

# ELECTRIC VEHICLES IN THE PHILIPPINES:

business opportunities, market  
barriers, and policy signals



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## About Eco-Business

Established in 2009, Eco-Business is an independent media and business intelligence company dedicated to sustainable development and ESG performance.

It publishes high quality, trusted news, and views in multimedia formats on business and policy developments around the world with a sustainability and ESG-focused lens. It also provides research and consulting on a wide range of issues which create strategic value for its partners and clients.

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## About the report

This report analyses the business case for electric vehicles (EVs) and related infrastructure and industry investments in the Philippines. It covers current policy signals, growth forecasts and business opportunities in the country's nascent yet promising market. It argues that a decisive policy push is required to unlock capital and spur EV adoption, industry growth, and infrastructure development. It also shows that the expected rise in private vehicle uptake resulting from the Covid-19 pandemic presents an opportunity to drive the Philippines' transition to clean transport.

## Limitations

This report has potential limitations with regard to its research design and methodology. Commissioned as a desktop study, it relies primarily on secondary sources available within the public domain. However, secondary sources were complemented by interviews with three key opinion leaders, including a domestic industry association, an international development organisation, and a multilateral development bank. Another limitation concerns the type of data analysed. The report mainly provides qualitative analysis of existing and proposed policy regulations. While a quantitative estimate on the Philippines' EV market potential is given, this analysis can be further deepened to include quantitative data on growth potential across the entire EV value chain, including charging infrastructure demand, industry development, repairs, and maintenance. The researchers were also limited to conduct the research within two months. Any EV-related policy developments that took place after data was gathered are not included in this report. As a follow up to this report, the researchers recommend analysis focused on the investment roadmap needed to develop the Philippines' EV and charging infrastructure industry.



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## Abbreviations

BOI	Board of Investments
BIR	Bureau of Internal Revenue
CPC	Certificate of Public Convenience
DENR	Department of Environment and Natural Resources
DOE	Department of Energy
DOF	Department of Finance
DOF	Department of Science and Technology
DTI	Department of Trade and Industry
DOTr	Department of Transportation
DPWH	Department of Public Works and Highways
EV	Electric Vehicle
EVAP	Electric Vehicle Association of the Philippines
EVMR	Electric Vehicle Manufacturing Roadmap
EVR	Electric Vehicle Roadmap
IEC	Information, education, and communication
IPP	Investment Priorities Plan
LGU	Local Government Unit
LTFRB	Land Transportation Franchising and Regulatory Board
MtCO <sub>2</sub> e	Million tonnes of carbon dioxide equivalent
NFSCC	National Framework Strategy on Climate Change
OEM	Original Equipment Manufacturer
PEP	Philippine Energy Plan
PhUV	Philippine Utility Vehicle Corporation
PM	Particulate matter
PPP	Public-Private Partnership
PUV	Public Utility Vehicle
PUVMP	Public Utility Vehicle Modernisation Programme
SEA	Southeast Asia
SME	Small and medium-sized enterprises
TRAIN	Tax Reform for Acceleration and Inclusion
TESDA	Technical Education and Skills Development Authority
ZEV	Zero-emissions Vehicle





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# SUMMARY

The Philippines is one of Asia's fastest growing economies. With rising incomes and the increasing aspirational desire for vehicle ownership, the country's vehicle market is forecast to grow alongside the economy. Recognising that transport electrification must be a key pillar of the nation's decarbonisation strategy, Philippine lawmakers have filed several legislative bills to incentivise the manufacturing, importation, and uptake of electric vehicles (EVs). However, discussions on these proposals have stalled since last year.

EVs at present make up only a small share of the Philippines' automotive market. In addition to current policy uncertainties, high acquisition costs, the country's underdeveloped EV industry, and limited charging infrastructure have been cited as major market restraints. While bills have been filed in both the Senate and the Congress

that aim to facilitate EV adoption, discussions around these bills have stalled since last year. It is estimated that a decisive policy push is required to unlock much-needed investment and fast-track industry growth and charging infrastructure development, putting the Philippines on a path towards a future of sustainable transport.

Despite persistent challenges, the Electric Vehicle Association of the Philippines (EVAP) forecasts the country's EV market to grow by 8 to 12 per cent annually this decade. For foreign financiers and industry players looking to gain a footing in the market, opportunities lie in providing finance for charging infrastructure and other EV-related initiatives, offering innovative EV technology solutions and technology transfer, and the supply of battery systems and other EV components.

## 1. Introduction

The Philippines is one of Asia's fastest growing economies. Since the turn of the century, average economic growth rates have stood above 5 per cent, and this rapid growth brings the country to the cusp of moving from a lower-middle to an upper-middle income country in the medium term (GIZ, 2020). Further, the country's Industry Development Program aims to strengthen global and regional economic integration by tapping innovation to spur growth across 12 major industries, including

automotive, electronics and electrical, aerospace, among others (BOI, 2017).

With incomes and the aspirational desire for car ownership on the rise, the nation's vehicle market is forecast to grow alongside the economy, even as the fear of contracting Covid-19 deters Filipinos from using public transportation. As authorities continue to grapple with the pandemic, the uptake of private vehicles, particularly two-wheelers, is forecast to accelerate (ADB, 2021).



As more vehicles ply Philippine roads, they exacerbate air quality and increase greenhouse gas emissions.

In 2017, an estimated 70,000 Filipinos died prematurely due to air pollution (Sabillo, 2020), and authorities have cited land transport as a key pollution source. Already the nation's second-biggest emitter, the sector will need to decarbonise, and a shift to zero-emissions vehicles (ZEV) including e-vehicles is key to this transformation.

Philippine legislators have recognised the social, environmental, and economic benefits that EVs could bring to the country. Several legislative bills have been proposed to incentivise the manufacture, importation, and use of

EVs. However, discussions on these legislations have stalled since last year, and as a result none have been signed into law until now. Current policy uncertainties prove to be a major barrier to attracting investment needed to drive the country's nascent EV market.

EVs currently make up only a small share of the Philippines' automotive market. Only 0.3 per cent of the nation's transport energy demand was met by electricity last year and only about 7,000 EVs were registered in the country in 2018 (Senate of the Philippines, 2020); (International Trade Administration, 2020). In addition to the lack of enabling national laws, high acquisition costs of EVs compared to their internal combustion engine counterparts and limited charging

infrastructure have been identified as major market restraints. The domestic EV manufacturing industry is also currently underdeveloped and grapples with limited access to finance.

Despite such challenges, the EVAP forecasts the country's EV market to grow by 8 to 12 per cent annually this decade, which is expected to generate P1.68 billion (GBP25.1 million, US\$33.6 million) in revenue services and sales of 200,000 units by 2024 (International Trade Administration, 2020). Experts estimate that a decisive policy push is needed to unlock much-needed investment and fast-track industry growth and charging infrastructure development, putting the country on a path towards a future of sustainable transport.

## 2. State of play: Where do electric vehicles stand in the Philippines?

### 2.1 Market trends

There were 11,851,192 motor vehicles registered in the Philippines as of December 2020 (LTO, 2020). Of these, approximately 1.1 million were private cars (Sanchez, 2021a), with the number of registered motorcycles and tricycles standing at an approximate seven million (Sanchez, 2021b). EVs currently make up less than 1 per cent of the market, with about 7,000 registered in 2018 (International Trade Administration, 2020).

However, the Philippine EV market is projected to grow significantly over the next decade. EVAP forecasts an annual growth rate of 8 to 12 per cent, which is expected to generate P1.68 billion (GBP25.1 million, US\$33.6 million) in revenue services and sales of 200,000 units by 2024 (International Trade Administration, 2020). This increase in EV demand is driven by the nation's rapid economic growth, insufficient public transport alternatives to jeepneys and tricycles, and initial government support through programmes and legislation (Mitsubishi, 2019). New EV launches by original equipment manufacturers (OEMs) and the establishment of charging infrastructure are also expected to spur growth (Frost & Sullivan, 2019). As of 2019, there were 17 e-jeepney models, 21 e-tricycle

models, and 24 electric two-wheelers available in the Philippine market, while seven battery electric vehicle cars and four plug-in hybrid electric cars were available or announced for local launching (Mitsubishi, 2019).

The country's EV market is segmented into e-motorcycles, e-tricycles, e-jeepneys, e-quads, and passenger EVs (Frost & Sullivan, 2019). Of these, e-tricycles, used to transport passengers over short distances, account for the biggest share, followed by e-motorcycles, with electric utility vehicles and electric cars bringing up the rear. In 2017, 56 per cent of newly registered EVs were e-tricycles, and 38 per cent were e-motorcycles. Electric utility vehicles and cars each made up 3 per cent of the mix (Mitsubishi, 2019). As a result of the Public Utility Vehicle Modernisation Program (PUVMP), which was launched by the Department of Transportation (DOTr) in 2017, and the e-tricycle donations of the Department of Energy (DOE), e-tricycles and e-jeepneys have contributed to the national EV stock, respectively totaling 1,151 and 252 as of May 2019 (Mitsubishi, 2019).

Philippine road transport is dominated by private vehicles (85 per cent), with public vehicles for hire accounting for 14 per cent, and government and corporate fleets accounting for 1 per cent (EVAP,

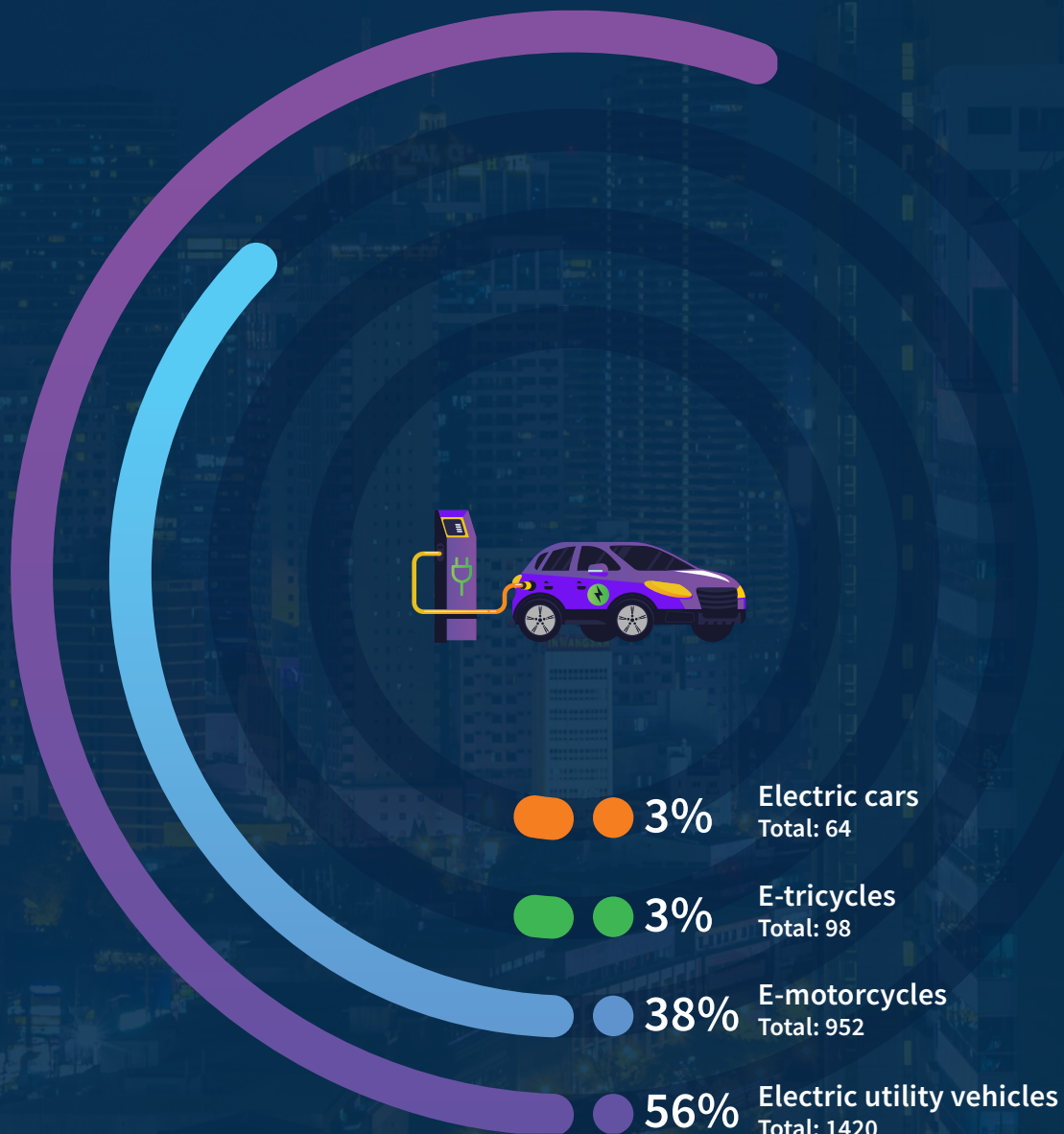
2014). But while making up only a moderate share of road transport, public vehicles cause most of the transport pollution and are major fuel users, with tricycles consuming 67 per cent of total transport fuel used, followed by jeepneys (23 per cent) (ADB, 2017). EVs are expected to mainly gain traction through the commercial market, which includes government, public utility, and corporate fleets, and the household market (Mitsubishi, 2019). However, unlike in many other nations, the EV personal vehicle market currently still only caters to the extreme upper class, accounting for only about 1 per cent of the total EV market (International Trade Administration, 2020).

### 2.2 Stakeholder analysis

There are numerous stakeholders in the Philippines' transport sector, which operate on different scales and levels that include government, the private sector, and civil society (GIZ, 2020). The Philippine government, through the Department of Trade and Industry (DTI) and the Board of Investments (BOI), the lead government agency responsible for the promotion of investments in the Philippines, has been promoting the growth of the EV industry in the country.

Transportation initiatives on the national level are typically implemented

# EV REGISTRATIONS in the Philippines, 2017









by the DOTr and the Department of Public Works and Highways (DPWH) (Mitsubishi, 2019). State-owned financial institutions, such as the Development Bank of the Philippines and the Landbank of the Philippines, are also involved in transport-related initiatives.

In addition, local government units (LGUs) have fiscal and administrative autonomy, allowing them to levy local taxes and fees and allocate resources based on their own priorities, if they are consistent with nationwide goals (Mitsubishi, 2019).

EV policy interventions in the country have been spearheaded by the DOE, the DOTr, the DTI, the Department of Environment and Natural Resources (DENR), and the Technical Education and Skills Development Authority (TESDA). Initiatives have included EV deployment for public transport, charging infrastructure development, information, education, and communication (IEC) programmes, fiscal incentives and industry development support, and capacity building (Mitsubishi, 2019).

The DOTr plays a key role in driving the adoption of EVs for public transport and government fleets, while the DOE focuses on charging infrastructure development (EVAP, 2021). The DTI is responsible for the institutionalisation of EV standards and industry development, while TESDA works on capacity building initiatives for EV after-sales services (EVAP, 2021; Mitsubishi, 2019).

Consistent with Republic Act 8749, or the Clean Air Act of 1999, the DENR sets policy directions to curb air pollution and reduce its impacts. To achieve this, the department sets stringent emissions standards for combustion engines while pushing for stronger EV adoption.

In partnership with EVAP, the government has developed a national development roadmap for EVs to expand the Philippines's potential for local production and manufacturing of EVs (DTI, 2021). Anchored on the Motor Vehicle Development Program, it was to be implemented in four phases from 2013 to 2023, with the first three phases focused on establishing the local EV supply chain and export market

expansion. The last phase (2019-2023) aims for the industry's regional and global integration and market growth acceleration (DTI, 2021). Building on progress made, the BOI is currently developing a comprehensive EV Roadmap, which will be made public in 2021 (British Embassy Manila webinar, 2021).

As of 2020, private sector players in the country's EV market consisted of 54 manufacturers and importers, 11 parts manufacturers, and 18 dealers and traders (International Trade Administration, 2020). Surveys have shown that nearly all local manufacturers, which are mostly small and medium-sized enterprises (SMEs), at present completely import main EV system components, and the battery manufacturing industry in the country is limited to lead acid battery production and battery pack assembly (Mitsubishi, 2019). Vehicle design and development of multinational car manufacturers are typically also conducted in company headquarters with minimal involvement from Philippine assembly plants (Mitsubishi, 2019).

**The EV industry is divided into two segments, with multinational companies typically specialising in electric cars and buses, and local vehicle suppliers focusing on e-tricycles, e-motorcycles, and e-jeepneys (Mitsubishi, 2019). Major domestic EV manufacturers in the market include (Frost & Sullivan, 2019):**

- BEMAC Electric Transportation Philippines Inc., a domestic subsidiary of Uzushio Electric, a Japanese EV company. The company mass produces electric tricycles;
- Philippine Utility Vehicle Corporation (PhUV) Inc., the business arm of the Motor Vehicle Parts Manufacturers Association of the Philippines and an umbrella organisation of several companies in the country's EV industry. The firm's core products include e-jeepneys, e-tricycles, and e-quads;
- Eclimo Electric Management Inc., a Philippine manufacturer of electric scooters and batteries;
- ToJo Motors, a Filipino-owned assembler, importer, and dealer of electric vehicles. The company specialises in the production of e-tricycles and e-jeepneys;
- EV Wealth Inc., a domestic manufacturer of electric tricycles;
- Eleia Green Vehicles, a Philippine manufacturer of electric tricycles.

EV charging system suppliers in the country are currently limited in number, and multinational players, such as Swiss engineering firm ABB Group and Japanese car manufacturer Mitsubishi Motors, have entered the market (Businessworld, 2018); (Meralco, 2017). As of 2020, there were 19 EV charging stations in the Philippines, mostly in the island of Luzon (International Trade Administration, 2020).



**Key suppliers of chargers and charging infrastructure developers include (Frost & Sullivan, 2019; Mitsubishi, 2019):**

- Soundon New Energy, a Chinese-owned company that manufactures solar-integrated charging stations;
- CHRG Inc., a startup company in Quezon City that provides EV solutions;
- Manila Electric Company (Meralco), an electric power distribution firm and a developer of EV charging stations;
- QEV Philippines, a developer of EV charging stations. The company aims to install 200 charging stations in the country by 2022;
- UniOil, a Philippine petroleum company and EV charging station developer.

Other important private sector stakeholders are PUV operators, including operators of utility vans, jeepneys and tricycles, and real estate developers, which are involved through township projects that include residential, commercial, and industrial development (Mitsubishi, 2019).

According to official registrations, there were approximately 250,000 jeepneys in the Philippines in 2016 (DTI, 2016), while the number of registered motorcycles and tricycles was about seven million in 2020 (Sanchez, 2021a).

## 2.3 Key policy developments

The Philippine government has recognised that transport electrification must be a key pillar of its decarbonisation strategy. In addition to several legislative bills which have been filed in recent years both in Congress and the Senate to roll out charging stations, establish domestic EV supply chains, boost the profitability of EV fleet operations, and encourage EV uptake among consumers and businesses, several policy frameworks are currently in place that supports EV growth.

### 2.3.1 The Philippine Energy Plan (PEP) 2018-2040

As part of the DOE's PEP 2018-2040 which aims to increase the production of clean and indigenous sources of energy to support growing economic development and promote

environmental protection, the DOE targets a 10 per cent penetration rate of EVs for road transport (motorcycle, cars, and PUVs) by 2040, translating to aggregate energy savings from oil and electricity equivalent to 5 per cent from business as usual. Increasing EV road transportation is part and parcel of the DOE's commitment towards transitioning the country towards low-carbon economic development pathways. (DOE, 2016; British Embassy Manila webinar, 2021).

### 2.3.2 Republic Act No. 10963: Tax Reform for Acceleration and Inclusion (TRAIN) Law

Passed into law on 19 December 2017, the TRAIN law provides incentives for President Rodrigo R. Duterte's infrastructure priority projects, among which are his push for alternative and cleaner modes of public transportation. The law exempts pure EVs from excise tax on automobiles. Hybrid vehicles, on the other hand, are granted 50 per cent reduction of applicable excise tax on automobiles (BIR, 2017).

### 2.3.3 Executive Order 226: The Omnibus Investments Code

Signed in 1987, Executive Order 226 or The Omnibus Investments Code outlines the country's investment policies to grant incentives to businesses and projects that are seen to contribute to the country's holistic economic development (BOI, 1987).

Under this law, manufacturers of EV parts and components, operators of charging stations or refueling stations for alternative energy fuels are granted a tax holiday for 3-6 years and excise tax incentives for the importation of capital equipment.

An update to this under the Memorandum Order No. 50 Series of 2020, or The 2020 Investment Priorities Plan (IPP), states that charging and refueling stations for alternative energy fuels will also be granted excise tax incentives (Republic of the Philippines, 2020).

### 2.3.4. Executive Order 488 Series of 2006

Signed on 12 January 2006 by then President Gloria Macapagal-Arroyo, the Executive Order 488 series of 2006 brought the rates of import duty on components, parts, and accessories for the assembly of hybrid, electric, flexible fuel and compressed natural gas motor vehicles to zero, thereby allowing EV manufacturers to import components at a more affordable price (DTI, 2006).

### 2.3.5 The Public Utility Vehicle Modernisation Programme (PUVMP) 2017

On 19 June 2017, the DOTr issued Department Order No. 2017-011, the Omnibus Guidelines on the Planning of Public Road Transportation Services and Franchise Issuance, or the PUVMP (DOTr, 2017). The programme seeks

to reduce the public's reliance on private vehicles for the movement of people and goods by developing and promoting high quality public transport systems. The order also seeks to prioritise and promote mobility as a basic human need instead of the movement of vehicles.

The DOTr mandated the Land Transportation Franchising and Regulatory Board (LTRFB) to encourage and require PUV operators to consolidate and establish coordinated fleet operations. Incentives are to be given to larger fleets of higher rider capacity vehicles. Such incentive includes giving higher capacity transportation modes priority in terms of allocating Certificate of Public Convenience (CPC), the permit issued by the LTRFB to operate road transportation services for public use. Aside from ensuring that public transport is safe, reliable, accessible, and comfortable, the PUVMP also mandates the environmental soundness of public transportation.

Paragraph 2.1.4 states that “public transport vehicles with combustion engines must have low emissions, as proven by compliance with Euro – 4 emissions standards or better (EURO V, EURO VI, etc), as prescribed by the DENR. Other preferred public transport vehicles are those using electric drives and/or running on alternative fuels, such as electric and solar” (DOTr, 2017).

Aligned with this objective, PUVMP also mandates the modernisation of public transport. Paragraph 5.2 Modernisation of Public Transport Services provides that brand new and environmentally friendly units will be promoted and be given priority in the allocation of CPCs and deployment. Environmentally friendly units are defined as vehicles that use an electric drive and/or engines compliant with Euro – 4 or better emissions standards.

In December 2020 and in response to the challenges posed by Covid-19, the LTRFB eased the rules under the PUVMP and allowed PUVs to operate even if they are not yet part of a cooperative or corporation as long as the PUVs have met the Motor Vehicle Inspection Standard. Currently, there are 2,836 modernised PUVs in operation. PUVs

have until 31 March 2021 to consolidate into a cooperative or corporation to continue operating (Malaya, 2020).

## 2.4 Other policy instruments

### 2.4.1 Republic Act No. 11285: Energy Efficiency and Conservation (EE and C) Act

Signed into law on 12 April 2019, Section 25 Chapter VII of the EE and C Act provides that, upon certification of the DOE, energy efficiency projects as defined in the Act shall be prioritised in the BOI's annual investment plans. This includes investments in energy efficient buildings, products, and transportation (including EVs and charging stations) (DOE, 2019).

### 2.4.2 Republic Act 10771: Philippine Green Jobs Act of 2016

Signed into law on 27 July 2015, Section 5 of the Philippine Green Jobs Act of 2016 provides incentives for businesses to generate and sustain green jobs. Under the law, income tax up to 50 per cent is deductible from total expense on skills training and research development. The law also provides for tax and duty-free importation of capital equipment.

## 2.5 Proposed Bills

### 2.5.1 Senate Bill No. 1382: The Electric Vehicles and Charging Stations Act

Filed in 2020, Senate Bill No. 1382 is considered the cornerstone of the Philippines' EV legislation (Senate of the Philippines, 2020). Also known as the Electric Vehicle and Charging Stations Act, the bill was up for a second reading in the Senate as of March 2020, but it has yet to be enacted.

The legislation seeks to mainstream the use of EVs in the private and public sectors by addressing the main barriers standing in the way of greater EV adoption. It outlines the regulatory framework for the use of electric vehicles and policies to spur demand generation for and industry development of electric vehicles (Senate of the Philippines, 2020).

For investors, the legislation will provide fiscal and non-fiscal incentives

for the importation, utilisation, and manufacture of EVs (Senate of the Philippines, 2020). This includes a 9-year exemption from value-added tax, customs duties, and discounts on the Motor Vehicle User's Charge as well as expedited registration procedures for EV users. In addition, the DTI and the BOI are required to establish a time-bound, targeted, performance-based, and transparent EV incentive strategy to attract EV and EV parts manufacturing (Senate of the Philippines, 2020).

If passed into law, the legislation will also require gasoline stations nationwide to provide space for the installation of charging stations, which will be run either by station owners or third-party service providers (Senate of the Philippines, 2020). Moreover, public and private buildings will be mandated to dedicate parking slots for the exclusive use of EVs. The bill will also require large industrial and commercial entities, public transport operators, and government agencies to adopt a minimum 5 percent share of EVs within their respective fleets.

Local governments will be tasked to establish green routes for electrified PUV fleets (Senate of the Philippines, 2020). In addition, the government will pursue efforts to narrow the cost differential between EVs and fossil fuel cars to make electric models more affordable.

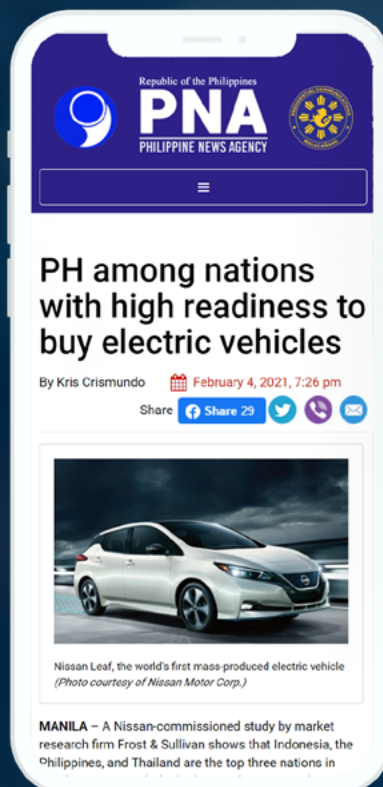
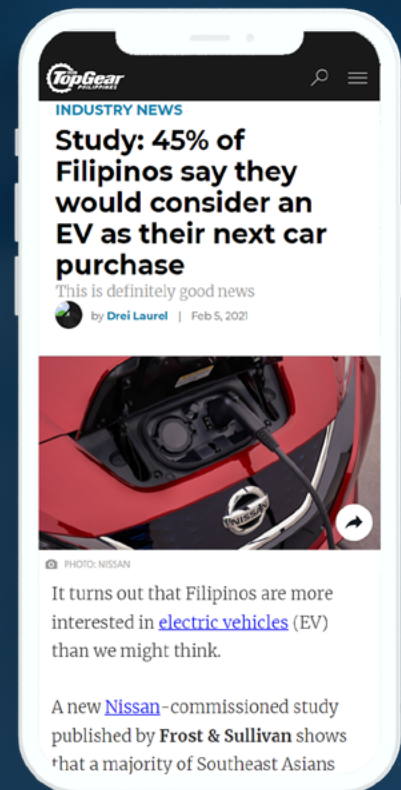
The legislation will initiate a “whole-of-government approach” to the development of the Philippines' EV sector, with a comprehensive EV Roadmap to be drafted by the DOE in collaboration with the DOTr, the DTI, the BOI, and the Department of Science and Technology (DOST) (Senate of the Philippines, 2020).

It is estimated that the bill will substantially accelerate the electrification of the country's transport sector, leading to a reduction in oil consumption of 146.56 million barrels, equivalent to US\$9.8 billion in economic savings (Senate of the Philippines, 2020).

Other legislative bills filed in Congress which support SB 1382 include House Bill No. 4075 and House Bill No. 4391, both titled The Electric Vehicles and Charging Stations Act. See Annex for details.



# Various headlines in UK and Philippines publications on electric vehicles.



### 3. Market barriers

Several obstacles at present restrain EV uptake in the Philippines. Experiences in other markets have shown that such challenges can be addressed through integrated strategies that involve regulatory and fiscal policy instruments focused on generating demand, building charging infrastructure, reducing EV cost, and developing industry (Mitsubishi, 2019). Key obstacles in the Philippine EV market include:

#### 3.1 Lack of enabling national laws

Globally, policy support for e-mobility has been gaining traction. In 2018, the UK in partnership with Poland launched the declaration, “Driving Change Together – Katowice Partnership for E-Mobility.” In the Philippines, the DOTr last year responded with a statement of support to this call, which signaled its commitment to accelerate the adoption of electric mobility to levels compatible with a less-than-2-degree pathway, expand the ZEVs market, facilitate the transport sector’s decarbonisation, and work with various society actors to achieve a rapid transition to clean transport, in the interest of cleaner air, innovative industry, and for a safe and stable climate (Driving Change Together Partnership, 2018). Such global policy declarations provide guidance as the country works towards achieving the PUVMP and enabling the deployment of more ZEVs and EVs on the road.

A supportive policy environment is much needed in the Philippines where the lack of policy clarity is at present the main market barrier. While the DTI has introduced an EV manufacturing roadmap and incentives to encourage EV investment (International Trade Administration, 2020), there is at present no policy in place that incentivises consumers to purchase an EV (UNDP, 2021). Despite ongoing discussions on proposed legislation and the need for clean energy, the Philippines’ current energy policy is “technology neutral” (International Trade Administration, 2020).

Until now, initiatives geared towards EV adoption have seen limited success. The PUV Act, for instance, has not significantly accelerated uptake (Frost & Sullivan, 2020). While

the government promotes the use of EVs under the initiative, high costs and underdeveloped e-jEEPney supply chains have led PUV operators switching to cleaner vehicles to favour internal combustion vehicles instead of EVs (EVAP, 2021).

To propel market growth, experts have recommended the adoption of an enabling regulatory and tax regime that favours EVs and reflects the true cost of fossil fuels (Mitsubishi, 2019).

It has also been proposed to integrate electric mobility commitments into national policies, such as the Nationally Determined Contributions (NDCs) under the Paris Climate Agreement, energy efficiency policies, and renewable energy policies, in order to send a clear signal to manufacturers and investors (UNEP, 2020). The DOE, for example, has included in their energy sector NDC submission a target of 10 per cent increase in penetration rate of electric vehicles for road transport (motorcycles, cars, jeepneys) by 2040 (DOE, 2016; British Embassy Manila webinar, 2021).

It is estimated that the passage of the proposed Senate Bill No. 1382 will greatly benefit the country’s EV market, creating a conducive policy environment that addresses affordability concerns and the lack of charging infrastructure (Senate of the Philippines, 2020; EVAP, 2021). Other measures that have the potential to spur EV use in the Philippines include parking fee discounts, access to priority lanes, and exemptions from toll charges (Mitsubishi, 2019). To offer an additional growth avenue besides private EV purchases, the government could also consider mandating minimum thresholds for EV adoption in corporate, government, and public transport fleets (Mitsubishi, 2019).

#### 3.2 High acquisition costs

The premium paid for EVs remains a key concern for PUV operators and consumers. Battery electric vehicles, hybrid electric vehicles, and plug-in hybrid electric vehicles are all significantly more expensive than internal combustion engine

cars running on gasoline or diesel (International Trade Administration, 2020).

Comparative cost analyses show that compact electric vehicles cost between 1.08 and more than two times that of their fossil fuel counterparts, while electric jeepneys cost about twice as much as standard diesel jeepneys, which currently service the majority of PUV routes (Mitsubishi, 2019).

At present, it takes public transport companies six to seven years to recover investments in e-jEEPneys, but it is estimated that social distancing guidelines introduced in response to the Covid-19 pandemic and the resulting loss in revenue for public transport fleet operators have extended this payback period to about 12 years (UNDP, 2021).

Given the lower operating cost of EVs, providing PUV operators with information on the full life-cycle cost of e-jEEPneys and other vehicles relative to their fossil fuel-powered equivalents may help encourage EV purchases, as would policy incentives (ADB, 2021).

#### 3.3 Underdeveloped domestic EV industry

Limited domestic EV manufacturing capacity is currently a major barrier to EV mass adoption in public transport fleets as it leads to a lack of readily available e-jEEPneys, and the limited access to finance makes it difficult for manufacturers to ramp up production. As a consequence, vehicles are not manufactured until a confirmed order is received (EVAP, 2021).

This build-to-order production approach results in long waiting times for manufacturers to process and complete orders, causing public transport businesses switching to cleaner vehicles under the PUV Modernisation Program to favour mass-produced Euro – 4 compliant internal combustion engine vehicles over EVs (EVAP, 2021).

The challenge to source e-jEEPneys is tied to another barrier, which is the difficulty of securing a franchise to



operate PUVs (EVAP, 2021). Under the current regulation by the LTFRB, PUV operators are required to secure 15 jeepney units before being eligible to apply for a franchise, whether this be an e-jeepney or a conventional internal combustion engine jeepney. But without a robust local supply chain for e-jeepneys, PUV operators find it challenging to secure a fleet of 15 e-jeepneys to even start with their franchise application. In contrast, the supply chain for conventional jeepneys is well established in the Philippines, making it easier for PUV operators to choose fossil fuel vehicles (EVAP, 2021).

EV adoption by both companies and private consumers is also held back by insufficient after sale support, a shortcoming that is largely the result of low EV maintenance and repair capacity, as well as the lack of prompt availability of replacement parts (UNDP, 2021; Mitsubishi, 2019).

Greater support for the domestic EV industry, through measures that could include increased direct subsidies, improved credit access for manufacturers, and government-funded training opportunities for building manufacturing and maintenance skills, is needed to bring down EV costs and ensure sufficient after sale support and higher consumer confidence (Mitsubishi, 2019).

### 3.4 Limited charging infrastructure

Public slow charging stations are currently not available in the Philippines, with fast charging points accessible only in a limited number of locations. Given the current prevalence of two-wheelers, it is estimated that most private EVs in the country will be charged at home or in workplaces. But studies have stressed that the presence of public charging stations is needed to reduce range anxiety and encourage greater EV adoption as car sales increase (Mitsubishi, 2019).

The government considers the private sector a key player in charging infrastructure development, but policies that would bring confidence to investors have yet to be introduced (UNDP, 2021). Building charging station networks will also require coordination across multiple stakeholders, including power distribution companies,

equipment manufacturers, developers, and charging station operators (Frost & Sullivan, 2020).

In addition, experts have highlighted the need for a Charging Infrastructure Masterplan on the national level to adequately respond to consumers' infrastructure needs. Such a planning document could lay out the country's infrastructure development strategy, specify installation standards and permitting protocols, and introduce financing mechanisms such as subsidies, tax incentives or co-investment schemes with the private sector (UNDP, 2021).

### 3.5 Availability of information

The lack of awareness of the social, environmental, and economic benefits of EVs among Philippine consumers and public transport fleet operators currently stands in the way of faster EV uptake. To improve the social acceptance of EVs and direct interest of the market away from internal combustion engine vehicles, the country needs to educate consumers on the life cycle cost and provide information on EV technology, available after sale support and charging infrastructure, and charging standards through IEC campaigns and other promotional activities (UNDP, 2021).

### 3.6 Lack of plans for social integration

Drivers of traditional jeepneys pushed back against the PUVMP when the DOTr first rolled it out in 2017. According to jeepney drivers and operators national organisation PISTON, the modernisation programme will affect at least 500,000 drivers, and 250,000 small operators, and up to 2 million families that depend on them (PISTON, no date).

The resistance is primarily due to the high cost of a modern and compliant PUV, which could go up to P1.6 million (GBP23,834, US\$ 33,166) per unit compared to a jeepney that could only cost from P100,000 (GBP15,000, US\$ 20,873 ). Databank IBON Foundation said that for a socially just transition to happen, the government should use its own funds to replace the old jeepneys at no cost to the drivers, and to treat mass transportation as a public service instead of as a business (IBON Foundation, 2017).













## 4. Business case

### 4.1 Growth projections

The Philippines is the 13th most populous country in the world (Jaymalin, 2017), with 108 million inhabitants in 2019 (World Bank, 2021) and half of the household population younger than 23.4 years in 2010 (PSA, 2012). The Southeast Asian (SEA) nation has one of the most dynamic economies in the Asia Pacific region, boasting an average economic growth rate of more than 5 per cent since the turn of the century (GIZ, 2020).

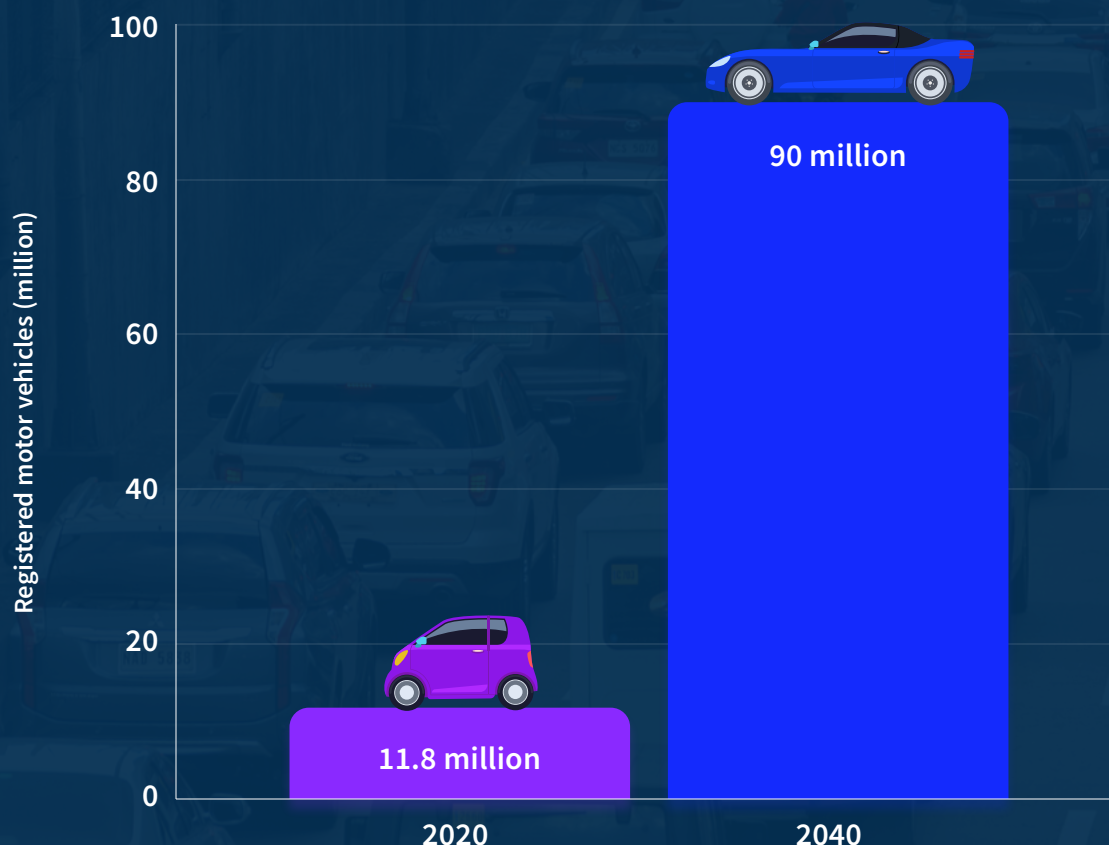
This growth brings it to the cusp of moving from a lower-middle to an upper-middle income country in the medium term (GIZ, 2020). Driven by rising incomes, population growth, and the growing aspirational desire to

own a car, the nation's vehicle market is forecast to grow substantially alongside the economy in the years ahead (GIZ, 2020). Covid-19 is predicted to see the desire for personal vehicle ownership increase further, benefitting the two-wheeler sector in particular. Lockdowns and social distancing protocols have dramatically diminished public transport's riding capacity, and for Filipinos who can afford it, a private vehicle is preferred for fear of virus transmission (ADB, 2021). The motorisation rate in the country rose from 57.9 vehicles/1,000 capita to 117.7 vehicles/1,000 capita from 2000 to 2015 (GIZ, 2020), and the current annual motorisation rate stands at 6 per cent (ADB, 2017). The DOE expects over 90 million registered motor vehicles—including motorcycles—on the nation's

roads by 2040, up from 8 million in 2014 (Senate of the Philippines, 2020).

With Philippine road transport at present dominated by fossil fuel-powered vehicles, such rapid increase in motorisation levels threatens to deteriorate both the country's air quality and energy security (ADB, 2017). The transport sector is currently the second highest contributor to the Philippines' greenhouse gas emissions, accounting for 31.6 per cent of total emissions in 2016 (USAID, 2016). It also has the highest carbon dioxide emissions growth rate in the country's energy sector. By 2030, emissions from road transport are expected to reach 87 million tons of carbon dioxide equivalent (MtCO<sub>2</sub>e), up from 24 MtCO<sub>2</sub>e in 2007 (ADB, 2017).

### Projected rise in registered motor vehicles in the Philippines, 2020-2040





In addition, the sector is responsible for 76 per cent of total particulate matter 10 (PM10) pollution. In 2017, the DENR declared transport-related air pollution the biggest environmental health threat facing the country (GIZ, 2020).

The Philippines ratified the Paris Agreement in 2017, pledging to reduce its greenhouse gas emissions by 75 per cent by 2030 from 2015 levels (Eco-Business, 2021). The National Framework Strategy on Climate Change (NFSCC), 2010–2022, expects the transport sector to play a key role in achieving this goal, with improvements in energy efficiency and a shift to cleaner vehicles among key priorities (ADB, 2017).

Aligned with this decarbonisation pledge, the DOE identified EV adoption as one of the key activities to deliver the energy sector's contribution to the NDC, stating a target of up to 10 per cent increase in penetration rate of electric vehicles for road transport (motorcycles, cars, jeepneys) by 2040 (DOE, 2016; British Embassy Manila webinar, 2021). If put on a low-carbon path, road transport could contribute up to 20 per cent to targeted emission reductions (GIZ, 2020).

Senators of the country have stressed the potential of transport electrification to cut emissions, foster greater energy independence, and provide economic savings for industry and households. The Philippines imported an estimated 97 per cent of its total crude supply in 2019, making it dependent on foreign suppliers to fuel its transport sector (Senate of the Philippines, 2020). In 2011, the country spent about \$12.8 billion on imported petroleum products, 17 per cent of which went to the transport sector, rendering the Philippines vulnerable to energy supply disruptions and global price fluctuations (ADB, 2017).

Experts expect the passage of the proposed Senate Bill No. 1382 to greatly benefit the country's EV market, as it would create a conducive policy environment that addresses current affordability concerns and the lack of charging infrastructure (Senate of the Philippines, 2020; EVAP, 2021). However, the bill may not be passed into law in 2021 (UNDP, 2021). If tax incentives are introduced, it is estimated that by 2030 annual sales of plug-in hybrid EVs and

battery EVs will increase to more than 30,000 and 70,000 units, respectively (Mitsubishi, 2019).

There are signs there is rising interest in EVs among Philippine consumers. A 2018 survey showed that almost five in 10 consumers in the country planning to buy a car are open to purchasing an electric model (Frost & Sullivan, 2018). The Philippines is also one of Southeast Asia's five major motor vehicle producers (Frost & Sullivan, 2018). Southeast Asia, when considered as a single region, is the fifth largest vehicle market in the world, ahead of Russia and Brazil. After China and India, the region is expected to account for the next wave of automotive demand growth (Frost & Sullivan, 2018).

The public transport sector alone could provide a significant catalyst for the Philippines' EV market. Based on 2016 data, there are about 48,000 jeepney units that will need to be replaced and more than 822,000 tricycles registered in the country. Reserving a certain share of the routes for e-jeepneys and e-tricycles—a key component of several proposed legislative bills—could stimulate enough demand for sustainable growth of the local EV industry (Mitsubishi, 2019). Studies have also pointed to tourism and logistics as industries that could drive EV uptake if supportive regulations are introduced (Mitsubishi, 2019). It should be noted, however, that accessibility improvements in the public transport sector could reduce private vehicle demand by up to 57 per cent by 2030, affecting future EV growth (Mitsubishi, 2019).

Under a best-case scenario, which assumes the introduction of importation tariff and excise tax incentives as well as minimum thresholds for EV adoption in corporate, government, and public transport fleets, the total number of EVs on Philippine roads could reach 300,000 by 2030 (Mitsubishi, 2019).

## 4.2 Recommendations

The Philippines EV market is at present held back by an uncertain policy landscape. Several legislative bills have been proposed to drive EV uptake and spur industry development, and experts expect that the passage of Senate Bill No. 1382—arguably the cornerstone of

the country's EV legislation—will help the market realise its growth potential (EVAP, 2021). However, there is a chance that the bill may not be signed into law in 2021 (UNDP, 2021).

For foreign investors and EV companies looking to enter the market, opportunities lie in providing finance for charging infrastructure and other EV-related initiatives, offering innovative EV technology solutions and technology transfer, and the supply of battery systems and other EV components (EVAP, 2021; International Trade Administration, 2020).

A programme being planned that could offer various opportunities for investors and industry players alike is the Green Routes initiative, which is a key feature of several proposed legislative bills. With e-jeepneys the only vehicles permitted to operate on these routes, the initiative would assure investors a market, and potential opportunities include establishing a leasing scheme for e-jeepneys, offering battery-swapping services, and providing finance to domestic e-jeepney manufacturers (EVAP, 2021). Key to identifying opportunities and gaining a footing in the market is developing relationships with EVAP, potential consumers such as the DOE, the DENR, local government units (LGUs), and PUV operators, and the Public-Private Partnership Center, the Philippines' central coordinating and monitoring agency for all public-private partnerships (PPPs) (ADB, 2021; EVAP, 2021).

Even if the much-awaited Senate Bill No. 1382 is not passed this year, PPPs could enable market players to take advantage of business development opportunities in the country (EVAP, 2021). The DOE has rolled out policy issuances that seeks to collaborate with the private sector in order to implement out a multi-stakeholder pilot programme to advance charging infrastructure development in the country (EVAP, 2021). A study was conducted as part of the initiative in early 2021, and the DOE is expected to announce the launch of the programme this year (EVAP, 2021; British Embassy Manila webinar, 2021). Despite the absence of policy, LGUs have also in the past launched smaller scale programmes in PPPs to spur EV adoption in specific cities (ADB, 2021).

A blue and yellow Philippine jeepney is shown from a side-front perspective. It has a large sign on its side that reads "PILIPINAS Go Renewable!" with a small graphic of a sun and a leaf. The jeepney is parked on a street with tall buildings in the background. The image is overlaid with a semi-transparent blue filter.

## 5. Conclusions

The Philippines may be on the cusp of an EV revolution. Amid rapid economic growth and rising incomes, private vehicle ownership is forecast to increase substantially in the coming years. With transport electrification seen as a key pillar in the country's decarbonisation strategy, and the EV roadmap potentially shaping the country's position in ZEV/EV market, the Philippine EV market could grow significantly this decade.

But while legislators have proposed measures to drive EV uptake, policy uncertainties at present prove a major obstacle to growth and may deter investors to commit to the market. Bringing comfort to market participants will require a decisive policy push, but discussions on legislative bills designed to incentivise the manufacture, importation, and uptake of EVs have stalled.

However, the passage of Senate Bill No. 1382, seen as the cornerstone of the country's EV legislation, is expected to resolve current uncertainties and address persistent market barriers, including high acquisition costs of EVs, the country's underdeveloped EV industry, and limited charging infrastructure.

For foreign financiers and industry players looking to enter the market, opportunities lie in providing finance for charging infrastructure and other EV-related initiatives, offering innovative EV technology solutions and technology transfer, and the supply of battery systems and other EV components. Despite current challenges, investors and industry players are likely to find promising opportunities in developing charging infrastructure and the electrification of the country's public transport sector. ➡



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# Appendix

## House Bill No. 4075: The Electric Vehicles and Charging Stations Act

On 20 August 2019, House Bill No. 4075, or the Electric Vehicles and Charging Stations Act, was filed in the Philippine Congress (House of Representatives, 2019a). Proposed by the House Committee on Energy, the bill seeks to create a national policy to incentivise the manufacture, importation and use of EVs in the country.

The bill also mandates the construction of dedicated parking lots and charging stations in private and public buildings, the promotion of EV public transportation in local governments through the opening of green routes exclusive for electric PUVs, and the provision of fiscal and non-fiscal incentives to accelerate EV adoption (House of Representatives, 2019a).

Section 17 provides for fiscal incentives on the purchase and importation of

capital equipment, spare parts, and components used in the manufacture and assembly of electric vehicles and the construction of charging stations. Fiscal incentives will also be extended to manufacturers and assemblers of semi-built or knocked-down parts of EV units and charging stations. The incentives will be extended for 10 years.

EV users will also enjoy fiscal incentives for a period of nine years. Incentives are offered in the form of value-added tax (VAT) exemption for EV purchases, exemption from the payment of motor vehicles user's charge imposed by LTO, and exemption from on-street parking fees imposed by local governments to local traffic and other similar rules and regulations and zoning ordinances.

Section 18 outlines non-fiscal incentives for EV users. If the bill is signed into

law, EV users will be granted priority in vehicle registration and registration renewal processes.

They will also be exempted from the mandatory unified vehicular volume reduction program, which means EV users can be on the road any day of the week. In addition, PUV operators using EVs will be given priority by the LTFRB for when applying for franchise to operate. These non-fiscal incentives are provided without expiration date unless it is explicitly repealed in the bill.

Finally, Section 19 states the provision of financial assistance by government financial institutions and other financial institutions for businesses engaged in the manufacture, assembly, importation, and operation of EV and EV charging stations.

## House Bill No. 4391: The Electric Vehicles and Charging Stations Act

Similar to House Bill No. 4075, House Bill No. 4391, filed on 4 September 2019, is a counterpart to Senate Bill No. 1382 (House of Representatives, 2019b). It seeks to create a national policy framework to promote and mainstream the use of EVs for public and private transportation. The bill likewise pushes for the establishment of dedicated parking slots and charging areas at gasoline stations and public and private establishments, the formulation of accreditation mechanism for charging station service providers, the creation of green routes, thus, opening a business opportunity for exclusive EV public utility vehicles, and the provision of fiscal and non-fiscal incentives to EV businesses and users (House of Representatives, 2019b).

A key feature of House Bill No. 4391 that differentiates it from other bills is its push for the creation of an Electric Vehicle Manufacturing Roadmap

(EVMR) and its mandate for the DOE to lead in directing this roadmap.

Section 5 of the bill states: "The DOE shall determine the general policy direction and specific policy measures required to promote EVs and charging stations." Specifically, the bill tasks the DOE to create the Electric Vehicle Roadmap (EVR) together with the DOTr, the DTI, and other relevant government agencies.

The EVR is an annual comprehensive plan to accelerate EV uptake in the country. It will incorporate the Power Development Plan (PDP) and the PUV Modernisation Programme as far as EVs and charging stations are concerned. The EVR will have annual targets and metrics that aim to measure and build up progress on EV infrastructure development and EV adoption.

The bill also urges the inclusion of EVs in the country's Investments

Priorities Plans (IPPs) under the BOI. The bill directs the BOI to incentivise the purchase and importation of capital equipment, spare parts, and components used in the manufacture and assembly of EVs and the construction of charging stations, including knocked-down parts or semi-built units, for a period of 10 years from the enactment of the bill.

For EV users, the same non-fiscal incentives provided for in House Bill No. 4075 are also provided in this bill. These include prioritisation in vehicle registration and registration renewal processes with the LTO, exemption in the vehicular volume reduction programme and number coding schemes, which means EVs are allowed to be on the road any day of the week unlike internal combustion engine vehicles, which have to be off the road one day each week, and financial assistance from government banks for businesses engaged in the EV sector.







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