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ECONOMIC RELATIONS

POSITION PAPER

ASEAN Smart Mobility Infrastructure for a Sustainable Future: Trends and Opportunities to Attract Italian Investments

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The ASEAN Region has reconfirmed its commitment, made at the 2015 United Nations Climate Change Conference, to accelerate **decarbonization**. The Region's transportation sector is responsible for 40% of global greenhouse gas emissions and 23% of carbon dioxide emission. ASEAN nations aim to reach a high penetration of **sustainable, electric transportation** to reduce the region's carbon footprint. ASEAN countries have thus initiated "**smart mobility**" **policies** in recent years to increase **electric vehicle** (EV) investment.

In 2020, EV sales in the Region surged to **2.45 million**, a growing trend relative to population growth and economic development. Projections estimate that **20% of all vehicles in Southeast Asia will be electric by 2025** (approx. **59 million two- and three-wheel vehicles and 8.9 million four-wheel vehicles**). Furthermore, ASEAN government agencies have also granted **tax and non-tax incentives to attract domestic and foreign direct investment (FDI) in EV manufacture and infrastructure**. These incentives include regulatory shifts, maximization of value chain potentials, utilization of charging networks, and tariffs or corporate income tax exemptions.

Italian investment would bring further sustainability expertise into the Region. Italy's automotive industry is one of the largest industrial sectors in the nation, placing Italy among international leaders and competitors. Italy has a strong history of excellence in automotive technology and the production of EV infrastructure across the sustainable mobility value chain.

ASEAN Countries' Smart Mobility Policies

1. **Status quo**.

Studies estimate that **ASEAN countries lose approximately 2-5% of their annual GDP to heavy traffic**. For instance, Metro Manila registers a daily economic loss of USD 67 million, while Greater Jakarta's annual economic loss totals USD 4.6 billion.

Overall, the transportation sector in Southeast Asia is responsible for 40% of global greenhouse gas emissions and 23% of carbon dioxide emissions.[1]

Achieving a high penetration of electronic mobility in the ASEAN region would significantly decrease the level of final energy consumption.[2]

2. In response, ASEAN countries are promoting several policies to expedite progress towards a more sustainable transportation sector.

- Policy Group 1. **Tax Measures and Incentivized Pricing**.
  - Indonesian state-owned electricity provider PT PLN (Perusahaan Listrik Negara) currently offers a 30% discounted rate to EV owners who charge their vehicles from 10:00 PM to 5:00 AM.
  - Singapore plans to adjust the road tax for e-cars and lower the differential relative to internal combustion engine (ICE) vehicles.
  - Vietnam has imposed city taxes on two-wheelers, aiming to phase out the vehicles in high-density urban areas by 2030.
- Policy Group 2. **The Sustainable Mobility in Metropolitan Regions (SMMR) Project**.
  - SMMR is an ASEAN-German Cooperation Project which began in November 2021 and extends through October 2024. It focuses on supporting local, national, and international transportation policy makers, experts, operators, and stakeholders.
- Policy Group 3. **ASEAN Sustainable Urbanization Strategy (ASUS) and ASEAN Smart Cities Network (ASCN)**.[3]
  - The two policies share a similar framework and focus. The six major areas of concern are (i) civic and social; (ii) health and well-being; (iii) security; (iv) quality environment; (v) infrastructure; (vi) industry and innovation.

[1] Source: Cambridge university Press, "Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, 2014".

[2] Source: Asian Development Bank Institute (ADBI), "Electric Vehicles and Energy Insecurity in ASEAN Countries: Renewable Energy Integration and Urban Air Quality, 2019".

[3] Source: ASEAN, "The Road to Sustainable Cities, 2021".

- Policy Group 4. **Clean Transport Initiatives**.[4]
  - ASEAN countries are establishing initiatives to encourage citizens to take up cycling as a greener and healthier mode of transport within cities. These initiatives include public bicycle sharing and Jakarta's establishment of the safe bicycle trail.

3. Additional initiatives are being implemented to **promote the transition to more environmentally friendly vehicles**:

- The government of Indonesia expects to meet its operational needs with over 100,000 e-cars and 400,000 e-motorcycles by 2030. Furthermore, the country's municipal land transport operator, TransJakarta, began operating 30 electric buses in March 2022.
- Malaysia has established a road tax exemption, up to 100%, for EVs. The country also enacted an individual income tax relief program to reimburse costs related to EV use. Up to 2,500 MYR can be claimed for expenses related to the purchase, installation, rent, and subscription fees for EV charging facilities.
- Thailand launched a national program that will increase the local production and circulation of one million EVs – including 400,000 cars and trucks, 620,000 motorcycles, and 31,000 buses and commercial vehicles – by 2025.
- The Philippines is implementing a Public Utility Vehicle Modernization Program which aims to phase out 180,000 jeepney units and replace them with EVs or Euro 4 compliant (low carbon emission) vehicles. Moreover, the country implemented a "no upfront cash" system that allows users to purchase e-trikes without making large down payments.
- Vietnam's Vinbus (an electric bus & transportation provider) expanded into Ho Chi Minh in March 2022.
- Vietnam, Thailand, and Singapore have made it compulsory for car manufacturers and importers to affix CO_2 emission and fuel economy labels on new, light-duty passenger vehicles.[5]

Recent Sustainability Trends

4. ASEAN countries' interest in EVs has increased significantly in recent years and continues to grow.[6]

In 2020, the sale of EVs totaled 2,450,000. This growing trend is expected to continue to increase with population growth and economic development.

However, questions remain regarding consumers' willingness to pay for advanced technology. As of 2022, Southeast Asian consumers' powertrain preferences for their next vehicle are: Gasoline/Diesel (ICE) – 66%, Hybrid Electric (HEV) – 15%, Plug-in hybrid electric (PHEV) – 11%, Battery electric vehicle (BEV) – 5%.

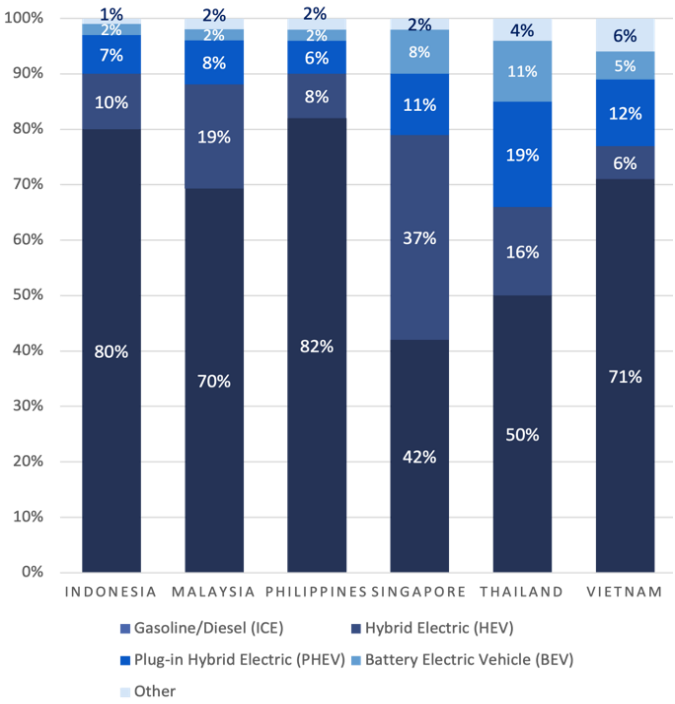

Figure 1. *Southeast Asian consumers' powertrain preferences for their next vehicle. (Source: The European House - Ambrosetti and Mahanakorn Partners Group data elaboration, 2022)*

Nevertheless, **a third of Southeast Asian consumers are open to buying an electric car**.

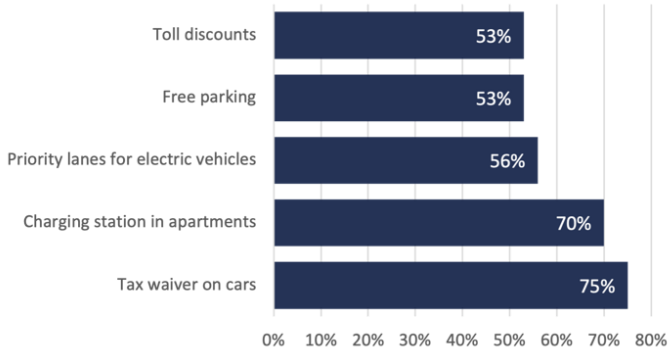

Figure 2. *Incentives to Promote Electric Vehicles in Southeast Asia: respondents reveal their choice incentive to switch to electric vehicles. (Source: The European House – Ambrosetti and Mahanakorn Partners Group data elaboration, 2022)*

5. EV and charging infrastructure development strategies vary from country to country within the ASEAN region. Some member states plan to enter into public-private partnerships (PPP), while others seek to maintain full state ownership. For instance:

- In Singapore, Singapore Power (SP) Group has formed a joint venture with Hyundai.
- In Thailand, Foxconn has partnered with Thailand's state-owned oil and gas giant, PTT, to form a joint venture named Horizon Plus.
- In Indonesia, state-owned PLN has developed 200 charging stations in 10 cities.

[4] Source: The Korea Transport Institute, "Vision and Strategies of Public Transportation in ASEAN Megacities, 2014."

[5] Consistent with the goals identified in the ASEAN Fuel Economy Roadmap for the Transport Sector 2018-2025 (ASEAN, 2019).

[6] Source: ASEAN, "The Road to Sustainable Cities, 2021".

ASEAN Countries' Sustainability Targets

6. ASEAN transportation experts estimate that **20% of all vehicles on the road in Southeast Asia will be electric by 2025**. This includes 59 million two- and three-wheelers and 8.9 million four-wheel vehicles.[7]

- **Brunei.**
  - BNCCP (the Brunei Darussalam National Climate Change Policy) focuses on 10 core areas, including EVs, with targets to be implemented in the next 15 years.
  - The country reportedly aims to grow EV sales until 60% of total vehicle sales are EVs.
- **Indonesia.**
  - Aims to reach net-zero emission by 2060 or sooner.
  - Aims to export 200,000 electric cars by 2025, nearly 20% of the one million cars exported by the country in a single year.
  - Intends to install 2,400 public charging stations by 2025, and 31,000 by 2030.
  - Initiated a 5-year development plan (2020-2024) to increase renewable energy capacity by 300% or more.
  - The country expects that 2,200 EV units, 711,000 hybrid units, and 2.1 million electric motorcycles will be on the road by 2025.
- **Malaysia.**
  - The National Automotive Policy (NAP) of 2020 aims to propel Malaysia's automotive industry into an era of digital, industrial revolution. Although NAP does not incentivize the manufacture of EVs or infrastructure development, its vision is to ensure long-term sustainability in the automotive industry. Plans include establishing an Electric Vehicle Interoperability Centre (EVIC) [8] to oversee EV charging protocols, energy management systems, and the safe usage of crucial, volatile components.
  - The government has been convinced by Original Equipment Manufacturers (OEMs) to reconsider EV policy.
  - Malaysia originally planned to achieve 25% renewable energy by 2025[9], but this has recently been increased to 31% within the same timeframe.[10]
- **Singapore.**
  - Plans to phase out ICE vehicles by 2040.
  - Plans to construct 60,000 charging stations by 2030 in public car parks and on private property.
  - Has announced the decision to stop issuing taxi-licenses to diesel-powered vehicles by 2025.
  - The goal of the Long-Term Low Emissions Development Strategy (LT-LEDS) is to reduce CO_2 emissions by 33 million tons by 2050.
- **Thailand.**
  - Aims to produce 250,000 EVs, 3,000 electric public buses, and 53,000 e-motorcycles by 2025.
  - Offers large incentive packages to EV manufacturers, with the goal of increasing total EV production by 30% by 2030.
  - Aims to only sell zero-emission vehicles in the country from 2035.
  - The National Climate Change Master Plan (2015-50) refers to the carbon market as a potential mechanism to achieve targeted emission reductions in key industries and promote energy efficiency.[11]

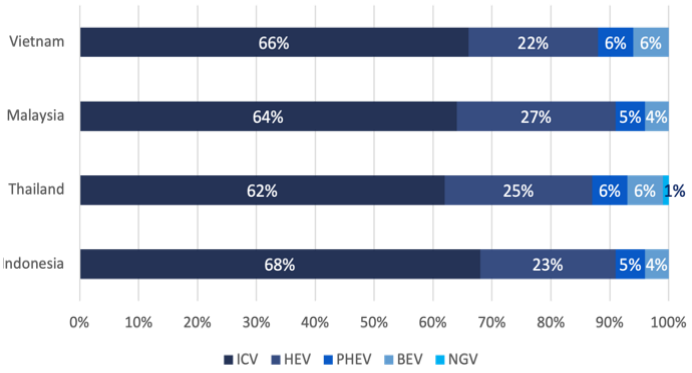

Figure 3. *ASEAN Sales Share by Powertrain (Source: The European House - Ambrosetti and Mahanakorn Partners Group elaboration on Suehiro, S. and Purwanto, J. 2019. "Study on Electric Vehicle Penetrations' Influence on 3Es in ASEAN")*

Tax and Non-tax Incentives to EV Manufacturers and Infrastructure Producers

7. Several **non-tax incentives** are already in effect throughout the ASEAN region.

- **Regulatory Environment**.
  - Indonesia has increased loan accessibility for electric car purchasers by easing lending regulations, risk calculation, and credit checks. It recently announced plans to remove down payment requirements for the purchase of green vehicles.
  - Malaysia launched a Low Carbon Cities 2030 Challenge, which aims to establish 200 low-emission zones across the country. The expectation is that it will increase demand for green transportation options, including EVs.
  - Singapore has implemented trade regulations and several Free Trade Agreements (FTAs) favorable to the manufacture of EVs and EV infrastructure.
  - Thailand emerged as the 10th biggest auto manufacturer of 2021 and an EV manufacturing hub. This is due to policies promoting Foreign Direct Investment (FDI) and the incentivization of investment in the EV sector, supply chain and car buyers.

[7] Source: International Renewable Energy Agency (IRENA).
[8] Source: Malaysia Ministry of International Trade and Industry
[9] Source: Ibid.
[10] Excerpt from an interview with Energy and Natural Resources Minister, Datuk Seri Takiyuddin Hassan.
[11] Reduction of GHG emissions by 20-25% by 2030 (or 110 to 140 MtCO2eq); increase of renewable energy capacity to approx. 20,000 MW by 2036; utilization of 15-20% renewable energy in electricity production by 2036

- The Philippines has enacted several laws facilitating the purchase of green vehicles, including the "no up-front cash" system that eliminates the down payment requirement when purchasing e-trikes. The country has issued a Public Utility Vehicle (PUV) modernization plan to replace public transport vehicles 15 years or older with modern, zero or low-emission vehicles.

- **Potential Supply Chain Opportunities**.
  - In Indonesia the government has established regulations to halt the export of unprocessed nickel ore to support domestic EV battery manufacture. Ride-hailing operators have already begun adopting EVs, and public transport operators are also planning to procure EV passenger buses.
  - Malaysia, following introduction of the National Automotive Policy 2020, has leveraged its copper reserves to increase the manufacture of lithium-ion batteries and battery packs. There has been a distinct shift towards EV production and plans are in place to build Malaysia's first electric bus assembly plant.
  - The Philippines, home to 5% and 4% of global nickel and cobalt reserves respectively, plans to increase participation in the EV battery production chain.
  - In Vietnam, VinFast is the country's current, dominating EV manufacturer. High discounts are offered on VinFast's EVs to increase domestic demand. Additionally, Vietnam is uniquely positioned to become a low-cost nickel sulfate supplier in the region's EV lithium-ion battery market.

- **Charging networks**.
  - Malaysia plans to construct 25,000 public charging stations and 100,000 private charging stations by 2030.
  - In Singapore, there are approximately 1,800 public charging stations currently in use and plans to construct 60,000 additional charging stations by 2030. The government is setting aside 30 million SGD between 2021 and 2025 to fund initiatives to promote the increased adoption of EVs. These initiatives also include increasing the number of private charging stations.
  - Thailand has a relatively extensive public charging network. There are approximately 1,000 charging stations in use throughout the country, installed within 200 kilometers of one another for greater coverage. The Thailand Board of Investment (BOI) also grants investment incentives for EV-related infrastructure, especially charging stations, to accelerate the domestic EV market.

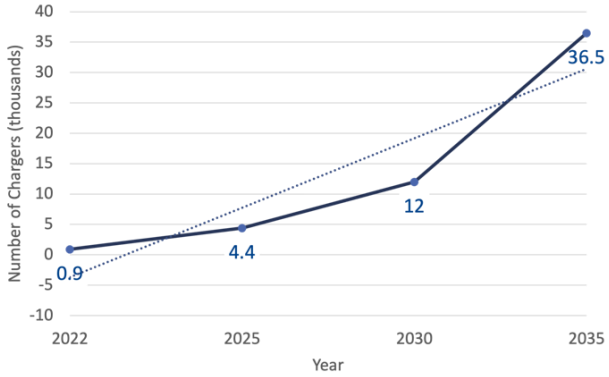

Figure 4. *Thailand's Public Fast Chargers. (Source: The European House - Ambrosetti and Mahanakorn Partners Group elaboration on Thailand's National Electric Vehicle Policy Committee, 2022)*

8. With respect to **Tax incentives**:

- In Indonesia, the import of EVs from other ASEAN countries, China, and South Korea is **tariff exempt**. The Ministry of Finance recently proposed a decrease in the tariff on EVs with fewer than nine seats. The decrease would be from the current rate of 70% to 50%. The goal is to incentivize and increase adoption of EVs. The finalization of a new EV policy is in process. This new policy includes a variety of fiscal incentives, such as tax cuts to foreign automotive manufacturers, as the country redoubles its efforts to become a lithium-ion battery production hub.
- The Malaysian government is preparing to introduce various **tax breaks** on the duties and road tax on EVs.
  - 100% exemption from import and excise duties, and zero road tax on Completely Built Unit (CBU) electric cars until December 31, 2023.
  - 100% exemption from import duties on Completely Knocked Down Unit (CKD) electric cars until December 31, 2025.
- In the Philippines, EVs will be exempt from excise tax under the Tax Reform for Acceleration and Inclusion Act (TRAIN).
- Singapore decreased the Additional Registration Fee (ARF) on EVs. The minimum ARF will be lowered to 0 SGD for all electric cars from January 2022 to December 2023. EV purchases made from January 1st, 2021, to December 31st, 2023, are also eligible for an ARF rebate of 45% under the EV Early Adopter Incentive (EEAI). This rebate is capped at a maximum of SGD 20,000. Additionally, the Vehicle Emission Scheme (VES) grants tax rebates based on a car's eco-friendliness. Most EVs receive the highest tax benefits, scoring a minimum grade of A2. For example, A1-grade vehicles qualify for a total rebate of 25,000 SGD:

- In Thailand the import duty on CBU EV batteries is reduced during 2022-2023: the rebate on EVs priced above 2 million THB is 40%.; the rebate on EVs priced between 2 and 7 million THB is 20%. A reduction in excise taxes is also in place.[12] The excise tax on imported EVs will be reduced from 8% to 2%. The excise tax on domestically produced EVs will be decreased from 10-30% to 2-10%. The Thailand Board of Investment (BOI) introduced corporate income tax (CIT) reductions and other incentives to EV manufacturers. These reductions extend from 3 to 11 years. Eligible manufacturers include those producing all types of EVs and EV platforms.[13]

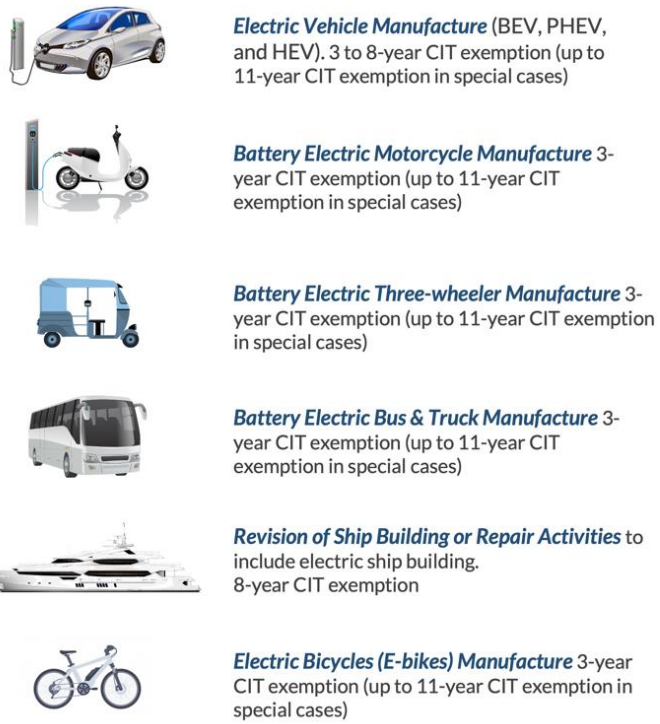

Figure 5. *Enhanced Investment Incentives for EV Production in Thailand (Thailand Board of Investment, 2022).*

Additional FDI Promotion and Facilitation Policies

9. **FDI inflows** to ASEAN countries have increased by 5% to **USD 156 billion in 2020**.[14]

- In Indonesia, the EV and battery industry is now a major source of foreign investment, reportedly accounting for 70% of FDIs in 2020.
- In Thailand, year-over-year (YOY) FDI growth in the automotive and auto parts sector more than quadrupled, to 1.2 billion USD, in Q1 2022.

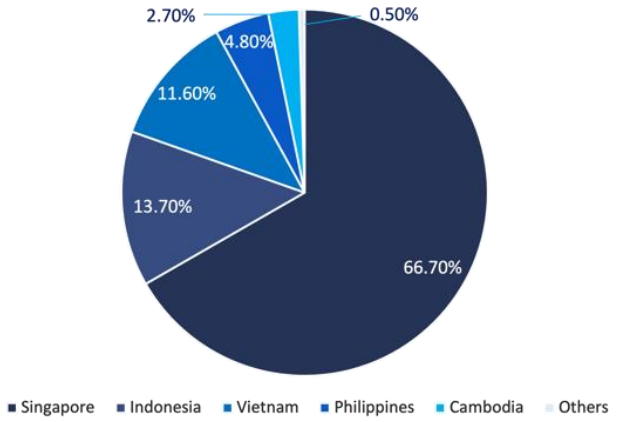

Figure 6. *ASEAN FDI Inflow Recipients (Source: The European House - Ambrosetti and Ambrosetti and Mahanakorn Partners Group elaboration on UNTCAD, World Investment Report, 2021)*

10. **Measures to Increase FDI Inflows.**[15]

- In Indonesia the Five-Year Plan (RPJMN) (2020-2024)[16] completes the National Long-Term Development Plan (RPJPN) (2005-2024) to achieve prosperous, fair, and sustainable development by 2024.
- Malaysia has implemented an export-led growth strategy.
- In Singapore the Local Industry Upgrading Program (LIUP) is an initiative promoted by the Economic Development Board that aims to strengthen the links between FDI and Small and Medium Enterprises (SME).
- USAID/Cambodia. The Country Development Cooperation Strategy (CDCS) 2020-2025 is an initiative which aims to foster a business enabling environment.[17]
- In Thailand:
  - the Industrial Estate Authority of Thailand (IEAT) aims to develop and support the management of industrial estates and ports to promote entrepreneurship and responsible environmental business.
  - Special Economic Zones (SEZs) allow the state to better support infrastructure development, incentivize investment, and provide administrative services.
  - The Eastern Economic Corridor (EEC) Development Plan aims to encourage investment, promote innovation, and advance technology in the region.

[12] Incentives will initially apply to some 27 model types of EVs.
[13] Source: Thailand BOI, "Electric Vehicle Industry, 2022." For electric four-wheeler vehicle, ships, and motorcycles.
[14] Source: United Nations Conference on Trade and Development (UNCTAD), "Investment flows to developing countries in Asia could fall up to 45% in 2020, 2020."
[15] Source: Source: Procedia Economics and Finance, "The Foreign Direct Investments in South-East Asia during the Last Two Decades, 2014."
[16] Source: Asian Development Bank Institute (ADBI), "Indonesia, 2020–2024 —Emerging Stronger. Country Partnership Strategy, 2020."
[17] Source: USAID, "Country Development Cooperation Strategy (CDCS), 2022."

- Investment Facilitation Agreements:
  - Regional Comprehensive Economic Partnership (RCEP) Agreement (2022).
  - ASEAN Free Trade Area (AFTA) (1993).
  - ASEAN-India Comprehensive Economic Cooperation Agreement (ASEAN-India CECA) (2015).
  - ASEAN-Japan Comprehensive Economic Partnership (AJCEP) (2008).
  - ASEAN-Republic of Korea Comprehensive Economic Cooperation Agreement (AKFTA) (2009).
  - ASEAN-Australia and New Zealand Free Trade Agreement (ASEAN-ANZ FTA) (2010).
  - ASEAN-People's Republic of China Comprehensive Economic Cooperation Agreement (ACFTA) (2010).
  - ASEAN-Hong Kong, China Free Trade Agreement (ASEAN-Hong Kong, China FTA) (2019).
  - ASEAN Framework Agreement on Investment Facilitation (AFAIF) (2021).
- WTO Investment Facilitation for Development (WTO IFD) (2017).

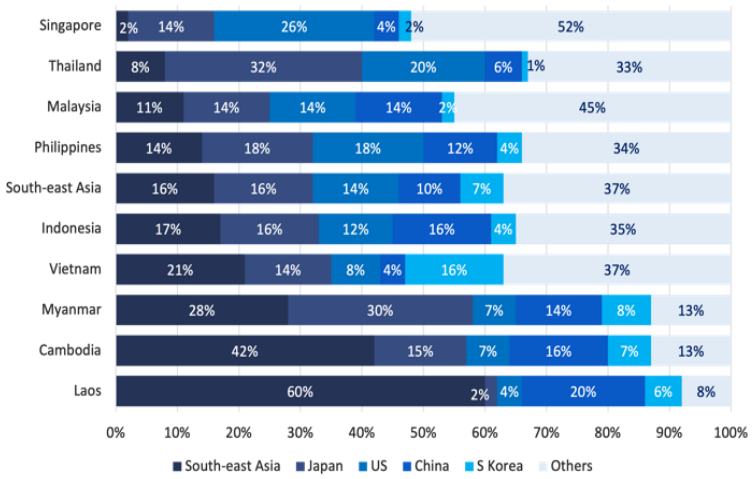

Figure 7. *Greenfield Foreign Direct Investment into South-East Asia. (Source: fDi Markets, 2018)*

11. **Methods of Investment.**

- Indonesia.
  - Foreigners can establish limited liability companies (LLCs) through 100% foreign ownership or joint venture with Indonesian partners.
- Malaysia.
  - A foreigner is entitled to fully own certain types of businesses under the Company Act of 2016. However, those businesses must have a legitimate, permanent address in Malaysia. Another regulation requires that businesses in particular industries (e.g., agriculture, banking, education, oil, and gas) have 50% Malaysian ownership.
- Singapore.
  - The Singapore Companies Act allows foreign investor to fully own Singaporean corporate entities.
  - There are no restrictions on the types of business activities in which a company may engage.
- The Philippines.
  - Under the Foreign Investments Act of 1991 (FIA), a foreign investor is generally allowed to own 100% of any local business enterprise.
- Thailand.
  - The Foreign Business Act B.E. 2542 (1999), reserves certain business activities for Thai nationals and restricts foreign business ownership. The Act requires that Thai shareholders hold a minimum of 51% of the company's capital. Accordingly, foreign investors are only permitted to own 49% of the company.
- Vietnam.
  - If international treaties and domestic law are silent, the licensing authority has the discretion to decide whether to allow foreign investment in a given sector. However, most publicly traded Vietnamese companies are still subject to a foreign ownership limitation of 49%.

Italy as a Preferred Partner in the Development of Sustainable Mobility in ASEAN

12. Italy is a **leading country in the automotive value chain and industry**. The Italian national automotive sector consists of more than 5,000 companies and approximately 260,000 employees. The sector's direct turnover is EUR 100 billion, making up 6% of the national GDP. Including the service sector and automotive-related components, the industry generates EUR 49 billion in turnover and employs around 160,000 employees in 2,000 companies.

13. Beyond the sector's overall size, Italy has demonstrated excellence in manufacturing and energy distribution industries.

- Italy has formed a sub-sector of the automotive manufacturing and components sectors devoted to the production of light electric vehicles, motorbikes, and bicycles. Italy is also home to well-established producers of inverters, battery storage systems, and electric motors. This growth is thanks to development in the photovoltaic sector. Italy is also the **third largest exporter of LED lights in the world** with approximately 80 manufacturers of LED equipment.
- Recycling and second-life initiatives in Italy have produced a specialization in the disposal of accumulators. A collaboration between the Cobat Consortium[18] and National Research Council (CNR) has developed advancements in the recovery of lithium batteries. Projects for the reuse of batteries are set for

[18] Cobat is a service platform for circular economy guaranteeing an efficient collection, storage and recycling of tires, batteries and accumulators and electrical and electronic equipment. In 2021 Cobat was acquired by the cleantech company Innovatec.

launch, including the Enel-X. The Enel-X[19] program is ready to establish a large-scale battery storage facility with a projected capacity of 5MWh/10MWh. Second-life batteries from the automotive sector will be used to store the excess power produced by the 30MW solar park under development at the Rome-Fiumicino International Airport.

- In 2001, Italy became **the first country** to launch a nationwide EV charging station infrastructure, the beginnings of a smart grid. Today, Italy has one of the most efficient, remotely controlled networks of smart electricity meters. This system includes the remote metering, reading, and management of domestic meters. Additionally, Italy supplies the demands of this network with an industrial sector devoted to producing recharging infrastructure for both private and public use, energy storage systems, and smart public lighting systems. This network better serves the nation with efficient demand response management.
- Innovative companies and start-ups specializing in the development of software applications and technology solutions form a fabric of **mobility services** for an emerging mobility management and shared mobility system.

14. Italy also has a strong **network of research institutes** at the forefront of applied research in energy and mobility, including the Polytechnics of Turin and Milan, the Centre for Automotive Research and Evolution (CARe) in Rome, and the institutes of the CNR.

15. Furthermore, **EU policies and associated Italian investment plans** bolster the innovations to come.

The European Commission has proposed revising the European targets for the 2030 energy transition. The goal is to meet greater ambitions in the transportation sector. The "Fit for 55" package includes target to decrease car emissions by 55%, emissions from vans by 50%, and 0 pollution for new cars in 2035. Additionally, the Mission 2 "Green Revolution and Ecological Transition", with a total investment of EUR 69.9 billion, aims to renew bus fleets with the purchase of 3,800 low-emission electric and hydrogen powered buses.

This is the direction in which the **National Recovery and Resilience Plan** (NRRP) in Italy, a part of the EUR 750 billion Next Generation EU (NGEU) program, is moving in response to the pandemic crisis. The national plan is to contribute to the construction of charging stations on a large scale. EUR 740 million has been allocated to the development of electric charging infrastructure and the promotion of more sustainable local transport. The plan is to develop 7,500 fast-charging points on highways and 13,755 in urban centers. An additional hundred experimental charging stations with energy storage technology will be constructed. The NRRP's contribution is meant to **increase the adoption of e-mobility and its related value-chains** by establishing new charging points in strategic locations.

[19] Enel X is the Enel Group company that provides innovative products and services at the service of energy transformation at household, city and industrial levels, with a view to sustainable development.