

The Case for Sustainable Transportation in the Philippines: Identifying Opportunities and Gaps in the Law

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I. SUSTAINABLE TRANSPORTATION IN THE PHILIPPINES.....	1103
II. MODERN FEATURES OF PUBLIC TRANSPORT CONVEYANCES .	1107
III. PREMIUM POINT-TO-POINT BUSES (P2P)	1107
IV. THE TRAIN LAW ON ELECTRIC AND HYBRID VEHICLES	1108
V. PUV MODERNIZATION PROGRAM (PUVMP)	1109
VI. JUSTIFICATIONS FOR PROMOTING ELECTRIC VEHICLES	1111
VII. CONCERNS REGARDING ELECTRIC VEHICLES	1115
VIII. POLICY RECOMMENDATIONS	1117
IX. CONCLUSION AND OTHER SUGGESTIONS	1123

I. SUSTAINABLE TRANSPORTATION IN THE PHILIPPINES

The emergence of new technologies often results in multiple legal issues, spurring from the need to regulate new entities, activities, and relationships resulting from these changes.¹ These issues tend to require novel approaches to reform existing laws, particularly during the early stages of these technological developments.² This is generally the case with regard to

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1. Lyria Bennett Moses, *Why Have a Theory of Law and Technological Change?*, 8 MINN J. L. SCI. & TECH. 589, 595 (2007).
2. *Id.*

technological advances such as artificial intelligence, cryptocurrencies, and Deoxyribonucleic Acid (DNA) mapping.³

In contrast to this trend, it has usually been the government which is pushing for the modernization of the transportation sector by enacting various laws and regulations aimed at creating opportunities to facilitate sustainable transportation in urban and rural areas.⁴

Enumerated below are notable examples of legislation that support the use of alternative fuels.

First, Republic Act No. 9367 (Biofuels Act of 2006)⁵ was promulgated to encourage the use of biofuels.⁶ It was “declared the policy of the State to reduce [its] dependence on imported fuels with due regard to the protection of public health, the environment, and the natural ecosystems consistent with the country’s sustainable economic growth that would expand opportunities for livelihood by mandating the use of biofuels[.]”⁷ Biofuels refer to “bioethanol and biodiesel and other fuels made from biomass and primarily used for motive, thermal[,] and power generation, with quality specifications in accordance with the [Philippine National Standards.]”⁸ It was mandated “that all liquid fuels for motors and engines sold in the Philippines shall contain locally-sourced biofuels components[.]”⁹ Certain incentives were given under the law to encourage investments in the production, distribution, and use of locally-produced biofuels, such as zero specific tax on local or imported biofuels component,¹⁰ exemption from value-added tax (VAT) for the sale of raw materials used in the production of biofuels,¹¹ exemption of water effluents from wastewater charges under

3. See Infosec, Legal Issues of New and Emerging Technologies, *available at* <https://resources.infosecinstitute.com/legal-issues-of-new-and-emerging-technologies/#gref> (last accessed Feb. 29, 2020).

4. See Land Transportation Franchising and Regulatory Board, PUV Modernization, *available at* <http://ltfrb.gov.ph/index.php/puv-modernization-2> (last accessed Feb. 29, 2020).

5. An Act to Direct the Use of Biofuels, Establishing for This Purpose the Biofuel Program, Appropriating Funds Therefor, and for Other Purposes [Biofuels Act of 2006], Republic Act No. 9367 (2007).

6. *Id.* § 2.

7. *Id.*

8. *Id.* § 3 (f).

9. *Id.* § 5.

10. *Id.* § 6 (a).

11. Biofuels Act of 2006, § 6 (b).

Section 13 of Republic Act No. 9275¹² (Philippine Clean Water Act), as well as financial assistance to qualified entities who shall engage in activities involving production, storage, handling, and transport of biofuel and biofuel feedstock, including the blending of biofuels with petroleum.¹³

Second, due to the increase in gasoline prices in 2007, the government, through the Department of Energy (DOE) encouraged the use of liquefied petroleum gas (LPG) as an alternative fuel for public transportation, specifically, commercial taxis.¹⁴ Alternative fuel vehicles/engines refer to “vehicles/engines that use alternative fuels such as biodiesel, bioethanol, natural gas, electricity, hydrogen[,] and automotive LPG instead of gasoline and diesel[.]”¹⁵ The DOE issued Department Circular (D.C.) No. 2007-02-0002¹⁶ entitled “Providing for the Rules and Regulations Governing the Business of Supplying, Hauling, Storage, Handling, Marketing and Distribution of LPG for Automotive Use” to serve as a guideline for the increasing demand of LPG as transport fuel.¹⁷ The major factor which influenced the shift is that using LPG results in cleaner emissions and better air quality.¹⁸

Third, the State encouraged the use of compressed natural gas (CNG) buses.¹⁹ Department Order (D.O.) No. 2011-14²⁰ of the then Department of

12. *Id.* § 6 (c) & An Act Providing for a Comprehensive Water Quality Management and for Other Purposes [Philippine Clean Water Act of 2004], Republic Act No. 9275, § 13 (2004).

13. Biofuels Act of 2006, § 6 (d).

14. Department of Energy, Auto LPG Vehicles, *available at* <https://www.doe.gov.ph/alternative-fuels/auto-lpg-vehicles-0> (last accessed Feb. 29, 2020).

15. Biofuels Act of 2006, § 3 (b).

16. Department of Energy, Providing for the Rules and Regulations Governing the Business of Supplying, Hauling, Storage, Handling, Marketing and Distribution of Liquefied Petroleum Gas (LPG) for Automotive Use, Department Circular No. 2007-02-0002 [Auto-LPG Rules] (Feb. 13, 2007).

17. Department of Energy, *supra* note 14.

18. Edwin N. Quiros, et al., A Preliminary Study of LPG as an Alternative Fuel for Philippine Jeepneys (An Conference Paper Published by SAE Technical) at *1, *available at* https://www.researchgate.net/publication/315852408_A_Preliminary_Study_of_LPG_as_an_Alternative_Fuel_for_Philippine_Jeepneys (last accessed Feb. 29, 2020).

19. Department of Transportation and Communications, An Order Exempting CNG Buses From the Moratorium in Accepting, Processing and Granting of

Transportation and Communications²¹ (DOTC) exempts CNG buses from the moratorium in accepting, processing, and granting of certificates of public convenience (CPC) for public utility buses in order to reduce greenhouse gas (GHG) emissions and promote alternative fuels in public transportation services.²² In addition, the use of CNG-fueled conveyances results in reduced operation and maintenance expenses as well as improved efficiency of public utility bus operations.²³

Finally, there has been a rise in the use of alternative fuels and electric vehicles. DOTC D.O. No. 2011-16²⁴ stated that “priority is extended to vehicles propelled by engines using alternative fuels such as LPG, CNG, or electric[-]powered motors.”²⁵ The purpose of this regulation is “[t]o promote the operation of public transport conveyances using alternative fuels or electric motor-powered vehicles, which are found to be environment friendly[.]”²⁶ The regulation also mandates that “all electric vehicles for public transportation services [are exempted] from the moratorium on franchise applications subject to the determination of [its route measured capacity] by [the then] DOTC Planning and other conditions set forth in previous Department Orders.”²⁷

Certificate of Public Convenience (CPC) for Public Utility Buses, Department Order No. 2011-14 [DOTC D.O. No. 2011-14] (Jan. 21, 2011).

20. *Id.*

21. This has now been renamed the Department of Transportation (DOTr). An Act Creating the Department of Information and Communications Technology, Defining its Powers and Functions Appropriating Funds Therefor, and for Other Purposes [Department of Information and Communications Technology Act of 2015], Republic Act No. 10844, § 15 (a) (6) (2015).

22. DOTC D.O. No. 2011-14, paras. 1 & 3.

23. *Id.* para. 2.

24. Department of Transportation and Communications, Inclusion of Electric Motor Powered Vehicles in Item No. 4 of DOTC Order No. 97-1997 “Providing Standard Classification for All Public Transport Conveyances” and the Exemption of All Electric Vehicles for Public Transport from the Moratorium on Franchise Applications, Department Order No. 2011-16 [DOTC D.O. No. 2011-16] (Mar. 3, 2011).

25. *Id.* para 2.

26. *Id.* para. 1.

27. *Id.* para. 3.

II. MODERN FEATURES OF PUBLIC TRANSPORT CONVEYANCES

DOTC D.O. No. 2015-011²⁸ was issued in order to “encourage innovation across all forms of public land transport[, thereby increasing] mobility on major thoroughfares, boost travel times, improve the quality, sustainability[, and] reliability of public transport services, and respond to the needs of the modern commuter.”²⁹ It amended DOTC D.O. 97-1097³⁰ by recognizing new forms of transport services, such as Bus Rapid Transit (BRT), airport bus, premium taxis, and Transportation Network Vehicle Services (TNVS), and modernizing the transport services currently being offered to the Filipino commuting public.³¹ The regulation required new categories of transport services to be equipped with modern operating conditions and technologies.³² For example, the BRT should have an on-board Closed Circuit Television (CCTV) with four cameras, vehicle tracking via on-board Global Positioning System (GPS) devices, Automatic Fare Collection System (AFCS), free Wi-Fi for all passengers, on-board automated bus arrival electronic display and announcement system, among others.³³

III. PREMIUM POINT-TO-POINT BUSES (P2P)

DOTC D.O. No. 2015-018³⁴ introduced the Premium Point-to-Point (P2P) Bus Services for Greater Manila, an express bus service that takes passengers to a specified destination with fewer stops between origin and destination points, significantly cutting down travel times.³⁵ The P2P Bus was also required to have the modern operating conditions and technologies

28. *Id.*

29. Department of Transportation and Communications, Further Amending Department Order No. 97-1097 to Promote Mobility, Department Order No. 2015-011 [DOTC D.O. No. 2015-011], at *1 (May 8, 2015).

30. Department of Transportation and Communications, Providing Standard Classification for All Public Transport Conveyances, Department Order No. 97-1097 [DOTC D.O. No. 97-1097] (Sep. 29, 1997).

31. DOTC D.O. No. 2015-011, at **1-5.

32. *Id.*

33. *Id.* at *2.

34. Department of Transportation and Communications, Premium Point-to-Point Bus Services for Greater Manila, Department Order No. 2015-018 [DOTC D.O. No. 2015-018] (Oct. 14, 2015) (as amended).

35. *Id.* ¶ 1.

mentioned in the preceding section, although the number of CCTV cameras was not specified and the AFCS was made optional.³⁶

However, there were additional requirements such as a driver console, enabling two-way communication and a facility for advance ticketing and seat booking via mobile phone and the internet.³⁷ Also, in the above-mentioned regulation, the Land Transportation Franchising and Regulatory Board (LTFRB) will have access to the real time global positioning system (GPS) signals of all express buses, allowing them to monitor vehicle movements, measure travel times and ensure compliance with service standards and specifications.³⁸ The GPS real-time data will also be made publicly available to enable passengers to monitor bus movements or arrival times at terminals, on their phones and on other electronic devices.³⁹

IV. THE TRAIN LAW ON ELECTRIC AND HYBRID VEHICLES

Curiously, the benefits of purchasing electric and hybrid vehicles entered the consciousness of consumers through the passing of a tax law. Republic Act No. 10963⁴⁰ (Tax Reform for Acceleration and Inclusion Act of 2017 or TRAIN Law) amended Republic Act No. 8424⁴¹ (National Internal Revenue Code of 1997). The TRAIN Law “restructures the tax schedule on the excise tax on automobiles by imposing ad valorem taxes that are directly applied to the net manufacturer’s price/importer’s selling price instead of imposing marginal tax rates[.]”⁴²

36. *Id.* ¶ 4.

37. *Id.*

38. *Id.* ¶ 6.

39. *Id.*

40. 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 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 [Tax Reform for Acceleration and Inclusion (TRAIN)], Republic Act No. 10963 (2017).

41. An Act Amending the National Internal Revenue Code, as Amended, and for Other Purposes [Tax Reform Act of 1997], Republic Act No. 8424 (1997).

42. Tax Reform for Acceleration and Inclusion (TRAIN), § 45. *See also* National Tax Research Center, Tax Changes You Need To Know (A Booklet Published By the Department of Finance, National Tax Research Center) at 8, *available at*

Comparing the resulting increase in the prices of regular vehicles with the incentives given to electric and hybrid vehicles, this regulation encouraged consumers to consider purchasing electric and hybrid vehicles. The TRAIN Law provided that hybrid vehicles shall be subject to 50% of the applicable excise tax rates on automobiles, and purely electric vehicles and pick-ups shall be exempt from the excise tax on automobiles.⁴³

The TRAIN Law is implemented by the Bureau of Internal Revenue (BIR) through its Revenue Regulations (RR) 5-2018⁴⁴ which defines a Hybrid Electric Vehicle (HEV) as a “motor vehicle powered by electric energy, with or without provision for off-vehicle charging, in combination with gasoline, diesel, or any other motive power[.]”⁴⁵ In other words, if the vehicle runs purely on electric power, then it is classified as an electric vehicle (EV), and if it runs using a combination of electric power and gasoline or diesel, then it is classified as an HEV.⁴⁶

V. PUV MODERNIZATION PROGRAM (PUVMP)

Department of Transportation (DOTr) D.O. No. 2017-011⁴⁷ (Omnibus Franchising Guidelines) was issued to “promote adequate, safe, reliable, efficient, and environment-friendly Public Utility Vehicles (PUVs)[.]”⁴⁸ and recognized that “public road transport services nationwide should be provided in a timely, sufficient, cost-effective, and reliable manner[.]”⁴⁹

<http://www.ntrc.gov.ph/images/Publications/train/tax-changes-you-need-to-know.pdf> (last accessed Feb. 29, 2020).

43. Tax Reform for Acceleration and Inclusion (TRAIN), § 45.
44. Bureau of Internal Revenue, Revenue Regulations Implementing the Adjustment of Rates on the Excise Tax on Automobiles pursuant to the Provisions of Republic Act No. 10963, otherwise known as the “Tax Reform for Acceleration and Inclusion (TRAIN) Law” Amending for the Purpose Revenue Regulations No. 25-2003, Revenue Regulations No. 5-2018 [BIR R.R. No. 5-2018] (Jan. 5, 2018).
45. *Id.* § 2.
46. Peaches Aranas, *Of excise tax and hybrid electric vehicles*, MANILA TIMES, Dec. 16, 2018, available at <https://www.manilatimes.net/2018/12/16/business/sunday-business/of-excise-tax-and-hybrid-electric-vehicles/483390/483390> (last accessed Feb. 29, 2020).
47. Department of Transportation, Omnibus Guidelines on the Planning and Identification of Public Road Transportation Services and Franchise Issuance, Department Order No. 2017-011 [DOTr D.O. No. 2017-011] (June 19, 2017).
48. *Id.* whereas cl. para. 1.
49. *Id.* whereas cl. para. 2.

One of the major components of PUV Modernization Program is fleet modernization, wherein new vehicle standards are being developed in consultation with concerned government agencies, jeepney associations, and local and international manufacturers to replace old PUVs.⁵⁰ The regulation required PUVs to have modern features like Global Navigation Satellite System (GNSS) receivers (e.g., GPS) and safety features such as fire extinguishers and speed limiters, in addition to the modern features of the P2P Buses mentioned earlier.⁵¹ It also contains a section on the Modernization of Public Transport Services, wherein brand new and environmentally-friendly units shall be promoted and be given priority in the allocation of CPCs and deployment, based on route categories.⁵²

As to environmental soundness, public transport vehicles with combustion engines are being required to have low emissions (compliance with Euro IV emission standards or better as prescribed by the Department of Environment and Natural Resources (DENR)) and the regulation stated that other preferred public transport vehicles are those using electric drives and/or running on alternative fuels, such as electric and solar-powered.⁵³ The LTFRB was directed to issue a Memorandum Circular (MC) to provide for a modernization program for all PUVs, and establish the age limit of each classification.⁵⁴ LTFRB issued several MCs as guidelines to implement the PUMVP.⁵⁵

50. Land Transportation Franchising and Regulatory Board, *supra* note 4.

51. DOTr D.O. No. 2017-011, § 2.1.2.

52. *Id.* § 5.2.

53. *Id.* § 2.1.4.

54. *Id.* § 5.2.2.

55. See Land Transportation Franchising & Regulatory Board, Guidelines for the Public Utility Vehicle Modernization Program's Initial Implementation pursuant to Department Order No. 2017-11, Otherwise Known as the Omnibus Franchising Guidelines, Memorandum Circular No. 2018-006 [LTFRB Memo. Circ. No. 2018-006] (Mar. 13, 2018); Land Transportation Franchising & Regulatory Board, Consolidation of Franchise Holders in Compliance with Department Order No. 2017-011, Otherwise Known as the Omnibus Franchising Guidelines (OFG), Memorandum Circular No. 2018-008 [LTFRB Memo. Circ. No. 2018-008] (Mar. 16, 2018); Land Transportation Franchising & Regulatory Board, Implementing Rules on Selection of Transport Operators for LGU-Prepared LPTRPs Under DO No. 2017-011, Otherwise Known as the Omnibus Franchising Guidelines (OFG), Memorandum Circular No. 2018-009 [LTFRB Memo. Circ. No. 2018-009] (May 29, 2018); Land Transportation Franchising & Regulatory Board, Guidelines for Dropping and Substitution of PUJ Units Under the PUVMP,

The provisions of the Omnibus Franchising Guidelines (OFG), including the aforementioned requirements on environmental soundness of public transport vehicles, “immediately apply to all new applications for franchise and petitions for modification[s].”⁵⁶ As to all existing, updated, and valid franchises, a transitory period of three years from the effectivity of the OFG was mandated.⁵⁷ During the three-year transition period, operators who comply with the provisions of the OFG and LTFRB MCs shall have the duration of their franchises extended.⁵⁸ It follows that those who are not able to comply with the provisions of the OFG, including the fleet modernization, will not be issued a franchise.

VI. JUSTIFICATIONS FOR PROMOTING ELECTRIC VEHICLES

The use of e-vehicles has wide-ranging benefits. It is environment-friendly and low maintenance, cheaper to use because it has no or low fuel costs, improves safety, and is more comfortable to use because of lesser noise during operation compared with non-electric alternatives.⁵⁹

Besides these advantages, the Electric Vehicle Association of the Philippines also cites the following economic reasons to support electric vehicles:

- (1) creation of new jobs for manufacturing (e.g., welders, painters, machine operators, body makers, assembly workers) and operation (e.g., charging station operators, maintenance and

Memorandum Circular No. 2018-012 [LTFRB Memo. Circ. No. 2018-012] (June 6, 2018); & Land Transportation Franchising & Regulatory Board, Implementing Guidelines in the Acceptance of Applications for New CPC Under the Initial Implementation of the Public Utility Vehicle Modernization Program, Memorandum Circular No. 2018-013 [LTFRB Memo. Circ. No. 2018-013] (June 27, 2018). The aforementioned Memorandum Circulares were amended and the guidelines were consolidated. Land Transportation Franchising & Regulatory Board, Consolidated Guidelines on the Process of Issuance of Certificate of Public Convenience (CPC) and Provisional Authority (PA)/Special Permit (SP) Under the Omnibus Franchising Guidelines & Public Utility Vehicle Modernization Program (PUVMP), Memorandum Circular No. 2019-013 [LTFRB Memo. Circ. No. 2019-013] (Mar. 15, 2019).

56. DOTr D.O. No. 2017-011, § 11.1.

57. DOTr D.O. No. 2017-011, § 11.2.

58. DOTr D.O. No. 2017-011, § 11.4.

59. Ergon Energy, Benefits of electric vehicles, *available at* <https://www.ergon.com.au/network/smarter-energy/electric-vehicles/benefits-of-electric-vehicles> (last accessed Feb. 29, 2020).

service technicians, EV drivers, transport operators) of EV systems;⁶⁰

- (2) increased government income from withholding taxes due to the establishment and resulting sales of the EV industry;⁶¹
- (3) multiplier effect — the injection of more disposable income will encourage consumers to spend more on EVs thus creating more sales for the EV industry;⁶²
- (4) carbon credits from the reduction of emissions;⁶³
- (5) dollar savings from the reduction of the need to import oil;⁶⁴
- (6) savings from pollution-related health expenses, such as pulmonary and cardiovascular diseases;⁶⁵
- (7) government gains from the VAT sales of EVs;⁶⁶
- (8) increase in the government's VAT collection from the additional energy demand;⁶⁷ and
- (9) net revenue gained by the government as a result of the aforementioned benefits.⁶⁸

In addition to economic benefits, there are also legal justifications for promoting sustainable modes of transportation such as EVs.

In the 1987 Constitution, it was declared the policy of the State to “protect and promote the right to health of the people and instill health consciousness among them”⁶⁹ and to “protect and advance the right of the

60. Rommel Juan, 9 economic benefits of using e-vehicles in PH, *available at* <https://www.rappler.com/nation/76305-economic-benefits-electric-vehicles-philippines> (last accessed Feb. 29, 2020).

61. *Id.*

62. *Id.*

63. *Id.*

64. *Id.*

65. *Id.*

66. Juan, *supra* note 60.

67. *Id.*

68. *Id.*

69. PHIL. CONST. art. II, § 15.

people to a balanced and healthful ecology in accord with the rhythm and harmony of nature.”⁷⁰

With regard to motor vehicles, the State policies in the Constitution were primarily implemented by the Philippine Clean Air Act of 1999.⁷¹ The law

- (1) recognized “the right [of the citizens] to breathe clean air[.]”⁷²
- (2) mandated the (a) DOTr to “implement the emission standards for motor vehicles[.]”⁷³ and (b) the Department of Trade and Industry (DTI), DOTr, and DENR to “formulate and implement national motor vehicle inspection and maintenance program” to ensure the substantial reduction of emissions from motor vehicles,⁷⁴ and
- (3) directed DENR to issue and periodically revise information on air pollution techniques, including those on alternative fuels, processes, and operating methods, which will result in the elimination or significant reduction of emissions.⁷⁵

In 2004, President Gloria Macapagal Arroyo issued Executive Order (E.O.) No. 397,⁷⁶ which recognized that hybrid or partly-electrical vehicles are considered to be more powerful and fuel efficient.⁷⁷ The E.O. reduced the rates of import duty on completely-knocked down parts and components for assembly of low-engine displacement and hybrid vehicles.⁷⁸ In 2006, E.O. No. 488⁷⁹ was issued, which identified how emerging alternative fuel

70. PHIL. CONST. art. II, § 16.

71. An Act Providing for a Comprehensive Air Pollution Control Policy and for Other Purposes [Philippine Clean Air Act of 1999], Republic Act No. 8749 (1999).

72. *Id.* § 4.

73. *Id.* § 21 (a).

74. *Id.* § 21 (d).

75. *Id.* § 11.

76. Office of the President, Reducing the Rates of Import Duty on Completely-Knocked-Down Parts and Components for Assembly of Low Engine Displacement and Hybrid Vehicles, Executive Order No. 397, Series of 2004 [E.O. No. 397, s. 2004] (Dec. 31, 2004).

77. *Id.* whereas cl. para. 2.

78. *Id.* § 1.

vehicle technologies may improve the energy efficiency of transportation vehicles and support the government's agenda on energy independence.⁸⁰ It imposed a zero rate on the import duty of components, parts, and accessories for the assembly of hybrid, electric, flexible fuel, and CNG motor vehicles.⁸¹

The Climate Change Commission, which includes DOTr as a member, was established by Republic Act No. 9729 (Climate Change Act of 2009).⁸² One of the powers of the Climate Change Commission is to formulate strategies on mitigating GHG and other anthropogenic causes⁸³ of climate change.⁸⁴ Such anthropogenic causes of climate change include “fuel efficiency, energy conservation, use of renewable energy, and waste management, among others[.]”⁸⁵

Finally, as to the Philippines' international obligations, the government submitted its Intended Nationally Determined Contributions (INDC) to the United Nations Framework Convention on Climate Change (UNFCCC),⁸⁶ “anchored on its policy declaration under the Climate Change [Act] of 2009, as amended in 2012, whereby the State shall cooperate with the global community in the resolution of climate change issues.”⁸⁷ It is stated that the

79. Office of the President, 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, Executive Order No. 488, Series of 2006 [E.O. No. 488, s. 2006] (Jan. 12, 2006).

80. *Id.* at whereas cl. para. 4.

81. Department of Trade and Industry, E-Vehicles, *available at* <http://industry.gov.ph/industry/e-vehicles> (last accessed Feb. 29, 2020).

82. An Act Mainstreaming Climate Change into Government Policy Formulations, Establishing the Framework Strategy and Program on Climate Change, Creating for this Purpose the Climate Change Commission, and for Other Purposes [Climate Change Act of 2009], Republic Act No. 9729, §§ 4 & 5 (2009).

83. Anthropogenic causes refer to “causes resulting from human activities or produced by human beings.” *Id.* § 3 (c).

84. Climate Change Act of 2009, § 9 (i).

85. Climate Change Commission, Rules and Regulations Implementing the Climate Change Act of 2009, Republic Act No. 9729, rule VI, § 1 (i) (2010).

86. Republic of the Philippines, Intended Nationally Determined Contributions, *available at* <https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/Philippines/1/Philippines%20-%20Final%20INDC%20submission.pdf> (last accessed Feb. 29, 2020).

87. *Id.* at 1.

Philippines “intends to undertake GHG (CO₂e) emissions reduction [(from energy, transport, waste, forestry and industry sectors)] of about 70% by 2030[.]”⁸⁸ President Rodrigo Duterte signed the Instrument of Accession to the Paris Agreement,⁸⁹ which establishes a global warming goal of below two degrees Celsius from pre-industrial averages, on 28 February 2017. This was unanimously concurred by the Senate on 14 March 2017, thereby completing the ratification process. The Instrument of Accession was accepted by the UNFCCC on 23 March 2017, and it officially entered into force on 22 April 2017.⁹⁰

VII. CONCERNS REGARDING ELECTRIC VEHICLES

First, even with the incentives from the TRAIN Law, there are concerns that the price of e-vehicles to be used for public transportation is too expensive.⁹¹ As to PUVs, one obstacle is the cost of new e-jeepneys which will result in jeepney operators contracting large debts.⁹² As per the Guidelines on the Availment of the Equity Subsidy under the PUVMP, the current equity subsidy is ₱80,000.⁹³ However, if modern jeepneys will cost about ₱1.2 million to ₱1.6 million, the subsidy amount is only about five percent of the total price and could hardly bring down the monthly repayment of the loan, which is the primary reason for opposition from certain transport groups.⁹⁴

Second, considering that (a) the PUVMP involves the replacement of old units of PUVs nationwide, and (b) an estimated number of 179,000 PUJs

88. *Id.* at 3.

89. The 2015 United Nations Climate Change Conference, Paris, France, Nov. 30 to Dec. 11, 2015, Adoption of the Paris Agreement, U.N. Doc. FCCC/CP/2015/L.9/Rev.1 (Dec. 12, 2015).

90. Danessa Rivera, *Audit sought on greenhouse gas emission level*, PHIL. STAR, Aug. 5, 2019, available at <https://www.philstar.com/business/2019/08/05/1940552/audit-sought-greenhouse-gas-emission-level> (last accessed Feb. 29, 2020).

91. Robert Siy, *PUV modernization is a must*, MANILA TIMES, Oct. 13, 2018, available at <https://www.manilatimes.net/2018/10/13/business/columnists-business/puv-modernization-is-a-must/451587> (last accessed Feb. 29, 2020).

92. *Id.*

93. Department of Transportation, Guidelines on the Availment of the Equity Subsidy under the Public Utility Vehicle Modernization Program, Department Order No. 2018-016 [DOTr D.O. No. 2018-016], pt. V, ¶ 2 (i) (July 31, 2018).

94. Marc Adrian, *PUV Modernization: Here’s What You Need To Know*, available at <https://www.imoney.ph/articles/jeepney-puv-modernization-program> (last accessed Feb. 29, 2020)

nationwide are to be covered by the program, there are no clear guidelines as to how the old vehicles will be scrapped.⁹⁵

Third, there is also a need to encourage more firms to engage in the manufacturing of EVs, including its parts, components, and accessories such as charging stations. It was reported that the “[l]ack of charging equipment is one of the main reasons for the slow uptake of electric vehicles in the Philippines.”⁹⁶

Fourth, hesitations in purchasing EVs may also be caused by the high electricity cost in the Philippines.⁹⁷ According to International Energy Consultants, a Perth-based consulting firm providing market-related advisory services to companies operating in and associated with the electricity supply industry in the Asia-Pacific region, the average cost of electricity for residential consumers in the Philippines ranks second highest in Asia after Japan, overtaking countries such as Singapore, Hong Kong and Thailand.⁹⁸ It was reported that the “high cost of electricity in the Philippines has not only burdened residential and commercial power consumers but has likewise slowed down the development of the local electric vehicle industry[.]”⁹⁹

Finally, although the Philippines has several laws, regulations, implementing rules, department orders, and other issuances regarding electric and hybrid vehicles, there is currently no comprehensive database of such rules. An online repository of laws, regulations, policies, and legal information on electric and hybrid vehicles may be useful as a guide to policy makers in identifying gaps, duplications, and inconsistencies in the legal framework, as well as areas for improvement in drafting regulations.

95. DOTr D.O. No. 2018-016, pt. I.

96. See Chrisee Dela Paz, Shell stations to offer charging for electric vehicles, *available at* <https://www.rappler.com/business/184796-pilipinas-shell-qev-electric-vehicles-charging-stations> (last accessed Feb. 29, 2020).

97. See Lennie Lectura, *Average electricity price in PHL 2nd highest in Asia — think tank*, BUS. MIRROR, Aug. 7, 2018, *available at* <https://businessmirror.com.ph/2018/08/07/average-electricity-price-in-phl-2nd-highest-in-asia-think-tank> (last accessed Feb. 29, 2020).

98. Lectura, *supra* note 97.

99. The Philippine Star, *High-power cost slows develop of e-vehicle sector*, PHIL. STAR, Sep. 25, 2015, *available at* <https://www.philstar.com/business/2015/09/25/1503903/high-power-cost-slows-develop-e-vehicle-sector> (last accessed Feb. 29, 2020).

VIII. POLICY RECOMMENDATIONS

As to the issue on the high cost of EVs and low amount of equity subsidy under the DOTr OFG, a development economist has recommended the increase in the equity subsidy to at least ₱400,000 for jeepney owners to purchase a new EV citing the following reasons:

- (1) it would not limit financing to be availed from government banks, and “would enable the jeepney operator to seek financing from private banks” which customarily require 20% as down payment for the purchase of new vehicles;¹⁰⁰
- (2) higher equity may encourage the jeepney owners to “shift to bus operations” in high demand areas such as Quezon Avenue or Shaw Boulevard;¹⁰¹
- (3) it may “attract more PUV owners to participate in the PUVMP” if they consider the financial advantage of surrendering their old and polluting vehicles to claim the equity subsidy;¹⁰² and
- (4) the higher equity subsidy would result in a bigger down payment for the new EV, “[reducing] the total loan amount, and the monthly amortization [payments,]” so it would not be too burdensome for the jeepney owner or operator.¹⁰³

As to the funds to finance the higher equity subsidy, there have been suggestions to source them from the motor vehicle user’s charge.¹⁰⁴ Albay Representative Joey Sarte Salceda recently filed a House Bill that aims to use funds from the Motor Vehicle User’s Charge Law¹⁰⁵ to help finance the

100. Robert Siy, *PUV modernization is a must*, MANILA TIMES, Oct. 13, 2018, available at <https://www.manilatimes.net/2018/10/13/business/columnists-business/puv-modernization-is-a-must/451587> (last accessed Feb. 29, 2020).

101. *Id.*

102. *Id.*

103. *Id.*

104. See An Act Amending Republic Act No. 8794, Entitled “An Act Imposing a Motor Vehicle User’s Charge on Owners of All Types of Motor Vehicles and for Other Purposes”, as Amended by Republic Act No. 11239, H.B. No. 4695, § 5, 18th Cong., 1st Reg. Sess. (2019).

105. An Act Imposing a Motor Vehicle User’s Charge on Owners of All Types of Motor Vehicles and for Other Purposes, Republic Act No. 8794 (2000) (as amended).

modernization of public utility vehicles through substantial equity subsidies.¹⁰⁶

Regarding the lack of clear rules and regulations for scrappage of old vehicles, this should be drafted as soon as possible. There should be a mechanism to ensure that old and polluting vehicles that are intended to be replaced would be removed from the road, as some PUV owners or operators may think that the vehicles may be used for private purposes, or that it is allowable to just move the operation of the vehicles outside the cities. Currently, there is no established vehicle scrappage industry in the Philippines. As per the 2016 GIZ Study entitled, “Transforming Public Transport in the Philippines, The Jeepney+ NAMA of the Philippine Government,”¹⁰⁷ it was recognized that a scrapping scheme “is an integral part of the reform to lock in aspired benefits, [particularly] ... better air quality and reduced CO₂ emissions[,]”¹⁰⁸ and that a “scrappage program should consider reliability, political and social implications, financial viability, and legality.”¹⁰⁹ When an operator applies for a franchise, the “LTFRB should require [a] scrappage certificate[.]”¹¹⁰

In order to encourage the manufacturing of EVs, parts, components, accessories, and charging stations, the 2017 Investments Priorities Plan (IPP)¹¹¹ and its Guidelines¹¹² list the preferred activities, including charging and refueling stations for Alternative Energy Vehicles, except LPG-run vehicles;¹¹³ mass transport using brand new buses that run on electric batteries, and/or compressed or liquefied natural gas, as well as public utility

106. H.B. No. 4695, § 5.

107. Department of Transportation & Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Transforming Public Transport in the Philippines (A Publication on the Jeepney+ NAMA of the Philippine Government), available at https://www.changing-transport.org/wp-content/uploads/2016_Full_NAMA_Concept_Jeepney_NAMA.pdf (last accessed Feb. 29, 2020).

108. *Id.* at 44.

109. *Id.*

110. *Id.*

111. Office of the President, Approving the 2017 Investment Priorities Plan, Memorandum Order No. 12 [OP Memo. Order No. 12] (Feb. 28, 2017).

112. Board of Investments, General Policies and Specific Guidelines to Implement the 2017 Investments Priorities Plan, Memorandum Circular No. 2017-004 [BOI Memo. Circ. No. 2017-004] (June 14, 2017).

113. *Id.* pt. D, ¶ I (3) (d).

vehicles as defined by DOTr, LTFRB, and the Land Transportation Office (LTO) as part of the PUV modernization program of the government;¹¹⁴ and, environment or climate change-related projects which “covers manufacture/assembly of goods and the establishment of energy efficiency-related facilities where either utilization would significantly lead to either the efficient use of energy, natural resources or raw materials, minimize/prevent pollution, or reduce greenhouse gas emissions.”¹¹⁵

Annex D of the Guidelines specifies the incentives for BOI-registered enterprises. For the Omnibus Investments Code of 1987 (E.O. No. 226), the following are examples of the incentives: (a) “[income tax holiday;]”¹¹⁶ (b) “[duty] exemption on imported capital equipment, spare parts[,] and accessories;”¹¹⁷ (c) “[exemption] from wharfage dues and any export tax, duty[] impost and fees;”¹¹⁸ (d) “[simplification] of customs procedures;”¹¹⁹ and (e) “[access] to bonded manufacturing warehouse[,]” among others.¹²⁰

Another way to support the local manufacturing of EVs, parts, components, accessories, and charging stations is for the government, both national and local government units, to purchase vehicle fleets for their operations. As the government also operates its own fleet of vehicles which contribute to greenhouse gas emissions, all government agencies should lead by example and shift their fleet to EVs to reduce negative environmental impact, stimulate the local EV manufacturing industry, and increase the number of available EV facilities such as charging stations, repair shops, and EV operators/drivers.

The Government of Canada has published a Best Practices Guide for Greening Government Fleets.¹²¹ The Guide provides a step-by-step process which can be adopted by other governments in implementing the transition of government fleet to EVs, which includes assessing the fleet by establishing a baseline of fleet vehicle usage and fuel consumption; getting aligned by

114. *Id.* pt. D, ¶ I (6) (2).

115. *Id.* pt. D, ¶ I (9).

116. *Id.* annex D, pt. A (1).

117. *Id.* annex D, pt. A (2).

118. BOI Memo. Circ. No. 2017-004, annex D, pt. A (3).

119. *Id.* annex D, pt. A (9).

120. *Id.* annex D, pt. A (10).

121. Natural Resources Canada, Greening Government Fleets (A Guide to Understanding Best Practices Published in May 2018), available at https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/transportation/NRCan_GreeningGovFleets_e.pdf (last accessed Feb. 29, 2020).

“[engaging] employees and senior management early in the decision-making process in order to gain support”¹²² in the transition to EVs; understanding the needs, undertaking an in-depth analysis of fleet needs, and developing a strategic plan which may include a “vehicle replacement schedule ... [and] plans for the installation of charging and refueling infrastructure[;]”¹²³ and, finally, “[implementing] the strategy and [tracking] results.”¹²⁴

To address the issue of high electricity costs in the Philippines, the government may explore alternative sources of energy. For example, it was recently reported that the DOE is planning to “put up solar charging stations to support the development of [] electric vehicles[.]”¹²⁵ Solar charging stations were piloted by the ADB Project on e-trikes entitled “Philippines: Market Transformation through Introduction of Energy-Efficient Electric Vehicles Project,”¹²⁶ which aimed to establish solar and grid-connected charging stations to meet the demand of 1,000 e-trikes.¹²⁷ Other technologies may also be tapped, like the hydrogen fuel cell cars which run quietly and emission free, but can be refueled as quickly as gasoline-powered cars (as opposed to several hours to charge EVs) and can travel further between fill-ups, although there is an issue as to the lack of fueling stations.¹²⁸ New regulations should be issued to encourage the utilization of solar charging stations and hydrogen fuel cell cars.

As mentioned above, an online database of laws, regulations, policies, and legal information on electric and hybrid vehicles may be used to guide decision-makers in drafting regulations since the gaps, duplications, and inconsistencies in the legal framework may be determined based on a

122. *Id.* at 5.

123. *Id.* at 6.

124. *Id.*

125. Alena Mae S. Flores, *DoE readies solar charging stations for EV market*, MANILA STAND. TODAY, July 11, 2018, available at <http://manilastandard.net/business/power-technology/270264/doe-readies-solar-charging-stations-for-ev-market.html> (last accessed Feb. 29, 2020).

126. Asian Development Bank, *Philippines: Market Transformation through Introduction of Energy-Efficient Electric Vehicles Project*, available at <https://www.adb.org/projects/43207-013/main> (last accessed Feb. 29, 2020).

127. *Id.*

128. Associated Press, *Hydrogen fuel cell cars face obstacle: few fueling stations*, MANILA BULL., Apr. 14, 2017, available at <https://newsbits.mb.com.ph/2017/04/14/hydrogen-fuel-cell-cars-face-obstacle-few-fueling-stations> (last accessed Feb. 29, 2020).

compilation of such legal information. In this Article, the following laws and regulations were discussed:

- (1) Republic Act No. 9367 — An Act to Direct the Use of Biofuels, Establishing for this Purpose the Biofuel Program, Appropriating Funds Therefor, and for other purposes, or the “Biofuels Act of 2006”;
- (2) DOE Department Circular No. 2007-02-0002 — Providing for the Rules and Regulations Governing the Business of Supplying, Hauling, Storage, Handling, Marketing and Distribution of Liquefied Petroleum Gas (LPG) For Automotive Use;
- (3) DOTC Department Order No. 2011-14 — An Order Exempting CNG Buses from the Moratorium in Accepting, Processing, and Granting of Certificate of Public Convenience (CPC) for Public Utility Buses;
- (4) DOTC Department Order No. 2011-16 — Inclusion of Electric Motor Powered Vehicles in Item No. 4 of DOTC Order No. 97-1097 "Providing Standard Classification For All Public Transport Conveyances" and the Exemption of All Electric Vehicles for Public Transport from the Moratorium on Franchise Applications;
- (5) DOTC Department Order No. 2015-011 — Further Amending Department Order No.97-1097 to Promote Mobility;
- (6) DOTC Department Order No. 2015-018 — Premium Point-to-Point Bus Services for Greater Manila, as amended by DOTr Department Order No. 2017-005 — Expanded the coverage of P2P buses to highly-urbanized areas other than Metro Manila;
- (7) Republic Act No. 10963 — Tax Reform for Acceleration and Inclusion (TRAIN) or TRAIN Law;
- (8) Bureau of Internal Revenue (BIR) Revenue Regulations (RR) 5-2018 — Revenue Regulations Implementing the Adjustment of Rates on the Excise Tax on Automobiles pursuant to the Provisions of Republic Act No. 10963, otherwise known as the “Tax Reform for Acceleration and Inclusion (TRAIN) Law” Amending for the Purpose Revenue Regulations No. 25-2003;
- (9) DOTr Department Order No. 2017-011 — Omnibus Guidelines on the Planning and Identification of Public Road Transportation Services and Franchise Issuance or OFG;

- (10) LTFRB Memorandum Circular No. 2018-006 — Guidelines for the Public Utility Vehicle Modernization Program's Initial Implementation pursuant to Department Order No. 2017-011, otherwise known as the Omnibus Franchising Guidelines;
- (11) LTFRB Memorandum Circular No. 2018-008 — Consolidation of Franchise Holders in Compliance with Department Order No. 2017-011, otherwise known as the Omnibus Franchising Guidelines (OFG);
- (12) LTFRB Memorandum Circular No. 2018-009 — Implementing Rules on Selection of Transport Operators for LGU-Prepared LPTRPs Under Department Order No. 2017-011, otherwise known as the Omnibus Franchising Guidelines (OFG);
- (13) LTFRB Memorandum Circular No. 2018-012 — Guidelines for Dropping and Substitution for PUJ under PUVMP;
- (14) LTFRB Memorandum Circular No. 2018-013 — Implementing Guidelines in the Acceptance of Applications for New CPC under the Initial Implementation of the PUVMP;
- (15) LTFRB Memorandum Circular No. 2019-013 — Consolidated Guidelines on the Process of Issuance of CPC and Provisional Authority /Special Permit under the OFG and PUVMP;
- (16) 1987 Constitution, Article II, Sections 15 and 16;
- (17) Republic Act No. 8749 — An Act Providing for a Comprehensive Air Pollution Control Policy and for Other Purposes (Philippine Clean Air Act of 1999);
- (18) Executive Order No. 397, Series of 2004 — Reducing the Rates of Import Duty on Completely-Knocked Down Parts and Components for Assembly of Low Engine Displacement and Hybrid Vehicles;
- (19) Executive Order No. 488, Series of 2006 — 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;
- (20) Republic Act No. 9729 — An Act Mainstreaming Climate Change into Government Policy Formulations, Establishing the Framework Strategy and Program on Climate Change, Creating

for this Purpose the Climate Change Commission, and for Other Purposes (Climate Change Act of 2009);

- (21) Administrative Order No. 2010-01 dated 20 January 2010, Implementing Rules and Regulations of Republic Act No. 9729;
- (22) Intended Nationally Determined Contributions (INDC) of the Philippines to the United Nations Framework Convention on Climate Change (UNFCCC);
- (23) Instrument of Accession to the Paris Agreement;
- (24) Department Order No. 2018-016 (Guidelines on the Availment of the Equity Subsidy under the PUV Modernization Program);
- (25) Republic Act No. 8794, An Act Imposing a Motor Vehicle User's Charge on Owners of All Types of Motor Vehicles and for Other Purposes, as amended;
- (26) Omnibus Investments Code of 1987 (Executive Order No. 226, Series of 1987);
- (27) 2017 Investments Priorities Plan and Board of Investments Memorandum Circular No. 2017-004, General Policies and Specific Guidelines to Implement the 2017 Investments Priorities Plan;

However, there may be other laws, regulations, implementing rules, department orders, and other issuances that may have an impact on electric and hybrid vehicles that are not included in the above list, as well as others that may be issued in the future since the law is rapidly changing, especially those concerned with technology. It is suggested that further research be conducted to complete the online repository of legal information for the guidance of the law makers, policy leaders, stakeholders, lawyers, and the public in general.

IX. CONCLUSION AND OTHER SUGGESTIONS

Sustainable transport through the use of alternative fuel vehicles such electric or hybrid vehicles is attainable, provided that the right policies are in place.

To encourage the use of electric and hybrid vehicles or other alternative fuel vehicles, the government may also consider giving other incentives, such as the exemption of EVs from the Unified Vehicular Volume Reduction Program Regulating the Operation of Certain Motor Vehicles on All Roads

in Metropolitan Manila (UVVRP).¹²⁹ Several pending bills in the Senate and House of Representatives which encourage the use of electric and hybrid vehicles also have good suggestions as to possible incentives.

Examples of proposed incentives to EVs in the Senate include Senate Bill No. 174¹³⁰ which aims to create a national policy and framework to encourage the uptake of EVs including: “(1) mandating all gasoline stations as well as public and private establishments to have designated parking areas for EVs; (2) requiring all designated EV parking areas to be installed with charging stations; (3) establishing an accreditation mechanism for all charging station service providers; (4) creating green routes exclusive to electric public utility vehicles; (5) including domestic EV manufacturing in the Investment Priorities Plan; and (6) providing value added tax exemption for purchase of electric vehicles.”¹³¹ Senate Bill No. 472¹³² proposes exemption of EVs from the payment of excise taxes, suspension of imposition on VAT, exemption from payment of MVUC, and other non-fiscal incentives such, as priority in registration and issuance of plate number, priority in franchise application, exemption from UVVRP, and provision for free parking spaces in new establishments.¹³³

Examples of proposed incentives to EVs in the House of Representatives include allocation of land and lot space by Local Government Units for the construction of electric and hybrid vehicle charging stations to encourage wider deployment of EVs and HEVs in their areas of jurisdiction,¹³⁴ exemption of electric, hybrid, and alternative fuel vehicles from payment of toll fees in expressways, exemption of providers of fueling/refueling and

129. Metro Manila Development Authority, Unified Vehicular Volume Reduction Program Regulating the Operation of Certain Motor Vehicles on All Roads in Metropolitan Manila, MMDA Regulation No. 96-005 (May 31, 1996).

130. An Act Providing the National Energy Policy and Regulatory Framework for the Use of Electric Vehicles, and the Establishment of Electric Charging Stations, S.B. No. 174, 18th Cong., 1st Reg. Sess. (2019).

131. *Id.* explan. n.

132. An Act Promoting Environmentally Sustainable Transport by Providing Incentives for the Manufacture, Assembly, Conversion and Importation of Electric, Hybrid and Other Green Vehicles, and for Other Purposes, S.B. No. 472, 18th Cong., 1st Reg. Sess. (2019).

133. *Id.* §§ 5-8.

134. An Act Promoting Environmentally Sustainable Transport by Providing Incentives for the Manufacture, Assembly, Conversion and Importation of Electric and Hybrid Vehicles Including Charging Stations and for Other Purposes, H.B. No. 444, 18th Cong., 1st Reg. Sess., § 8 (4) (2019).

charging stations from payment of income tax, and a system for EV battery collection, transportation, and disposal.¹³⁵

Incentives in other countries may also be explored and considered whether such incentives may also be applicable in the Philippine setting.

In Indonesia, for example, President Joko Widodo enacted Presidential Regulation No. 55 of 2019¹³⁶ regarding the Acceleration of Battery Electric Vehicle (BEV) Programs for Road Transportation (PR 55/2019) last August 2019, which provided: (1) fiscal incentives aimed at promoting BEVs such as “tax or import customs relief, discounts on [] charging fees [of BEVs], financial support for the research or the construction of vehicle charging facilities, and certification of resources or products related to the [BEV] industry[;]”¹³⁷ and (2) non-fiscal incentives including, “exemptions from limitations on the use of certain roads, the granting of production rights for technologies whose patents are held by the government, and the maintenance of the safety and security of those areas [of operation of the] BEV industry[.]”¹³⁸

In Thailand, the Vice President of the Electric Vehicle Association of Thailand outlined, in a presentation on 13 March 2019, the government’s planned incentives for EVs including a target of 20% government budget for vehicle fleet using BEV, encouraging various government agencies to use more EVs in their operations, and enacting policies relating to end of life management for EV batteries.¹³⁹

135. An Act to Promote the Manufacture, Assembly, Importation, Sale, Distribution, Use and Development of Hybrid and Alternative Fuel Vehicles by Granting Tax Exemptions and Providing Incentives Therefor, and for Other Purposes, H.B. No. 738, § 8, 18th Cong., 1st Reg. Sess. (2019).

136. Acceleration of Battery Electric Vehicles Program for Road Transportation, [PR 55/2019], Presidential Regulation No. 55 of 2019 (2019) (Ind.).

137. Revaldi N. Wirabuana, Indonesia Looks to Accelerate Battery Electric Vehicle Program, *available at* https://www.ssek.com/blog/indonesia-looks-to-accelerate-battery-electric-vehicle-program?utm_source=Mondaq&utm_medium=syndication&utm_campaign=View-Original (last accessed Feb. 29, 2020).

138. *Id.*

139. Pongpan Kaewtatip, Thailand’s Automotive Industry and Current EV Status (A Power Point Presentation by the Electric Vehicle Association of Thailand) at 17–18, *available at* [https://www.boi.go.th/upload/content/2.%20\[PPT\]%20Thailand's%20Automotive%20Industry%20and%20Current%20EV%20Status_5c864c90761f6.pdf](https://www.boi.go.th/upload/content/2.%20[PPT]%20Thailand's%20Automotive%20Industry%20and%20Current%20EV%20Status_5c864c90761f6.pdf) (last accessed Feb. 29, 2020).

In Singapore, the government introduced an EV car-sharing scheme where the Land Transport Authority (LTA) and the Economic Development Board (EDB), signed an agreement with BlueSG, a private company, to operate a nationwide car-sharing program with a fleet of 1,000 EVs.¹⁴⁰ Other incentives that would motivate consumers to buy electric cars in Singapore include tax rebates and subsidies on electric car purchase, charging stations in the vicinity of housing and work, free or subsidized parking spots for electric cars, road tax or toll subsidies, priority or special lanes for electric cars, and special insurance plans for other cars, among others.¹⁴¹

Choosing the appropriate policies and giving fiscal and non-fiscal incentives to encourage sustainable transport has the ability to steer the country to the right direction when it comes to technological advancements and better health through lower GHG emissions.

140. EDB Singapore, Singapore unveils its first EV car-sharing scheme, *available at* <https://www.edb.gov.sg/en/news-and-events/insights/innovation/singapore-unveils-its-first-ev-car-sharing-scheme.html> (last accessed Feb. 29, 2020).

141. Statista Research, Incentives for purchasing an electric car in Singapore 2019, *available at* <https://www.statista.com/statistics/1030124/singapore-incentives-for-purchasing-an-electric-car> (last accessed Feb. 29, 2020).