

Profile of the Electric Vehicle Industry in the Philippines*

I. INTRODUCTION

When fossil fuels such as gasoline and diesel are burned, carbon dioxide (CO₂), a greenhouse gas, is released into the atmosphere. When CO₂ and other greenhouse gases like methane, nitrous oxide, and hydrofluorocarbons build up, a warming of the Earth's atmosphere happens and causes a change in the climate we are now experiencing (EPA, 2022). Adopting the use of electric vehicles (EVs) is one strategy to decarbonize the transportation sector by reducing greenhouse gas emissions, which is necessary to lessen the impact of climate change.

Although vehicles with an internal combustion engine (ICE) have been the standard vehicle plying on the road for a significant number of years, vehicle manufacturers are now including EVs in their line-up, considering the growing preference of people for vehicles that are not only fuel-dependent—given the current high prices of fuel—but are also friendly to the environment.

This paper provides a profile of the EV industry in the Philippines. Information on the policy support programs and incentives for the said industry in the Association of Southeast Asian Nations (ASEAN) region are also discussed in the paper.

II. BACKGROUND INFORMATION

An EV is driven by an electric motor that uses stored energy in its rechargeable batteries vis-à-vis a vehicle with an ICE, which generates power by burning a mixture of gasoline and gases. The use of EVs contributes to improving air quality because EVs emit no carbon emissions during operation, reducing air pollution significantly. In addition to reducing air pollution, EVs can reduce noise pollution as they are significantly quieter than conventional vehicles.

There are several types of EVs in the market. These include all-electric vehicles, also referred to as battery EVs (BEVs), with an electric motor instead of an ICE. This vehicle uses

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a large traction battery pack to power the electric motor. It must be plugged into a wall outlet or charging equipment, called elective vehicle supply equipment (EVSE). On the other hand, Hybrid EVs (HEVs) are powered by an ICE and one or more electric motors, which use energy stored in batteries. Unlike BEVs, HEVs cannot be plugged in to charge the battery. Instead, the battery is charged through regenerative braking¹ and the ICE. The additional power the electric motor provides is likely to allow for a smaller engine, while the battery can also power auxiliary loads, reducing engine idling when stopped. These features collectively contribute to better fuel economy without sacrificing performance. Plug-in hybrid EVs (PHEVs) use batteries to power an electric motor and another fuel, such as gasoline, to power an ICE. The ICE can charge PHEV batteries using a wall outlet, charging equipment, or regenerative braking. The vehicle typically runs on electric power until the battery is nearly depleted, at which point the car automatically switches over to using the ICE. (See Annex A for a detailed comparison of the key components of BEVs, HEVs, and PHEVs).

Energy storage systems, such as batteries, are essential components of EVs. The following are the different types of EV batteries:

- a. Lithium-ion batteries – Currently used in most portable consumer electronics such as cellphones and laptops because of their high energy per unit mass relative to other electrical energy storage systems. They are also said to have a high power-to-weight ratio, high energy efficiency, good high-temperature performance, and low self-discharge. Most of today's BEVs and PHEVs use lithium-ion batteries, though the exact chemistry often varies from that of consumer electronics batteries. While most components of lithium-ion batteries can be recycled, the cost of material recovery remains a challenge for the industry.
- b. Solid-state batteries – These are the batteries in which all the components that make up the battery are solid. Secondary batteries (batteries that can be recharged and used repeatedly), like lithium-ion batteries, are basically composed of two electrodes (a cathode and an anode) made of metal and an electrolyte that fills the space between them. Conventional secondary batteries use a liquid as the electrolyte, but solid-state batteries use a solid as the electrolyte. A solid electrolyte enables larger-capacity and higher-output batteries than lithium-ion batteries. Moreover, making the electrolyte solid has advantages in terms of safety over lithium-ion batteries.
- c. Nickel metal hydride batteries – Routinely used in computer and medical equipment, offer reasonable specific energy and specific power capabilities. These batteries have a much longer life cycle than lead-acid batteries and are safe and abuse-tolerant. These batteries have been widely used in HEVs. The main challenges with nickel-metal hydride batteries are their high cost, high self-discharge, and heat generation at high temperatures, and the need to control hydrogen loss.

¹ Regenerative braking means the electric motor is operated in reverse, thereby applying a braking force through electromagnetism. This recaptures some of the vehicle's kinetic energy by charging the battery. Some electric vehicle models have specific driving modes that incorporate varying levels of regenerative braking. (Office of Energy Efficiency & Renewable Energy)

- d. Lead-acid batteries – These batteries can be designed to be high-powered and are inexpensive, safe, and reliable. However, low specific energy, poor cold-temperature performance, and short calendar and lifecycle impede their use. Advanced high-power lead-acid batteries are being developed, but these batteries are only used in commercially available electric-drive vehicles for ancillary loads.
- e. Ultracapacitors - Store energy in a polarized liquid between an electrode and an electrolyte. Energy storage capacity increases as the liquid's surface area increases. Ultracapacitors can provide vehicles with additional power during acceleration and hill climbing and help recover braking energy. They may also be useful as secondary energy-storage devices in electric-drive vehicles because they help electrochemical batteries level load power.

Typically, the production of an EV produces greater CO₂ emissions than the production of a conventional vehicle. The creation of lithium-ion batteries, a vital component of an EV, consumes a substantial amount of energy and releases CO₂ throughout the manufacturing of an EV. However, even after accounting for the creation of batteries, EVs are still considered the more environment-friendly option due to the reduced emissions created during the vehicle's lifespan (Choudhury, 2021).

As mentioned earlier, aside from environmental awareness, the demand for EVs has surged due to rising fuel costs, partly brought about by the ongoing Ukraine-Russia geopolitical war, making oil importation more expensive. It must be mentioned that the Philippines is highly dependent on the world market for its oil. As of the first week of January 2022, gasoline products averaged P62.10 per liter (L), while diesel products averaged P43.94/L. By July 2022, the average gasoline price was P85.47/L, and the average diesel price was P87.31/L, representing net increases of 37.63% or P23.37/L for gasoline and 98.70% or P43.37/L for diesel (Grecia L., 2022).

Several Southeast Asian countries have begun taking initiatives to encourage EV adoption in their respective nations. An online article reported that ASEAN's interest in EVs has increased over time and that, according to the ASEAN Automotive Federation, about 2.45 million EVs were sold in the ASEAN member states in the year 2020. This number is expected to increase with population growth and economic development (Southeast Asia Infrastructure, 2021).

In an effort to catch up with worldwide efforts to accept new technologies, such as the move towards EV use, the Philippine government, through the Department of Transportation, introduced the Public Utility Vehicle Modernization Program. This program is one of the flagship programs of the Duterte Administration designed to modernize the public transport system to provide a safe, convenient, and systematized service to Filipinos commuting daily. Furthermore, the government also passed Republic Act (RA) No. 11697, also known as the "Electric Vehicle Industry Development Act (EVIDA)," which lapsed into law on April 15, 2022, without the signature of the President, in accordance with Article VI Section 27(1) of the 1987 Philippine Constitution, which would regulate various EV-related operations in the country. The EVIDA is a landmark piece of legislation that will help the country remain globally competitive and on the cutting edge of EV technology and the infrastructures and

components that support it. It will also pave the way for local EV production, which would lead to the creation of new jobs and the attraction of new investments.

III. PROFILE OF THE EV INDUSTRY IN THE PHILIPPINES

Data from the Electric Vehicle Association of the Philippines (EVAP)² shows 13,934 registered EVs between 2010 and 2021. The EVs account for only 0.11% of the 13 million vehicles registered, per the Land Transportation Office (LTO) 2021 Annual Report. Table 1 provides information on the various types of registered EVs from 2010 to 2021.

Table 1

Number of Registered EVs, by Type, CY 2010 to 2021

| Type of EV | No. of EVs registered with the LTO |
|---------------------------|------------------------------------|
| e-Trikes | 7,220 |
| e-Motorcycles | 5,520 |
| e-Utility vehicles | 815 |
| e-Cars | 311 |
| e-Sports utility vehicles | 43 |
| e-Trucks | 12 |
| e-Bus | 10 |
| Total | 13,934 |

Note. Data gathered from EVAP.

As provided in Table 1, the majority of EVs registered with the LTO include e-Trikes and e-Motorcycles, comprising 51.8% and 39.6% of the total, respectively. An E-Trike, as defined under LTO Memorandum Circular No. AVT-2015-1983³ is a motor vehicle powered by electrical energy from rechargeable batteries symmetrically arranged and mounted with a cabin designed to travel on three wheels for six or less passengers, excluding the driver, depending on the number of seat provisions. Its motor vehicle classification is motorcycle-tricycle (MTC), and the Motor Vehicle User's Charge (MVUC) rate, for which its owners are

² The EVAP is an association of electric vehicles enthusiasts. EVAP envisions a nation wherein the use of EVs is highly promoted, encouraged and supported by its government and the society in order to develop a transportation landscape that is one with the environment ecologically and economically. It has been in-charge of organizing the yearly EV Summits in the country in coordination with various stakeholders and government agencies such as the Department of Trade and Industry, Department of Energy, and the Land Transportation Office.

³ Subject: Classification and Registration of Electric Tricycle also known as E-Trike (December 2, 2015).

liable to pay to the LTO, is the rate used for MTC, whether private or for-hire, under RA 8794⁴ or the MVUC law. Its operation is limited within or along barangay roads only and may only be allowed to pass the main thoroughfares, highways, or national roads for crossing only when the barangay road is divided by such structures.

EVAP predicts an annual growth rate of EVs in the country by 8% to 12%. According to EVAP, this is expected to generate about P1.68 billion in revenue from services and sales of 200,000 units by the year 2024. The predicted increase in demand for EVs is attributed to various factors, such as their rising popularity, widespread acceptance across the country, the steep rise in fuel prices, and government support for EVs in the form of programs and policies (International Trade Administration, 2022).

Data from the EVAP shows that major companies involved in the EV supply chain are mostly engaged in metal, plastic parts and sub-assembly components, electronic components, vehicle body building capacities, vehicle external sourcing, and local assembly. (See Table 2.)

Table 2

EV Supply Chain Capacity

I. Metal / plastic components and sub-assemblies

| | | |
|---|---|---|
| ● Autofir Enterprises* | ● KEA Industrial Corporation* | ● Nito Seiki Manufacturing Corporation* |
| ● Manly Plastics Inc.* | ● Asian Transmission Corporation | ● Albert Metalcraft, Inc. |
| ● Alpha Techno Precision Toolings, Inc. | ● Ambrose Industries Inc. | ● BES Technical Works and Services Inc. |
| ● Karzai Corporation | ● Laguna Carparts Mfg., Inc. | ● Master Coating Industrial Technology Inc. |
| ● Onatech, Inc | ● P&R Parts and Machineries, Inc | ● P.IMES Corp. |
| ● RJ Spring, Rubber, and Metal Parts Mfg. Corp. | ● ROH Auto Products (Philippines), Incorporated | ● Tri-R Allied Industries Inc. |
| ● Valerie Products Mfg., Inc. | ● VJF Precision Toolings Corp. | ● VSO Global Incorporated |

⁴ Entitled, “An Act Imposing a Motor Vehicle User’s Charge on Owners of All Types of Motor Vehicles and for Other Purposes”, (June 27, 2000).

II. Electronic components

A. Electronics manufacturing services

- Integrated Micro-electronics Inc.*
- Denso Philippines Inc.
- EMS Components Assembly Inc.
- Continental Temic
- Ionics EMS Inc.

B. Automotive Wire Harness

- Yazaki-Torres Manufacturing Inc.
 - EDS Manufacturing
 - International Electric Wires Philippines Inc.
 - Philippine Kyohritsu
-

III. Imported EV parts suppliers

- Various battery cell/pack suppliers (China)*
 - Various Battery Management System (BMS) suppliers (China)*
 - Various motor controllers (China)*
 - Various traction motor suppliers (China)*
-

IV. Vehicle chassis and body manufacturers

A. e-Buses

- Almazora Motors Corporation
- Autodelta Coach Builders, Inc.
- Del Monte Motor Works, Inc.
- Colombian Motors Corporation
- Centro Manufacturing Corporation

B. e-Jeepneys

- Almazora Motors Corporation
- M.D. Juan Enterprises

C. e-Tricycle

- Almazora Motors Corporation
 - M.D. Juan Enterprises*
-

V. Completely built unit suppliers

A. e-Buses

- Columbian Motors Corporation - BYD (China)*
- Sky-well New Energy Automobile Group Co. Ltd (China)*

B. e-Jeepneys

V. Completely built unit suppliers

- Global Electric Transport - EV Dynamics (China)*
- Star 8 Green Technology Corp (China)*
- FilOil Gas and Energy Company Inc. (China)*

C. e-Tricycle

- Star 8 Green Technology Corp (China)*
- DECC Philippines*

D. e-Vans and e-Taxi

- CHTC Motors
- BYD Philippines
- Nissan Philippines Inc.
- Mitsubishi Motors Philippines Corporation
- Hyundai Asia Resources Inc.
- DongFeng Motor Company*
- Chery Motors Philippines, Inc.

E. e-Motorcycles

- Honda Motorcycle Philippines (Japan/Thailand) *
- Eclimo Electric Management, Inc. (Malaysia)*

VI. Vehicle manufacturers/ Completely knocked down assemblers

A. e-Trike

- BEMAC Electric Transportation Philippines, Inc.*
- Tojo Motors Corporation, Inc.*
- Prozza Hirose Manufacturing Inc.*
- Philippine Utility Vehicle Inc.*
- GerWeiss Motors Corporation*
- EV Wealth*
- PinoyAko Corporation*
- Elaia Green Vehicles (CKD China)*
- Motolite Philippines (CKD-China)

B. e-Jeep

- Tojo Motors Corporation, Inc.*
- Philippine Utility Vehicle Inc.*
- ENPlus Co. Ltd.

C. e-Motorcycles

- TRINX Bicycle Sport Technology Corp.*
- Integrated Micro-electronics Incorporated
- Kymco Philippines Inc.

D. e-Cars

- ENPlus Co. Ltd.*

Note. Items in asterisk are active or have been involved with the EV industry, while others have the potential to be actively engaged in the EV industry.

Meanwhile, data from ToJo Motors, which specializes in producing e-tricycles and e-jeepneys, reveal that 10 public transport groups already use EVs. These are mostly located in the Mindanao region. These are the (a) LADOTRANSCO; (b) Metro Gensan Transport Cooperative; (c) FVR Malagat Tambler Transport Cooperative; (d) Balangay Transport Cooperative; (e) Makilala Transport Cooperative; (f) Rajah Buayan Transport Cooperative; (g) Luzon Eco Transport Service Multi-Purpose Cooperative; (h) E-Sakay; (i) Apopong Lagao Jeepney Operators and Drivers Transport Service Cooperative; and (j) Public Transport Alliance of the Philippines. (See Table 3.)

Table 3

Public Transport Groups Using EVs and Their Locations

| Public transport groups | Locations |
|---|-------------------------------------|
| LADOTRANSCO | General Santos City, South Cotabato |
| Metro Gensan Transport Cooperative | General Santos City, South Cotabato |
| FVR Malagat Tambler Transport Cooperative | General Santos City, South Cotabato |
| Rajah Buayan Transport Cooperative | General Santos City, South Cotabato |
| Apopong Lagao Jeepney Operators and Drivers Transport Service Cooperative | General Santos City, South Cotabato |
| Balangay Transport Cooperative | Butuan City |
| Makilala Transport Cooperative | Kidapawan City |
| Luzon Eco Transport Service Multi-Purpose Cooperative | Marikina City |
| E-Sakay | Metro Manila |

In terms of price and maintenance cost, EVs and conventional vehicles have always entailed a tradeoff. While a brand-new EV may be more expensive than a conventional vehicle in terms of price, it is still cheaper to own in the long run because of the savings generated from the reduced maintenance costs, specifically for all-electric vehicles. According to the Alternative Fuels Data Center of the US Department of Energy, while the maintenance needs and safety requirements for PHEVs and HEVs are similar to those of conventional vehicles, all-electric vehicles typically require less maintenance for the following reasons:

- a. The battery, motor, and associated electronics require little to no regular maintenance;
- b. There are fewer fluids, such as engine oil, that require regular maintenance;
- c. Brake wear is significantly reduced due to regenerative braking; and
- d. There are far fewer moving parts relative to a conventional fuel engine.

According to Zigwheels⁵, the Philippines currently offers 15 EV models, with Nissan, Porsche, BYD, Jaguar, and WM Motor being the most popular EV brands in the country. Some of the industry's finest EVs include the Nissan Kicks e-Power, Porsche Taycan, BYD E6, Jaguar I-Pace, and BYD Tang. The cheapest EV is the Nissan Kicks e-Power 2022, a self-charging hybrid EV that uses an electric system to power the wheels and a gasoline engine to charge the battery, which costs P1.21 million. The most expensive is the Jaguar I-Pace 2022, a battery-electric crossover SUV produced by Jaguar that costs P7.59 million. (See Table 4.)

Table 4

Popular EVs in the Philippines and Their Price

| Model | Price (in pesos) |
|----------------------|------------------------------|
| Jaguar I-Pace | 7.59 million |
| BYD E6 | 4.20 million |
| BYD Tang | 3.70 million |
| Nissan Leaf | 2.80 million |
| WM Motor W5 | 2.54 million |
| Nissan Kicks e-Power | 1.21 million to 1.51 million |

The need for charging stations is rising along with the demand for EVs. The availability of charging stations has been a crucial factor in determining the nation's readiness to adopt EVs as a method of transportation. With the assistance of private organizations, a number of EV charging stations have been established in the country, particularly in Metro Manila, which is seen to boost and support the growth of EVs. According to EVAP, the total number of charging stations, including chargers and battery swapping stations⁶ throughout the country, is estimated at 164. (See Table 5.)

Table 5

Number of Charging Stations in the Philippines

| Charger type | No. of stations |
|---------------------------|-----------------|
| AC charging stations | 122 |
| DC charging stations | 34 |
| Battery swapping stations | 8 |
| Total | 164 |

Note. See Annex B for the complete list of EV charging stations.

Data sourced from the Alternative Fuels and Energy Technology Division, Department of Energy.

⁵ Zigwheels is an automotive and motorcycling website which provides automotive industry news, reviews and advice to consumers.

⁶ Battery swapping involves switching out a depleted electric car battery with a fully charged one, rather than plugging it in to charge (Kristan, L., 2022).

More EV charging stations are expected to open as companies like Megaworld Corporation, Ayala Corporation, and Shell Pilipinas have announced that they will be opening more charging stations as part of their efforts to create a safer and greener future for all (Unbox.ph, 2022). Also, the partnership between eSakay, Inc., a subsidiary of the Manila Electric Company (Meralco), and the Golden Arches Development Corporation has paved the way for the installation of EV charging stations at the McDonald's Green and Good Store in UN Avenue in Ermita, Manila, and Shaw Boulevard in Mandaluyong (Gines Jr., B., 2021). These efforts are essential for increasing EV adoption and reducing customer anxiety about the purchase and ownership of an EV.

As to the cost of charging an EV, Top Gear⁷ noted that a Nissan Leaf, with a claimed range of 311 kilometers when fully charged, costs almost P360 to completely charge based on the 2021 average Meralco rates (Tabamo, D., 2021). If the said kilometrage is applied to locations coming from the city of Manila, the fully charged Nissan Leaf can reach approximately Tagudin, Ilocos Sur, in the North or Ragay, Camarines Sur, in the south.

Currently, EV charging stations found in SM Supermalls are free of charge to EV owners and their customers as part of their efforts to entice more Filipinos to switch from fuel-fed cars to a more environment-friendly mode of transportation (Ochave, R., 2022). In the case of those operated in gasoline stations of Shell Philippines, the cost of charging is P65 pesos per minute since they use a 180-kilowatt direct current (DC) fast charger, unlike the alternating current (AC) chargers found in other establishments (Unbox.ph, 2022).

Public charging stations make EVs more convenient to use. Although the majority of EV owners charge at home, public charging and workplace charging stations can increase the daily useful range of all-electric vehicles and reduce the amount of gasoline consumed by PHEVs. General public charging uses Level 2 or DC fast charging. Level 1 and 2 charging stations should typically be located where vehicle owners are highly concentrated and parked for long periods of time, such as shopping centers, airports, hotels, government offices, and other businesses. Public charging should also be located along highway corridors or urban charging hubs.

EV charging system suppliers in the country are currently limited in number, and multinational players, such as the Swiss engineering firm ABB Group and Japanese car manufacturer Mitsubishi Motors, have entered the market. Current key suppliers of chargers and charging infrastructure developers include the following (Ha. T. and Manongdo, P., 2021):

- a. Soundon New Energy – A Chinese-owned company that manufactures solar-integrated charging stations;
- b. CHRG Inc. – A start-up company in Quezon City that provides EV solutions;
- c. Meralco – An electric power distribution firm and a developer of EV charging stations;
- d. QEV Philippines – A developer of EV charging stations that aims to install 200 charging stations in the country by 2022; and

⁷ Top Gear publishes articles related to latest developments in the car motoring industry.

e. Unioil – A Philippine petroleum company and EV charging station developer

As of 2022, there are 10 manufacturers engaged in the EV industry that avail of tax incentives. These include four enterprises registered with the Board of Investments (BOI), one with the Subic Bay Metropolitan Authority (SBMA), and five with the Philippine Economic Zone Authority (PEZA). Of these manufacturers, four focus on export, four are domestic-oriented, and two are mixed. The majority of the manufacturers are engaged in producing EVs and their components, while BTC Power Cebu, Inc. and Wyntron are engaged in building ultra-fast EV chargers. (See Table 6.)

Table 6

EV Manufacturers Availing Fiscal Incentives

| Enterprise name | Investment Promotion Agency (IPA) | Market orientation | Location | Registered activity |
|-----------------|-----------------------------------|--------------------|--------------------------------|---|
| Manufacturer 1 | BOI | Domestic | Bustos, Bulacan | Producer of EVs (3 wheels and 4 wheels) |
| Manufacturer 2 | BOI | Domestic | Bacoor, Cavite | New domestic producer of EVs |
| Manufacturer 3 | BOI | Domestic | Carmona, Cavite | New domestic producer of EVs |
| Manufacturer 4 | BOI | Domestic | Carmona, Cavite | New domestic producer of electric motorcycles |
| Manufacturer 5 | SBMA | Export | Olongapo City, Zambales | Engaged in the business of manufacturing and/or assembly of EVs, in any form, size, type, purpose, and with any number of wheels, and subsequent sale of the manufactured products to distributors and/or dealers |
| Manufacturer 6 | PEZA | Export | Sta Rosa, Laguna | Manufacturing of rare earth magnet/grain boundary diffusion process of magnet for EV and HEV |
| Manufacturer 7 | PEZA | Export | East Service Road, Taguig City | Manufacture of electronic car parts (Door/ Body Control Modules) |

| Enterprise name | Investment Promotion Agency (IPA) | Market orientation | Location | Registered activity |
|-----------------|-----------------------------------|--------------------|-----------------|---|
| Manufacturer 8 | PEZA | Mixed | Cabuyao, Laguna | Electronic car dashboard assembly |
| Manufacturer 9 | PEZA | Export | Mactan, Cebu | To engage in the assembly of ultra-fast EV chargers, EV-DC fast chargers, and EV-AC charger units |
| Manufacturer 10 | PEZA | Mixed | Rosario, Cavite | Manufacture of Electronic Vehicle Supply Equipment charger |

Note. Data sourced from the FIRB Secretariat.

IV. INCENTIVES AVAILABLE TO THE PHILIPPINE EV INDUSTRY

In 2006, then President Gloria Macapagal-Arroyo issued Executive Order (EO) No. 488 s. of 2006⁸ due to the need to promote the efficient use of fuel in the transport sector and complement EO 156 s. of 2002, which restructured the country's Motor Vehicle Development Program and its implementing guidelines for the primary purposes of the establishment and/or expansion of production facilities by global vehicle manufacturers to allow the export of completely built units (CBUs) and increase the exports of motor vehicle parts and components. EO 488 s. of 2006 modified import duty rates on components, parts, and accessories for the assembly of hybrid, electric, flexible fuel, and compressed natural gas motor vehicles under Section 104 of the Tariff and Customs Code of the Philippines (now the Customs Modernization and Tariff Act). The said articles were subjected to import duty rates for Most-Favoured Nation and the ASEAN-Common Effective Preferential Tariff (CEPT), allowing EV manufacturers to import EV components at a more affordable cost. (See Annex C.) According to Section 2 of EO 488 s. of 2006, the ASEAN-CEPT rates shall be accorded to imports coming from the ASEAN Member States applying CEPT concession to the same product pursuant to Article 4 of the Agreement on the CEPT Scheme for the ASEAN Free Trade Area (CEPT Agreement), signed on January 28, 1992, and its Interpretative Notes.

In 2017, when RA 10963,⁹ otherwise known as the "Tax Reform for Acceleration and Inclusion (TRAIN)" law, was enacted and made effective on January 1, 2018, purely EVs were

⁸ Entitled, "Modifying the Rates of Import Duty on Components, Parts and Accessories for the Assembly of Hybrid, Electric, Flexible Fuel and Compressed Natural Gas Motor Vehicles Under Section 104 of the Tariff and Customs Code of 1978, as Amended", (January 12, 2006).

⁹ Entitled, "An Act Amending Sections 5, 6, 24, 25, 27, 31, 32, 33, 34, 51, 52, 56, 57, 58, 74, 79, 84, 86, 90, 91, 97, 99, 100, 101, 106, 107, 108, 109, 110, 112, 114, 116, 127, 128, 129, 145, 148, 149, 151, 155, 171, 174, 175, 177, 178, 179, 180, 181, 182, 183, 186, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 232, 236, 237, 249, 254, 264, 269, and 288; Creating New Sections 51-A, 148-A, 150-A, 150-B, 237-A, 264-A, 264-B, and

made fully exempt from the excise tax on automobiles while HEVs were subjected to 50% of the applicable excise tax rates on automobiles.

RA 11534¹⁰, otherwise known as the Corporate Recovery and Tax Incentives for Enterprises (CREATE) Act, was signed by former President Duterte on March 26, 2021, to serve as a fiscal stimulus for businesses, especially with the effects brought about by the COVID-19 pandemic. Aside from reducing income tax rates for micro, small, and medium enterprises and large corporations, the law also rationalized the fiscal incentives system of the country by making it performance-based, time-bound, targeted, and transparent.

Section 292 of the National Internal Revenue Code (NIRC) of 1997, as amended by the CREATE Act, states that appropriate tax incentives shall be granted to registered enterprises only to the extent of their approved registered project or activity as listed under the Strategic Investment Priority Plan (SIPP).

Green ecosystems, health-related activities, defense-related activities, industrial value chain gaps, and food security-related activities are among the priority activities under Tier II, pursuant to Memorandum Order No. 61¹¹ dated May 24, 2022, which approves the 2022 SIPP. Electric vehicle assembly (pure EV, PHEV, HEV, fuel cell EV), manufacture of EV parts, components, and systems, and establishment and operation of EV infrastructures are all covered by 'Green Ecosystems'. As such, these activities are presently eligible to avail of the tax incentives stipulated under Title XIII, Section 294 of the NIRC of 1997, as amended by the CREATE Act, to wit: (See Table 7.)

265-A; and Repealing Sections 35, 62, and 89; All Under Republic Act No. 8424, Otherwise Known as the National Internal Revenue Code of 1997, as Amended, and for Other Purposes", (December 19, 2017).

¹⁰ Entitled, "An Act Reforming the Corporate Income Tax and Incentives System, Amending for the Purpose Sections 20, 22, 25, 27, 28, 29, 34, 40, 57, 109, 116, 204 and 290 of the National Internal Revenue Code of 1997, as Amended, and Creating Therein New TITLE XIII, and for Other Purposes", (March 26, 2021).

¹¹ Entitled, "Approving the 2022 Strategic Investment Priority Plan", (May 24, 2022).

Table 7*Duration of Tax Incentives for Tier II Activities Under the CREATE Act¹²*

| Location Tier | Duration of tax incentives | |
|--|--|---|
| | Domestic market enterprise | Export-oriented enterprise |
| National Capital Region (NCR) | 5 years Income tax holiday (ITH) + 5 years Enhanced Deductions (ED), and a maximum of 12 years customs duty exemptions on the importation of capital equipment, raw materials, spare parts, or accessories from the date of registration | 5 years ITH + 10 years ED/SCIT, and a maximum of 17 years customs duty exemptions on the importation of capital equipment, raw materials, spare parts, or accessories, VAT zero-rating on local purchases, and VAT exemption on importation from the date of registration |
| Metropolitan areas or areas contiguous and adjacent to the NCR | 6 years ITH + 5 years ED, and a maximum of 12 years customs duty exemptions on the importation of capital equipment, raw materials, spare parts, or accessories from the date of registration | 6 years ITH + 10 years ED/SCIT, and a maximum of 17 years customs duty exemptions on the importation of capital equipment, raw materials, spare parts, or accessories, VAT zero-rating on local purchases, and VAT exemption on importation from the date of registration |
| All other areas | 7 years ITH + 5 years ED, and a maximum of 12 years customs duty exemptions on the importation of capital equipment, raw materials, spare parts, or accessories from the date of registration | 7 years ITH + 10 years ED/SCIT, and a maximum of 17 years customs duty exemptions on the importation of capital equipment, raw materials, spare parts, or accessories, VAT zero-rating on local purchases, and VAT exemption on importation from the date of registration |

Under the EVIDA law, on the other hand, the following fiscal incentives are provided to players in the EV industry:

- a. Inclusion of the following activities in the SIPP, subject to an evaluation process, and possible entitlement to the incentives and for the length of time as provided under EO 226, otherwise known as the “Omnibus Investments Code of 1987”, as amended by the CREATE Act, and Title XIII of the NIRC of 1997, as amended, and other applicable laws:

¹² Rule 3, Section 6(A) of Implementing Rules and Regulation of Title XIII of CREATE Act.

- i. Manufacture and assembly of EVs, charging stations, batteries, and parts and components; and
- ii. Establishment and operations of charging stations and other related support infrastructures such as research and development centers, training centers, testing centers, and waste treatment facilities.

In addition, the Department of Trade and Industry (DTI), through the BOI, shall recommend an EV incentive strategy, for approval by the Fiscal Incentives Review Board (FIRB), as part of the manufacturing component of the Comprehensive Roadmap for the Electric Vehicle Industry (CREVI), similar to EO 182, s. of 2015, otherwise known as the “Comprehensive Automotive Resurgence Strategy Program”.

- b. Entitlement to the incentives under RA 10963, otherwise known as the TRAIN law, of the importation of CBUs of EVs, provided that in the case of imported electric jeepneys and electric tricycles, the Department of Finance, upon the recommendation of the DTI, may suspend the exemption to protect local manufacturers.
- c. Exemption from paying duties for eight years of importing CBUs of charging stations.
- d. Inclusion in the SIPP, subject to an evaluation process, of the importation of capital equipment and components used in the manufacture or assembly of EVs and construction or installation of charging stations and possible entitlement to the incentives and for the length of time as provided under EO 226, as amended Title XIII of the NIRC of 1997, as amended, and other applicable laws.
- e. Percentage discount for BEVs (30%) and HEVs (15%) on the MVUC imposed by the LTO under RA 8794, as well as vehicle registration and inspection fees, for a period of eight years from the effectivity of the law.

Section 25 of the EVIDA law also provides non-fiscal incentives to participants in the EV industry, which shall be in force for eight years from the effectivity of the Act. These are as follows:

- a. For EV users:
 - i. Priority registration and renewal of registration and issuance of a special type of vehicle plate by the LTO;
 - ii. Exemption from the mandatory unified vehicular volume reduction program, number-coding scheme, or other similar schemes implemented by the Metropolitan Manila Development Authority, other similar agencies, and local government units;

- iii. Expeditious processing by the Land Transportation Franchising and Regulatory Board of applications for the franchise to operate, including its renewal, for public utility vehicle operators that are exclusively utilizing EVs; and
 - iv. Availment of Technical Education and Skills Development Authority training programs on EV assembly, use, maintenance, and repair for its employees.
- b. For EV manufacturers and importers: Expeditious processing by the Bureau of Customs on the importation of parts and components for the manufacture and assembly of EVs; and
 - c. For EV manufacturers: Permission may be granted by the government to allow expert foreign nationals to be employed under a form of the technology transfer agreement, subject to the guidelines to be issued by the Department of Labor and Employment, the Professional Regulatory Commission, and the DTI.
 - d. Concessional financial packages from government financial institutions and other financial institutions shall be encouraged for entities engaged in the: (1) manufacture and assembly of EVs, charging stations, batteries, and parts and components, and (2) establishment and operations of charging stations and other related infrastructures such as research and development centers, training centers, testing centers, and waste treatment facilities.
 - e. Preferential interest rates and payment scheme on consumer loans for the acquisition of EVs and charging stations.
 - f. The Bangko Sentral ng Pilipinas shall encourage banks to lend a certain percentage of their portfolio to EV, charging stations, and battery manufacturers, assemblers, and end users, provided that financing packages for EV fleets shall be prioritized and the procedure shall be streamlined.

V. ASEAN POLICY SUPPORT AND INCENTIVES FOR ITS EV INDUSTRY

According to an article from the Asian Development Bank – South East Asia Development Solutions (SEADS)¹³, Southeast Asia is emerging as a potential market and manufacturing hub for EVs. The article also references information from Mordor Intelligence¹⁴ that the ASEAN EV market is estimated at nearly \$500 million in 2021 and forecasts it to grow to \$2.7 billion by 2027 (SEADS, 2022). According to the Center for

¹³ South East Asia Development Solutions was created to sow seeds of growth to help member countries of the Asian Development Bank become prosperous, knowledge-based, and sustainable economies.

¹⁴ Mordor Intelligence is a fully revenue-funded organization founded in 2014 which have partnered with 4,000 plus enterprises across 20 industries, to deliver precise data and actionable insights in over 6,000 projects.

Strategic and International Studies (CSIS)¹⁵, Southeast Asian countries are taking notable steps to establish their domestic industries as an essential part of the EV ecosystem by developing materials that support supply chain resilience and implementing economic policies that facilitate domestic adoption (Fallin and Lee, 2022). One of these policies is establishing a package of incentives to attract investments in the EV industry.

In Malaysia, EV manufacturers can take advantage of a number of tax incentives, such as excise tax and import duty exemptions, as well as sales and service tax waivers. Further, EV owners can claim tax relief for owning an EV. Only fully or pure electric vehicles are eligible for Malaysia's tax incentives, which fall into three categories as follows (ASEAN Briefing, 2022): (See Table 8.)

Table 8

Malaysia's Tax Incentives Per Category

| Category | Incentives |
|----------------|---|
| Imports | Imported CBUs have full import and excise tax duty exemption until the end of 2023. |
| Local assembly | Locally assembled, completely knocked down (CKD) units have full import and excise duty exemptions and a sales and service tax waiver until the end of 2025. |
| Owners | EV owners are exempted from road tax and can claim a personal tax exemption of up to 2,500 ringgit (US\$571) ¹⁶ for costs relating to EV charging hardware and services, including the purchase, installation, rental, and subscription fees of EV charging facilities, until the end of 2023. |

Thailand, on the other hand, has introduced assistance measures for its EV industry by exempting investments in the manufacturing of advanced vehicle technologies from corporate income tax (CIT) for a maximum of eight years. BEV investment projects are eligible for CIT exemption from five to eight years. In contrast, PHEV investment projects are eligible for a CIT exemption of three years and an exemption from import tariffs on production machinery. In the case of investments in producing HEVs, only the exemption from import tariffs on production machinery is available to investing companies. On the other hand, enterprises that manufacture EV components are eligible for an eight-year CIT exemption (Schroeder and Iwasaki, 2021). (See Table 9.)

¹⁵ The CSIS is a bipartisan, nonprofit policy research organization founded in 1962 and is dedicated to advancing practical ideas to address the world's greatest challenges. It organizes conferences, publishes, lectures, and makes media appearances that aim to increase the knowledge, awareness, and salience of policy issues with relevant stakeholders and the interested public.

¹⁶ Prevailing rate as of June 8, 2022.

Table 9*CIT Exemption in Thailand for EV Investment Projects*

| Particular | CIT exemption (in years) |
|--|-----------------------------|
| Manufacturers engaged in BEV | 5 to 8 |
| Manufacturers engaged in PHEV | 3 |
| Manufacturers engaged in HEV | None |
| Manufacturers engaged in EV components | 8 |

Note. Manufacturers engaged in HEV are only granted import tariff exemption on production machinery. Sourced from https://www.eria.org/uploads/media/Research-Project-Report/2021-03-Promotion-Electromobility-ASEAN/5_ch.1-Current-Situation-Electric-Vehicle-ASEAN-2611.pdf

As part of its ambitious aim to convert 50% of its entire automobile output to EVs by 2030 and become a production hub for cleaner vehicles in Southeast Asia, Thailand has provided additional incentives for its EV industry on top of the CIT exemption. The package comprises subsidy programs¹⁷, import duty reduction, and excise tax cuts as follows (ASEAN Briefing, 2022):

- a. A 70,000 Thai baht (THB) (US\$2,111)¹⁸ subsidy per EV unit for passenger cars with 10 to 30 kWh battery capacity for CKD and CBU units;
- b. A 150,000 THB (US\$4,523)¹⁹ subsidy for each EV unit for passenger cars with more than 30kWh battery capacity for CKD and CBU units;
- c. An 18,000 THB (US\$542)²⁰ subsidy for electric motorcycles from eligible car producers between 2022-2023;
- d. Exemption from import duties on important electrical components: batteries, traction motors, compressors for battery EVs, battery management systems, drive control units, and reduction gear between 2022-2025;

¹⁷ The subsidy programs are funded by 3 billion THB (US\$90 million) from the 2022 central budget and from the longer-term 40 billion THB (US\$1.2 billion) investment in the EV industry between 2023 to 2025.

¹⁸ Prevailing rate as of February 2022.

¹⁹ Ibid.

²⁰ Ibid.

- e. A 40% reduction in import duty for CBU of battery EVs priced up to 2 million THB (US\$61,805)²¹ and a 20% reduction for those priced between 2 million THB (US\$61,805)²² and 7 million THB (US\$211,278)²³ from 2022 to 2023; and
- f. Excise tax cut from 8% to 2% for imported EVs.

These incentives are said to initially apply to 27 model types of EVs comprising of: (a) eco-cars with 10 seats or less; (b) electric pick-ups; (c) hydrogen fuel cell-powered trucks; (d) EVs with 10 seats or less; and (e) plug-in four-door passenger pick-ups.

In Singapore, to support the adoption of EVs and eventually phase out the usage of ICE vehicles, the government adopted a three-pronged approach via tax incentives, regulations, standards, and EV charger deployment. On tax incentives, the following are granted to lower the cost of owning an electric car, particularly mass-market models:

- a. EV Early Adoption Incentive (EEAI) from January 1, 2021, to December 31, 2023: Owners who register fully electric cars will receive a rebate of 45% off the Additional Registration Fee (ARF), capped at SG\$20,000 (US\$14,600)²⁴. This is seen to narrow the upfront gap between electric and ICE cars.
- b. Enhanced Vehicular Emissions Scheme (VES) from January 1, 2021, to December 31, 2025: Rebates for certain categories of vehicles will be increased by SG\$5,000 (US\$3,650)²⁵ for cars, and SG\$7,500 (US\$5,475)²⁶ for taxis.
- c. Additional Registration Fee (ARF)²⁷ floor reduction from January 1, 2022, to December 31, 2023: The ARF floor will be lowered from SG\$5,000 (US\$3,650)²⁸ to \$0 for fully electric cars and taxis so that buyers of mass-market electric cars can enjoy the combined EEAI and VES rebates of up to SG\$45,000 (US\$32,850)²⁹.

²¹ Prevailing rate as of March 10, 2022.

²² Ibid.

²³ Ibid.

²⁴ Based on the Bangko Sentral ng Pilipinas Exchange Rate Bulletin on November 24, 2022.

²⁵ Ibid.

²⁶ Ibid.

²⁷ The ARF is a tax paid when registering a vehicle, and is calculated based on a percentage of a vehicle's Open Market Value – the cost of a vehicle imported into Singapore.

²⁸ Based on the Bangko Sentral ng Pilipinas Exchange Rate Bulletin on November 24, 2022.

²⁹ Ibid.

- d. Road taxes for fully electric and petrol-electric cars will be reduced by up to 34% for cars in the 90-230kW power rating bracket.

In terms of EV charger deployment, the Singapore government aims to deploy 60,000 EV charging points across Singapore by 2030, comprising 40,000 in public car parks and 20,000 in private premises.

On the other hand, the Indonesian government has solidified its support for developing the domestic EV industry through several policies and regulations. The most notable regulation is Presidential Decree No. 55/2019 (PR 55/2019), which firmly cements the development of the domestic EV industry as a national priority, stemming from government efforts to increase national energy efficiency and achieve clean, renewable energy in accordance with commitments to reduce greenhouse gas emissions (KPMG, 2021). The objective of the regulation is to accelerate the BEV program for road transportation by granting fiscal and non-fiscal incentives to industry players, as well as to make Indonesia a base for the production and export of BEVs, given that it is an important source of nickel laterite³⁰.

The key provisions of PR 55/2019 are as follows: (a) a program that seeks to accelerate the domestic BEV industry by insisting on the construction of domestic BEV manufacturing infrastructure; (b) stringent local content requirements for companies that will engage in BEV manufacturing and BEV components manufacturing (See Table 10.); and (c) grant of certain fiscal and non-fiscal incentives by the central and regional governments to business actors that are engaged in the acceleration program, including BEV manufacturing companies and BEV component manufacturing companies, public transport companies, companies renting out batteries (battery swap) for electric motor bikes, and individuals who use BEVs. These incentives include the following: (a) import duty incentives for any imports of BEV and its main components; (b) sales tax incentives on luxury goods; (c) incentives for the production of equipment for public electric charging stations; (d) incentives for export financing; and (e) financing support for the construction of public electric charging stations (Baker Mckenzie, 2019).

³⁰ According to the Broken Hill Proprietary Group Limited, an Australian multinational mining, metals, natural gas petroleum public company, nickel sulphide and laterite ore is used to make nickel metal, predominantly for the production of stainless steel as well as nickel sulphate, a key ingredient in the batteries that drive EVs.

Table 10*Local Content Requirements for Companies Manufacturing BEV and BEV Components*

| Type of BEV | Phase | Time frame | Minimum local content (in %) |
|---|-------|--------------|------------------------------|
| Two or three-wheel (e.g., E-motorcycles) | 1 | 2019 to 2023 | 40 |
| | 2 | 2024 to 2025 | 60 |
| | 3 | 2026 onwards | 80 |
| Four or more wheels | 1 | 2019 to 2021 | 35 |
| | 2 | 2022 to 2023 | 40 |
| | 3 | 2024 to 2029 | 60 |
| | 4 | 2030 onwards | 80 |

In Cambodia, the government has included EVs in its national transport policy, focusing on cities. In Cambodia's Long-Term Strategy for Carbon Neutrality submitted to the United Nations Framework Convention on Climate Change in December 2021, a commitment was incorporated to have 40% of EV cars and urban buses and 70% of electric motorbikes by the year 2050 (UNDP, 2022). As a first step towards this direction, the government of Cambodia reduced the special import duty for EVs from 30% to 10% in 2021, incentivizing people to shift towards EVs. Other incentives under consideration include reducing the road tax and registration fees for EVs (Nikkei Asia, 2022). Further, the government is encouraging investments in EV assembling plants to create more green jobs and investments while positioning Cambodia in the emerging global and regional supply chains for EVs. Similar to other countries worldwide, the need to expand charging stations is seen as one of the key drivers toward the large-scale adoption of EVs in Cambodia (UNDP, 2022).

In the case of Vietnam, the International Trade Administration (ITA)³¹ reports that while the country's EV industry is still in its infancy, there is potential for significant growth. The number of electric automobiles in Vietnam, including hybrid, plug-in hybrid, and pure electric ones, is 140 in 2019, 900 in 2020, and an additional 600 units as of the first quarter of 2021 (mostly hybrid models). The charging infrastructure is the biggest challenge in realizing the sector's full potential. The first quick EV charging system was opened in Da Nang in December 2017 and funded by the Central Power Corporation in cooperation with Mitsubishi. In July 2021, VinFast³² installed 500 EV charging stations and planned to have 2,000 charging stations set up nationwide with over 40,000 charging ports by the end of 2022. Besides VinFast, Porsche has built fast charging stations in Hanoi and Ho Chi Minh City (ITA, 2022).

³¹ International Trade Administration is an agency in the United States Department of Commerce that promotes United States exports of non-agricultural US services and goods.

³² VinFast is part of the VinGroup, which is known as the leading domestic EV manufacturer in Vietnam.

The ITA article also notes that the Vietnamese government has no explicit policy frameworks and incentives for the EV industry. Accordingly, through its sustainable development plan, the government has been applying several solutions to promote EVs, which include four focused areas, namely: (a) sustainable development; (b) green growth; (c) climate change; and (d) environmental protection laws. As regards incentives for its EV industry, the most recently issued decisions of the government are as follows:

- a. Decree 10/2022 (effective from March 1, 2022), which exempts BEVs from the registration fee for the first three years and a 50% fee reduction for the next two years.
- b. Law No. 03/2022/QH15 (effective from March 1, 2022), which reduces the excise tax rate for BEVs to 1% to 3% for a period of five years starting from the effectivity of the law. (ITA, 2022)

On the other hand, Laos aims to boost the percentage of EVs in the country to 1% by 2025 and over 30% by 2030. In line with these goals, the government has approved a policy that removes import restrictions on EVs to increase the number of EV dealers in Laos. However, vehicles imported and distributed in the country must meet international standards for quality, safety, after-sales service, and maintenance, including a waste management strategy for EV companies (Southeast Asia Infrastructure, 2021). Further, the government will encourage businesses to set up factories to produce EV parts and components and invest in developing charging stations throughout the country. Tax exemptions or reductions on the equipment imported for EV production and charging stations shall likewise be provided. Under the policy, the annual road tax for EVs will also be 30% less than that of petrol vehicles with equal engine power. The government has also appointed the Electricite du Laos (EDL) as the service provider for installing charging stations. The state-owned power company is instructed not to charge meter fees to residences or businesses that use these facilities. The EDL shall also provide priority EV parking slots and charging stations in public areas (Vientiane Times, 2021).

In the case of Brunei, the Strategic Plan for the Ministry of Transport and Infocommunications, or the MTIC 2025, targets to increase the number of EVs by 50% by 2025 (Ministry of Transport and Infocommunications, 2020). In 2021, its government launched the Electric Vehicle Pilot Project, which aims to provide exposure to the technology direction, namely EV usage, its benefits, and the vehicle's charging equipment. This is apart from studying and identifying the public's perception and acceptance of EVs toward change from conventional vehicles to EVs in the country. The project will run for two years and is aligned with achieving the goal of Strategy 3 (Electric Vehicles) under the Brunei Darussalam National Climate Change Policy (BNCCP)³³(Brunei Gazette, 2021). Available data shows,

³³ Strategy 3 of the BNCCP seeks to reduce Brunei Darussalam's carbon emissions from the land transportation sector by increasing the share of EVs to 60% of annual sales by 2035. The strategy will be carried out by the Electric Vehicle Joint Task Force, co-led by the Ministry of Transport and Infocommunications and Ministry of Energy. It has for its strategic objectives the following: (a) Develop policies and programmes to

however, that EV adoption in Brunei has remained low since the launch of the EV Pilot Project in 2021. To date, there are only 19 EVs registered in Brunei, and the owners primarily use their own home charging units to power their vehicles. A mid-term review of the project revealed areas requiring attention and evaluation, including adequate charging infrastructure (from home charging to a network of rapid charging stations), impact on the national power grid, associated life-cycle costs, and consumer behavior (Azahari, 2022).

VI. CONCLUSION

The trend toward EV-related activities is no longer inevitable. With growing concerns for the environment and the unpredictability of fuel prices, many countries all over the world are considering and integrating EVs into their transport network. In the ASEAN, while the uptake and initiatives are not as fast and robust as those in European countries, there have already been strategic plans and policies put in place to set the direction for the EV industry in the different states.

For its part, the Philippine government has already demonstrated strong national support for promoting EVs. It enhanced its policy that will not only enable an environment for the development of EVs as an attractive and feasible mode of transportation in the country that could aid in reducing dependence on fossil fuels, generate employment, and promote the health and well-being of the population through the use of low emission and other alternative energy technologies but would also incentivize the different players in the EV industry.

Moreover, the CREVI, serving as the national development plan for the EV industry, incorporated in the Philippine Energy Plan and the National Transport Policy, will ensure that the policy environment and support required for continuous industry development will be monitored and addressed.

support deployment of EVs; (b) Collaborate with key relevant government agencies, main industry players and the private sectors in identifying and implementing measures to promote the use of EV; (c) Identify and implement measures to shift public preference from ICE to EV; and (d) Develop measures to manage use of EV and ensure sustainable use of EV. Its performance indicators shall be the following; (a) number of EVs on the road (in units); (b) number of ICE vehicles on the road (in units); (c) number of charging stations (in units); (d) electricity consumption at charging station (in kWh); and (e) petroleum product consumption at petro station (in kilotonne of oil equivalent).

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Annex A.

| Components | Function | Types of EV | | | |
|----------------------------------|---|--------------|----------------|--------|--------------------|
| | | All electric | Plug-in hybrid | Hybrid | Fuel cell hydrogen |
| Battery (auxiliary) | Provides electricity to start the car before the traction battery is engaged; it also powers vehicle accessories. | | ✓ | ✓ | ✓ |
| Battery (all-electric auxiliary) | Provides electricity to power vehicle accessories. | ✓ | | | |
| Battery pack | Stores energy generated from regenerative braking and provides supplemental power to the electric traction motor. | | | | ✓ |
| Charge port | Allows the vehicle to connect to an external power supply to charge the traction battery pack. | ✓ | ✓ | | |
| DC/DC converter | Converts higher-voltage DC power from the traction battery pack to the lower-voltage DC power needed to run vehicle accessories and recharge the auxiliary battery. | ✓ | ✓ | ✓ | ✓ |

| Components | Function | Types of EV | | | |
|-------------------------|--|--------------|----------------|--------|--------------------|
| | | All electric | Plug-in hybrid | Hybrid | Fuel cell hydrogen |
| Electric generator | Generates electricity from the rotating wheels while braking, transferring that energy back to the traction battery pack. Some vehicles use motor generators that perform both the drive and regeneration functions. | | ✓ | ✓ | |
| Electric traction motor | Using power from the traction battery pack, this motor drives the vehicle's wheels. Some vehicles use motor generators that perform both the drive and regeneration functions. | ✓ | ✓ | ✓ | ✓ |
| Fuel cell stack | An assembly of individual membrane electrodes that use hydrogen and oxygen to produce electricity. | | | | ✓ |
| Exhaust system | Channels the exhaust gases from the engine out through the tailpipe. A three-way catalyst is designed to reduce engine-out emissions within the exhaust system. | | ✓ | ✓ | |
| Fuel Filler | A nozzle from a fuel dispenser attaches to the receptacle on the vehicle to fill the tank. | | ✓ | ✓ | ✓ |

| Components | Function | Types of EV | | | |
|--|---|--------------|----------------|--------|--------------------|
| | | All electric | Plug-in hybrid | Hybrid | Fuel cell hydrogen |
| Fuel Tank (Gasoline) | Stores gasoline on board the vehicle until the engine needs it. | | ✓ | ✓ | |
| Fuel Tank (Hydrogen) | Stores hydrogen gas onboard the vehicle until it's needed by the fuel cell. | | | | ✓ |
| Internal Combustion Engine (spark-ignited) | Fuel is injected into either the intake manifold or the combustion chamber, where it is combined with air, and the spark from a spark plug ignites the air/fuel mixture. | | ✓ | ✓ | |
| Onboard charger | Takes the incoming AC electricity supplied via the charge port and converts it to DC power for charging the traction battery. It also communicates with the charging equipment and monitors battery characteristics such as voltage, current, temperature, and state of charge while charging the pack. | ✓ | ✓ | | |
| Power Electronics Controller | Manages the flow of electrical energy delivered by the traction battery, controlling the speed of the electric | ✓ | ✓ | ✓ | ✓ |

| Components | Function | Types of EV | | | |
|--------------------------|--|--------------|----------------|--------|--------------------|
| | | All electric | Plug-in hybrid | Hybrid | Fuel cell hydrogen |
| | traction motor and the torque it produces. | | | | |
| Thermal System (cooling) | Maintains a proper operating temperature range of the engine, electric motor, power electronics, and other components. | ✓ | ✓ | ✓ | ✓ |
| Traction Battery Pack | Stores electricity for use by the electric traction motor. | ✓ | ✓ | ✓ | |
| Transmission | The transmission transfers mechanical power from the engine and/or electric traction motor to drive the wheels. | ✓ | ✓ | ✓ | ✓ |

Annex B.

List and Location of Available Electric Vehicle Charging Station (EVCS) in the Philippines, as of 06 December 2022

| No. | Operator | Classification | No. of Chargers | Region |
|-----|--|----------------|-----------------|--------|
| 1 | 888Street, Pasig | AC | 1 | NCR |
| 2 | A. Vidal Romal | AC | 1 | NCR |
| 3 | Apocalypse Custom Electric Motorcycles | AC | 1 | NCR |
| 4 | Ateneo De Manila University (private use only) | AC | 4 | NCR |
| 5 | Ayala Alabang (Muntinlupa) | DC | 2 | NCR |
| 6 | Ayala Malls Circuit Makati | AC | 1 | NCR |
| 7 | Basilan Open Basketball Court, Muntinlupa | AC | 4 | NCR |
| 8 | Bight Electric Bike - Valenzuela Valenzuela | AC | 6 | NCR |
| 9 | BroFeast Bar & Restaurant, Taguig | AC | 1 | NCR |
| 10 | California Ecobike | AC | 1 | NCR |
| 11 | CTP Asean Tower, Alabang, Muntinlupa | AC | 4 | NCR |
| 12 | DENR-Environmental Management Bureau | DC | 1 | NCR |
| 13 | DOE EV Charging Station | DC | 1 | NCR |
| 14 | DOST - PCIEERD | DC | 1 | NCR |
| 15 | DTI - Manufacturing Industries Service Board of Investment (BOI) | DC | 1 | NCR |
| 16 | Ecodrive Amoranto Branch | AC | 1 | NCR |
| 17 | Ehdcris Store | AC | 1 | NCR |
| 18 | Electric Vanguard | AC | 2 | NCR |
| 19 | Emicor Inc | AC | 1 | NCR |
| 20 | E-mtb.ph | AC | 2 | NCR |
| 21 | eSakay Makati Mandaluyong Swapping Station (private use only) | BSS | 1 | NCR |
| 22 | Eyong's Tattoo, Quezon City, Kalakhang, Manila | AC | 1 | NCR |
| 23 | Famous Parts and Services, Navotas | AC | 1 | NCR |
| 24 | Greenwoods | AC | 1 | NCR |
| 25 | Hidden Tapsihan Main | AC | 1 | NCR |
| 26 | GXSun, QC | AC | 1 | NCR |
| 27 | Horizon Homes, Shangri La at the Fort / Shangri La | DC | 1 | NCR |
| 28 | Kenwei, Novaliches | AC | 1 | NCR |
| 29 | Kenwei, Las Pinas | AC | 1 | NCR |
| 30 | Malacañang Motor Pool Office/ Office of the President (OP) Proper | DC | 1 | NCR |
| 31 | McDonald's Green and Good stores - Shaw Boulevard | AC | 1 | NCR |
| 32 | McDonald's Green and Good stores - Wack-Wack, Shaw Blvd. Mandaluyong | AC | 1 | NCR |
| 33 | Meadowmere Resort, Main St. | AC | 1 | NCR |
| 34 | McDonald's - GOLDEN ARCHES DEVELOPMENT CORPORATION | DC | 1 | NCR |
| 35 | Meralco - Valenzuela Sector | DC | 2 | NCR |
| 36 | Meralco - Pasig Sector | DC | 2 | NCR |
| 37 | Meralco - Paranaque Sector | DC | 2 | NCR |
| 38 | Meralco - Manila Sector | DC | 2 | NCR |
| 39 | Meralco - Balintawak Sector | DC | 2 | NCR |
| 40 | Meralco Powerlab Lab | DC | 2 | NCR |
| 41 | Meralco Powerlab Tech | DC | 8 | NCR |
| 42 | Meralco - Alabang Business Center | DC | 1 | NCR |
| 43 | Meralco - Commonwealth Business Center | DC | 1 | NCR |
| 44 | Meralco - Malabon Business Center | DC | 1 | NCR |
| 45 | Meralco - Marikina Business Center | DC | 1 | NCR |
| 46 | Meralco - Parañaque Business Center | DC | 1 | NCR |
| 47 | Meralco - España Business Center | AC | 1 | NCR |
| 48 | Meralco - Mandaluyong Business Center | AC | 1 | NCR |
| 49 | Meralco - Tutuban Business Center | AC | 1 | NCR |
| 50 | Meralco - Valenzuela Business Center | AC | 1 | NCR |
| 51 | Meralco - Balintawak Business Center | AC | 1 | NCR |
| 52 | Meralco - Caloocan Business Center | AC | 1 | NCR |

List and Location of Available Electric Vehicle Charging Station (EVCS) in the Philippines, as of 06 December 2022

| No. | Operator | Classification | No. of Chargers | Region |
|-----|--|----------------|-----------------|-----------|
| 53 | Meralco - Kamuning Business Center | AC | 1 | NCR |
| 54 | Meralco - Las Piñas Business Center | AC | 1 | NCR |
| 55 | Meralco - Makati Business Center | AC | 1 | NCR |
| 56 | Meralco - Novaliches Business Center | AC | 1 | NCR |
| 57 | Meralco - Pasig Business Center | AC | 1 | NCR |
| 58 | Meralco - Roosevelt Business Center | AC | 1 | NCR |
| 59 | Meralco - Taguig Business Center | AC | 1 | NCR |
| 60 | McDonald's Green and Good Stores - UN Avenue | AC | 2 | NCR |
| 61 | Meralco Charging Station | AC | 1 | NCR |
| 62 | Metropolitan Manila Development Authority (MMDA) Head Office Building | AC | 3 | NCR |
| 63 | Minoo Soft Cream Philippines, Quezon City | AC | 1 | NCR |
| 64 | MQAD Property Management and Development Corp | AC | 2 | NCR |
| 65 | Muntinlupa Sports Center | AC | 10 | NCR |
| 66 | Net Group Buildings, BGC | AC | 4 | NCR |
| 67 | Nissan Mantrade Makati | AC | 1 | NCR |
| 68 | Prozza eTrike Swapping Station | BSS | 1 | NCR |
| 69 | Nissan Otis | AC | 1 | NCR |
| 70 | Pasig Electric Vehicle Charging Station | AC | 4 | NCR |
| 71 | Pink En Blue, Barangay Moonwalk, Metro Manila | AC | 1 | NCR |
| 72 | Porsche DC Charger | DC | 1 | NCR |
| 73 | Pumprime Enterprise (Unioil Congressional2 Station) | AC | 1 | NCR |
| 74 | Puray Street, Kalakhang Manila, Philippines | AC | 1 | NCR |
| 75 | SM Aura - B1 Parking | AC | 2 | NCR |
| 76 | SM BF Parañaque | AC | 1 | NCR |
| 77 | SM Bicutan | AC | 1 | NCR |
| 78 | SM Center Valenzuela | AC | 1 | NCR |
| 79 | SM Fairview | AC | 1 | NCR |
| 80 | SM Grand Central | AC | 1 | NCR |
| 81 | SM Mall of Asia - 3rd Level North Parking Building | AC | 2 | NCR |
| 82 | SM Manila | AC | 1 | NCR |
| 83 | SM Marikina | AC | 1 | NCR |
| 84 | SM Mega Mall | AC | 2 | NCR |
| 85 | SM North EDSA - 3rd Level North Parking Tower | AC | 2 | NCR |
| 86 | SM San Lazaro | AC | 1 | NCR |
| 87 | SM Southmall | AC | 2 | NCR |
| 88 | SM Sta. Mesa | AC | 1 | NCR |
| 89 | Tail G Nwow Only | AC | 1 | NCR |
| 90 | Tail G Pasay | AC | 1 | NCR |
| 91 | Tailg Mandaluyong | AC | 1 | NCR |
| 92 | The Podium | AC | 2 | NCR |
| 93 | Unioil - Congressional | AC | 1 | NCR |
| 94 | Unioil - EDSA Guadalupe | DC | 1 | NCR |
| 95 | Uptown Bonifacio | DC | 2 | NCR |
| 96 | Valenzuela Gateway Complex | AC | 3 | NCR |
| 97 | Vertis North Mall, QC | AC | 1 | NCR |
| 98 | Vito's Home, Sta. Ana, Manila | AC | 1 | NCR |
| 99 | Alabang Commercial Corporation | AC | 2 | NCR |
| 100 | North Triangle Depot Commercial Corporation | AC | 2 | NCR |
| 101 | ParkNCharge | AC | 1 | NCR |
| 102 | ALI Commercial Center Inc. | AC | 2 | NCR |
| 103 | Robinsons Galleria-Ortigas | AC | 2 | NCR |
| 104 | Cuisine de Iloco, Laoag City | AC | 1 | Region 1 |
| 105 | Thetuchels, Davao del Sur | AC | 1 | Region 11 |
| 106 | Tojo eTrike swapping station - Butuan City | BSS | 1 | Region 13 |
| 107 | Awesome Hotel | AC | 1 | Region 2 |
| 108 | CharM eTrike Charging Station, Isabela | DC | 2 | Region 2 |
| 109 | Solaris HQ | AC | 2 | Region 2 |

List and Location of Available Electric Vehicle Charging Station (EVCS) in the Philippines, as of 06 December 2022

| No. | Operator | Classification | No. of Chargers | Region |
|-----|---|----------------|-----------------|----------|
| 110 | Thunderbird Resort | AC | 1 | Region 2 |
| 111 | TailG, Balluag, Bulacan | AC | 1 | Region 3 |
| 112 | TailG, Malolos, Bulacan | AC | 1 | Region 3 |
| 113 | TailG, Plaridel, Bulacan | AC | 1 | Region 3 |
| 114 | TailG, Pulilan, Bulacan | AC | 1 | Region 3 |
| 115 | Angat, Bulacan | AC | 2 | Region 3 |
| 116 | IPro, Inc. - UniOil | AC | 3 | Region 3 |
| 117 | Mabalacat, Pampanga | AC | 1 | Region 3 |
| 118 | Meralco - Plaridel Sector – Construction | DC | 1 | Region 3 |
| 119 | Meralco - Ballwag Business Center | AC | 1 | Region 3 |
| 120 | Meralco - Sta. Maria Business Center | AC | 1 | Region 3 |
| 121 | Scooter City Ebike, Bulacan | AC | 1 | Region 3 |
| 122 | Angelo Levarido Senior High School | AC | 10 | Region 4 |
| 123 | Batangas | AC | 11 | Region 4 |
| 124 | Batulao Hiking | AC | 1 | Region 4 |
| 125 | Carmona National High School | AC | 10 | Region 4 |
| 126 | Carmona Park, Cavite | AC | 10 | Region 4 |
| 127 | Carmona Public Market | AC | 10 | Region 4 |
| 128 | Chepard Ebikes | AC | 2 | Region 4 |
| 129 | D'bas Bulalohan, Tagaytay, Cavite | AC | 1 | Region 4 |
| 130 | De La Salle Canlubang (private use only) | AC | 2 | Region 4 |
| 131 | First Natgas Power Corp. (FNPC) | AC | 1 | Region 4 |
| 132 | Herb Republic, Laguna | AC | 1 | Region 4 |
| 133 | Hiro Aki Italian Pizza - Montalban | AC | 1 | Region 4 |
| 134 | Integrated Micro-Electronics, Inc. | DC | 1 | Region 4 |
| 135 | Joe's and Teos, Naic, Cavite | AC | 1 | Region 4 |
| 136 | Kenwei, Cavite | AC | 2 | Region 4 |
| 137 | Los Banos | AC | 10 | Region 4 |
| 138 | Mabeck, Cavite | AC | 1 | Region 4 |
| 139 | Meralco - Angono Business Center | DC | 1 | Region 4 |
| 140 | Meralco - Dasmariñas Sector - Operations | DC | 1 | Region 4 |
| 141 | Meralco - Rizal Sector Maintenance | DC | 1 | Region 4 |
| 142 | Meralco - San Pablo Sector Maintenance | DC | 1 | Region 4 |
| 143 | Meralco - Sta. Rosa Sector – Construction | DC | 1 | Region 4 |
| 144 | Meralco - Batangas Business Center | AC | 1 | Region 4 |
| 145 | Meralco - Calamba Business Center | AC | 1 | Region 4 |
| 146 | Meralco - San Pablo – Sta Cruz Business Center | AC | 1 | Region 4 |
| 147 | MonteCarlo Townhomes Subdivision | AC | 6 | Region 4 |
| 148 | Pablo's Barbacoa, Laguna | AC | 1 | Region 4 |
| 149 | Pearl Cuisine, Nasugbu, Batangas | AC | 1 | Region 4 |
| 150 | Racers Hideout, Cavite | AC | 1 | Region 4 |
| 151 | Ready to Ride Ph | DC | 3 | Region 4 |
| 152 | Shell SLEX Mampalasan Northbound | DC | 8 | Region 4 |
| 153 | Starbucks Nuvali, Sta. Rosa, Laguna | AC | 1 | Region 4 |
| 154 | Tojo eTrike swapping station - Coron Palawan | BSS | 1 | Region 4 |
| 155 | UCC Clockwork, Sta. Rosa, Laguna | AC | 1 | Region 4 |
| 156 | Veronica Foods | AC | 1 | Region 4 |
| 157 | SkyBright Solar PH | AC | 1 | Region 6 |
| 158 | Tojo eTrike swapping station - Boracay (private use) | BSS | 1 | Region 6 |
| 159 | McDonald's Upper East Bacolod | AC | 1 | Region 6 |
| 160 | BTCPower Inc., Cebu | DC | 1 | Region 7 |
| 161 | EVWealth eTrike swapping station - Naga (private use) | BSS | 1 | Region 7 |
| 162 | Nissan Cebu South - V.Rama | AC | 1 | Region 7 |
| 163 | Tojo eTrike swapping station - General Santos City | BSS | 1 | Region 7 |
| 164 | Tojo eTrike swapping station - Naga (private use) | BSS | 1 | Region 7 |

Annex C.

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|-------|-----------------------|---|------------------|------|
| | | | MFN | CEPT |
| (1) | (2) | (3) | (4) | (5) |
| 87.02 | | Motor vehicles for the transport of ten or more persons, including the driver. | | |
| | 8702.10 to 8702.90.11 | x x x | | |
| | 8702.90.12 | ---- CBU/Other | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of vehicles by participants in the commercial vehicle development program: | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | | --- x x x | | |
| | 8702.90.21 | ---- x x x | | |
| | 8702.90.22 | ---- CBU/Other | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of vehicles by participants in the commercial vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | | -- x x x | | |
| | | --- x x x | | |
| | 8702.90.31 | ---- x x x | | |
| | 8702.90.32 | ---- CBU/Other | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of vehicles by participants in the commercial vehicle | | |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|------|-------------|--|------------------|------|
| | | | MFN | CEPT |
| (1) | (2) | (3) | (4) | (5) |
| | | development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | | --- x x x | | |
| | 8702.90.41 | ---- x x x | | |
| | 8702.90.42 | ---- CBU/Other | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of vehicles by participants in the commercial vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | | -- x x x | | |
| | | --- x x x | | |
| | 8702.90.51 | ---- x x x | | |
| | 8702.90.52 | ---- CBU/Other | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of vehicles by participants in the commercial vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | | --- x x x | | |
| | 8702.90.61 | ---- x x x | | |
| | 8702.90.62 | ---- CBU/Other | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of vehicles by participants in the commercial vehicle development program | | |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|--------------|-----------------------|---|------------------|------|
| | | | MFN | CEPT |
| (1) | (2) | (3) | (4) | (5) |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | | --- x x x | | |
| | 8702.90.91 | ---- x x x | | |
| | 8702.90.92 | ---- CBU/Other | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of vehicles by participants in the commercial vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| 87.03 | | Motor cars and other motor vehicles principally designed for the transport of persons (other than those of heading 87.02), including station wagons and racing cars. | | |
| | 8703.10 to 8703.90.25 | x x x | | |
| | | ---- CBU / Other: | | |
| | 8703.90.26 | ----- Of a cylinder capacity less than 1,800 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.27 | ----- Of a cylinder capacity 1,800 cc and above but less | | |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|------|-------------|---|------------------|------|
| | | | MFN | CEPT |
| (1) | (2) | (3) | (4) | (5) |
| | | than 2,000 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | | | | |
| | | | | |
| | 8703.90.28 | ----- Of a cylinder capacity 2,000 cc and above but less than 2,500 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | | | | |
| | | | | |
| | 8703.90.31 | ----- Of a cylinder capacity 2,500 cc and above but less than 3,000 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | | | | |
| | | | | |
| | 8703.90.32 | ----- Of a cylinder capacity 3,000 cc and above | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|------|--------------------------|---|------------------|------|
| | | | MFN | CEPT |
| (1) | (2) | (3) | (4) | (5) |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | | -- Other, for the transport of 8 persons or less: | | |
| | | --- x x x | | |
| | 8703.90.33 to 8703.90.36 | x x x | | |
| | | --- Four wheel drive vehicles, CBU / Other: | | |
| | 8703.90.37 | ---- Of a cylinder capacity less than 1,800 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.38 | ---- Of a cylinder capacity 1,800 cc and above but less than 2,000 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.41 | ---- Of a cylinder capacity 2,000 cc and above but less than 2,500 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and | 0 | 0 |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|------|--------------------------|---|------------------|------|
| | | | MFN | CEPT |
| (1) | (2) | (3) | (4) | (5) |
| | | gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | | |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.42 | ---- Of a cylinder capacity 2,500 cc but less than 3,000 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.43 | ---- Of a cylinder capacity 3,000 cc and above | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | | --- x x x | | |
| | 8703.90.44 to 8703.90.47 | x x x | | |
| | | --- Other: | | |
| | 8703.90.48 | ---- Of a cylinder capacity less than 1,800 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|------|-------------|---|------------------|------|
| | | | MFN | CEPT |
| (1) | (2) | (3) | (4) | (5) |
| | | B. x x x | | |
| | 8703.90.51 | ----- Of a cylinder capacity 1,800 cc and above but less than 2,000 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.52 | ----- Of a cylinder capacity 2,000 cc and above but less than 2,500 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.53 | ----- Of a cylinder capacity 2,500 cc and above but less than 3,000 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.54 | ----- Of a cylinder capacity 3,000 cc and above | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle | | |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|------|--------------------------|---|------------------|------|
| | | | MFN | CEPT |
| (1) | (2) | (3) | (4) | (5) |
| | | development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | | --Other, for the transport of 9 persons: | | |
| | | --- x x x | | |
| | 8703.90.61 to 8703.90.65 | x x x | | |
| | | ----- CBU / Other: | | |
| | 8703.90.66 | ----- Of a cylinder capacity less than 1,800 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.67 | ----- Of a cylinder capacity 1,800 cc and above but less than 2,000 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.68 | ----- Of a cylinder capacity 2,000 cc and above but less than 2,500 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|------|--------------------------|---|------------------|------|
| | | | MFN | CEPT |
| (1) | (2) | (3) | (4) | (5) |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.71 | ----- Of a cylinder capacity 2,500 cc and above but less than 3,000 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.72 | ----- Of a cylinder capacity 3,000 cc and above | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | | --- x x x | | |
| | 8703.90.73 to 8703.90.76 | x x x | | |
| | | --- Other four wheel drive vehicles, CBU / Other: | | |
| | 8703.90.77 | ----- Of a cylinder capacity less than 1,800 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed | 0 | 0 |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|------|-------------|---|------------------|-------------|
| | | | MFN (4) | CEPT (5) |
| (1) | (2) | (3) | | |
| | | natural gas (CNG) vehicles. | | |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.78 | ---- Of a cylinder capacity 1,800 cc and above but less than 2,000 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.81 | ---- Of a cylinder capacity 2,000 cc and above but less than 2,500 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.82 | ---- Of a cylinder capacity 2,500 cc and above but less than 3,000 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.83 | ---- Of a cylinder capacity 3,000 cc and above | | |
| | | A. Components, parts and/or accessories imported | | |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|------|--------------------------|---|------------------|------|
| | | | MFN | CEPT |
| (1) | (2) | (3) | (4) | (5) |
| | | from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | | --- x x x | | |
| | 8703.90.84 to 8703.90.87 | x x x | | |
| | | --- Other: | | |
| | 8703.90.88 | ---- Of a cylinder capacity less than 1,800 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.91 | ---- Of a cylinder capacity 1,800 cc and above but less than 2,000 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.92 | ---- Of a cylinder capacity 2,000 cc and above but less than 2,500 cc | | |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|--------------|-----------------------|---|------------------|------|
| | | | MFN | CEPT |
| (1) | (2) | (3) | (4) | (5) |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.93 | ---- Of a cylinder capacity 2,500 cc and above but less than 3,000 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| | 8703.90.94 | ---- Of a cylinder capacity 3,000 cc and above | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motor vehicles by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 3 | 3 |
| | | B. x x x | | |
| 87.04 | | Motor vehicles for the transport of goods. | | |
| | 8704.10 to 8704.90.39 | x x x | | |
| | | -- Completely Built-Up (CBU) / Other: | | |
| | | --- g.v.w. not exceeding 5 t: | | |
| | 8704.90.41 | ---- Vans, pick-up trucks and similar vehicles | | |
| | | A. Components, parts and/or accessories imported | | |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|------|-------------|--|------------------|------|
| | | | MFN | CEPT |
| (1) | (2) | (3) | (4) | (5) |
| | | from one or more countries for assembly of trucks by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | 8704.90.42 | ---- Ordinary lorries (trucks) | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of trucks by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | 8704.90.49 | ---- Other | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of trucks by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | | --- g.v.w. exceeding 5t but not exceeding 24t: | | |
| | 8704.90.51 | ---- Vans, pick-up trucks and similar vehicles | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of trucks by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|------|-------------|--|------------------|------|
| | | | MFN | CEPT |
| (1) | (2) | (3) | (4) | (5) |
| | | B. x x x | | |
| | 8704.90.52 | ---- Ordinary lorries (trucks) | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of trucks by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | 8704.90.59 | ---- Other | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of trucks by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | | --- g.v.w. exceeding 24t: | | |
| | 8704.90.61 | ---- Vans, pick-up trucks and similar vehicles | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of trucks by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | 8704.90.62 | ---- Ordinary lorries (trucks) | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of trucks by participants in the motor vehicle development program | | |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|--------------|-----------------------------|---|------------------|-------------|
| | | | MFN (4) | CEPT (5) |
| (1) | (2) | (3) | (4) | (5) |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | 8704.90.69 | ---- Other | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of trucks by participants in the motor vehicle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| 87.11 | | Motorcycles (including mopeds) and cycles fitted with an auxiliary motor, with or without side-cars; side-cars. | | |
| | 8711.10 to 8711.90.94 | x x x | | |
| | | --- CBU / Other: | | |
| | 8711.90.95 | ---- Not exceeding 200 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motorcycles by participants in the motorcycle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | 8711.90.96 | ---- Exceeding 200 cc but not exceeding 500 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motorcycles by participants in the motorcycle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed | 0 | 0 |

| Hdg. | Tariff Code | Description | Rate of Duty (%) | |
|------|-------------|---|------------------|------|
| | | | MFN | CEPT |
| (1) | (2) | (3) | (4) | (5) |
| | | natural gas (CNG) vehicles. | | |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | 8711.90.97 | ---- Exceeding 500 cc but not exceeding 800 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motorcycles by participants in the motorcycle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |
| | 8711.90.98 | ---- Exceeding 800 cc | | |
| | | A. Components, parts and/or accessories imported from one or more countries for assembly of motorcycles by participants in the motorcycle development program | | |
| | | 1. For assembly of hybrid (electric and gasoline/diesel), electric, flex-fuel (bio-ethanol and bio-diesel) and Compressed natural gas (CNG) vehicles. | 0 | 0 |
| | | 2. Other | 1 | 3 |
| | | B. x x x | | |