committed to reduction of tariffs on EGs, according to the list of 54 EGs for trade liberalization endorsed in 2012. The APEC EGs list was the first one put into practice around the world and at the end of 2021, the APEC announced its plan to expand it (Mao et al., 2023).

3. Methodology

This paper is based on a qualitative analysis in order to achieve its main objective, namely to investigate key policies which stimulate trade in EGs at the level of AT-5. The effects of these policies are more indirect than direct, however there are evident relationships between such initiatives and trade in EGs. The main data are those published by the International Monetary Fund (IMF) (2024a), namely the Climate Change Indicators Dashboard, and those provided by the World Bank Group (2024), related to trade in EGs. The index of comparative advantage in environmental goods is a useful measure of the relative advantage/disadvantage of the AT-5.

The analysis is structured as follows. Section 4 reveals that Malaysia is competitive in trade in EGs and is the only one in this position among the AT-5. Trade in EGs has been indirectly stimulated by policies, plans, and roadmaps related to green growth. Section 5 focuses on policies related to EGs in Thailand, Vietnam, Indonesia and the Philippines. Section 6 presents the case study of electric vehicles in Thailand, Indonesia, Vietnam and Malaysia. Section 7 concludes.

4. Malaysia, competitive in trade in environmental goods

Following a period characterized by a market-driven approach to promoting green growth, characterized by encouraging private sector participation in renewable energy (RE) without a proper regulatory framework, in 2009 were introduced in Malaysia non-market-based policy instruments. Those were motivated by the need to eliminate the market failures (such as the abuse of monopsony power, arbitrary or incomplete pricing of inputs and information asymmetry). Public interventions followed, however it is still needed (1) the development of the Malaysian trade capacity, as the domestic demand is too small to sustain the sector and (2) a stronger framework where environmental and trade policies are mutually supportive (Paramasua et al., 2019).

In the 12th Malaysian Plan, “environment” is mentioned more than 300 times. The Twelfth Plan is aligned to the 2030 Agenda, representing Malaysia’s commitment in implementing the 17 sustainable development goals (SDGs) (Economic Planning Unit, 2021). The first National Policy on Climate Change, published in 2009 (the same year when the National Green Technology Policy was launched), was followed nearly 15 years later by the National Climate Change Policy 2.0. It reaffirms Malaysia’s commitment to achieving the climate pledges, including reaching net-zero greenhouse gas (GHG) emissions by 2050. “It aligns with recent strategic initiatives, such as the National Energy Transition Roadmap (NETR), which promotes a just energy transition towards a green economy, and the New Industrial Master Plan (NIMP) 2019-2030, which drives technological innovations and investments for climate action” (Ministry of Natural Resources and Environmental Sustainability, 2024). Emissions reduction through carbon market mechanisms is gaining traction in ASEAN. As Malaysia assumes the ASEAN chairmanship in 2025, at national level is emphasized even more intensely than usually the importance of cross-border collaboration for further progress and development in this field (S&P, 2024). At the same time, Malaysia's Climate Change Act is expected at the beginning of 2025 (S&P, 2024). In the National Energy Policy 2022-2040, renewable energy plays a central role (Economic Planning Unit, 2022).

Trade in environmental goods is not mentioned in these policies, plans, and roadmaps. Nevertheless, facilitating trade in environmental goods and services is a tool for climate action (ECORYS, 2023).

At the same time, the increase of trade in EGs has been stimulated by a host of determinants, including: tariff reductions, stronger environmental awareness, implementation of environmental policies and regulatory reforms, enforcement of government regulations to protect the environment, progress in developing alternative energy sources and energy-efficient goods, and high international oil prices (Kuriyama, 2021). Among the AT-5, Malaysia has the second lowest average MFN tariff per economy, according to the APEC List of Environmental Goods: 0.8%, as compared to 0.4% in Vietnam, 1.3% in the Philippines, 1.9% in Thailand, and 5.2% in Indonesia (Kuriyama, 2021). In a survey conducted by the APEC Business Advisory Council (ABAC), Malaysia is the first in the preferences of respondents exporting EGs, with a share of around 24% (ABAC, 2023).

The following Chart reflects the *index of comparative advantage in environmental goods* (Box 1) for AT-5 until 2019, the most recent year for which data are available. Only Malaysia recorded a relative advantage in environmental goods between 2015 and 2019.

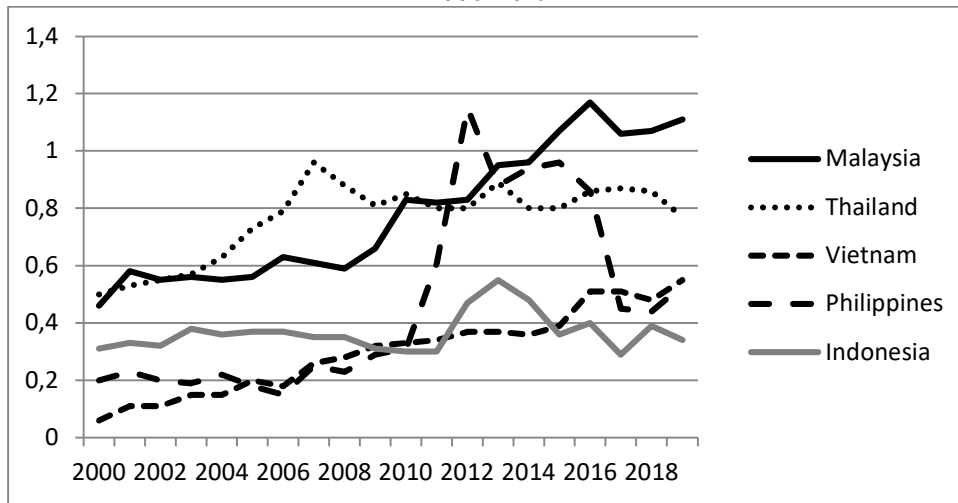
Box 1: Definition of comparative advantage in environmental goods

It is a measure of the relative advantage or disadvantage a particular country has in environmental goods, and can be used to evaluate export potential in that class of goods. Environmental goods include both goods connected to environmental protection (such as goods related to pollution management and resource management), and adapted goods (which are goods that have been specifically modified to be more "environmentally friendly" or "cleaner"). A value greater than one indicates a relative advantage in environmental goods, while a value of less than one indicates a relative disadvantage.

Source: World Bank Group (2024).

Thailand was the second after Malaysia, but with values under 1 and losing ground. The Philippines recorded a value greater than 1 only in 2012 and values close to 1 until 2015, with a decreasing trend until 2018 and an upward trend in 2019. Indonesia also had a peak in 2013. Vietnam, even if it still has a relative disadvantage, it closes the gap with the others (Chart 1).

Chart 1: The index of comparative advantage in environmental goods for AT-5, 2000-2019



Note: Data for 2019 is the latest available.

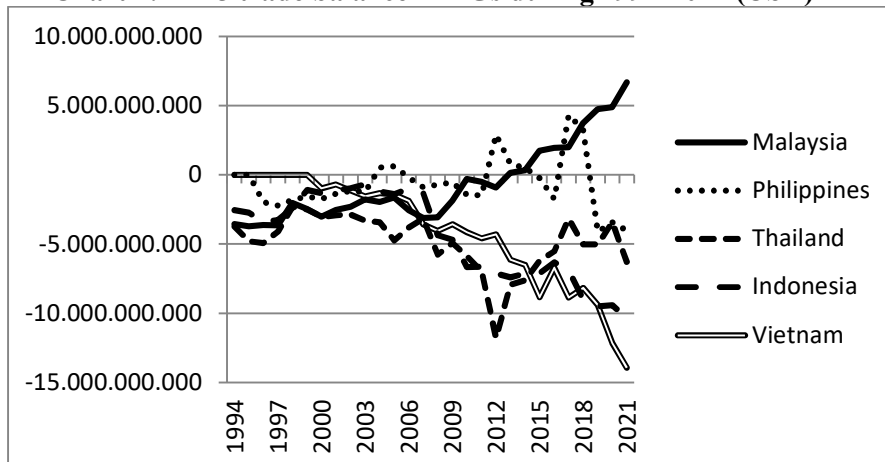
Source: Chart elaborated by the author, based on World Bank Group (2024).

The Malaysian Ministry of Investment, Trade and Industry (MITI) launched in October 2024 the MITI *Sustainability Report 2023*, aiming to develop a trade and industry sector that incorporates sustainable practices. This follows the launch of MITI's National ESG (environmental, social and governance) Framework in 2023. The industrial policy implementation includes the National Automotive Policy 2020, the National Semiconductor Strategy (NSS), and the New Industrial Master Plan 2030 (NIMP 2030). Such initiatives reflect a people-centric concept, focusing on five core elements: investment, international trade, industrial development, job opportunities and community engagement (Business Times, 2024). Such initiatives underscore that trade and industry are interlinked.

George et al. (2024) emphasize that at the level of ASEAN, Singapore together with Malaysia are the main net exporters of environmental goods, but with opposite trends: Malaysia's net exports grew rapidly, while Singapore's have been decreasing. Among net importers, the Philippines is the only one with significant shifts between the positions of net exporter and importer. Vietnam recorded an increase of imports, and these are larger than Indonesia's, while Thailand's imports diminished between 2012 and 2017, with fluctuations at a lower level afterwards.

Chart 2 reflects the trade balances for AT-5, Malaysia being the only net exporter of EGs in 2019-2021. Malaysia has also the largest share of EGs in total exports (6%), as compared to 2% in Indonesia, 3% in the Philippines and Vietnam and 4% in Thailand (the world median is 2%) (World Bank Group, 2024). By contrast, Malaysia and the Philippines have the lowest shares of EGs in total imports (4%), while the shares of Indonesia and Vietnam are 6% and that of Thailand is 7% (world median is 4%) (World Bank Group, 2024).

Chart 2: AT-5 trade balance in EGs during 1994-2021 (USD)

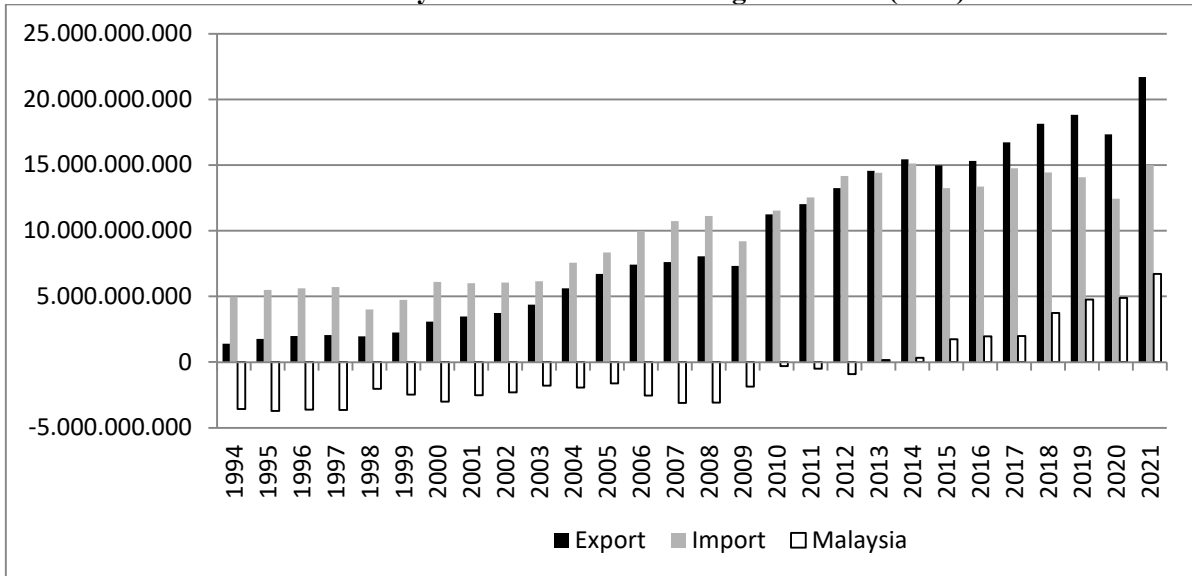


Notes: For the Philippines, data starts in 1996 and for Vietnam in 2000.
Data for 2021 is the latest available.

Source: Chart elaborated by the author, based on IMF (2024a).

Chart 3 reveals Malaysia's trade in EGs, with exports larger than imports since 2013, with an increasing trend. The surplus surpassed the value of USD 6 billion in 2021.

Chart 3: Malaysia's trade in EGs during 1994-2021 (USD)



Note: Data for 2021 is the latest available.

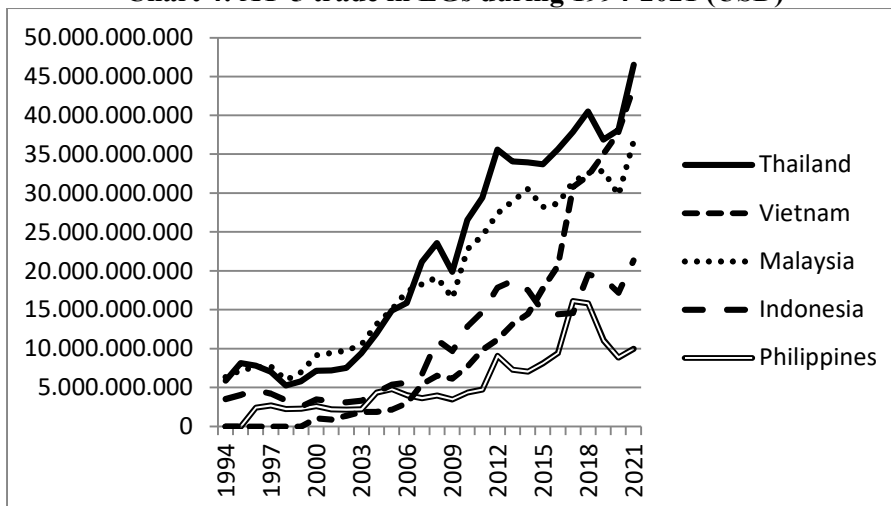
Source: Chart elaborated by the author, based on IMF (2024a).

5. Policies related to EGs in Thailand, Vietnam, Indonesia and the Philippines

Thailand has set the goal of achieving carbon neutrality by 2050 and net-zero emissions by 2065 (Sutabutr, 2024). The new National Energy Plan (NEP), to be implemented from 2024 to 2037, comprises a power development plan, an oil plan, a gas plan, an alternative energy plan and an energy efficiency plan. Under the power development plan, the share of coal and gas is set to decrease to 48% of total fuel use by 2037, down from nearly 80% early this year, while renewable energy should comprise 51%, up from 20% at the end of 2023 (Bangkok Post, 2024).

Among the AT-5, Thailand is the first in terms of total trade in EGs, and it is followed by Vietnam, Malaysia, Indonesia and the Philippines (Chart 4).

Chart 4: AT-5 trade in EGs during 1994-2021 (USD)



Notes: For the Philippines, data starts in 1996 and for Vietnam in 2000.
Data for 2021 is the latest available.

Source: Chart elaborated by the author, based on IMF (2024a).

Vietnam announced the target to achieve net-zero emissions by 2050. Vietnam and Indonesia have signed the Just Energy Transition Partnership (JETP) with an international coalition of donors (Climate Action Tracker, 2024). According to the Ministry of Industry and Trade (MoIT), Vietnam is facing greater pressure in greening its exports as consumers and trade partners are paying more and more attention to sustainable development and environmentally friendly products, while advantages from free trade agreements are not complete. Standards and regulations on supply chains, materials, labour, and the environment to imported products are stricter, especially in developed countries. Competition is more intense, as “many nations have also been diversifying their supplies outside China, with a focus placed on a number of partners similar to Vietnam such as Turkey, Mexico, India, Indonesia, and Bangladesh” (Vietnam Investment Review, 2024).

Environmental protection is one of the priorities of the Government of *Indonesia*. In September 2022, the government updated its 2015 Nationally Determined Contribution to the Paris Agreement, and made the commitment to reduce the greenhouse gas (GHG) emissions by 32 percent by 2030 and to reach net-zero emissions by 2060 or sooner (International Trade Administration, 2024).

In August 2023, Indonesia’s capital was ranked as the most polluted city in the world, the major contributors to air pollution being the transportation sector (44%) and industry (31%) (International Trade Administration, 2024). Indonesia’s new capital city, Nusantara, is planned to achieve carbon neutrality by 2045, with the focus on: reversing deforestation to reforestation, no fossil fuel for energy, electricity, and transportation, green building design and material, a circular economy approach through a Reduce, Reuse and Recycle system and a climate-friendly agriculture (ADB, 2023).

Indonesia has both strengths and weaknesses in the field of EGs, as underscored by Montfaucon et al. (2024):

- Indonesia’s green competitiveness has declined in recent years. In spite of that, the fourth most populous country in the world has untapped potential in exports of EGs and plastic substitutes. The private sector, especially firms involved in global value chains, will be essential to realizing Indonesia’s potential in green trade.
- Even if Indonesia is committed to reducing tariffs on some EGs and it took concrete steps to ensure more environmentally sustainable palm oil and timber exports, it does not participate in most multilateral initiatives and environmental provisions in trade agreements are weakly enforceable in most cases.
- Local content requirements (LCR) aimed at creating local manufacturing capacity could also be a deterrent to growth.

According to PAGE (2021), in the field of greening exports, the product needing the most attention is palm oil, with the greatest export potential. However, the environmental impact of new oil palm plantations is extensive, through deforestation, degradation of soil quality, increased GHG emissions, and low productivity. The yield per hectare of oil palm plantations is much lower than in Malaysia. In addition, greening the supply chain is essential to ensure processing efficiency of raw material and use the residual biomass for energy generation.

The Philippines is the only AT-5 which does not have a net-zero target. It is committed to a projected GHG emissions reduction and avoidance of 75% for the period 2020 to 2030 for the sectors of agriculture, wastes, industry, transport, and energy (UNDP, 2023). The Philippines was the first country in the Southeast Asian region to set a moratorium on new coal, and is implementing some measures to support renewables. However, according to the current policies, coal will remain the dominant source of electricity generation for 2030. Therefore, the government needs to focus on accelerating the renewable energy adoption and implementing a coal and fossil gas phase out plan (Climate Action Tracker, 2024).

6. Case study of electric vehicles in Thailand, Indonesia, Vietnam and Malaysia

Most of the Asian Tigers have the potential to become regional centers for the electric vehicle (EV) industry, with a well-developed electronics industry providing a solid foundation for participation in global supply chains (Thorbecke, 2023). The Asian Tigers refuse to be only sales markets for EVs, but have the goal of producing EVs or at least being integrated into global supply chains. Between the strategies to achieve this objective, there are similarities, but also substantial differences (Guild, 2024).

Thailand and Indonesia are offering tax incentives, lower import duties and value-added tax rebates to attract EV manufacturers. Indonesia aims to produce 600,000 electric vehicles by 2030, tapping its nickel reserves (The Economic Times of India, 2024; Raharyo et al., 2022). However, it is not the leader among the AT-5.

Terasawa and Tiberghien (2024) emphasize that in Southeast Asia, Thailand leads. EVs had a share of 10% of all Thai automobile sales in 2023. As of 2024, Thailand has an estimated production capacity of 350,000 vehicles per year, entirely supported by seven Chinese automakers. One can notice a surge in Chinese EVs in Thailand and the partial displacement of dominant Japanese car makers. Toyota, Honda and even Tesla are now reacting and planning future capacity in Thailand. The EV surge has been strongly influenced by the public commitment and fiscal policies, such as: an eight-year corporate tax holiday for EV projects, 40% reduction on import duties, an excise tax cut from 8% to 2% and subsidies for eligible EVs.

Indonesia intends to become a hub for EVs and battery production in Southeast Asia (The Investor, 2024). The three investors among automotive manufacturers are: China's BYD (investment in value of USD 1.3 billion, foreseen to become operational in January 2026, with an estimated production capacity of 150,000 units yearly); South Korea's Hyundai (capacity of 250,000 units per year, but that level has not been reached yet) and China's Wuling (capacity of 120,000 units per year, investment of USD 0.7 billion) (TechInAsia, 2024; Indonesia Business Post, 2024; China Daily, 2022; Hyundai, 2022).

With the largest nickel reserves globally, along with iron, copper, and bauxite – essential components for battery production – Indonesia inaugurated in July 2024 “the region's first EV battery manufacturing plant, a joint venture between Hyundai Motor and LG Energy Solution from South Korea, with a total investment of USD 1.1 billion located in West Java” (The Investor, 2024). Domestic EV sales still have a low market share (1.7% in 2023). Sales have been constrained by EV prices and limited charging stations, therefore Indonesia has introduced further tax incentives for imports of completely built-up EVs (Terasawa and Tiberghien, 2024).

In its turn, Vietnam has a production capacity of 350,000 EVs: 250,000 at Vietnam-based Vinfast and 100,000 in a Hyundai factory. Vietnam aims to develop its market and production through policies including a reduction in excise duties on battery EVs and a US\$1000 incentive for EV purchases (Terasawa and Tiberghien, 2024).

Investments in Malaysia's EV industry from 2018 to March 2023 totaled 26.2 billion ringgit (\$5.4 billion), with the number of EVs increasing from 3,400 units in 2022 to more than 7,500 units in September 2023. In the budget for 2024 considerable tax incentives are provided for investments in strategic sectors, including the EV industry. The road tax for EVs is much lower compared to other vehicles and the legislative provisions on EV filling stations have been relaxed. The Malaysian government facilitated the takeover of UMW Holdings by Sime Darby, the new conglomerate having the ability to compete with large multinational companies in the EV field (Nikkei Asia, 2023). A national network of charging stations is forecast to be able to power 10,000 units in 2025, compared to only 1,000 in 2023 (Goh, 2023). Tesla launched its first showroom in Malaysia in July 2023, competing with the EV industry in Thailand and Indonesia.

7. Conclusions

The main finding of this investigation shows that, even if there is no specific trade policy focused on EGs, each of the AT-5 have plans, strategies and goals related to environmental protection and, indirectly, to EGs. All the AT-5 occupy close positions in the Hinrich-IMD Sustainable Trade Index (STI): Thailand 12, Philippines 13, Vietnam 14, Malaysia 15, and Indonesia 18. This index measures 30 global economies’ “capacity to participate in the international trading system in a manner that supports the long-term goals of economic growth, environmental protection, and societal development” (Hinrich Foundation-IMD, 2024).

With the exception of the Philippines, the other four Asian Tigers of second-generation have ambitious net-zero emissions. EGs industry and trade are indirectly stimulated by green policies. Malaysia seems better prepared than the others. Among the AT-5, it has the second lowest average MFN tariff per economy, according to the APEC List of Environmental Goods: 0.8%, as compared to 0.4% in Vietnam, 1.3% in Philippines, 1.9% in Thailand, and 5.2% in Indonesia. It is also the only one among the five countries to record a relative advantage in environmental goods between 2015 and 2019. At the same time, it was the only net exporter of EGs in the timeframe 2019-2021.

In the field of EV production, Thailand is the leader in Southeast Asia, followed by Indonesia. Chinese automakers, followed by South Korean automotive manufacturers are the key investors. Indonesia intends to

also become a hub for EV battery production in Southeast Asia, due to its nickel, iron, copper, and bauxite reserves.

The second finding indicates that, with a blend of foreign capital, domestic resources, human capital, and ambitious policies, the AT-5 countries have the potential to green their economies and trade, serving as models for others. Although they have not yet attained the status of the first-generation Asian Tigers (Singapore, South Korea, Taiwan-China, and Hong Kong-China), four of the AT-5 - Malaysia, Indonesia, Thailand, and Vietnam - have made significant progress in trade in EGs. Lower trade barriers, stricter standards and regulations, intense competition and ambitious policies will further stimulate greening their international trade.

References:

- [1] APEC Business Advisory Council (ABAC) (2023). Survey on Trade in Environmental Goods and Services.
- [2] Asian Development Bank (ADB) (2023). ADB, Indonesia Launch Net Zero Strategy for New Capital City, December 3, <https://www.adb.org/news/adb-indonesia-launch-net-zero-strategy-new-capital-city>.
- [3] Bacchetta, M., Bekkers, E., Solleder, J.-M. & Tresa, E. (2022). “Environmental Goods Trade Liberalization: A Quantitative Modelling Study of Trade and Emission Effects”, Geneva: World Trade Organization.
- [4] Bangkok Post (2024). Clean energy plan to generate B2.9tn, October 17.
- [5] Business Times (2024). MITI commits to sustainable markets and net-zero pathway, October 1.
- [6] China Daily (2022). Wuling's electric mini car to hit Indonesia.
- [7] Climate Action Tracker (2024). Net zero targets, <https://climateactiontracker.org/countries/vietnam/net-zero-targets/>, <https://climateactiontracker.org/countries/philippines/>.
- [8] Economic Planning Unit (2021). Twelfth Malaysia Plan 2021-2025, <https://rmke12.ekonomi.gov.my/en>, Prime Minister’s Department, Federal Government Administrative Centre, Putrajaya, Malaysia.
- [9] Economic Planning Unit (2022). National Energy Policy 2022-2040, Prime Minister’s Department, Federal Government Administrative Centre, Putrajaya, Malaysia.
- [10] The Economic Times of India (2024). Bad news for India? Indonesia and Thailand up their EV strategy to attract electric vehicle makers, 22 February.
- [11] ECORYS (2023). Trade in Environmental Goods and Services, Final Report for the Ministry of Foreign Affairs, Rotterdam, March 3.
- [12] George, A., Sengstschmid, U. & Xie, T. (2024). Trade as Part of the Climate Solution? Evaluating the Status Quo, Research Paper 8-2024, Asia Competitiveness Institute Research Paper Series, June.
- [13] Goh, N. (2023). Tesla becomes latest EV company to see promise in Malaysia, Nikkei Asia, 20 July.
- [14] Guild, J. (2024). Markets, Makers, and the State of Play in Southeast Asia’s Electric Vehicle Industry, The Diplomat, 1 February.
- [15] Hinrich Foundation-IMD (2024). Sustainable Trade Index 2024 – The race for resilience, <https://imd.widen.net/s/dsf2b2jlsj/sti-2024-report>.
- [16] Hyundai (2022). Supporting Hyundai’s Future Mobility Strategy Hyundai Motor Company Inaugurates Its First Manufacturing Plant in Southeast Asia, March 16.
- [17] Indonesia Business Post (2024). Wuling Indonesia explores EV export expansion, June 20.
- [18] International Monetary Fund (IMF) (2024a). Climate Change Indicators Dashboard. [Trade in environmental goods], <https://climatedata.imf.org/pages/access-data>.
- [19] IMF. (2024b). World Economic Outlook Database, <https://www.imf.org/en/Publications/WEO/weo-database/2024/April>.
- [20] International Trade Administration (2024). Country commercial guides – environmental technology, US Department of Commerce, Washington D.C., <https://www.trade.gov/country-commercial-guides>.
- [21] The Investor (2024). Indonesia aims to become Southeast Asia's EV production hub, October 29.
- [22] Kuriyama, C. (2021). A Review of the APEC List of Environmental Goods, APEC Policy Support Unit POLICY BRIEF No. 41 October.
- [23] Ministry of Natural Resources and Environmental Sustainability (2024). National Climate Change Policy 2.0, September 30.
- [24] Mao, X., Liu, H., Gui, J. & Wang, P. (2023). Toward inclusive list-making for trade liberalization in environmental goods to reduce carbon emissions, *Geography and Sustainability*, Volume 4, Issue 3, pp. 200-212, <https://doi.org/10.1016/j.geosus.2023.04.002>.
- [25] Montfaucon, A.F., Lakatos, C., Agnimaruto, B. & Silberring, J.M. (2024). “Trading Towards Sustainability: The Role of Trade Policies in Indonesia’s Green Transformation.” Washington, DC: World Bank.
- [26] Neumayer, E. (2000). Trade and the Environment: A Critical Assessment and Some Suggestions for Reconciliation. *The Journal of Environment & Development*, 9(2), 138–159. <http://www.jstor.org/stable/44319491>.
- [27] Nikkei Asia (2023). Malaysia ready to become Southeast Asian EV hub, trade minister says, 26 October.
- [28] Nolan, S. (2024). Thailand: A Global Hub for Electric Vehicle Production, *EV Magazine*, August 9.

- [29] PAGE (2021). Green Industry and Trade Assessment (GITA) of Indonesia: A Strategic Guide toward Green Industrial Development.
- [30] Paramasua, M., Devadason, E.S. & Tehrani, P.M. (2019). *Environmental goods and services sector in Malaysia: Regulatory shortcomings and policy constraints*. Institutions and Economies, 11 (2). pp. 73-99.
- [31] Raharyo, A., Mertawan, G.A. & Baskoro, R. (2022). Competitive Advantage between Indonesia and Thailand on Electric Vehicle Manufacturing, *Journal of Economics and Business Aseanomics* 7 (2), 101-121.
- [32] Schoenbaum, T.J. (1997). International Trade and Protection of the Environment: The Continuing Search for Reconciliation. *American Journal of International Law*, 91(2):268-313. Doi: 10.2307/2954212.
- [33] S&P Global (2024). Malaysia updates climate policy to support NDC target, Climate Change Act by Q1 2025, October 1.
- [34] Steenblik, R. (2005). Environmental Goods: A Comparison of the APEC and OECD Lists, Joint Working Party on Trade and Environment, November 29.
- [35] Sutabutr, T. (2024). Thailand's Path toward Carbon Neutrality and the Implications for the Mekong Subregion, Commentary from Clean EDGE Asia, The National Bureau of Asian Research, March 2.
- [36] TechInAsia (2024). BYD to set up \$1.3b EV plant in Indonesia, targets operations by 2026, May 2.
- [37] Terasawa, M. & Tiberghien, Y. (2024). Asia ground zero in the revolution of electric vehicle markets, East Asia Forum, March 19.
- [38] Thompson, P. & Strohm, L. A. (1996). Trade and Environmental Quality: A Review of the Evidence. *The Journal of Environment & Development*, 5(4), 363–388. <http://www.jstor.org/stable/44319237>.
- [39] Thorbecke, W. (2023). *The East Asian Electronics Sector*, Cambridge University Press, February.
- [40] United Nations Conference on Trade and Development (UNCTAD) (2023). Key Statistics and Trends in Trade Policy 2022 – Green goods trade and trade policies, https://unctad.org/system/files/official-document/ditctab2023d2_en.pdf.
- [41] UNDP (2023). Climate Promise, <https://climatepromise.undp.org/what-we-do/where-we-work/philippines>.
- [42] Vietnam Investment Review (2024). Trade sector encouraged to go green, June 17.
- [43] World Bank Group (2024). Prosperity Data 360, trade in environmental goods, <https://prosperitydata360.worldbank.org/en/indicator/WB+CCDR+CC+ENV+GDS+CADV> and <https://prosperitydata360.worldbank.org/en/indicator/WB+CCDR+CC+ENV+TRAD+EX>.
- [44] World Trade Organization (WTO) (2022). Leveraging Trade in Environmental Goods and Services to Tackle Climate Change, Policy brief, Geneva.
- [45] World Trade Organization (WTO) (2023). World Trade Report 2023 – Re-globalization for a secure, inclusive and sustainable future, https://www.wto.org/english/res_e/booksp_e/wtr23_e/wtr23_e.pdf.