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MASTER OF PUBLIC POLICY (MPP)

香港科技大學
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

Driving Sustainable Change: Tackling Barriers to Electric Private Cars (e-PCs) Adoption in Hong Kong

Group 13:

Bufan LIANG
Haotian WEN
Ruoxi SHU
Shusen DENG
Yixin YANG

Faculty Advisor:

Xiaofan ZHAO

Project Client:

Kevin LEUNG

PPOL DIVISION OF PUBLIC POLICY 公共政策學部

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EXECUTIVE SUMMARY

The Hong Kong government has actively promoted the adoption of electric vehicles (EVs) through various policy measures in recent years. As a result, between 2020 and 2024, the share of newly registered electric private cars (e-PCs) annually increased from 12.4% to 71.1%, and the total registration share of e-PCs rose from 2.8% to 17.1%. Although this increase is significant, it remains insufficient given the ambitious policy targets stated in the Hong Kong Roadmap on Popularization of Electric Vehicles (Hong Kong Environmental Protection Department, 2021b), namely "No new registration of fuel-propelled private cars, including hybrid vehicles, in 2035 or earlier" and "Zero vehicular emissions by 2050". Currently, there is still a gap of 522,949 registrations required to reach the target.

This study investigates this gap by identifying the key barriers that continue to hinder the long-term, widespread adoption of EVs in Hong Kong. These barriers are: (1) insufficient charging infrastructure, and (2) fiscal constraints on government support for EV policies.

Firstly, the slow implementation of the EV-charging at Home Subsidy Scheme (EHSS) and the limited availability and imbalanced distribution of public chargers creates inconvenience for existing EV owners and concerns potential buyers.

Secondly, fiscal constraints have become increasingly salient in the post-pandemic context. Recent budgets reflect a strong official commitment to fiscal discipline, with explicit limits placed on public spending for EV promotion.

Based on these current challenges, our research addresses the following question: **How can the Hong Kong government increase the public's willingness to buy electric vehicles and support their ongoing use without imposing additional fiscal pressure?**

This study employs a mixed-methods design combining both qualitative and quantitative approaches. Data were collected from the databases of the HK government, semi-structured interviews with stakeholders (including policymakers, councilors, EV owners, and industry experts), structured questionnaire targeting Hong Kong residents with a potential or current interest in EVs. The qualitative data were analyzed using thematic coding to identify major barriers and policy perceptions. Quantitative data analysis included descriptive statistics and logistic regression to examine the impact of policy factors (such as subsidies, tax changes, and charging accessibility) on

consumer willingness to adopt EVs. The use of both data sources provided a robust empirical basis for policy recommendations.

The findings highlight that charging infrastructure accessibility and fiscal policy design are the most decisive factors shaping consumer adoption of EVs. Insufficient charging convenience—especially the lack of chargers in residential areas—remains the most cited barrier among survey respondents and interviewees. On the policy side, while incentives like registration tax concessions do positively influence purchasing intent, their effectiveness is constrained by frequent changes and a lack of long-term predictability. Moreover, public awareness of existing support measures is limited, reducing the potential impact of current fiscal incentives.

Based on our empirical results and trade-off analysis, this study puts forward two primary, actionable recommendations:

- Scale Up and Optimize Charging Infrastructure: Accelerate the rollout of public and private charging stations—especially fast chargers in residential and underserved areas. Introduce mobile charging units to provide flexible solutions where permanent installations are challenging.
- Increase Taxes and Fees on ICE Vehicles: Implement higher taxes and registration fees for high-emission internal combustion engine (ICE) vehicles. This approach encourages EV adoption by making traditional vehicles less attractive, while generating revenue for further infrastructure investment—all without increasing the government's fiscal burden.

Looking ahead, for sustained growth, the government should enhance advertising strategies by:

- Quantifying and publicizing the tangible benefits of EVs, such as actual cost savings and emissions reductions—using clear, locally relevant data.
- Leveraging multi-platform outreach and authentic user testimonials, including social media, online video, and community-based events, to build trust and correct misconceptions.

ACKNOWLEDGEMENT

We would like to express our deepest gratitude to those who have supported and contributed to the completion of this Policy Analysis Exercise (PAE).

First and foremost, we extend our sincere appreciation to our faculty advisor, Professor Xiaofan Zhao, for her invaluable guidance, insightful feedback, and continuous support throughout this research. Her expertise and encouragement have been instrumental in shaping our analysis and refining our policy recommendations.

We are also deeply grateful to our client, Mr. Kevin Leung from PwC Hong Kong, for his trust, insights, and constructive input. His practical perspectives and professional expertise have provided us with a deeper understanding of the challenges and opportunities in promoting electric vehicle adoption in Hong Kong.

Furthermore, we would like to extend our heartfelt thanks to all the individuals who participated in our survey and interviews. Their willingness to share their experiences, perspectives, and valuable time has enriched our research and allowed us to develop a more comprehensive analysis. Their contributions have been essential in identifying key barriers and shaping well-informed policy recommendations.

Finally, we acknowledge the collaborative effort of our team members, whose dedication and hard work have been vital in bringing this project to fruition. This study would not have been possible without the collective commitment and contributions of everyone involved.

Thank you all for your support and encouragement in making this research a meaningful and impactful endeavor.

1 STATUS QUO ANALYSIS

Despite substantial policy efforts and improvements in recent years, the adoption of electric private cars (e-PCs) in Hong Kong remains insufficient to replace internal combustion engine (ICE) vehicles within the government's targeted timeframe. This chapter provides a comprehensive overview of the current landscape of EV adoption in Hong Kong, outlining relevant policy developments, identifying barriers that must be addressed to accelerate sustainable transportation, and ultimately framing our research question.

1.1 Current EV Adoption in Hong Kong

This section provides an overview of EV adoption in Hong Kong, starting with background information about the government's strategic efforts, followed by detailed statistical insights into current EV penetration rates and the state of charging infrastructure.

Government Strategic Efforts and Policies

The Hong Kong government has established the Steering Committee on the Promotion of EVs (SCPEV), chaired by the Financial Secretary, with members from various sectors. The committee was responsible for formulating strategies and specific supporting measures to promote the use of EV in Hong Kong, considering the energy efficiency, environmental benefits, and business opportunities brought by EV adoption. The committee completed its work by the end of September 2021.

Additionally, on March 17, 2021, the government released the first "Hong Kong Roadmap on Popularization of Electric Vehicles" ("The Roadmap"), outlining long-term policy objectives and plans for promoting EV adoption and the necessary infrastructure. The roadmap aims to achieve zero vehicular emissions in Hong Kong before 2050, aligning with Hong Kong's goal of attaining carbon neutrality by 2050 and progressing towards the vision of "Zero Carbon Emissions • Clean Air • Smart City".

Current Status of Electric Private Car Registrations

As shown in Figure 1 and Figure 2, in 2024, EV accounts for 71% of newly registered private cars and 17% of the total registered private cars, showing steady progress since 2020 (Hong Kong Transport Department, 2025). However, these figures still trail behind regional and global leaders: the EV penetration rates (EV's share of total

newly registered cars in a year) in Shenzhen and Norway were 77% and 89% respectively, indicating the potential for Hong Kong to intensify its efforts.

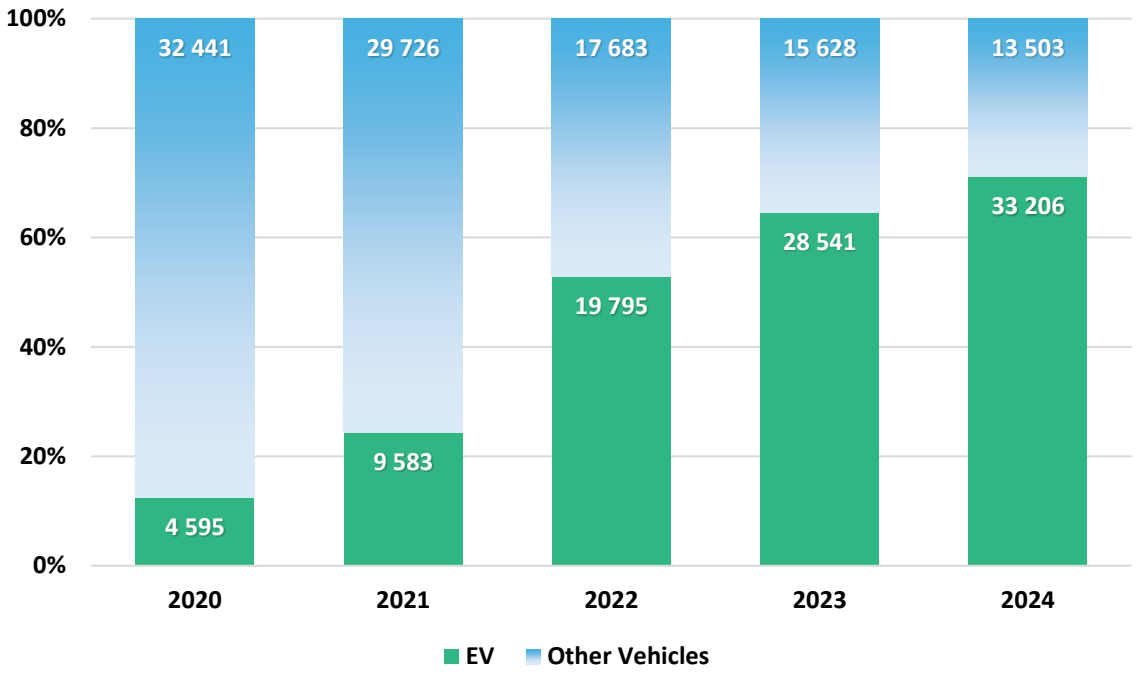

Figure 1. Number of First Registered Private Vehicles in HK

Source: Hong Kong Transport Department (2025)

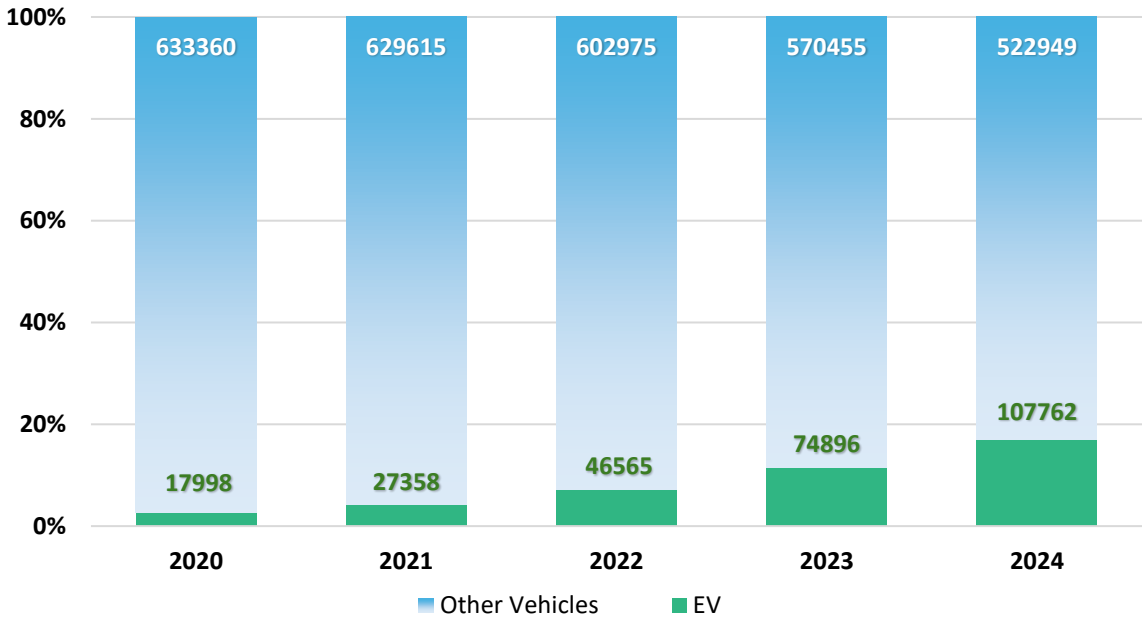

Figure 2. Number of Registered Private Vehicles in HK

Source: Hong Kong Transport Department (2025)

Development of Charging Infrastructure

As of December 2024, there were 10,401 public EV chargers in Hong Kong (Hong Kong Environmental Protection Department, 2024b). These chargers are distributed across all 18 districts in Hong Kong.

To enhance charging efficiency, the Hong Kong Environmental Protection Department has progressively upgraded standard chargers to medium-speed chargers, which reduces charging time by up to 60%. Additionally, two power companies and private enterprises are actively upgrading public standard chargers to medium-speed chargers and installing multi-standard fast chargers. EV suppliers are also expanding charging facilities for their own vehicle models at public locations.

With the steady increase in EV adoption, private companies are offering one-stop EV charging services to residential estates and commercial entities. These services include installing EV chargers at private parking spaces, providing charging services, and offering real-time charging station availability updates and reservation services via mobile apps.

To assist individual EV owners in installing chargers in private parking spaces, the EPD has set up a dedicated support team and hotline to provide technical guidance and related information. Additionally, the two power companies in Hong Kong also offer one-stop services for EV charger installation, including on-site inspections, technical consultation, inspection of installed chargers, and power connection services. These measures aim to enhance the accessibility and convenience of EV charging, further accelerating the adoption of EVs in Hong Kong.

1.2 Current Policy Overview

A thorough understanding of the policy environment surrounding electric private cars in Hong Kong is essential for contextualizing our analysis. In this section, we summarize several key policies (Figure 3) that have been implemented to support EV adoption, providing a framework for evaluating their effectiveness and identifying potential gaps for following alternatives.

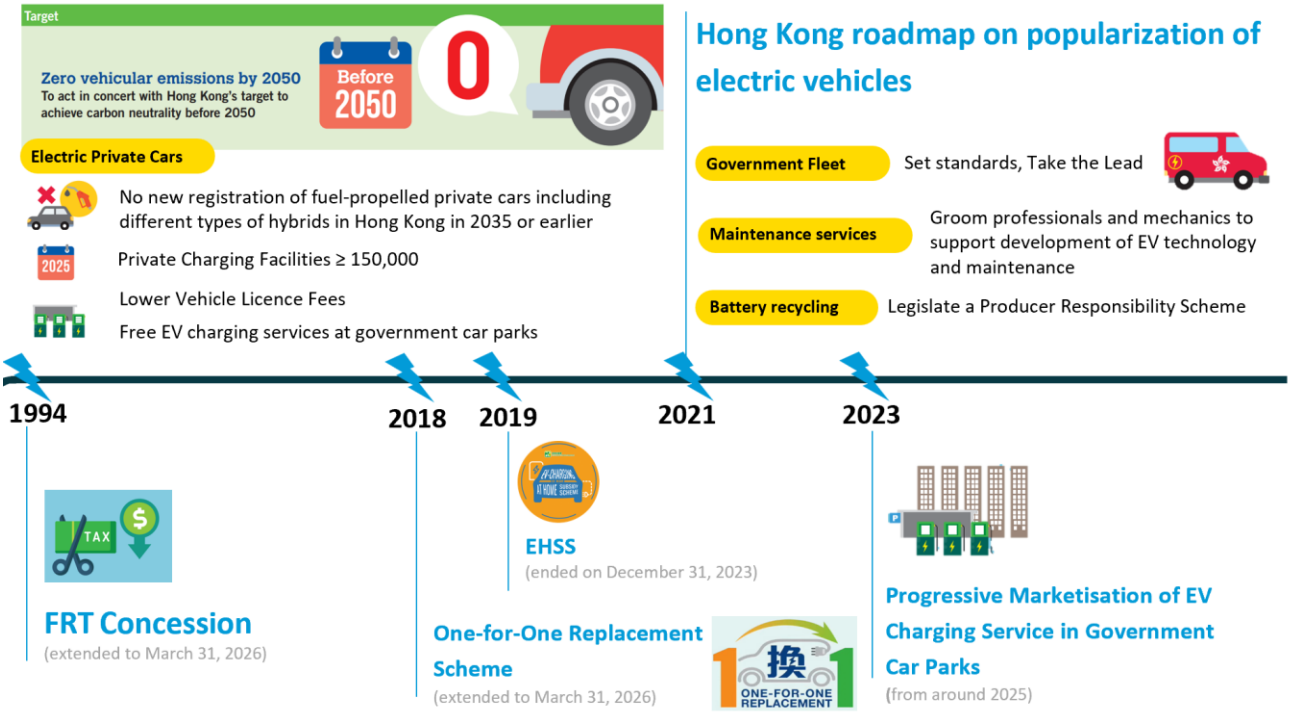

Figure 3. The overall timeline of policies regarding e-PCs

Source: Hong Kong Environmental Protection Department (2024b)

Since 1994, the Hong Kong government has exempted EVs from the First Registration Tax (FRT). On February 28, 2024, the government announced an extension of the FRT concession for EVs by two years, until March 31, 2026 (Hong Kong Transport Department, 2024). The current FRT rates for e-PCs are as follows (Table 1).

Table 1. The current FRT rates for e-PCs

Vehicle Price Bracket	Tax Rate
First HK$150,000	46%
Next HK$150,000	86%
Next HK$200,000	115%
Remaining Value	132%

Source: Hong Kong Transport Department (2024)

The "One-for-One Replacement Scheme", introduced in 2018, has been extended for two more years until March 31, 2026, to encourage vehicle owners in Hong Kong to switch to EVs. Under the scheme, owners who deregister and scrap an eligible private vehicle and purchase a new EV are entitled to a FRT concession of up to HK$172,500 (Hong Kong Transport Department, 2024).

The “EV-charging at Home Subsidy Scheme”, launched in 2020, aims to address technical and financial challenges in installing EV charging infrastructure in private residential car parks. The scheme has been well received, prompting the government to allocate an additional HK$1.5 billion in the 2022-23 Budget, bringing the total funding to HK$3.5 billion. The subsidy is expected to support the installation of charging infrastructure at approximately 700 estates by 2028, covering 140,000 parking spaces—about half of the eligible parking spaces in Hong Kong. The application period for the scheme closed on December 31, 2023 (Hong Kong Environmental Protection Department, 2024a).

On March 17, 2021, the government unveiled the “Hong Kong Roadmap on Popularization of Electric Vehicles”, outlining long-term policy objectives to promote EV adoption and related infrastructure development. Key measures include: halting new registrations of fuel-powered private vehicles (including hybrids) by 2035; expanding and commercializing the EV charging network; strengthening EV technology and maintenance training; implementing producer responsibility legislation for retired batteries to encourage recycling and secondary use; and fostering collaborative innovation, such as establishing a dedicated task force to study global decarbonization technologies, setting up a HK$200 million “Low Carbon Green Research Fund”, utilizing IoT and AI, and leveraging EV technology developments in the Guangdong-Hong Kong-Macao Greater Bay Area (Hong Kong Environmental Protection Department, 2021a).

1.3 Policy Barriers and Challenges

To understand the state of EV adoption in Hong Kong, it is necessary to dive into the critical obstacles hindering behind current policies in Hong Kong. This chapter outlines the critical obstacles facing Hong Kong in promoting widespread EV adoption, specifically highlighting three key issues: insufficient charging infrastructure, a shortage of skilled technicians for EV maintenance, and inadequacies in the battery recycling system. By clearly defining these problems, we set the foundation for our analysis and the subsequent development of targeted policy recommendations aimed at accelerating the adoption of EVs in Hong Kong.

1.3.1 Insufficient Charging Facilities

One of the primary barriers limiting the widespread adoption of EVs in Hong Kong is insufficient charging infrastructure. In residential areas, according to the Hong Kong Environmental Protection Department (2024a), as of December 2024, out of 711 EHSS successful applications, only 171 projects had been completed. The project has been launched for 4 years, but the progress is merely at 24%; the government must accelerate, or they will fail to meet the 2028 deadline at the current pace. Hong Kong’s dense and fragmented ownership of buildings, compared to single-owner landed properties in other countries, makes installing private EV chargers challenging. Over 90

percent of Hong Kong's private residential buildings are stratified, underlining the complexity of addressing vested interests and public resource distribution. In some older districts, property owners often refuse installation due to insufficient power capacity (CBRE Group, Inc., 2024).

The limited availability and uneven distribution of public chargers across Hong Kong have also impacted consumer convenience and confidence in EV adoption. The Transport Department reported that by December 2024, there were 10,401 public EV chargers in the city, of which 2,143 are standard chargers, 6,503 are medium-speed chargers, and 1,753 are fast chargers. Fast chargers can bring an EV to 80% of its battery capacity in just 30 minutes, whereas medium or slow chargers require six to eight hours. This considerable time difference and small proportion of fast chargers present challenges for drivers, who often cannot afford to spend that much time waiting for their vehicles to charge. In addition, Yonghai Du, Chief Innovation Officer of the Hong Kong Productivity Council, pointed out that the current 1:11 ratio of public chargers to EVs in Hong Kong contrasts sharply with 1:3 in Shenzhen, where the city has built over 1,000 ultra-fast charging stations, creating a "1-kilometer ultra-fast charging travel circle" to facilitate residents' lives (Luo, 2025; Xiong, 2025).

Moreover, 45% of public chargers are in commercial complexes, while 40% are in government and quasi-government buildings, and only 15% are in residential areas. In comparison, 80% of all charging in Oslo takes place at home (Møkkelgård, 2023). This imbalance creates inconvenience for existing EV users and concerns potential buyers.

In response, the 2024 Policy Address allocated HK$300 million for the installation of 500 fast chargers by 2027, with plans to reach 3,000 by 2030. However, it raised concerns about the strain that additional fast and ultra-fast chargers could place on the city's power grid. Du questioned whether the grid could handle the significant, localized electric currents and voltages required by such chargers. He also emphasized the urgent need to upgrade the power grid to support the expansion of fast-charging infrastructure.

The challenge of upgrading the power grid is further compounded by the diverse range of EV design standards, necessitating charging stations to be compatible with multiple charging plugs. This issue complexes infrastructure development, even before considering the ongoing maintenance needs of EVs. A shortage of qualified EV technicians is anticipated, which could hinder the ability to keep up with the growing demand for EVs and their associated services.

1.3.2 Fiscal Constraints

The second policy barrier is fiscal constraints. In recent years, Hong Kong's public finance has been governed by a strong commitment to fiscal discipline. According to the 2025-26 Budget, the government projected a deficit of

approximately HK$87 billion in 2024/25 despite robust revenue inflows. In response, the administration outlined a consolidation strategy centered on expenditure control while safeguarding essential public services. It pledged to return to a fiscal surplus by 2026/27 and to maintain fiscal reserves around HK$579 billion by 2030. To achieve these targets, policies have prioritized curbing recurrent spending and implementing only modest revenue adjustments.

This overarching budgetary caution has directly shaped the scale and design of Hong Kong's electric vehicle (EV) promotion policies. The most substantial initiative to date—the EV-Charging at Home Subsidy Scheme (EHSS)—was strictly limited by a fixed allocation of HK$3.5 billion. In line with the Basic Law's mandate for fiscal prudence, the government emphasized that applications would be processed on a first-come, first-served basis to prevent overspending. As reiterated by multiple officials, the principle of "prudent use of public money" remains foundational in public scheme design (HKSAR Government Press Releases, 2022). However, as revealed in our interview with Legislative Council Member Mr. Frankie Yick (see Appendix E), the EHSS had already exhausted its full budget by the end of 2024, leaving approximately 80% of its 700 approved projects unfinished. This not only signals administrative bottlenecks but also underscores the consequences of rigid expenditure ceilings in meeting infrastructure demand.

Further reflecting fiscal restraint, two major EV incentive mechanisms—the First Registration Tax (FRT) concession and the One-for-One Replacement Scheme—were both scaled back in the 2024/25 Budget (Hong Kong Transport Department, 2024). The maximum FRT waiver for standard electric private cars was reduced from HK$97,500 to HK$58,500, and EVs priced above HK$500,000 were rendered ineligible. Likewise, while the One-for-One Scheme was extended to March 2026, its benefits were narrowed by lowering the tax concession ceiling from HK$287,500 to HK$172,500 and excluding luxury models. These adjustments reveal a broader policy stance: rather than expanding subsidies in response to growing adoption, the government has chosen to constrain fiscal exposure. This approach reflects the guiding logic of Article 107 of the Basic Law, which mandates balanced budgets and financial prudence. Ultimately, these policy revisions demonstrate that while the government remains committed to promoting EV adoption, it seeks to do so strictly within the limits of its fiscal framework.

1.4 Research Question

In light of the status quo as well as current barriers and challenges identified, we arrive at our central research question:

How can the Hong Kong government increase the public's willingness to buy electric vehicles and support their ongoing use without imposing additional fiscal pressure?

2 LITERATURE REVIEW

Understanding the determinants of consumer decisions to adopt E-PCs is essential for crafting effective policy interventions, particularly in regions like Hong Kong where E-PC uptake remains uneven. The existing literature highlights that cost remains the most influential barrier, encompassing not only the upfront purchase price but also long-term expenses such as maintenance, battery replacement, and insurance (Gan & Wang, 2017; Bockarjova & Steg, 2014; Dagher et al., 2015). These concerns have been further exacerbated by recent reductions in government subsidies, as outlined in Hong Kong's 2024 fiscal budget, which lowered the First Registration Tax (FRT) concessions for eligible e-PCs (Hong Kong Transport Department, 2024).

In addition to financial concerns, infrastructural accessibility—especially the objective and perceived availability of charging facilities—plays a crucial role in shaping the likelihood of adoption (Sierzchula et al., 2014). Consumers also respond to social influence and normative pressure, which have been shown to amplify environmentally responsible behavior (Rezvani et al., 2015). Rising awareness of emissions, pollution, and battery disposal adds further weight to environmentally oriented motivations. Furthermore, vehicle-specific features—such as driving range, technological reliability, and after-sales service—contribute to perceived value and practical feasibility.

Taken together, these factors form a complex, interdependent matrix that informs both the willingness and ability of consumers to transition from conventional internal combustion engine (ICE) vehicles to EVs. The following sections examine these factors in depth, beginning with the dominant cost dimension.

2.1 Cost Factor

The cost of purchasing and owning an EV plays a crucial role in consumers' decision-making process. Various financial considerations influence the affordability and attractiveness of EVs, including the initial purchase cost, maintenance and battery replacement costs, and insurance expenses. These factors, combined with changes in government incentives and market dynamics, directly impact on the overall cost burden associated with EV ownership.

High Purchase Cost

Despite advancements in production efficiency, EVs remain significantly more expensive than their ICE counterparts, making affordability a key barrier to widespread adoption.

According to research by Thunder Said Energy (2024), an analysis of automobile sales prices in 2024 indicates that the average price of a new internal combustion engine (ICE) vehicle in the market is approximately $30,000 (It is approximately 234,000 Hong Kong dollars). In contrast, the average price of a new EV is nearly $45,000 (It is approximately 351,000 Hong Kong dollars). This suggests that EVs are more expensive, leading to higher purchase costs. Research by Gan and Wang (2017) on customer preferences and EV adoption indicates that cost is one of the primary factors influencing purchasing behavior. Similarly, Bockarjova and Steg (2014) argue that the most significant barrier to EV adoption is the perception of high monetary and non-monetary costs associated with these vehicles. A study by Dagher et al. (2015) found similar results in China, where consumers consider both vehicle and operating costs when deciding whether to purchase a hybrid vehicle.

In the 2024 fiscal budget, the Hong Kong government extended the originally scheduled termination date of the "One-for-One Replacement" scheme from 2024 to March 31, 2026, while also adjusting the tax concessions. According to the new regulations, the maximum tax reduction available to eligible vehicle owners upon first registration of an EV has been lowered from the previous HKD 287,500 to HKD 172,500 (Figure 4). Furthermore, to implement the "pay-as-you-can" principle, EVs priced above HKD 500,000 are no longer eligible for tax exemptions in the future (Hong Kong Transport Department, 2024).

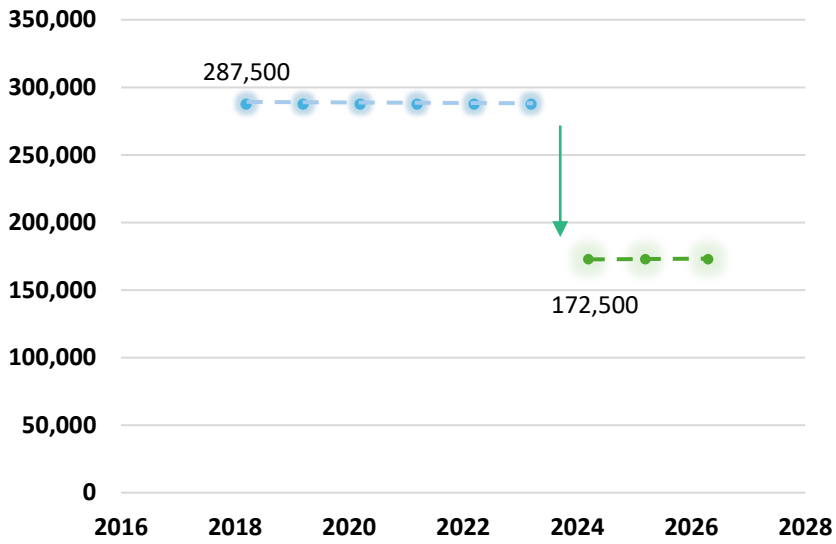

Figure 4. Change in FRT Reduction Cap under One-for-One Scheme

Source: Hong Kong Transport Department (2024)

With the reduction in government subsidies, many perceive the cost of purchasing EVs as significantly increased, which has led to a decrease in purchase intention. Specifically, the reduction in tax concessions and the exclusion of EVs priced above HKD 500,000 from any tax exemptions have resulted in higher initial costs for consumers. Although the government continues to promote the adoption of EVs, this adjustment in subsidy policies may lead to a more cautious attitude among potential buyers, thereby affecting the growth of market demand. The high upfront cost of EVs, coupled with reduced government subsidies, makes them less affordable for many consumers.

High Battery Costs as a Barrier to EV Adoption

EVs are widely recognized as a key approach to achieving a low-carbon transition within the transportation sector; however, consumer acceptance and purchasing intention remain relatively limited, primarily due to the high initial purchase cost of EVs (Rezvani et al., 2015). Within the overall cost structure of EVs, battery costs account for a substantial proportion, directly contributing to the higher retail price of EVs compared to conventional internal combustion engine vehicles (Knittel & Tanaka, 2024). Although recent advancements in EV battery technology have significantly reduced battery cell production costs, the overall cost of battery packs remains high, thus perpetuating elevated vehicle prices (Barwick et al., 2025).

Specifically, Knittel and Tanaka (2024) argue that despite continuous reductions in battery prices, current battery costs have yet to fall to a level competitive with traditional vehicles. Consumers typically remain highly sensitive to elevated upfront costs during their purchasing decisions, which significantly limits market penetration for EVs. Barwick et al. (2025) further reinforce this view, highlighting that although battery costs have dramatically declined over the past decade, they still represent a substantial proportion of the total manufacturing cost of EVs. This ongoing cost burden constitutes a major financial barrier for mainstream consumers, hindering the pace at which EVs penetrate mass markets.

Supporting evidence from regional markets provides additional insights into this phenomenon. Moeletsi (2021), in a study of consumer perceptions in South Africa, finds that the high upfront cost of EVs—particularly attributed to expensive batteries—is one of the primary financial barriers influencing consumer decisions. Furthermore, Kongklaew et al. (2021), investigating barriers to EV adoption in Thailand, reached similar conclusions, noting that elevated battery prices significantly inflate the retail price of EVs, leading to widespread consumer perceptions of EVs as “too expensive”, thus hindering adoption.

In summary, extensive research consistently demonstrates that high battery costs significantly contribute to elevated vehicle prices, creating a notable economic barrier and negatively influencing consumer willingness to adopt EVs. Consequently, reducing battery costs to enhance price competitiveness remains crucial to accelerating widespread adoption of EVs.

High Insurance Cost

Table 2 compares the insurance coverage of the popular Tesla Model Y Standard Range and TOYOTA SIENTA for vehicles first registered by the Transport Department in July 2023 as a reference for EV and ICE vehicle insurance comparison.

Table 2. Different insurance companies for electric and fuel car insurance prices

Insurance institution	EV Third Party Property Damage Deductible	ICE vehicles Third Party Property Damage Deductible	EV Third Party Liability Insurance[1]	ICE vehicles Third Party Liability Insurance
Dah Sing Insurance	HKD 30,000	HKD 10,000	HKD 5,150.25	HKD 1,471.50
Allianz	HKD 25,000	HKD 7,000	HKD 3,824.33	HKD 1,585.79
QBE	HKD 15,000	HKD 5,000	HKD 5,349.19	HKD 1,905.65

Source: Kilowatt (2024)

In Hong Kong, insurance costs for EVs are generally significantly higher than those for ICE vehicles. A comparison between the same insurance company shows that EV insurance premiums can be approximately three times higher than those for ICE vehicles. Several key factors contribute to this price disparity, including higher repair costs, limited availability of spare parts, and the relatively immature EV market (Table 2).

One of the primary reasons for the higher insurance cost is the complexity of EV repairs, which involve high-voltage batteries, electric motor systems, and proprietary software. Independent repair shops often lack access to the necessary repair data, forcing EV owners to rely exclusively on authorized service centers, leading to significantly higher maintenance expenses than ICE vehicles. Furthermore, many EV components, especially batteries, are import-dependent, resulting in more extended repair wait times. This situation increases the claims risk for insurers, further driving up insurance premiums (Kilowatt, 2024). Higher insurance premiums for EVs, driven by expensive repairs and limited spare parts, further increase ownership costs.

[1] According to the Motor Vehicles Insurance (Third Party Risks) Ordinance, Chapter 272 of the Laws of Hong Kong, anyone who uses a car on the road in Hong Kong must have a valid third-party injury or death liability insurance that complies with the regulations. And this “third-party liability insurance” is a type of car insurance that a car owner must purchase compulsorily. The deductible is a predetermined amount on the policy that the policyholder is responsible for paying when he/she claims compensation.

2.2 The Accessibility of Charging Infrastructures

While cost factors play a pivotal role in shaping consumers' decisions regarding EVs, the overall feasibility of adopting EVs in Hong Kong extends beyond mere financial considerations. As potential buyers weigh the financial implications of purchasing and maintaining an EV, they also encounter practical concerns related to the accessibility of charging infrastructures. The ease with which drivers can charge their vehicles directly influences their willingness to adopt an EV. Thus, understanding the accessibility of charging infrastructures is essential for comprehensively addressing the barriers to EV adoption in Hong Kong, which are explored in detail in this chapter. This encompasses not only the number and distribution of chargers throughout the city but also the duration of charging time.

The Gap Between Supply and Demand of Chargers

The gap between the supply and demand for chargers plays a significant role in determining the overall effectiveness of the charging infrastructure and its ability to meet the needs of current and potential EV users. In high-density cities like Hong Kong, the supply-demand contradiction of EV charging infrastructure has become a key constraint limiting the popularization of EV.

On the demand side, He, Kuo, et al. (2022) analyzed 982 valid questionnaires and used a generalized ordered probit model to predict Hong Kong residents' EV purchase intentions over the next five years. Combined with 2016 micro-census data, they estimated the daily demand for public charger usage to reach 29,913 EVs. This demand not only reflects residents' reliance on public charging infrastructure in high-density environments but also reveals the limitations of home charging due to the lack of private parking spaces (He, Kuo, et al., 2022).

On the supply side, as of March 2025, there are 11,188 EV chargers available for public use, including 2,043 standard chargers (18.26%), 7,112 medium chargers (63.57%), 2,028 quick chargers (18.13%), and only 5 fast chargers distributed across all 18 districts (Hong Kong Environmental Protection Department, 2025). The data illustrate the uneven distribution of public chargers in Hong Kong. In total public chargers (Figure 11), Sha Tin (1,788) has over six-times as many chargers as Tuen Mun (280). Focusing on specific types: for standard chargers (Figure 5), Sha Tin (738) dwarfs Southern (4); for medium speed chargers (Figure 7), Kwun Tong (887) contrasts sharply with Tuen Mun (195); and for quick speed chargers (Figure 9), Sha Tin (288) far exceeds Tai Po (33). Even within regional breakdowns (Figure 6, 8, and 10), while New Territories holds larger shares (59% for standard, 46% for medium, and 48% for quick), intra-regional disparities exist—not all districts in New Territories have high counts. These disparities across districts for each charger type (standard, medium, quick) underscore a pronounced uneven distribution, with some districts (e.g., Sha Tin, Kwun Tong) heavily equipped, while others (e.g., Tuen Mun, Tai Po) lack adequate infrastructure.

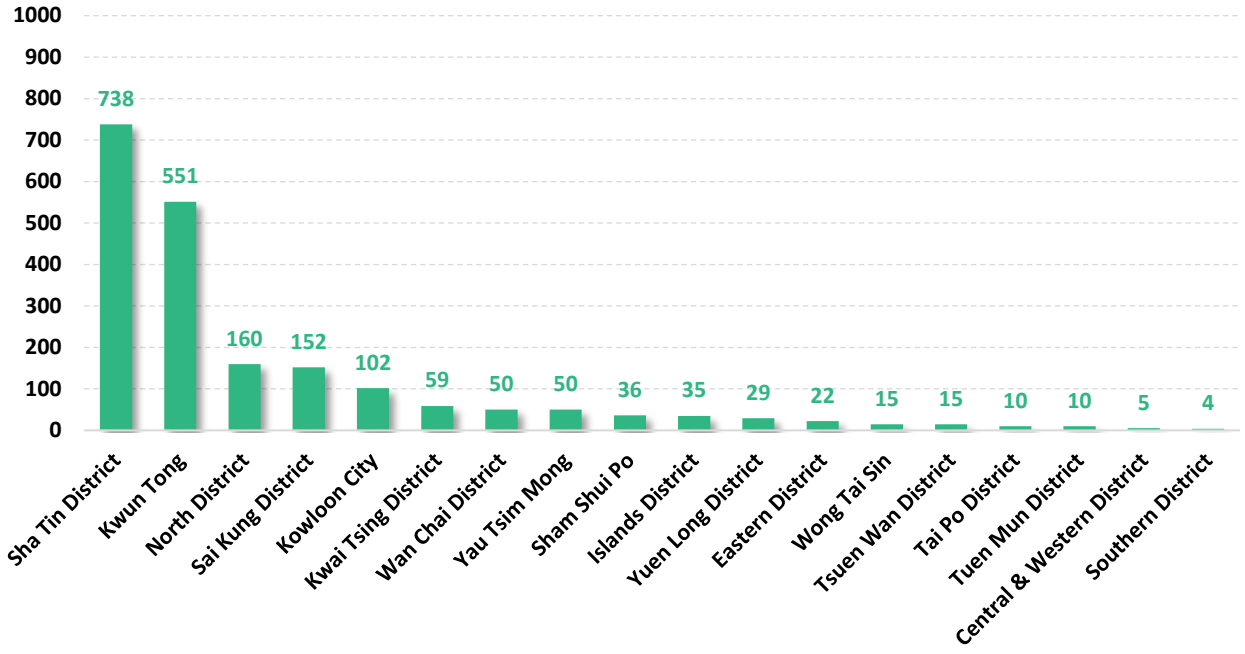

Figure 5. The number of standard public chargers in Hong Kong

Source: Hong Kong Environmental Protection Department (2025); Appendix J

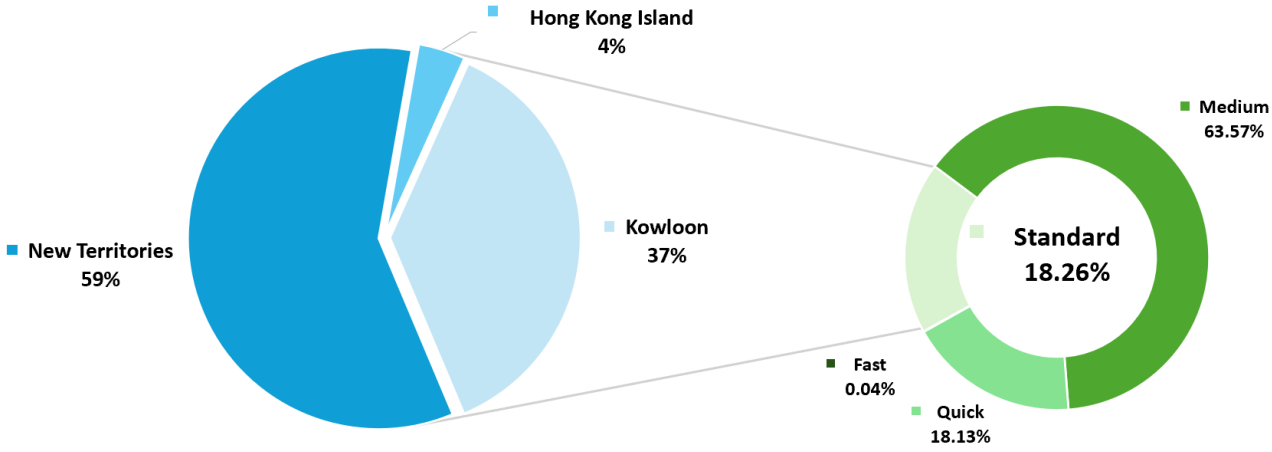

Figure 6. The distribution of standard public chargers in Hong Kong

Source: Hong Kong Environmental Protection Department (2025); Appendix J

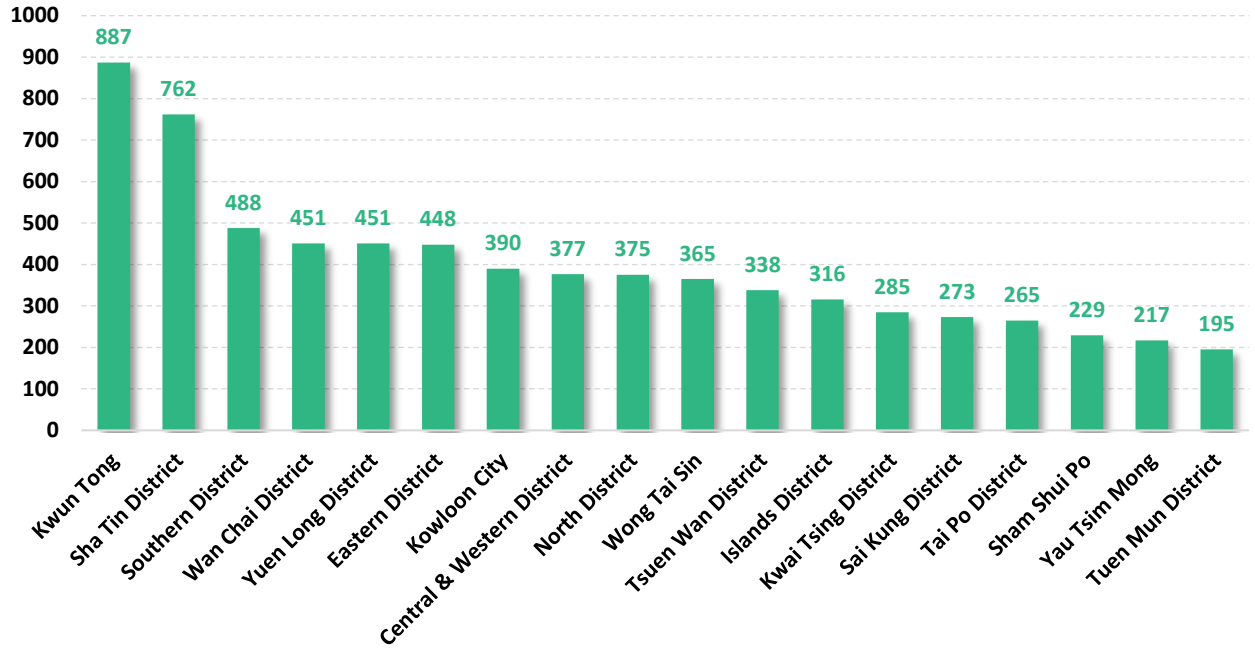

Figure 7. The number of medium public chargers in Hong Kong

Source: Hong Kong Environmental Protection Department (2025); Appendix J

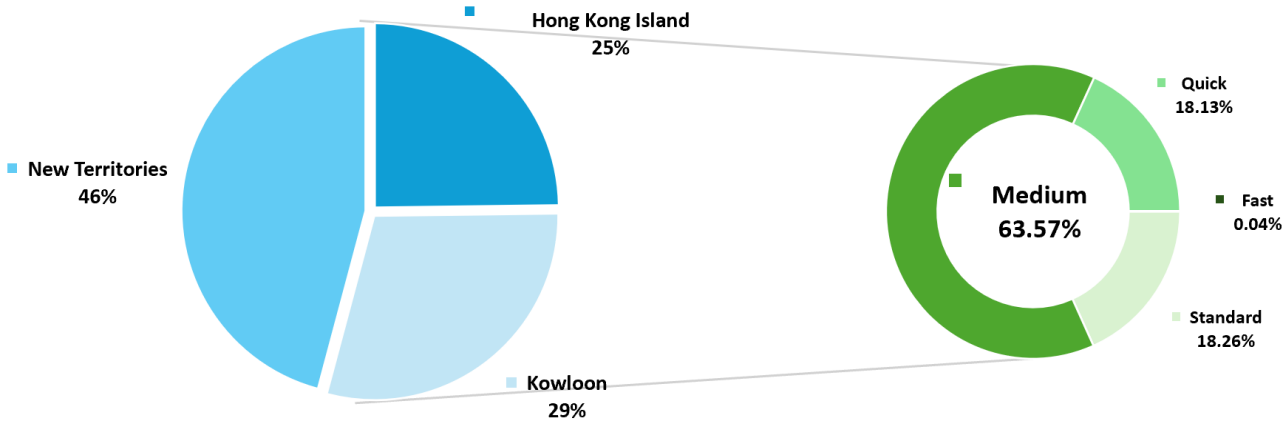

Figure 8. The distribution of medium (≦20kW) public chargers in Hong Kong

Source: Hong Kong Environmental Protection Department (2025); Appendix J

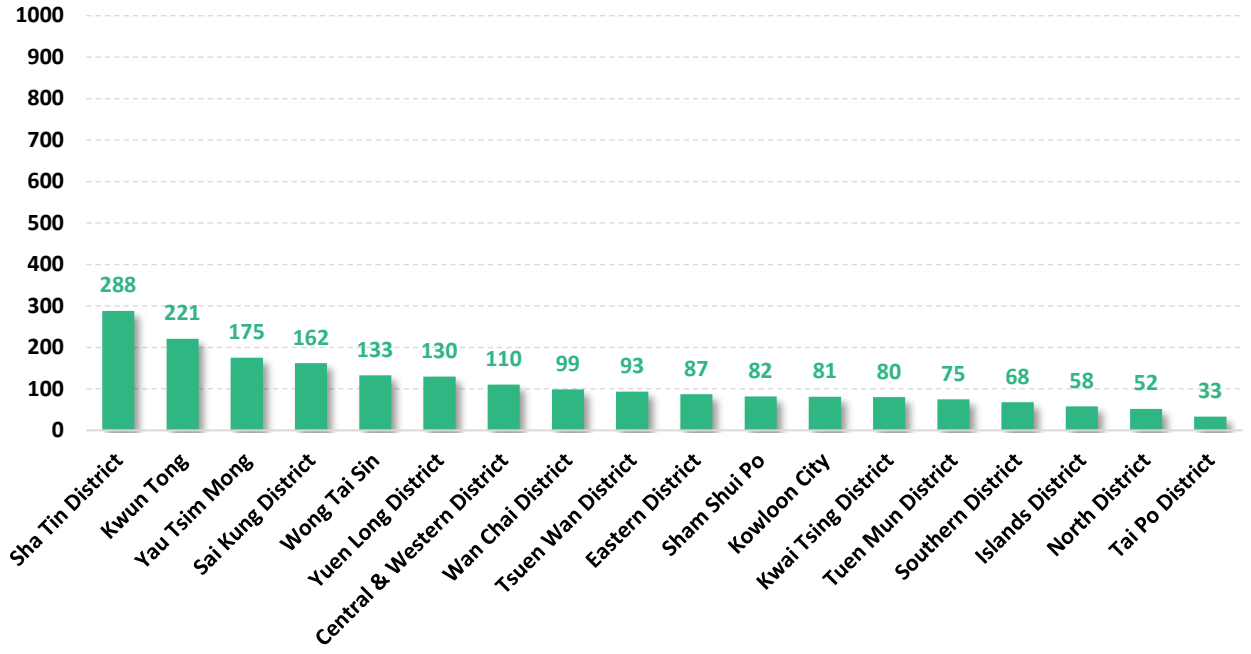

Figure 9. The number of quick public chargers in Hong Kong

Source: Hong Kong Environmental Protection Department (2025); Appendix J

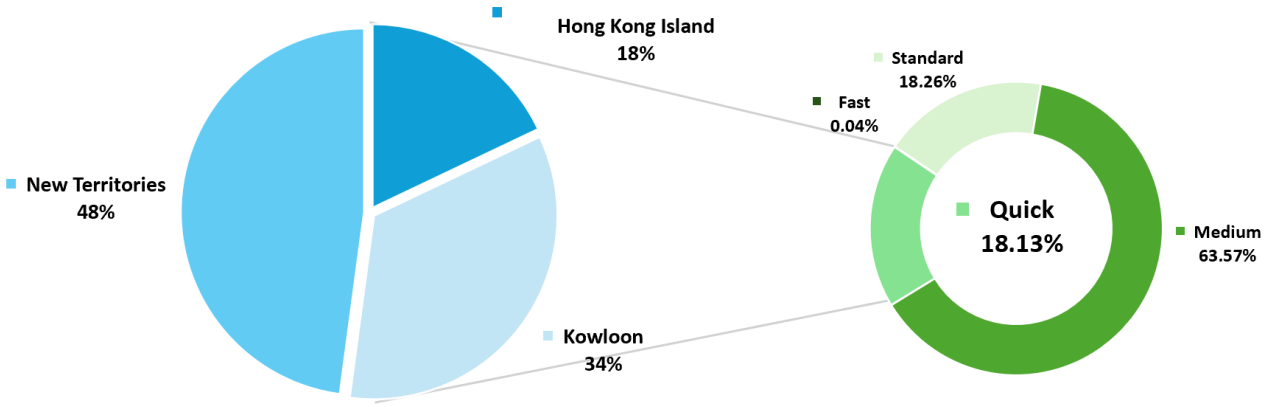

Figure 10. The distribution of quick (>20kW & <100kW) public chargers in Hong Kong

Source: Hong Kong Environmental Protection Department (2025); Appendix J

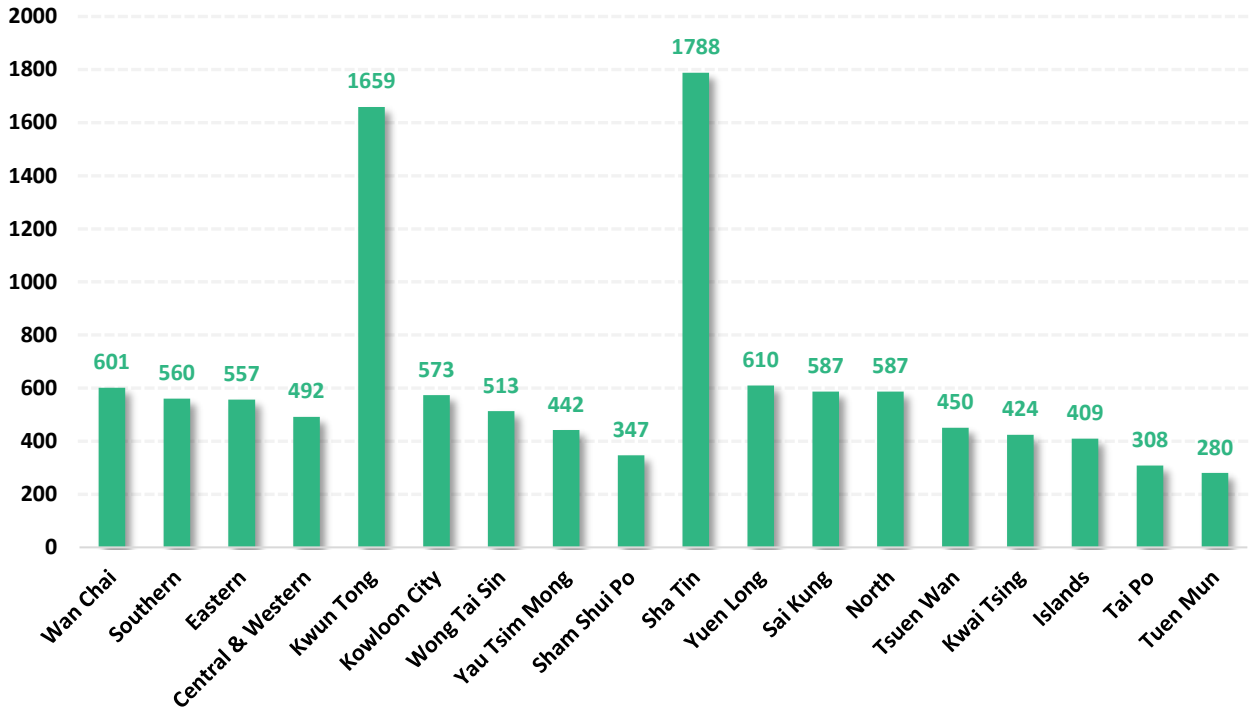

Figure 11. The number of all types of public chargers in Hong Kong

Source: Hong Kong Environmental Protection Department (2025); Appendix J

Although the supply of public chargers is increasing every year, in fact, the growth rate of chargers (both public ones and private ones) cannot keep up with that of EVs. The government faces significant economic pressure to construct a large number of new charging facilities. In the latest policy address, the Hong Kong government has set a target to increase the number of public and private parking spaces equipped with charging infrastructure to approximately 200,000 by mid-2027 (Legislative Council, 2025). Despite the addition of private chargers, a substantial gap of about 140,000 remains to meet this ambitious target. Relying solely on existing infrastructure would drastically reduce the coverage rate to 27.33%, highlighting the enormous gap between current supply capacity and future demand, particularly in new towns such as Tin Shui Wai and Tuen Mun (He, Kuo, et al., 2022).

Overall, this supply-demand imbalance reflects the typical contradiction in high-density cities where infrastructure planning lags behind population and transportation demands.

The Distribution of EV Chargers

In high-density urban environments like Hong Kong, the spatial distribution of charging infrastructure plays a critical role in the popularization of EVs. As of March 2025, Hong Kong had only 11,188 public EV chargers, primarily concentrated in coastal core areas of Hong Kong Island and Kowloon, with sparse charging facilities in suburban and rural areas of the New Territories (He, Kuo, et al., 2022) (Figure 12).

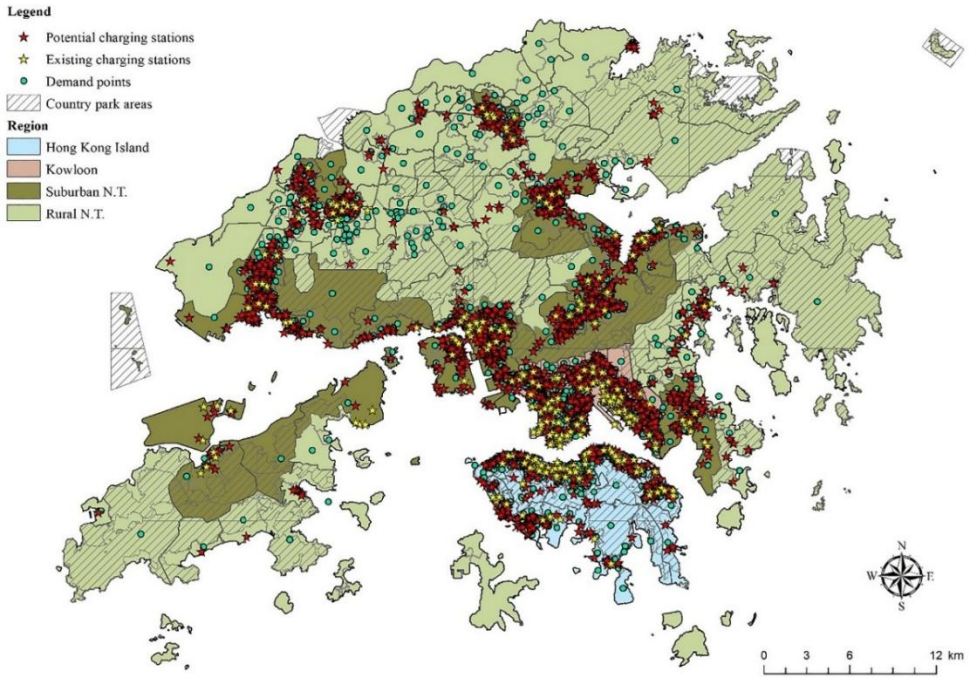

Figure 12. Distribution of charging supply and demand in Hong Kong

Source: He, Kuo, et al. (2022)

Quantitative results from He, Luo, et al. (2022) ordered logistic models highlight that the accessibility of charging infrastructure within a 5-minute walking distance of residential areas is a key factor. For non-EV owners, the number of standard chargers within a 5-minute walk of residential districts was significantly and positively associated with EV purchase intention (coefficient = 0.1418, $p < 0.001$). For EV owners, the number of chargers within a 5-minute walk of residential areas significantly influenced their intention to repurchase an EV (coefficient = 0.4715, $p < 0.01$). These findings suggest that, for both potential and existing EV users, the density of charging facilities in residential neighborhoods has a direct impact on their purchase willingness.

Moreover, their model tests showed that charger accessibility metrics within a 5-minute walking radius performed best in distinguishing purchase intentions, while metrics for 10- or 15-minute radii were significantly less effective (He, Luo, et al., 2022). This phenomenon is closely tied to Hong Kong's high-density urban fabric, reflecting residents' strong sensitivity to "short-distance accessibility", with 5 minutes being a critical threshold for effective accessibility perception. Overall, enhancing the accessibility of charging infrastructures within residential areas is essential to fostering greater EV adoption in Hong Kong.

The Duration of Charging Time

In addition, the distribution of chargers also affects the charging time. This is also an important factor influencing the overall accessibility of using EVs and consumers' perception.

Firstly, the length of charging time directly affects the convenience of using EVs. Longer charging times increase user waiting costs, especially during long-distance travel or in areas with inadequate charging infrastructure, which can lead consumers to doubt the practicality of EVs, thereby reducing their purchase intentions (Egbue & Long, 2012). Franke and Krems (2013) found that uncertainty around charging times further exacerbates consumer inconvenience, particularly during long-distance travel, where consumers worry about not being able to find a charging station in time or having to spend a significant amount of time charging, thus affecting travel efficiency.

Secondly, the duration of charging time also affects consumers' psychological perceptions. The long charging time might increase additional detour time due to limited charging locations (Hoen & Koetse, 2014), so that EV owners have to queue in place or go elsewhere to find available chargers. Moreover, the additional detour time can make consumers feel inconvenienced and anxious, thereby reducing their satisfaction with EVs. On the other hand, shorter charging times can enhance the user experience, increase consumers' trust in EVs, and promote purchase intentions (Hawkins et al., 2013).

In summary, both the duration of charging and the accessibility of charging infrastructure are critical factors that influence consumer perceptions and decisions regarding electric vehicle adoption.

2.3 Social Influence and Peer Pressure

In daily life, individuals are constantly influenced by the people around them, a phenomenon known as social influence. This concept plays a crucial role in shaping consumer behaviors, including the decision to adopt EVs. When considering major purchases like EVs, individuals often look to their social networks for cues on what is desirable or socially acceptable. As a result, the attitudes and behaviors of peers can significantly impact EV adoption. Cialdini and Goldstein (2004) identify two primary mechanisms of social influence: conformity and compliance. Conformity occurs when individuals modify their behavior to align with social norms, while compliance refers to behavioral changes influenced by explicit or implicit social pressure. Both mechanisms play a role in EV purchasing decisions, as individuals may be encouraged to adopt EVs based on the behavior of their peers or broader societal trends. When a growing number of people within a social group purchase EVs, it can create a ripple effect, encouraging others to follow suit—either out of a desire to fit in or because of perceived social validation.

Peer Pressure as a Driver of EV Adoption

Peer pressure is a form of normative social influence that encourages individuals to conform to group behaviors, including purchasing decisions (Packer & Ungson, 2024). When peers begin adopting EVs, others may feel inclined to follow suit, driven by the desire to fit in and avoid isolation. Consumers often perceive buying an EV as a socially validated choice, reinforcing the notion that EVs represent an intelligent and trend-aligned decision. Moreover,

compliance plays a crucial role in EV adoption. Direct recommendations from peers or indirect exposure to prevailing social norms can influence purchase decisions. Even individuals with limited prior knowledge of EVs may be swayed by peer pressure, increasing their likelihood of choosing an EV. This highlights the need to explore the mechanisms through which peer influence shapes EV purchasing behaviors.

Measuring the Impact of Peer Influence on EV Adoption

Manca et al. (2020) developed an analytical framework to assess how peer attitudes influence individual decision-making, using an individual peer attitude (IPA) variable. Their findings indicate that a higher proportion of "open to innovation" peers correlate with an increased likelihood of EV adoption. Specifically, when the share of innovation-oriented peers rises by 40%, the proportion of individuals choosing EVs increases by 4.5%. This demonstrates that individuals' preferences are shaped by their social networks, reinforcing the notion that peer pressure has a measurable impact on EV adoption. Supporting this perspective, Axsen et al. (2013) found that social interactions play a fundamental role in shaping consumer attitudes toward EVs. Their research underscores the significance of peer influence in shaping perceptions of EV technology, costs, and benefits. These findings suggest that social dynamics should be considered in EV marketing strategies and policy interventions aimed at increasing adoption rates.

The Negative Side of Social Influence

While social influence can encourage EV adoption, negative peer experiences can have the opposite effect. Cherchi (2017) highlights that negative feedback about EV performance strongly influences consumer perceptions, often outweighing positive experiences. Reports of poor battery life, charging issues, or maintenance difficulties significantly reduce perceived EV utility, creating barriers to adoption. Historically, negative consumer experiences have slowed market expansion, particularly when early EV models underperformed. These unfavorable perceptions have lingering effects, discouraging potential buyers from considering EVs. While transparency in consumer experiences is important, counteracting misinformation and emphasizing non-negative or positive experiences is equally crucial. As research suggests, the impact of social conformity grows in response to negative information, making it vital to accurately communicate the evolving reliability and advantages of EV technology.

To conclude, research from multiple perspectives has consistently demonstrated that peer pressure plays a significant role in shaping consumers' attitudes and decisions regarding EVs.

2.4 Environmental Impact

These environmental impact factors of EVs play a significant role in shaping consumer willingness to adopt EVs. Potoglou and Kanaroglou (2007) found that consumers are more likely to consider purchasing an EV as they become

more environmentally conscious. Similarly, Peters and Dütschke (2014) concluded that the improved environmental protection performance of EVs makes them more appealing to consumers. This is further supported by Simsekoglu (2018), who showed that consumers with a higher sense of environmental responsibility are more attentive to the environmental benefits of EVs, which in turn enhances their willingness to buy. Therefore, environmental concerns have become a critical factor in shaping consumer preferences for EVs. As awareness of climate change and pollution grows, consumers are increasingly drawn to EVs for their potential to reduce carbon emissions and other pollutants, noise pollution, and battery waste.

Carbon Emissions and Other Pollutants

Among transportation sources, road vehicles account for a significant share of carbon emissions, making EVs a major alternative to internal combustion engine (ICE) vehicles. Over their lifetime, EVs generally have a lower global warming potential than ICE vehicles, especially when powered by low-carbon electricity grids (Metais et al., 2022). A key advantage of EVs is their lack of tailpipe emissions, reducing urban exposure to pollutants such as nitrogen oxides (NO_x), volatile organic compounds, carbon monoxide, and particulate matter. These emissions significantly affect urban air quality and public health, making EV adoption particularly relevant in densely populated cities. Consumers living in high-pollution areas are more likely to adopt EVs due to their potential to improve local air quality (Hao et al., 2011). Additionally, studies suggest that emphasizing health co-benefits, such as reduced respiratory illnesses, increases consumer willingness to purchase EVs (Buekers et al., 2014).

Noise Pollution

Beyond emissions, EVs also contribute to reducing noise pollution, particularly in urban areas. Unlike ICE vehicles, which produce significant engine noise, EVs operate more quietly, creating a more pleasant and less stressful urban environment (Thorslund et al., 2012). While noise reduction is often seen as a secondary benefit, it can enhance the overall perception of EVs as a modern and high-tech mode of transportation. Regulatory policies, such as the European Union's vehicle noise standards, have indirectly encouraged EV adoption by promoting quieter transport alternatives (European Environment Agency, 2014).

Battery Disposal

However, a growing concern among consumers and policymakers is the environmental impact of EV battery disposal. Lithium-ion batteries contain materials that, if improperly discarded, can lead to toxic chemical leakage and resource depletion. Consumer awareness of battery disposal issues plays a dual role: it can act as a barrier to adoption if consumers perceive EVs as environmentally harmful due to waste concerns, or it can serve as a motivator if they recognize the benefits of a circular economy where batteries are efficiently recycled (Egbue & Long, 2012). Government policies that support battery recycling programs and second-life applications will be crucial in addressing these concerns and reinforcing the long-term environmental benefits of EVs.

2.5 The Role of Advertising

While the importance of economic, green attributes of the above factors in influencing purchase intentions is recognized, the question of how these attributes is communicated to consumers remains largely unanswered. This is where advertising comes into play. Advertising serves as a vital link between manufacturers and consumers, and it has the potential to shape consumers' perceptions and attitudes towards products. Today, EVs are seen as a key solution for reducing carbon emissions and tackling climate change. As a result, industry stakeholders are increasingly highlighting the green attributes of EVs in their advertising and exploring how these messages affect consumer buying decisions. Green advertising effectively conveys information about energy efficiency, resource conservation, and pollution reduction, significantly boosting purchase intentions compared to traditional advertising.

The Context of Advertisements

The effectiveness of green advertising stems from its ability to influence two key psychological factors: green perceived value and green product attitude. Green perceived value refers to consumers' comprehensive evaluation of the greenness of a product, taking into account the benefits and costs of purchasing it (Ariffin et al., 2016). At the same time, green advertising also improves consumers' attitudes toward EVs as sustainable products, which positively influences purchase behavior (Dodds et al., 1991). These findings suggest that well-crafted green advertising campaigns can shift consumer perceptions and drive EV adoption.

The Depth of Advertisements

A study by Tebbe (2025) investigates peer effects in EV adoption across social networks—workplaces, families, and neighborhoods—using Swedish administrative data from 2012 to 2021. The research finds significant peer influences: one new EV in a peer group triggers 0.094, 0.023, and 0.22 additional EV acquisitions in workplaces, families, and neighborhoods, respectively, within the next quarter. These effects persist for up to six quarters in workplaces, four quarters in families, and indefinitely in neighborhoods, displacing fossil fuel vehicle demand and reducing per capita CO_2 emissions by 4.1% through reduced driving, cleaner non-EV choices, and lower vehicle ownership.

The Format of Advertisements

Beyond the choice of platform, the format in which information is presented also affects consumer understanding and decision-making. Many potential EV buyers hesitate due to misconceptions about high upfront costs, unclear long-term savings, and a lack of awareness of the environmental and health benefits. A study by Camilleri and Larrick (2014) demonstrates that reframing vehicle cost information can significantly influence consumer choices. Their experiment showed that presenting fuel economy as lifetime gas costs (over 100,000 miles) increased

consumer preference for fuel-efficient vehicles. Specifically, when fuel economy was framed in dollar terms rather than gas consumption, the proportion of consumers choosing fuel-efficient vehicles increased from 67.2% to 79.7%. These findings suggest that presenting EV-related costs in a relatable and clear format, such as emphasizing lifetime energy savings, could enhance consumer willingness to purchase EVs. Inspired by this study, we incorporated a similar labeling experiment in our questionnaire survey to examine how different advertising formats influence Hong Kong residents' EV adoption intentions. The findings of this experiment will be analyzed in a later section.

The Breadth of Advertisements

While green advertising is influential, the choice of advertising channels and message presentation also plays a crucial role in its effectiveness. Most research focuses on the direct effects of green advertising on consumer behavior, but little is known about the long-term impact of repeated exposure to such messages. Additionally, different advertising platforms — such as social media, television, and print — may vary in their ability to communicate green attributes effectively. Social media allows for interactive engagement and targeted marketing, while television provides broader exposure but may have a lower long-term retention rate. Print media, though less widespread, can be effective for detailed educational campaigns. Understanding which channels best resonate with consumers can help manufacturers optimize their advertising strategies.

2.6 Vehicle Performance

Product characteristics play a crucial role in consumers' decisions to purchase EVs. Among these, battery life remains a primary concern due to performance degradation and high replacement costs. Additionally, factors such as driving range and after-sales service availability significantly impact consumer confidence and willingness to adopt EVs.

Battery Life and Driving Range

Battery life is one of the most expensive and critical components of an EV, directly influencing the total cost of ownership. Firstly, a shorter lifespan necessitates frequent replacements, increasing maintenance expenses and financial burdens on consumers, thereby lowering their willingness to purchase (Egbue & Long, 2012; Adepetu & Keshav, 2015). Meanwhile, poor battery durability and long charging times negatively affect purchase intentions. The length of charging time directly affects the convenience of using EVs. Longer charging times increase user waiting costs, especially during long-distance travel or in areas with inadequate charging infrastructure, which can lead consumers to doubt the practicality of EVs, thereby reducing their purchase intentions (Egbue & Long, 2012).

Secondly, battery degradation affects the driving range, exacerbating range anxiety—a major barrier to EV adoption. A declining battery capacity reduces the distance an EV can travel on a single charge, raising doubts about its

practicality (Hidrue et al., 2011). Rezvani et al. (2015) found that driving range is one of the most influential factors in consumer attitudes toward EVs, with battery life being a crucial determinant. Combined by the factor of accessibility of EV chargers, consumers worry about not being able to find a charging station in time or having to spend a long time charging during long-distance trips, which affects travel efficiency (Hidrue et al., 2011). This anxiety significantly reduces consumers' willingness to purchase EVs.

Third, battery lifespan impacts the resale value of EVs. Shorter lifespans lead to lower resale prices, deterring potential buyers who fear additional expenses for battery replacement (Adepetu & Keshav, 2015). This financial uncertainty discourages consumers from purchasing EVs, especially in markets where used EVs play a significant role in adoption rates.

Challenges in EV Maintenance and Repair Accessibility

While performance stability is critical, its long-term reliability depends on the availability of maintenance and repair services. The specialized nature of EV components, such as batteries and electric motors, creates a need for trained technicians and specialized repair facilities. Studies have shown that consumers are concerned about the availability of such services, particularly in regions with limited EV adoption (Rezvani et al., 2015). A study by Deloitte (2020) found that 40% of potential EV buyers consider after-sales service quality when making a purchase decision. The lack of established repair networks for EVs, particularly in rural or underdeveloped areas, can deter consumers from adopting the technology (Bühler et al., 2014). In contrast, a robust repair infrastructure enhances consumer confidence (Achtnicht & Daziano, 2013). Studies indicate that consumers are more likely to adopt EVs if they perceive repair services as readily available and affordable (Hardman et al., 2016). Additionally, high repair costs—especially for battery replacements—remain a significant concern. Ensuring the availability of affordable repair services and warranty coverage can alleviate these concerns and encourage EV adoption (Zhang et al., 2016).

Beyond the accessibility of repair service, as we mentioned in problem framing section, the technological complexity of EVs also presents challenges for traditional repair shops, which may lack the expertise or equipment to service EVs. This has led to a reliance on manufacturer-authorized service centers, which are often concentrated in urban areas (Nie et al., 2016). This disparity in service accessibility can create a perception of inconvenience among potential buyers.

2.7 Summary of Literature Review

In summary, the literature review highlights several critical factors influencing e-PC adoption (Table 3). Cost factors, including high upfront and long-term expenses, remain significant barriers, with battery costs and insurance premiums posing additional challenges. Accessibility of charging infrastructure is vital, as the distribution of

chargers and charging duration directly impact consumers' willingness to adopt e-PCs. Social influence plays a crucial role, where peer pressure and social norms can either encourage or deter potential buyers. Environmental concerns increasingly motivate consumers, although issues related to battery disposal can create ambivalence. Advertising strategies that emphasize green attributes effectively shape consumer perceptions and drive purchase intentions, while vehicle performance, particularly battery life and driving range, significantly affects consumer confidence.

Table 3. Summary of Key Points of Literature Review

Factor	Key Points
Cost Factors	· High upfront costs and long-term expenses are significant barriers to EV adoption.
	· Battery costs contribute significantly to overall vehicle prices.
	· Insurance costs for EVs are generally higher than for ICE vehicles.
Accessibility of Charging	· Accessibility of charging infrastructure is crucial for EV adoption.
	· Distribution of chargers must be sufficient and within a short distance from residences.
	· Charging time affects convenience and consumer perceptions.
Social Influence	· Social norms and peer pressure significantly impact EV adoption decisions.
	· Positive peer experience can encourage adoption, while negative feedback can deter it.
Environmental Impact	· Increased environmental awareness enhances consumer willingness to adopt EVs.
	· Concerns about battery disposal can act as both a barrier and a motivator for adoption.
Advertising	· Green advertising can significantly influence consumer attitudes and purchase intentions.
	· The effectiveness of advertising varies based on consumer traits and messages format.
Vehicle Performance	· Battery life and driving range are critical factors affecting consumer confidence.
	· The availability of maintenance and repair services influences adoption rates.

Understanding these factors provides valuable insights into the current landscape of e-PC adoption in Hong Kong. However, as the market evolves, it is essential to explore alternatives that can further enhance e-PC uptake and address existing barriers. The following chapter delves into various alternatives to traditional vehicles, examining innovative solutions and strategies that could facilitate a smoother transition to sustainable transportation.

3 METHODOLOGIES

Building on the insights gained from the literature review, to effectively address the complexities surrounding EV adoption in Hong Kong, this study employs a mixed methods design that integrates qualitative and quantitative research approaches. This dual strategy allows for a comprehensive exploration of the barriers and motivations influencing consumer behavior regarding e-PCs. Data collection involves three primary sources: semi-structured interviews with diverse stakeholders, a structured questionnaire targeting Hong Kong residents, and official databases that provide context on EV registration and infrastructure. Data analysis encompasses thematic analysis for qualitative insights, identifying patterns and themes from interview transcripts, and logistic regression for quantitative evaluation, assessing the relationships between various factors and purchasing intentions. By integrating these methodologies, the research aims to generate a well-rounded understanding of the current landscape of EV adoption, ultimately informing relevant policy recommendations to support sustainable transportation in the region.

3.1 Data Collection

For data collection, the project has three primary sources: semi-structured interviews, questionnaire surveys and some official databases. This is helpful for a comprehensive understanding of the obstacles and advantages of adopting electric private cars in Hong Kong, as well as the main factors that affect the purchase of electric private cars for Hong Kong consumers.

First of all, the study conducts semi-structured interviews with stakeholders from multiple sectors, including EV owners, Hong Kong Government officer, Hong Kong councilors, car rental staff and so on. This semi-structured format allows the flexibility to explore topics in depth. It promotes a dynamic interaction where participants can express their own experiences, while also guiding discussions to cover specific research questions. In this study, interviews were conducted online by zoom and offline in person, according to the schedule of the interviewees. These interviews help understand the challenges and opportunities within the industry, gathering qualitative insights to support the research. In summary, the interviews focus on the barriers and challenges of electric vehicles in terms of charge, market, fiscal burden, technician personnel and so on. Interviewers ask the participants what obstacles and challenges they thought the current development of electric private vehicles in Hong Kong was facing? All interview recordings were transcribed verbatim and made anonymous. The data collected from the interview

and questionnaire can corroborate and reinforce each other. A total of five participants have been interviewed from different industries, genders and age groups. Table 4 below shows the interviewees' profile.

Table 4. Interviewee profile (n=5)

Interviewee Occupation Category		Interviewee Name	Gender
EV Owners	University Scholar	Prof. S	Male
Hong Kong Councilors	Legislative Council Member (Shipping and Transport Sector)	Mr. F	Male
	Councilor of Central and Western District	Ms. M	Female
Hong Kong Government Officer	Environment and Ecology Bureau	Ms. K	Female
Others	Car Rental Staff	Mr. J	Male

In terms of questionnaire (Appendix C), the survey targets Hong Kong residents aged 18 and above who can afford to buy a private car or are very interested in electric vehicles, including current e-PC owners and potential buyers. The survey explores the various factors that influence their decision to adopt EVs, which includes sections that capture demographic information (gender, age and income), vehicle ownership status, current willingness to buy an EV, factors that influence the adoption of EVs (including cost, accessibility of charging facility, and environmental impact), and the potential impact of policy alternatives on purchasing decisions. The questions aim to identify patterns of consumer preference and barriers to adoption of EVs.

In addition, the study also uses this questionnaire to ask consumers to evaluate several new policy alternatives proposed in this project, so as to facilitate subsequent data analysis. The study uses convenience sampling strategy, with elements of purposive sampling. The questionnaire was distributed through accessible online channels—specifically, Facebook and WeChat groups related to electric vehicles (EVs), such as Tesla, BYD, and Xiaopeng automobile user communities. This approach enabled the researchers to reach a relevant pool of respondents who either own or are considering the adoption of electric private cars (e-PCs) in Hong Kong. While convenient for collecting a focused dataset, this sampling method may limit the generalizability of the findings to the broader population.

Finally, a total of 112 samples have been received, featuring a nearly balanced gender distribution (52% male and 48% female) and an age distribution predominantly concentrated between 26 and 45 years old, accounting for 62.5% of the sample. Table 5 below shows the questionnaire distribution format and collection status.

Table 5. Questionnaire distribution format and collection status

Release Form		Number of Questionnaires Collected
Online	Facebook groups	74
	WeChat groups	38

Moreover, the study also uses some official databases to assist. For example, data on EV registration and distribution statistics of chargers be obtained from the Transport Department and the Environmental Protection Department. This help assess the current infrastructure and its suitability to support the growing number of EVs.

3.2 Data Analysis

The data analysis includes both qualitative and quantitative methodologies to provide a comprehensive perspective on the challenges faced by the adoption of electric private cars in Hong Kong, the influencing factors for Hong Kong consumers to consider purchasing electric private cars, and the effectiveness of policy alternatives.

3.2.1 Qualitative Study

For qualitative method, the inductive thematic analysis approach was adopted in this study to allow patterns and themes to emerge directly from the data, ensuring that the analysis remained grounded in participants' lived experiences and perspectives. This method involves beginning the analysis without predefined codes, allowing for flexibility in identifying new and unexpected insights. During the initial coding phase, each relevant segment of the interview transcripts (Appendix D, E, F, G, and H) was carefully reviewed and annotated with descriptive labels that captured the core meaning of the data. As coding progressed, similar codes were grouped and refined through constant comparison, eventually forming broader themes. These emergent themes revealed key barriers and challenges to the adoption of electric private cars (e-PCs) in Hong Kong, such as accessibility of charging facilities, limited market options, high upfront costs, and concerns over long-term maintenance. This inductive process provided a nuanced understanding of stakeholder concerns and informed the subsequent development of policy recommendations.

The study adopts the tools of *Delve* for iterative coding, allowing for continuous optimization of the code during transcript data analysis. This iterative process allows for the capture of unforeseen nuances and ensures that the encoding remains responsive to the data. The initial data code was developed using the interview questions as a guide and later refined based on responses from the transcripts. Transcripts were read, re-read and coded line-by-line. After that, theme development was carried out based on the generated codes, grouping the relevant codes

into broader themes. This involves analyzing how different codes interact and how they jointly reveal the content of the research question. Each theme represents a conceptual category under which related codes were grouped, based on shared meanings or functional similarities. As each new theme was identified, previous transcripts were re-examined for relevant material.

The final codebook consists of seven main themes and their associated codes, along with frequency counts indicating how many times each theme appeared across the interview transcripts. For example, the theme "Charge" includes codes such as Private/Public Charging Facility, Fast Charging, and Mile Range, and was the most frequently mentioned topic with 10 occurrences. Other notable themes include "Market" (e.g., Demand Side, Supply Side, Market Survey Data), "Fiscal Burden" (e.g., Charger Installation Subsidy burden, Tax Incentives burden), and "Technician Personnel", which captured concerns about workforce sufficiency and service convenience. The detailed codebook can be found in the Appendix I. Table 6 below summarizes the brief codebook used in the analysis:

Table 6. Key Themes and Sample Codes Emerging from Participant Interviews

Theme	Sample Codes	Frequency
Charge	Private/Public Charging Facility, Fast Charging, Mile Range	15
Market	Demand Side, Supply Side, Market Acceptance, Market Survey Data	8
Fiscal Burden	Charger Installation Subsidies, Electricity Subsidies, Tax Incentives	6
Recycle	Battery Recycle, Recycling of Waste Parts	4
Approval Procedure	Land Usage Approval, Fund Approval	4
Technician Personnel	Cultivation Program, Sufficiency, Service Convenience	3
Advertisement	Media Promotion, Offline Face-to-Face Promotion	2

This codebook served as an essential reference during later stages of analysis, supporting both consistency in interpretation and the traceability of analytic decisions. By grounding theme development in participant narratives, the study ensured that the qualitative findings were reflective of real-world stakeholder experiences, particularly regarding the adoption barriers of electric private cars in Hong Kong.

Independent ethical approval from the Hong Kong University of Science and Technology Human Research Ethics Protocol and consent from participants were obtained.

3.2.2 Quantitative Study

In quantitative approach, firstly, we used descriptive statistical analysis to investigate the main factors influencing Hong Kong consumer's EV purchase and their rankings. We ask respondents to rank some factors on a scale of 1 to 5, with 5 being the most important and 1 being the least important. It mainly focuses on factors such as cost, accessibility of charging facilities, environmental advantages, vehicle performance, peer recommendations and advertisement.

In addition to descriptive statistics, we use multiple logistic regression models to evaluate the effectiveness of the relevant alternatives. The data source of the regression analysis also comes from the questionnaire. We asked respondents to evaluate several new policy alternatives proposed by us. We analyze the relationship between independent variables (such as economic subsidies incentives, availability of charging facilities, peer recommendation, environmental awareness and so on) and dependent variables (the probability that Hong Kong consumer has the willingness to purchase electric vehicles).

Logistic regression is employed in this study due to its suitability for analyzing binary outcomes, which aligns with the binary nature of the dependent variable: willingness to purchase an electric vehicle (Yes = 1, No = 0). Unlike linear regression, which assumes a continuous dependent variable, logistic regression models the probability of an event occurring using a logit function, ensuring predictions remain bounded between 0 and 1. This is critical for interpreting results as probabilities and avoids unrealistic predictions outside this range. Furthermore, logistic regression allows us to evaluate the direction, magnitude, and statistical significance of the relationships between multiple independent variables (e.g., financial incentives, charging infrastructure, peer recommendation, advertising effectiveness) and the binary outcome. The method also provides odds ratios, which quantify how each unit increases in an independent variable affects the odds of the outcome. Lastly, logistic regression accommodates categorical and continuous predictors, making it compatible with the mixed-variable questionnaire design. By controlling for demographic and contextual factors (e.g., gender, age and income), we isolate the unique effects of policy-related variables, ensuring robust conclusions about which measures most effectively drive EV adoption in Hong Kong.

The basic logistic regression model is specified as follows:

$$Logit\big(P(Y=1)\big) = \beta_0 + \beta_1 Subsidy + \beta_2 ICETax + \beta_3 Electricity + \beta_4 Charge + \beta_5 Understand + \beta_6 Recommendation + \beta_7 Environment + \beta_8 Advertise + \beta_9 Label + \gamma C + \epsilon$$

where $P(Y=1)$ is the probability that an individual has the willingness to purchase an EV. In the contrast, $P(Y=0)$ is the probability that an individual has no willingness to buy an EV. It is worth mentioning that in the

questionnaire survey, we classified the respondents who already own e-PC (regardless of whether they choose to buy EVs or not) and those who choose to buy EV into the category of having the willingness to buy EVs.

For independent variables, $Subsidy$ represents Hong Kong resident's response to the EV subsidy policy. We use a Likert scale of 1-5 to classify 5 different attitudes (5 representing full intention to buy, 1 representing no intention to buy). Similarly, $ICETax$ represents Hong Kong people's response to the policy of increasing tax rates and registration fee of ICE vehicles. $Electricity$ represents Hong Kong resident's reaction to the policy of increasing electricity charge subsidy. $Charge$ represents Hong Kong individual's attitude to the policy of improving charging facilities. $Recommendation$ represents Hong Kong people's reaction to the recommendations of relatives and friends around them. $Understand$ represents whether the respondents are aware of the current subsidy policies for electric private cars. $Advertise$ represents Hong Kong individual's response to the advertisement of EVs. They were all divided by the Likert scale, with 5 points representing full intention to buy and 1 point representing no intention to buy. The coefficients of these independent variables represent the impact of different responses of Hong Kong residents to different policy initiatives on the probability of their willingness to purchase electric vehicles. $Environment$ represents Hong Kong residents' cognition of the advantages of electric vehicles in protecting the environment. We also use the Likert scale to divide it, with 5 points representing full knowledge and 1 point representing complete ignorance. Its coefficient represents the impact of Hong Kong residents' perception of the environmental advantages of electric vehicles on the probability of their willingness to purchase electric vehicles. $Label$ is a dummy variable, indicating Hong Kong residents' preference for different types of labels for electric vehicles (we set the dummy equals 1 represents a preference for labels showing specific quantitative performance, and set it equals 0 represents a preference for labels with general description). Finally, we denote a full set of controls as C (which contains gender, monthly income and age) and error term as ϵ.

Overall, this study employs a mixed methods approach to comprehensively investigate the barriers and motivations influencing electric vehicle (EV) adoption in Hong Kong. The research begins with qualitative data collection through semi-structured interviews with diverse stakeholders, allowing for an in-depth exploration of the challenges faced in the development of electric private cars. This qualitative insight is complemented by a quantitative analysis derived from a structured questionnaire targeting Hong Kong residents, which assesses consumer preferences and the impact of various policy alternatives. The data collected from both methods are analyzed using thematic analysis for qualitative insights and logistic regression for quantitative evaluation, ensuring a robust understanding of the factors affecting EV adoption. By integrating these methodologies, the study aims to provide actionable policy recommendations that address the identified barriers.

4 ALTERNATIVES

To accelerate the adoption of e-PCs in Hong Kong, a multifaceted approach is necessary to address financial, infrastructural, informational, and environmental barriers. This section explores several policy alternatives, including financial incentives to reduce costs, improvements in charging accessibility, as well as strategic advertising to promote EV awareness. These measures aim to create a more supportive ecosystem for EV adoption and ensure long-term sustainability in the transportation sector.

4.1 Increase Financial Incentives

According to the survey of the literature review mentioned above, there are various cost factors that affect people's purchase intention, among which the acquisition cost of EVs, daily charging, battery use cost and insurance are relatively important parts.

We propose some improvement measures based on these four cost-related factors. First, adjusting taxes by increasing registration fees for high-emission vehicles and reducing those for EVs can lower purchase costs. Second, implementing Vehicle-to-Grid (V2G) technology allows EV owners to save on charging costs and earn from selling excess energy. Third, supporting battery recycling and independent repair markets can reduce maintenance and battery replacement expenses. Lastly, optimizing the insurance system, including separate battery coverage and discounts for V2G users, can lower overall insurance costs. These measures aim to make EV ownership more affordable and financially attractive.

4.1.1 Reducing EV Purchase Costs

Although directly reducing the tax burden on electric private cars (e-PCs) may appear to lower the purchase cost for consumers, this approach could pose several structural and practical challenges—particularly within the unique political-economic context of Hong Kong. Unlike many interventionist welfare states, Hong Kong operates under a "small government" model.[2] This concept refers to a governance approach in which the government deliberately

[2] The Hong Kong SAR government has long adhered to a "big market, small government" economic principle, in which the state's primary role is to provide the legal and institutional infrastructure for market operations rather than to directly intervene in them. This model emphasizes minimal government interference and encourages the private sector to take the lead in economic development.

limits its involvement in economic activities in order to preserve market efficiency and avoid distorting private sector behavior through excessive regulation or fiscal intervention. As such, large-scale, long-term subsidy programs, especially those involving recurring public expenditure, are generally perceived as misaligned with the city's administrative philosophy.

Moreover, Article 107 of the Basic Law explicitly states that the Hong Kong Special Administrative Region shall "strive to achieve a fiscal balance, avoid deficits, and keep the budget commensurate with the growth rate of its gross domestic product". This underscores the government's prudent fiscal stance and its aversion to long-term budget deficits or excessive public spending.

Given this fiscal discipline and institutional logic, implementing broad-based tax exemptions or long-term subsidy schemes may run counter to both Hong Kong's financial governance ethos and its small-government doctrine. By contrast, increasing the taxes and registration fees on ICE vehicles raises the cost of purchasing and operating conventional cars, thereby indirectly encouraging consumers to shift toward e-PCs without requiring significant public expenditure. This indirect approach not only helps safeguard government revenues but also aligns more closely with Hong Kong's market-oriented development principles, creating more favorable conditions for the long-term stability of the EV market.

This institutional logic is closely tied to Hong Kong's long-standing positioning of the government as a "facilitator" rather than a "provider" of economic outcomes. The government maintains the rule of law, protects property rights, and ensures free trade, but generally avoids directly engineering market results. Excessive reliance on state subsidies to promote e-PC adoption may therefore be perceived as incompatible with this approach. Consumers, too, may view such incentives as short-lived and potentially reversible, thereby casting doubt on the long-term affordability and stability of EV ownership.

By contrast, an increase in the tax and registration fees for ICE vehicles directly elevates the cost of owning and using such cars, thus promoting EV adoption through price disincentives rather than public subsidies. This strategy preserves fiscal stability and adheres to Hong Kong's market-based policy tradition, while still fostering sustainable growth in the EV sector.

Therefore, the Hong Kong government could consider increasing the first registration tax on high-emission ICE vehicles, raising their purchase costs, thereby encouraging consumers to transition to EVs. Additionally, increasing fuel taxes could raise the operating costs of ICE vehicles, further incentivizing consumers to opt for EVs. The increased tax revenue could then be allocated to the construction of EV charging infrastructure, improving the charging network and enhancing the convenience of using EVs.

Box 1. Norway's EV Incentive Policies and Lessons for Hong Kong

This indirect strategy finds a strong international precedent. A notable example is Norway, which has employed a dual-incentive mechanism: combining generous subsidies for EVs with punitive taxation on ICE vehicles. In Norway, full-electric vehicles (ZEVs) are exempt from road tolls, ferry fees, purchase tax, and VAT, while benefiting from free parking, charging, and access to bus lanes (European Federation for Transport and Environment, 2024). Research by Yadav et al. (2024) further suggests that higher gasoline taxes, in conjunction with lower electricity prices, positively influence EV demand. In addition, Gong et al. (2019) show that improvements in technology and tax incentives significantly affect consumer adoption patterns.

At the same time, the Norwegian government imposes high acquisition and import taxes on gasoline and diesel cars. Even with recent reductions in incentives (e.g., VAT applied above 500,000 NOK), the total cost differential between EVs and ICE vehicles remains large. Data from the Norwegian Road Federation show that EVs accounted for over 90% of new car sales in 2023. Fridstrøm and Østli (2021) estimate that a 10% increase in the price of gasoline vehicles corresponds to a 10.8% drop in their sales—highlighting the effectiveness of fiscal penalties in reshaping market behavior.

Therefore, while Hong Kong may lack the fiscal space to emulate Norway's expansive subsidy model, it can nonetheless draw lessons from the Norwegian experience. Specifically, two policy insights stand out: (1) the use of targeted disincentives—such as higher FRT and fuel taxes—can effectively alter consumer behavior in favor of EVs; and (2) even in fiscally conservative systems, the continuity of existing EV purchase incentives, such as the "One-for-One Replacement" scheme, remains essential. Maintaining policy consistency helps mitigate consumer uncertainty, encourages long-term investment decisions, and prevents loss of adoption momentum.

4.1.2 Lowering Electricity Costs

The promotion of Vehicle-to-Grid (V2G) technology would significantly enhance the economic viability of EVs and improve grid stability in Hong Kong. V2G enables a bidirectional flow of electricity between EVs and the grid, allowing vehicles to serve not only as transportation assets but also as mobile energy storage units. Under this model, EV owners can charge their vehicles during off-peak hours—when electricity prices are lower or when renewable energy sources like solar are abundant—and discharge electricity back to the grid during peak demand periods. This creates opportunities for both cost savings and energy arbitrage, effectively transforming private EVs into decentralized, revenue-generating assets.

By offering economic subsidies or feed-in tariffs for V2G participants, the government can incentivize EV owners to support grid operations while reducing their overall cost of vehicle ownership. According to Mo et al. (2022), this model holds particular promise in high-density cities like Hong Kong, where concentrated electricity demand and space constraints limit grid scalability. V2G-equipped EVs can also serve as emergency backup power sources during extreme weather events—such as typhoons—which frequently disrupt Hong Kong's energy infrastructure.

International experience reinforces the potential of V2G as a financially and operationally viable model. In Japan, pilot programs led by Nissan allow EV owners with private home chargers to feed excess energy back into the grid during peak hours, generating financial returns (Nissan, 2024). Similarly, the United Kingdom's "Powerloop" project enables EV users to participate in grid services and earn compensation by returning electricity during times of high demand (Octopus, 2021). In Spain, where electricity pricing varies across the day, EV owners are encouraged to engage in time-of-use arbitrage by charging their vehicles at night at discounted rates and selling the surplus power back to the grid during expensive peak periods (Mo et al., 2022). Team (2020) also highlights how V2G systems promote energy self-sufficiency when integrated with on-site renewable generation, such as rooftop solar.

Box 2. Shenzhen (China)'s Landmark V2G Pilot Program

A particularly noteworthy and recent case comes from mainland China. On 28 March 2025, Shenzhen launched one of the largest V2G-scale pilot programs in the world, involving 18,000 chargers, more than 17,000 EV trips, and over 760 charging posts across the city. The program successfully facilitated 88,000 kWh of bidirectional power exchange. Participants were offered CNY 4 per kilowatt-hour of electricity returned to the grid—equivalent to HKD 4.33 or USD 0.55. Given that the average off-peak charging cost is only CNY 0.4 per kWh, this yields a net profit of CNY 3.6 per kWh, making V2G participation highly attractive (People's Daily Online, 2025).

Moreover, as early as 15 May 2024, Shenzhen conducted a V2G demonstration project involving 500 charging stations and 15,000 posts, achieving 4,389 kWh of peak shaving within just one hour. This is equivalent to the daily electricity consumption of approximately 548 households (Shenzhen Government Online, 2024). These pilots showcase how scalable and lucrative V2G systems can be, even in densely populated urban environments.

These pilots showcase how scalable and lucrative V2G systems can be, even in densely populated urban environments. As noted by Sun Xiaojia, Deputy General Manager of the Market and Customer Services Department at the Shenzhen Power Supply Bureau of China Southern Power Grid, the V2G demonstration achieved cross-site coordination, multi-scenario coverage, and real-world participation from multiple brands and vehicle types, including heavy-duty trucks. It successfully overcame key technical bottlenecks in discharge capability and validated the potential of vehicle-to-grid regulation. This has major implications for power

balancing, renewable energy integration, emergency power support, and urban resilience in mega-cities like Shenzhen. This multi-dimensional validation — spanning both technical feasibility and system-level policy relevance—highlights the strategic value of V2G infrastructure in shaping a resilient, low-carbon urban power ecosystem.

For Hong Kong, which faces mounting grid pressure due to the rapid growth in EV adoption, these precedents are particularly instructive. Without careful load management, the city risks overburdening its power infrastructure—especially in high-rise districts with tightly coupled residential and commercial demand. V2G technology can mitigate the need for costly grid expansion projects while offering a practical, decentralized load-balancing tool. Furthermore, when integrated with smart grid systems and digital energy management platforms, V2G can enhance the flexibility and resilience of the entire energy ecosystem.

To replicate such success, Hong Kong could begin by establishing district-scale V2G pilot zones, possibly in newly developed areas or science parks where power demand profiles are more predictable. Financial mechanisms, such as differential pricing, dynamic tariffs, or grid-support rewards, should be established to encourage participation. Collaborations between power utilities (e.g., CLP and HK Electric), EV manufacturers, property developers, and digital energy management firms would be critical to delivering the necessary technical and institutional support. Over time, a well-designed V2G scheme could become a cornerstone of Hong Kong's low-carbon energy transition—delivering both economic value to users and system-wide resilience to the grid.

4.1.3 Optimizing the Insurance System

To reduce long-term ownership costs and strengthen consumer confidence in electric private cars (e-PCs), Hong Kong should support market-led reforms in the EV insurance sector. Given that EV related insurance premiums remain significantly higher than those for ICE vehicles, primarily due to costly battery repairs, limited parts availability, and immature repair networks, tailored and innovative insurance solutions are essential.

Box 3. Allianz Insurance Solutions for EVs

- **Battery-Specific Coverage**

  Allianz's "My Car" insurance product includes full protection for batteries—whether owned or rented—thereby dispelling industry concerns about component ownership and reinforcing coverage comprehensiveness (Allianz, 2024b).
- **Private Charging Infrastructure**

Allianz offers up to RM15,000 (approx. HKD 25,000) for wall charger protection and RM2,000 (approx. HKD 3,300) for cable-related losses caused by theft, fire, or natural disasters. Given that such infrastructure can be costly and often installed at private residences, this type of protection improves the risk profile of EV ownership and supports home-charging adoption (Allianz, 2024b).

- **Value-Added Assistance Services**

  Allianz's policy ensures that if an EV runs out of charge, the driver can either receive on-the-spot charging or towing to the nearest charging station (Allianz, 2024a). These services enhance reliability and convenience, making EV use more resilient to infrastructure limitations (Allianz, 2024a).

- **Premium Discounts for EVs**

  Allianz offers a 10% premium reduction for electric and hybrid vehicle users, directly aligning financial incentives with sustainable transport objectives (Allianz, 2024b).

These innovative insurance solutions exemplify how tailored coverage can address the unique challenges associated with EV ownership, which provide a practical example for Hong Kong.

First, insurance providers could introduce battery-specific coverage plans that allow users to insure high-cost battery components separately, rather than bundling them with general vehicle coverage. This would reduce overall premiums and directly address the most financially sensitive part of EV ownership.

Second, insurers should extend coverage to private charging infrastructure, including wall-mounted EV chargers and portable charging cables. Given that such infrastructure can be costly and is often installed at private residences, this type of protection improves the risk profile of EV ownership and supports home-charging adoption.

Third, insurers may offer value-added assistance services, such as 24-hour roadside towing or mobile charging stations, which can resolve range anxiety, one of the most cited concerns among EV users. These services enhance reliability and convenience, making EV use more resilient to infrastructure limitations.

Fourth, insurers can incorporate premium discount mechanisms to incentivize environmentally responsible vehicle choices. A similar approach could be adopted in Hong Kong to encourage participation in emerging EV technologies such as Vehicle-to-Grid (V2G) systems. In China, Ping An Property & Casualty has already implemented differentiated pricing models for new energy vehicles (NEVs), particularly through usage-based insurance (UBI) and automated driving features (Ping An Insurance Group, 2024). These practices reflect the insurance industry's growing capacity to offer more tailored pricing schemes, which can be extended to reward specific low-risk behaviors or advanced functionalities associated with EV users, including V2G integration.

In conclusion, these market-oriented insurance reforms—ranging from modular coverage options and infrastructure protection to assistance services and behavioral incentives—could significantly reduce the long-term cost burden of e-PC ownership. In parallel, government-insurer partnerships could be explored to develop a risk-sharing compensation pool for EV repair claims, thereby encouraging private insurers to expand offerings in this emerging segment without overpricing policies. Such a multifaceted strategy would improve affordability and stimulate broader EV adoption under Hong Kong's low-carbon transition agenda.

Overall, the first alternative of increasing financial incentives for e-PCs in Hong Kong focuses on addressing the various cost factors that influence consumers' purchase intentions. Key recommendations include:

- Adjusting taxes to raise registration fees for high-emission vehicles while reducing them for EVs, thereby lowering purchase costs and encouraging a shift towards e-PCs.
- Implementing V2G technology is proposed to enable EV owners to save on charging costs and profit from selling excess energy back to the grid. Additionally, supporting battery recycling initiatives and fostering independent repair markets can help mitigate maintenance and battery replacement expenses.
- Optimizing the insurance system, through tailored coverage options and discounts for V2G users, is also essential for reducing overall insurance costs.

These measures aim to enhance the financial attractiveness of EV ownership, promoting broader adoption while aligning with Hong Kong's market-oriented governance principles.

4.2 Enhancing Accessibility for Charging Facilities

While increasing financial incentives is crucial for promoting e-PCs in Hong Kong, equally important is the development of a robust charging infrastructure that supports the large-scale adoption of EVs. As highlighted in the policy problems section, the current number and distribution of charging stations in Hong Kong underscores the urgent need for infrastructure expansion. A well-adapted charging infrastructure is essential for alleviating consumer concerns about accessibility and convenience, ultimately fostering greater confidence in EV ownership.

All our interviewees mentioned that without convenient charging access, many users may hesitate to adopt EV. The scarcity of private chargers has discouraged potential EV consumers. Additionally, the low charger-to-EV ratio and uneven distribution of public chargers also indicate that the current public supply is unable to meet growing demand. There is a significant gap between demand and supply of charging facilities. In order to equalize this gap, the urgent task is to increase the supply of charging facilities. To address these challenges, we propose several improvement measures that can be implemented for both public and private charging solutions.

4.2.1 Adding Chargers at Existing Public Charging Networks

To effectively expand the public charger network, incrementally augmenting the number of chargers at existing public stations presents a strategic approach. This method ensures harmony with grid capacity constraints and evolving usage trends, allowing Hong Kong to optimize resource distribution while anticipating future demands.

In Hong Kong, the scarcity of available land and the complexity of infrastructure development pose significant challenges. Erecting new public charging stations in densely populated areas would entail protracted negotiations and exorbitant investments in land acquisition. Adding additional chargers at existing charging stations, which have already been strategically located in high-traffic zones with established demand, offers a more practical alternative. By increasing the number of chargers at these sites, the city can efficiently meet escalating needs without the arduous process of securing new land parcels, thereby saving the government from bearing substantial fixed costs.

The government's proactive efforts in improving charging accessibility are already underway. During an interview, Mandy, a member of the Central and Western District Council, shared that the Hong Kong government has set up a relevant working group. This group is actively negotiating with parking lot owners who have existing charger installations, including companies like Bank of China (Hong Kong). The aim is to make some of these chargers accessible to the public while ensuring that the original usage requirements are not affected. This insights also inspired us for the exploration of more flexible charging solutions, such as mobile chargers, to further enhance the city's charging infrastructure.

Box 4. An innovative measure in the Hengqin-Macao Deep Cooperation Zone of Zhuhai

In Hengqin, intelligent mobile chargers have been deployed, enhancing convenience for electric vehicle owners. After subscribing the official WeChat account "Qin Yi Ting", these chargers can autonomously navigate the parking area by using related navigation service of "Qin Yi Ting". Once a vehicle is parked, staff remotely position the charger next to it. The EV owner simply scans a QR code and connects the charging gun, with an average charging time of about an hour (Zhuhai Special Administrative Region Newspaper, 2023).

These intelligent chargers offer several advantages. They operate independently of the power grid, utilizing battery storage to recharge overnight and reduce peak load. A fully charged one can service 3-4 EVs. Their flexibility allows deployment in high-traffic areas, easing queueing during peak times and addressing the shortage of fixed charging stations. Additionally, they can serve as emergency power sources.

Meanwhile, connected to a data platform, staff can monitor the chargers in real-time, enhancing management and operational efficiency. Future integration with the "Qin Yi Chong" mini-program aims to unify parking and charging resources, improving the green travel experience for residents.

These chargers represent a new solution for electric vehicle charging, reflecting efforts to optimize infrastructure and promote a sustainable lifestyle.

The integration of mobile chargers in Zhuhai has proven to be an effective measure, and this model holds great promise for Hong Kong due to several key factors. Geographically, Hong Kong is characterized by its compact urban layout with a high concentration of population and vehicle traffic in specific areas. Moreover, land use negotiations are often time-consuming and costly, mobile chargers offer a convenient workaround. They eliminate the need for extensive land acquisition and related infrastructure development, thereby significantly reducing the government's fiscal burden.

Moreover, Hong Kong's transportation network, with its extensive road systems and well-connected public transport, also supports the movement of mobile chargers. Mobile chargers can be easily transported and stationed in these high-demand zones, such as the central business districts during weekdays and popular shopping and entertainment areas on weekends. This mobility allows for a more dynamic response to the fluctuating charging needs across different times and locations in the city without the constraints of fixed-location infrastructure.

In terms of cost-effectiveness, the initial investment and operational costs of mobile chargers are relatively lower compared to building new stationery charging stations. Hong Kong can leverage its existing technological and logistical capabilities to manage a fleet of mobile chargers. For instance, using digital platforms and real-time data analytics, the location and availability of mobile chargers can be easily monitored and communicated to EV users. This not only improves the user experience but also enhances the overall efficiency of the charging infrastructure. Meanwhile, logistics for relocating and maintaining these chargers can be efficiently managed, ensuring that they are always available where and when needed.

These mobile chargers serve as a flexible addition to the public charging supply, alleviating concerns about charging accessibility. Nevertheless, the successful implementation of these strategies hinges on the collaborative efforts of the government, electricity suppliers, and private sector stakeholders. The government should collaborate closely with electricity providers to secure the necessary power reserves for increased mobile chargers and additional chargers at existing stations. To conclude, by prioritizing the expansion of charging capacity at existing locations, Hong Kong can efficiently enhance its public EV charging network while ensuring a cost-effective approach to meeting the city's growing demand.

4.2.2 Improving the Density and Number of Private Chargers by Raising Funds

In the previous section, we discussed the method of increasing the number of public chargers, which are often installed near office buildings or large shopping malls. However, to support the growing demand for charging, especially in completing the Government's goal of installing 200,000 charging infrastructures throughout the city, the construction of private chargers is more crucial. The importance of private charging access is well illustrated by Professor Naubahar Sharif, who is an early EV adopter we interviewed. Reflecting on his experience, he noted:

> *"At that time, I did not have a private charging port, and my main learning from that very original experience 12 years ago is that if you want EVs to make sense for you, to be worthwhile for you, you must have your own private, dedicated charging spot. So then, I worked with my apartment complex building management company to install a dedicated charging spot and charging infrastructure. After that, I switched to a Tesla, and I only made the switch when it was clear that I could rely on my own charging station."*
>
> —— *EV owner, University Scholar, Prof. S*

This perspective highlights a critical barrier to EV adoption: without convenient private charging access, many potential users may hesitate to make the transition. Encouraging property management companies and residential complexes to facilitate private charger installations will be a key step in accelerating EV adoption in Hong Kong.

Homes should be the primary location for a well-designed and comprehensive charging infrastructure, and their numbers must significantly increase. Beyond quantity, the distribution of these private chargers is equally important. In a densely populated urban environment like Hong Kong, where space is limited, the strategic placement of chargers is vital. Thoughtful distribution not only alleviates range anxiety—a common concern among potential EV users—but also plays a key role in promoting widespread EV adoption, which is essential for a more sustainable transportation future.

To develop a comprehensive and sustainable private charging network, Hong Kong must integrate strategic planning with targeted incentives and market-driven solutions. Building on the momentum of recent advancements, where developers and the government have begun integrating charging facilities into new developments, further efforts are necessary to accelerate this transition. Many new developments now include a designated number of parking spaces with EV charging facilities, but additional measures are needed to expand private charging access and encourage widespread EV adoption. To achieve this, a dual approach is necessary: strengthening government support for private chargers and fostering private sector involvement in EV charging infrastructure.

In addition to maintaining its current policy of mandating EV charging facilities in new developments, the government should introduce direct financial incentives to encourage private charger installations. These incentives could take the form of subsidies or grants that lower the upfront costs associated with purchasing and installing chargers at home or in commercial properties. Given the fiscal constrain of Hong Kong government, we suggest that the government raise funds from the market to relaunch and sustain private charger subsidy schemes, thereby assisting consumers in installing their own chargers. This approach empowers individuals to take the initiative in establishing private charging solutions. By making EV ownership more convenient and appealing, the government can effectively stimulate demand and facilitate the broader adoption of electric vehicles.

Moreover, improving both the number and density of private chargers is essential, particularly given that 60% of people in Hong Kong work across different districts (Hong Kong Census and Statistics Department, 2021). This mobility underscores the need for a comprehensive charging network that meets the diverse needs of residents and commuters alike. To avoid creating new barriers to EV adoption, it is vital to balance the actual needs among various districts. Areas with high concentrations of EV owners should be prioritized for charging installations, ensuring that charging infrastructure is readily accessible where it is most needed. Therefore, fostering private sector involvement is indispensable for creating a robust and sustainable EV ecosystem.

To be specific, the funds raised can also serve as financial incentives, encouraging more companies to enter this industry and provide installation services. To accelerate market participation, the government could establish a fast-track licensing system for certified charging service providers. Especially streamlined approvals for private housing estates with existing electrical capacity reserves, reducing bureaucratic barriers for qualified enterprises. Simultaneously, creating district-specific installation quotas based on real-time EV registration data would guide rational industrial distribution.

Enhancing accessibility to charging facilities is crucial for the widespread adoption of EVs in Hong Kong. It is important that incrementally increasing chargers at existing public stations and introducing mobile chargers to address accessibility concerns in densely populated areas.

Additionally, strengthening support for private charging infrastructure through financial incentives and market funds can empower individuals to install their own chargers, improving convenience for EV owners. By focusing on the density and strategic placement of private chargers, Hong Kong can effectively meet the diverse needs of its residents and commuters, fostering a robust EV ecosystem and facilitating a smoother transition to its 2050 goal.

4.3 Refining Advertisement Strategy for EV Adoption

Despite significant growth in the EV market where the share of new private car registrations rose, information gaps persist, hindering broader acceptance. Current advertising efforts have not successfully conveyed the key benefits of EVs, as surveys indicate consumers often overestimate costs while underestimating savings and remain confused about charging options, despite infrastructure improvements. The focus on technical specifications rather than relatable advantages, combined with underutilized digital platforms and missed experiential marketing opportunities, has led to unnecessary range anxiety and low awareness of available subsidies. These communication deficiencies pose a serious constraint on EV adoption, as highlighted by the disconnect between Hong Kong's robust policy framework and the sluggish consumer response.

Therefore, raising awareness and providing clear, accessible information about e-PCs is key to driving adoption in Hong Kong. Factors like cost, charging infrastructure, and incentives shape consumer perceptions and influence decisions. Since buyers rely on available information, effective advertising is a powerful tool to address misconceptions and boost confidence. To achieve this, the advertising strategy needs to be refined.

First, the content of advertisement should highlight key advantages of EVs, including cost savings, charging availability, vehicle performance, government incentives, and environmental impact, which have been examined in literature review. Second, the format of content plays a crucial role in making information engaging and easy to understand. Whether highlighting cost efficiency, environmental benefits, or performance improvements, clear messaging helps potential buyers grasp the advantages of e-PCs. Third, the depth of advertising dissemination also impacts adoption. In order to reach more potential consumers, personal testimonials from real EV owners, whether everyday drivers or public figures, help build trust and credibility. Hearing firsthand experiences can reduce skepticism and encourage more consumers to make the switch. Fourth, the breadth of advertising dissemination determines how well information reaches different audiences. A multi-channel approach ensures widespread outreach and enhances social engagement.

By integrating these aspects in advertising strategy, Hong Kong can effectively motivate the public and address their concerns, making e-PCs a more attractive and viable choice. The following sections explore the second, third, fourth advertising strategy in greater detail.

4.3.1 Using Quantitative Label Design to Clarify the Advantages of EVs

Drawing on insights from research of Camilleri and Larrick (2014), we propose a labeling strategy to promote EVs at dealerships, emphasizing their cost benefits and environmental advantages to make these benefits more tangible

and compelling for consumers. We have designed two sets of labels (Figures 13 and 14) to enhance clarity and ease of understanding.

In Hong Kong, where fuel prices and maintenance costs for ICE vehicles are significantly higher, EVs offer substantial long-term savings. Although the upfront cost of an EV may appear higher, the total cost of ownership, including electricity, fuel, and maintenance, is often lower over the vehicle's lifetime. To focus on this advantage, for example, a label (label B in Figure 13) could show that while an EV might cost HK 300, 000 upfront, its total cost over 10 years (including fuel and maintenance) could be HK 400,000, compared to HKD720,000 for an ICE vehicle. This transparent presentation of cost benefits can address consumer concerns about upfront costs and highlight the economic advantages of EVs. Furthermore, the Hong Kong government's FRT policy and the "One-for-One" replacement scheme for e-PCs already alleviate some of the initial financial burden of purchase. By incorporating these incentives into the label design, consumers can see how government policies further reduce the effective cost of EV ownership, making EVs a more attractive and affordable option.

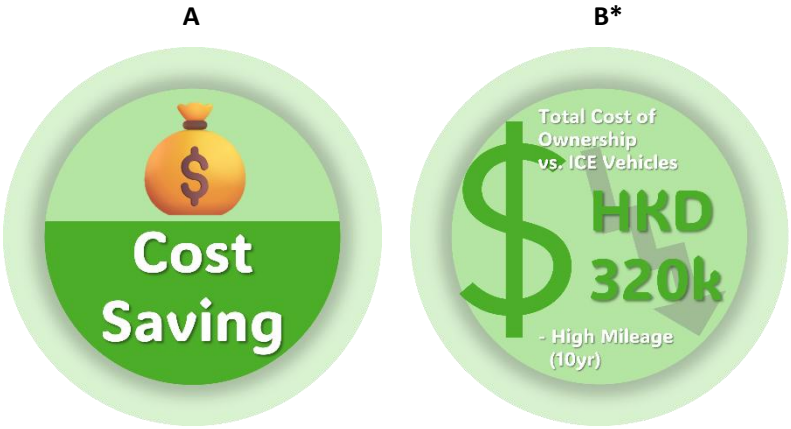

Figure 13. Schematic of our label design[3] to promote the aspect of lifetime cost savings of EVs

Beyond cost savings, EVs offer significant environmental benefits by reducing greenhouse gas emissions and air pollutants. Redesigned labels can clearly depict these advantages by comparing the lifetime CO_2 emissions of EVs and ICE vehicles. For instance, a label (label B in Figure 14) could state that driving EV can reduce 40% carbon emissions by the same amount as removing 500 ICE vehicles from the road. These quantitative comparisons help consumers understand the tangible environmental impact of choosing an EV.

[3] Label A emphasizes qualitative, descriptive statements to highlight the advantages of EVs, which is currently used as the common design format. Label B focuses on specific, quantitative data to illustrate the advantages of EVs. The actual amount (on Label B) may vary depending on various factors such as brand, model, etc. This number is selected here for demonstration from a range by our literature review and does not represent the real situation.

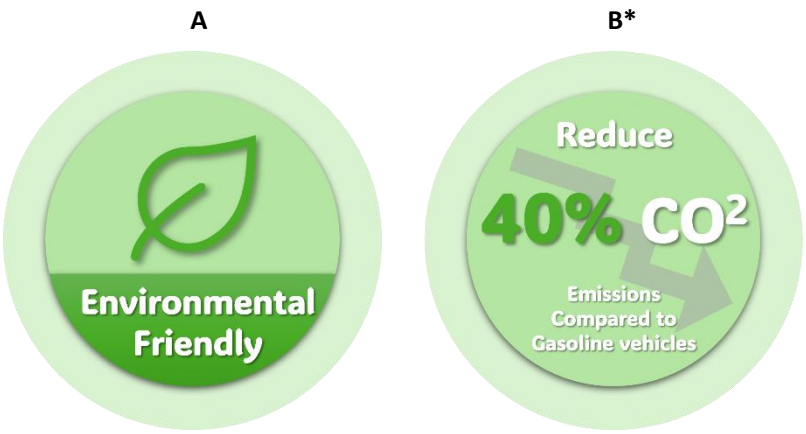

Figure 14. Schematic of our label design to promote environmental benefits of EVs

There are also many other characteristics of EVs for which labels can be designed in the form of quantitative data. By leveraging quantitative label design and information campaigns, we can make these benefits more tangible and compelling for consumers.

4.3.2 Utilizing the Power of Peer Influence

In order to accelerate the adoption of e-PCs in Hong Kong, leveraging peer influence can be a highly effective strategy, especially in the depth of advertisement dissemination. People are often more likely to trust and act on recommendations from individuals who have firsthand experience with a product, especially when those individuals are relatable and credible.

EV Owner Ambassador Program

The Government can create a formal EV Owner Ambassador Program that recruits enthusiastic EV owners to share their experiences with potential buyers. For example, Belgian government has teamed up with a local company to launch an EV ambassador program, sharing authentic owners experience (EVS Broadcast Equipment S.A., 2024). This approach could also effectively boost EV adoption in Hong Kong with manageable budgets. These ambassadors can be selected from diverse backgrounds, including professionals, families, and young adults, to ensure they resonate with a wide range of audiences. Ambassadors can be incentivized through perks such as free charging credits, exclusive access to EV events, or recognition in promotional campaigns. Their role would involve sharing their personal stories, demonstrating their vehicles, and answering questions from potential buyers at events, online forums, and social media platforms.

Meanwhile, relevant departments should encourage EV owners to share their experiences on social media platforms like Facebook, Instagram, and YouTube. Create a dedicated hashtag (e.g., #HKDrivesElectric) to identify these stories and make them easily discoverable. For example, ambassadors who trained by the Environment and

Ecology Bureau, can host monthly "EV Test-Drive Component" in shopping malls, demonstrating real-world EV use cases. By incorporating this event in Hong Kong, potential buyers could gain confidence in their purchasing decisions. Meanwhile, as incentives for ambassadors, a dedicated mobile app could integrate a referral tracking system where ambassadors earn points for successful peer conversions, redeemable for free charging credits or EV maintenance services.

Sharing with those potential EV consumers

When it comes to those potential EV consumers, online forums and local automotive communities can be utilized to facilitate discussions where EV owners can share tips, address concerns, and provide honest feedback to potential buyers. As an incentive, relevant departments and companies could develop a referral program that rewards both current EV owners and new buyers. For example, when an existing EV owner refers to someone who purchases an EV, both parties could receive incentives such as cash rebates, free charging sessions, or discounts on maintenance services. EV producers can also organize community-based test drive events where potential buyers can interact directly with EV owners. EV owners can demonstrate their vehicles, explain their personal experiences, and offer unbiased insights into the ownership process. This peer-to-peer interaction can help alleviate common concerns, such as range anxiety or charging infrastructure, by providing real-world perspectives.

By implementing these strategies, Hong Kong can effectively leverage peer influence and owner ambassadors to address common concerns, build trust, and inspire more residents to embrace EVs. This approach not only promotes EV adoption but also fosters a supportive and engaged community of EV enthusiasts, driving the city toward a more sustainable future.

4.3.3 Broadening Channels of Information Campaigns

To effectively broaden the channels of information campaigns and encourage more people in Hong Kong to purchase e-PCs, a multi-faceted approach leveraging digital platforms and traditional media is essential. Taking inspiration of the Electrify Expo, which is the largest EV festival hold in America provides a good example to enhance a wider social engagement.

Box 5. The Electrify Expo's Impact on Electric Mobility

The Electrify Expo is the largest EV festival in North America, showcasing a diverse range of electric vehicles, including cars, trucks, bikes, and scooters. Held in various cities across the U.S., the expo serves as a comprehensive platform for manufacturers, enthusiasts, and consumers to come together and explore the latest advancements in electric vehicles (Electrify Expo, 2025).

One of the standout features of the Electrify Expo is its interactive format, which encourages hands-on experiences. Attendees have the opportunity to test drive various electric vehicles, allowing them to experience firsthand the performance and benefits of e-PCs. This experiential approach not only demystifies electric vehicle technology but also fosters a deeper connection between consumers and the products.

The expo also features a series of informative panels and discussions led by industry experts, covering topics such as the future of electric mobility, advancements in battery technology, and the environmental impact of electric vehicles. These sessions provide attendees with valuable knowledge and insights, addressing common concerns and misconceptions about EVs.

Another significant aspect of the Electrify Expo is its emphasis on community engagement. The festival attracts a wide audience, including families, environmental advocates, and automotive enthusiasts, fostering a sense of community around electric mobility.

In summary, the Electrify Expo exemplifies how a well-structured event can effectively promote electric vehicles and engage the community awareness about e-PCs, including hands-on experiences, educational discussions, and community outreach, and ultimately drive higher adoption rates.

By highlighting the importance of sustainability and the benefits of electric transportation, the Electrify Expo provides valuable insights that can serve as a model for similar initiatives in Hong Kong. To be specific, social media platforms such as Facebook, Instagram, and YouTube serve as powerful tools for engaging potential e-PC buyers. Creating compelling multimedia content—such as short-form videos highlighting EV's advantages, including cost efficiency, reduced maintenance, and environmental benefits—can capture consumer interest. A dedicated YouTube series featuring real-life e-PC owners navigating Hong Kong's urban landscape, tackling common misconceptions (such as charging accessibility), and sharing cost-saving experiences can build trust and relatability. Moreover, interactive social media posts addressing frequently asked questions—such as battery lifespan, charging network expansion, and government incentives—can demystify concerns and encourage informed decision-making. Hong Kong's vibrant online automotive and environmental communities can be engaged through expert Q&A sessions and live discussions, ensuring that accurate and up-to-date information reaches a highly targeted audience.

Despite the growing dominance of digital media, traditional channels such as television, radio, and print remain vital for reaching broader demographics, including older consumers and those less active online. Strategic placement of TV commercials and radio advertisements—particularly during peak evening time and commute hours—can emphasize financial savings, energy efficiency, and environmental impact reduction, resonating with everyday drivers. Print media, including local newspapers and automotive magazines, should feature in-depth

articles analyzing Hong Kong's e-PC market trends, real-life case studies of successful EV adopters, and expert opinions on the future of sustainable transportation. This not only informs but also reassures potential buyers, reinforcing the long-term advantages of switching to e-PCs, which provide a platform to bring together experts, policymakers, and consumers to discuss the local e-PC landscape and the importance of sustainable transportation.

This is a well-rounded approach that combines digital innovation and traditional media outreach, which ensures that the benefits of EVs reach a diverse and wide-ranging audience. By implementing these suggestions, Hong Kong can effectively broaden its information campaigns, address consumer concerns, increase awareness, and ultimately drive higher e-PC adoption rates.

4.4 Summary of Alternatives

Accelerating the adoption of e-PCs in Hong Kong requires a comprehensive strategy addressing financial, infrastructural, and advertising challenges. Looking back on this section, we outline key alternatives to create a more supportive EV ecosystem (Table 7).

Table 7. Key Points of Alternatives

Addressing factor	Key Strategies
Financial Incentives	▪ Higher taxes on ICEs, V2G tech, optimized EV insurance.
Charging Accessibility	▪ Expand public and private chargers, optimize placement.
Strategic Advertising	▪ Use diverse formats for clear, persuasive messaging.

By integrating these policy alternatives, Hong Kong can accelerate e-PC adoption, strengthen EV infrastructure, and drive long-term sustainability, positioning itself as a leader in clean transportation. In order to verify whether these alternatives actually meet the needs of consumers, we will further evaluate them through following regression analysis.

5 EMPIRICAL RESULTS

Having explored the various policy alternatives aimed at enhancing EV adoption in Hong Kong, it is essential to ground these proposals in empirical evidence. This chapter presents the research results derived from the mixed methods approach introduced in Chapter 3, which combines both quantitative and qualitative analyses. These findings illuminate the current development challenges facing electric private cars in Hong Kong and evaluate the factors influencing their adoption. Building upon these insights, the research team conducted a trade-off analysis of the previously proposed policy alternatives, optimizing recommendations to further accelerate the popularization of electric vehicles.

5.1 Qualitative Results

This qualitative study employed an inductive thematic analysis approach to explore main barriers and challenges of electric vehicles (EVs) in Hong Kong. As mentioned in the methodologies section, the analysis of the 5 interview transcripts resulted in 20 categories, naturally grouped into seven themes. The detailed codebook can be found in the Appendix I.

Challenge 1: Charge

This theme typically reveals the main problems currently faced by electric private vehicles in Hong Kong, such as the insufficiency of various charging facilities and the resulting long charging time. Given that the lack of charging infrastructure is widely recognized barriers to EV adoption, this theme was the most frequently mentioned (n=15) in the interviews, reflecting public concern over both the availability and efficiency of charging options. This issue is particularly acute in densely populated districts, where access to parking itself is limited, let alone access to chargers.

Under this theme, several codes emerged. “Private/Public Charging Facility” captures frustration over limited access to chargers in both residential areas and public spaces. In private residential areas, the renovation of charging facilities is technically difficult and costly, while public parking lots lack the necessary wiring or physical space for installation. “Fast Charging” points to dissatisfaction with the lack of fast charger which lead the long charging times, especially compared to the convenience of petrol refueling. Meanwhile, “Mile Range” reflects anxiety about whether current EV models can support common commuting patterns without frequent recharging.

> *"The charging facilities are not well equipped. In the Central and Western Districts, there are usually only 4 to 5 parking lots with charging facilities, and they are often fully occupied throughout the day. Meanwhile, the charging speed of the charging facilities is low, with only 10-20% of them being fast charging facilities... The best solution is to have one's own private charging facilities, but this cannot be achieved in Central and Western Districts."*
>
> —— *Councilor of Central and Western District, Ms. M*

Challenge 2: Market

The second theme portrays some obstacles that electric private vehicles in Hong Kong are facing in the market, with 8 frequency references. For instance, Participants raised issues such as market diversity and the conduct of market data research, etc. This mainly includes two aspects. First, there are not many brands and models of electric vehicles in the Hong Kong market, especially when compared with the mainland market. Secondly, when the government investigates the current market supply and demand situation of charging facilities to lay a solid foundation for the future addition of charging facilities, it faces some difficulties in its implementation. Without solid survey data, policy becomes reactive rather than strategic — for example, installing chargers in locations that don't align with actual demand patterns.

> *"Maybe having more variety of cars now is probably… having a wide variety of choice is probably the challenge, because if you go to Shenzhen or Guangzhou, you will see the number of models of EVs is tremendous, is far greater than the number of models of EVs in Hong Kong."*
>
> —— *EV owner, University Scholar, Prof. S*

> *"It is still necessary to conduct research and find data. This is the top priority. Without data, it is impossible to make any progress. There must be data as the basis for action. When we, as district councilors, communicate with government departments, we always ask them to come up with a timetable. Which tasks should be accomplished as soon as possible, where there is a shortage and where there is a surplus?... Just having those ideas is not enough."*
>
> —— *Councilor of Central and Western District, Ms. M*

These concerns reveal a market-policy disconnect, while the government is pushing EV adoption, the market supply, choice, and data infrastructure is not yet mature enough to support sustained growth.

Challenge 3: Fiscal burden

This theme illustrates a growing sense of financial uncertainty surrounding EV-related incentives in Hong Kong, which shows 6 frequencies. A major concern was the limited scope and exhaustion of subsidies for charging installation (e.g., EHSS program), especially in housing estates. The "Charger Installation Subsidies", particularly under schemes like the EHSS, were seen as insufficient and already depleted. Participants pointed out that the high application volume, coupled with slow or opaque approval processes. This has led to many property owners who have already applied for funds having their projects temporarily at a standstill. Participants also noted the absence of electricity subsidies and uncertainty regarding the continuation of existing tax benefits, contributing to financial hesitancy.

> *"The EHSS has run out of funds. Some housing estates were unable to implement installations in time. Although many applied, the allocated budget has been fully used. We currently face a funding shortfall."*
>
> —— *Legislative Council Member, Shipping and Transport Sector, Mr. F*

Other Challenges: Recycle, Approval Procedure, Technician Personnel, and Advertisement

In addition to the three dominant themes discussed above, four other themes emerged from the interview data, albeit with lower frequency. These themes—Recycle, Approval Procedure, Technician Personnel, and Advertisement—were mentioned less often, but they still offer valuable insights into the multifaceted challenges of EV adoption in Hong Kong.

For recycle, this theme reflects environmental concerns surrounding the life cycle of electric vehicles, especially the management of used batteries and component waste. Although only mentioned 4 times, participants voiced confusion and skepticism over whether there are adequate systems in place to recycle EV batteries in a safe and sustainable manner. The lack of clear government guidance or public information in this area raises doubts about the long-term environmental benefits of EVs—ironically undermining one of their core value propositions. Therefore, if Hong Kong is to vigorously develop electric vehicles in the future, it must deal with the recycling problem of electric vehicles by itself.

Participants also highlighted bureaucratic inefficiencies in EV infrastructure development, particularly the approval processes for land use and funding. These issues reflect broader urban planning constraints unique to Hong Kong, underscoring the importance of streamlining inter-agency collaboration. This theme pointed to coordination gaps between government departments and the slow pace of administrative approvals, which delay the installation of public charging facilities.

A less frequently discussed, but still notable, concern was the shortage of trained professionals. With three mentions, this theme captured issues related to service availability, and technical support accessibility. This shortage was reported to negatively impact maintenance quality and business operations, indicating a pressing need for capacity building in this area.

Finally, the theme of advertisement, though mentioned only twice, touches on a critical public communication gap. As participants mentioned, the current policy promotion focus on Hong Kong is not on electric vehicles, so the promotion efforts are insufficient, especially face-to-face promotion. Moreover, with the issues of charging infrastructure and market diversity, the space for the development of advertising is relatively small. This indicates that public communication is currently reactive and constrained by existing weaknesses, rather than proactively shaping the EV narrative. In this context, strategic and localized advertising—particularly through in-person engagement—could serve as a catalyst to unlock broader behavioral change, correcting misconceptions and building public confidence in EV adoption.

Overall, the inductive thematic analysis reveals that the most pressing challenges to EV adoption in Hong Kong revolve around inadequate charging infrastructure, limited market diversity, and fiscal uncertainty—each of which emerged strongly and consistently across participant interviews. At the same time, less frequently mentioned themes, such as battery recycling, administrative inefficiencies, workforce shortages, and weak promotional efforts—shed light on equally important but often overlooked dimensions of the EV adoption. All in all, these findings indicate that the electric vehicle industry is confronted with a complex situation where challenges in infrastructure, market and fiscal are intertwined. Although policymakers have fully recognized some obstacles, others, especially those related to long-term sustainability and public participation, require greater attention. Addressing these multi-faceted issues in a coordinated and forward-looking manner is crucial for achieving a more inclusive and rapid electric vehicle transformation in Hong Kong.

5.2 Quantitative Results

This section presents the quantitative findings derived from the questionnaire survey. It consists of two parts: first, a descriptive statistical analysis summarizes key characteristics of the dataset, including the ranking of influencing factors that affect electric private car (e-PC) adoption, and the distribution of the dependent variable used in the subsequent regression analysis. This provides a foundational understanding of respondent attitudes and preferences. Second, the results of the logistic regression model are presented to examine how different variables statistically influence the likelihood of adopting an e-PC. Together, these analyses offer both a general overview and deeper empirical insights into the possible improvement strategies of e-PC adoption in Hong Kong.

5.2.1 Descriptive Statistical Analysis for Questionnaire

The study has received a total of 112 responses. The descriptive statistics of this study are mainly divided into two parts. Firstly, it is the survey ranking of the influencing factors of Hong Kong consumers' purchase of electric private cars. In addition, it is about the distribution of the dependent variable of this logistic regression.

Key Factors Influencing EV Purchase (5-point scale)

In the investigation of the influencing factors, as mentioned in the methodology section, the questionnaire asked the respondents to rank the following six factors 1) charge accessibility, 2) cost, 3) vehicle performance, 4) environmental advantages, 5) peer or social pressure and 6) advertisement on a scale of 1 to 5, with 5 being the most important and 1 being the least important. Figure 15 below shows the respondents' ranking result.

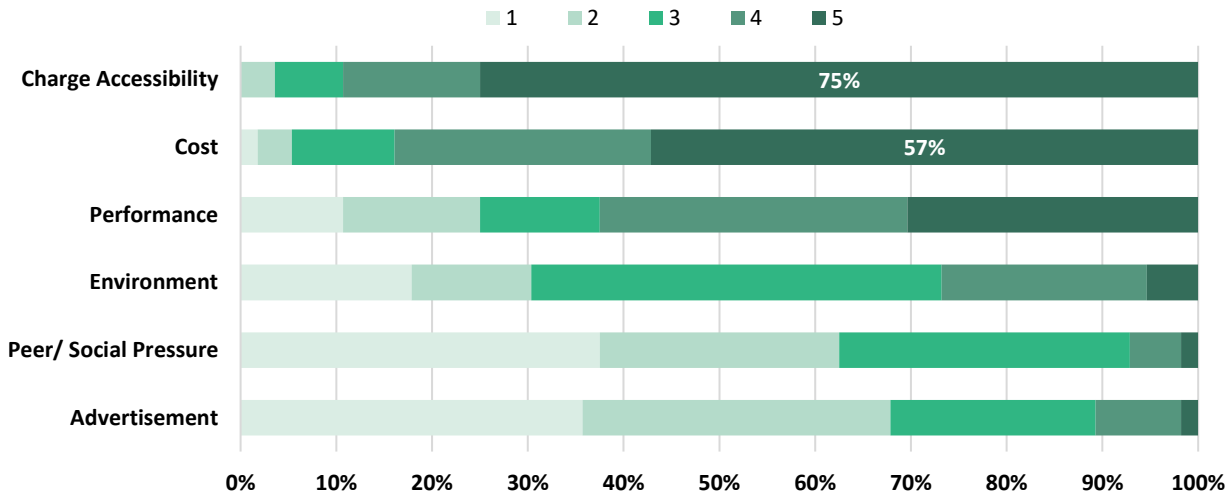

Figure 15. Respondents' ranking result of factors

From the results, it can be found that the vast majority of respondents regarded charge accessibility and cost as the most important factors. There are 75% of respondents rated "Charge accessibility" as 5 (most important). This strong consensus indicates that the availability and convenience of charging infrastructure remain central concerns for potential adopters in Hong Kong. Following this, there are 57% of respondents rated "Cost" as 5 (most important).

Vehicle performance was moderately emphasized, with a significant portion of respondents assigning it a score of 4, indicating that functionality, reliability, and range remain meaningful but not dominant considerations. Environmental factors received a more evenly distributed response across the scale, indicating mixed perceptions about the role of sustainability in purchase decisions—it may matter to some, but it is clearly not the top priority

for most. Social influence factors, such as peer or social pressure, and advertisement, ranked the lowest overall, with the majority of respondents placing them at 1 or 2 (least important).

Therefore, if take each of these factors and calculate their average scores based on the scoring of the respondents (1 to 5), it can still be concluded that charge and cost are the factors of the top concern. The specific results are in table 8 below.

Table 8. Average score of influencing factors

Influencing Factors	Average Score
Charge Accessibility	4.6
Cost	4.3
Performance	3.6
Environment	2.8
Peer/ Social Pressure	2.1
Advertisement	2.1

Dependent Variable: EV Purchase Interest (evinterest)

The dependent variable **evinterest** is a binary indicator of respondents' intention to adopt electric vehicles (EVs). The study judges whether the respondent has the interest in buying an EV based on two questions, whether they currently own an EV or whether they will buy one in the future.

The study judges these two situations respectively through two questionnaire questions: "If you currently own any vehicles, including EVs and ICE vehicles?"; "If you do not currently own an EV, will you consider purchasing one in the coming years?". This means that the respondents were classified as "interested in EVs" if they already owned an EV (selected "Yes, and my vehicle is an EV" in the current ownership question), or they did not own an EV but expressed willingness to consider purchasing one in the future (answered "Yes, I would consider" to the future purchase question).

Meanwhile, respondents were classified as "not interested" if they neither owned an EV nor planned to consider one (answered "No, I would not consider" and did not currently own an EV). The distribution situations of the two questionnaire questions are shown below.

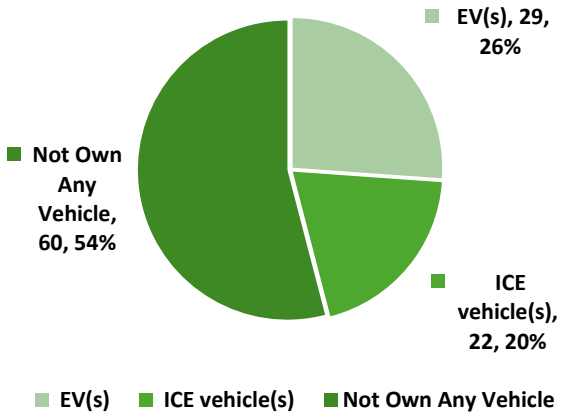

Figure 16. Respondents' current vehicle ownership status

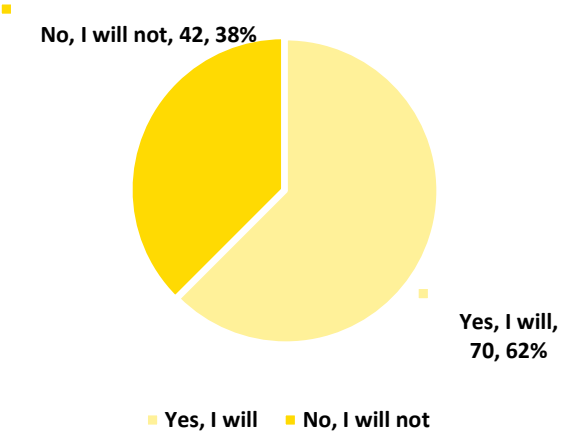

Figure 17. Respondents' willingness to purchase an EV in the future

When the answers to these two questions are combined, finally, 63% of the respondents exhibited EV purchase interest, reflecting a strong inclination toward EV adoption in the sample.

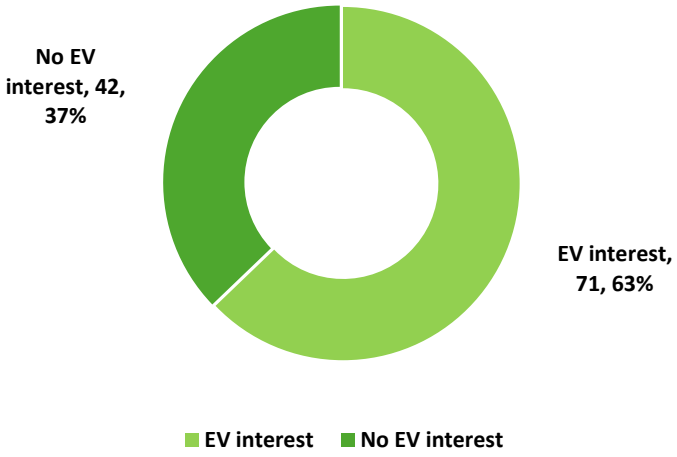

Figure 18. Respondents' EV interest

5.2.2 Logit Regression Results and Interpretations

Before proceeding with the regression analysis, we examined the correlation matrix to assess potential multicollinearity among the independent variables (see details in Figure 19). As shown in the results, there is a particularly high correlation among the economic subsidy related variables, such as $Subsidy$ and $ICETax$ (r = 0.72). These high coefficients indicate a risk of multicollinearity, which could distort the estimates and interpretations of the regression model.

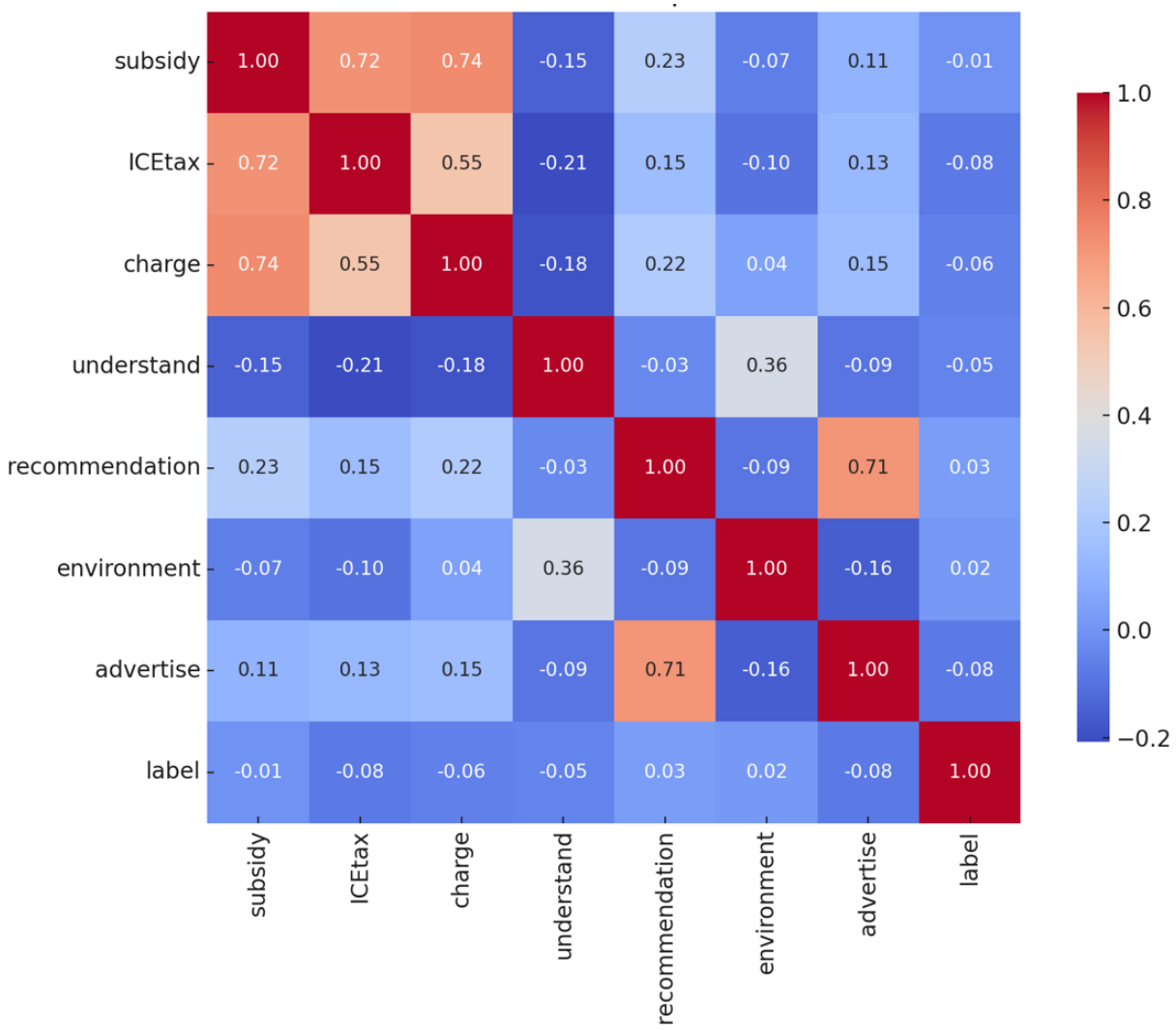

Figure 19. Correlation matrix of independent variables

To address this issue and reduce dimensionality while preserving the explanatory power of these related variables, we applied Principal Component Analysis (PCA) to combine the original independent variable $Subsidy$ and $ICETax$ into a new comprehensive index of $Policy\_incentives$ to eliminate collinearity (including both the direct incentive method of increasing purchase subsidy and the indirect incentive method of increasing ICE tax and registration fee). Therefore, the new logistic regression equation is below:

$$Logit\big(P(Y=1)\big) = \beta_0 + \beta_1 Policy\_incentives + \beta_2 Electricity + \beta_3 Charge + \beta_4 Understand + \beta_5 Recommendation + \beta_6 Environment + \beta_7 Advertise + \beta_8 Label + \gamma C + \epsilon$$

The result of logistic regression is as follows (Table 9):

Table 9. Logistic regression results: Coefficients of influencing factors

VARIABLES	(1) evinterest	(2) evinterest
policy_incentives	0.837**	1.008**
	(0.373)	(0.411)
electricity	-0.986**	-1.028**
	(0.462)	(0.469)
charge	0.594	0.597
	(0.394)	(0.424)
understand	1.160**	1.348**
	(0.582)	(0.625)
recommendation	0.629**	0.703**
	(0.321)	(0.345)
environment	0.434	0.727**
	(0.286)	(0.341)
advertise	0.625*	0.837**
	(0.354)	(0.385)
label	1.184*	1.183*
	(0.612)	(0.692)
is_male		0.492
		(0.555)
age		-0.0417
		(0.296)
income		-0.568**
		(0.282)
Constant	-3.991**	-3.973*
	(2.012)	(2.139)
Observations	112	112

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The first model (Model 1) includes only policy and perception-related variables. The results show that $Policy\_incentives$ has a positive and statistically significant effect (β = 0.84, p = 0.025) on the likelihood of expressing adoption interest, with an odds ratio of 2.31. This indicates that a one-unit increase in the strength of policy incentives more than doubles the odds of respondents being interested in adopting an e-PC, holding other variables constant. This finding underscores the critical role of coherent and attractive incentive policy such as increasing ICE tax fees and increasing EV purchase subsidies—in driving consumer interest and shaping adoption behavior. The second regression model (Model 2) included additional demographic control variables (gender, age group, and income bracket) to test whether personal characteristics modified the effects observed in the first model. The results were broadly consistent. The $Policy\_incentives$ coefficient increased slightly to 1.0076 (p = 0.014), with the odds ratio increase to 2.74, reinforcing the robustness of its predictive power.

In addition, the respondent's understanding of EV-related subsidy policy, represented by the variable $Understand$, had a significant positive association with adoption interest. In both models, the effect was statistically significant (p = 0.046 and p = 0.031, respectively), with a notably high odds ratio in Model 2 (OR = 3.85). This finding suggests

that improving public understanding and knowledge of relative subsidy policy—such as First Registration Tax Concessions, the "One-for-One Replacement" Scheme —may directly increase the likelihood of adoption.

The variable $Recommendation$ and $Advertise$ both showed a positive and significant impact with EV interest in both models. This indicates that in a market like Hong Kong, both peer recommendations and related marketing and promotion activities also play a role in shaping people's interest in electric vehicles. Therefore, leveraging community recognition, genuine user experience, and strategic advertising campaigns both online and offline can enhance consumer awareness and have a positive impact on attitudes towards the popularization of electric vehicles.

Moreover, the variable $Label$, which refers to the use of quantified information in advertising. Although the significance of this variable was relatively weak in both models (with a p-value of only less than 10%), it still indicates that information cues such as quantitative labels may contribute to the formation of consumer preferences. Integrating the quantitative labeling solution more intuitively into the purchasing platform or advertisement may have a subtle impact on decision-making.

The variable $Electricity$, which captures the perception of electricity subsidy, showed a consistently negative and statistically significant effect across both models. This might be because, first of all, the questionnaire participants might not trust the sustainability of electricity subsidies. Secondly, consumers may be more sensitive to upfront costs, infrastructure availability or other perceived risks. Therefore, electricity subsidies are not within the priorities of consumers.

For the variable $Charge$, although no statistical significance was shown in either of the two models, it's possible that most respondents rated charging infrastructure expansion positively, resulting in low variation in responses. Logistic regression depends on variation to detect predictive patterns. If nearly everyone agrees this is important, then this variable won't explain much difference in who is interested vs. not interested in e-PCs. Furthermore, the importance of the accessibility of charging facilities has also been demonstrated in the qualitative research.

Regard controls, Among them, $income$ was the only statistically significant predictor (p = 0.044), showing a negative relationship with adoption interest. This implies that lower-income respondents may be more interested in e-PCs, possibly due to their sensitivity to running costs or their responsiveness to government incentives. In contrast, gender (is_male) and age did not have statistically significant effects on adoption likelihood, suggesting that interest in e-PCs is not strongly differentiated across these demographic lines in the current sample.

Overall, the research results emphasize the importance of policy incentives in shaping consumer preferences. Moreover, The advertisement of EVs and related subsidy policies are also crucial for enhancing the purchasing interest of Hong Kong consumers in EVs. Other factors, such as charging infrastructure, although visually important, did not show a statistically significant impact in this analysis.

5.3 Tradeoff Analysis for the Result Policy Alternatives Selection

To systematically evaluate and prioritize policy alternatives, as the final part of empirical result, our study employs a tradeoff analysis based on two key criteria: statistical significance and frequency of theme. To be specific, statistical significance is measured by whether this alternative is statistical significance on our quantitative result if is get 1 score otherwise get 0. Meanwhile, the frequency of theme is measured by how frequently this theme is mentioned in our interviews, the most frequent theme gets 2 score, the next frequent gets 1 and the least mentioned gets 0. These criteria ensure a balanced assessment that integrates both empirical validity and policy relevance, addressing the limitations of relying solely on quantitative or qualitative measures.

Three alternatives have been evaluated regarding their potential impact on promoting EVs. The first alternative, enhancing tax and registration fees on ICE vehicles, shows significant empirical support but receives moderate attention in discourse. The second alternative, scaling and optimizing charging infrastructure, lacks sufficient empirical validation, yet it is the most frequently cited theme in discussions. Lastly, enhancing government advertising strategies for EVs also demonstrates significant empirical support, although it has received limited attention in the current discourse. Overall, the evaluation result is shown in Table 10.

Table 10. Trade off result

Alternatives	Statistical Significance	Frequency of Theme	Total Score
Alternative 1: Enhance Tax and Registration Fee on ICE Vehicles	1	1	2
Alternative 2: Scale Up and Optimize Charging Infrastructure	0	2	2
Alternative 3: Enhance Government Advertising Strategies for EV	1	0	1

The tradeoff analysis supports the selection of both Alternative 1 and Alternative 2 as complementary recommendations. Alternative 1 is prioritized due to its empirical backing, ensuring measurable short-term impacts. In contrast, Alternative 2 is recommended to address critical infrastructure gaps. This dual approach effectively balances evidence-based policymaking through Alternative 1 with stakeholder-driven priorities via Alternative 2, thereby mitigating the risks of neglecting either rigor or practicality.

6 RECOMMENDATION

Based on all our empirical results, the final recommendations of our study are as follows:

Recommendation 1: Scale Up and Optimize Charging Infrastructure

To increase EV adoption in Hong Kong, we hope to increase the EV penetration rate in Hong Kong to 85%. In order to achieve this, we need to address the problem of insufficient charging infrastructure. Charging accessibility emerged as the most recurrent concern among interviewees, with both private and public charging infrastructure described as insufficient, unreliable, or poorly distributed, especially in older residential areas and remote districts. Therefore, adding chargers at existing public charging network and improving the density of private chargers are two main ways to expand and optimize the charging network. This includes expanding fast charging networks in underserved areas, prioritizing public residential areas, government facilities and commercial parking areas. To address Hong Kong's charging infrastructure gap, mobile EV charging infrastructure should be introduced as a flexible solution. This charging infrastructure can be deployed in high-demand areas where permanent installations face space constraints, providing immediate relief as a cost-effective approach to optimize limited parking spaces.

Recommendation 2: Enhance tax and registration fee on ICE vehicles

While qualitative interviews focused more on practical challenges, quantitative regression results confirm that higher taxes and registration fees for ICE vehicles have the most statistically significant impact on EV interest. These measures increase the relative affordability of EVs and support the long-term shift away from fossil fuel vehicles. In addition to this, the initiative reduces the financial burden on the government. And increased taxes and registration fees on ICE vehicles may make EVs more economically attractive and drive-up sales. Drawing from Norway's successful experience, Hong Kong can implement a progressive tax system that imposes substantially higher rates on high-emission ICE vehicles. This approach would significantly enhance the economic attractiveness of EVs by creating a stark cost differential, while avoiding the fiscal strain of direct subsidies.

Building the future: Enhance Government Advertising Strategies for EV

To address the primary obstacles to electric vehicle (EV) adoption in Hong Kong, the government must implement effective advertising strategies alongside existing policies. Future recommendations include quantifying the benefits of EVs for clearer communication. The government should utilize measurable indicators to highlight advantages such as cost savings, reductions in carbon emissions, and long-term maintenance benefits. Providing

concrete comparisons—like “EVs save drivers an average of X% annually on fuel costs”—will make these benefits more tangible and persuasive. Additionally, a multi-platform outreach strategy should be adopted to maximize reach and impact. This includes leveraging social media for engaging visual content and testimonials, utilizing online television and streaming services for broader exposure, and organizing community events that allow potential users to experience EVs firsthand. Localized outreach efforts, such as interactive workshops and test-drive events, will foster direct engagement and build public confidence in EV adoption. Through these improvements, Hong Kong can better leverage its existing infrastructure and incentives, overcoming consumer hesitancy without imposing additional fiscal burdens while maintaining momentum toward its 2035 electrification targets.

Overall, by adopting these strategies, Hong Kong can effectively leverage its existing resources and incentives to achieve its electrification goals by 2035.

7 LIMITATIONS

The policy recommendations outlined in this report are grounded in our existing research findings. However, it is important to acknowledge certain limitations that may affect the validity and applicability of our conclusions.

Sample Size Constraints

The study collected only 112 valid questionnaire responses and conducted interviews with 5 stakeholders, which may not adequately represent Hong Kong's diverse EV market. The small sample size, particularly from specific groups like Tesla and BYD owners in online forums, could introduce selection bias and limit the generalizability of results.

Methodological Limitations in Quantitative Analysis

The logistic regression model may be affected by multicollinearity among predictor variables (e.g., between subsidy awareness and income levels), potentially impacting the reliability of coefficient estimates. The binary dependent variable (EV purchase intention) also simplifies complex consumer decision-making processes that likely involve multiple interacting factors.

Challenges for Policy Recommendations

Several proposed policies, particularly those requiring significant government funding (e.g., expanding charging infrastructure, increasing subsidies), may face feasibility constraints given Hong Kong's "small government" fiscal principles and competing budget priorities. The current underutilization of the EHSS scheme (only 24% completion rate) suggests potential challenges in implementing large-scale infrastructure projects.

These limitations highlight the necessity for caution in interpreting our findings. While this study offers several insights into the barriers to EV adoption in Hong Kong, the results should be viewed within the local context of these constraints. Future research should be conducted from larger, more representative samples, longitudinal data collection, and closer collaboration with industry stakeholders to address these limitations and enhance the robustness of findings.

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Appendix A: Logit Regression Coding

clear

import excel "/Users/shuruoxi/Desktop/新数据.xlsx", firstrow

** Generate Variables

** 1. Dependent Variables

gen evinterest =.

replace evinterest = 1 if 如果閣下目前沒有擁有電動汽車閣下是否會考慮在未來幾年內購買電動 == "是的，我會考慮。" | P == "是的。並且我的車是電動汽車。" | P == "是的。並且我的車是電動汽車。,是的。並且我的車是內燃機汽車。"

replace evinterest = 0 if 如果閣下目前沒有擁有電動汽車閣下是否會考慮在未來幾年內購買電動 == "不，我不會考慮（例如出於成本、便利性等原因）。" & P != "是的。並且我的車是電動汽車。"

** 2. Independent Variables

gen subsidy =.

replace subsidy = 1 if 如果政府對電動汽車的補貼提高閣下有多大的程度購買電動汽車 == "這完全不會影響我的購買決定；政府補貼對我而言不是主要因素。"

replace subsidy = 2 if 如果政府對電動汽車的補貼提高閣下有多大的程度購買電動汽車 == "這對我的決定影響極小。"

replace subsidy = 3 if 如果政府對電動汽車的補貼提高閣下有多大的程度購買電動汽車 == "這在一定程度上會增加我購買的可能性，但我仍需要考慮其他因素。"

replace subsidy = 4 if 如果政府對電動汽車的補貼提高閣下有多大的程度購買電動汽車 == "我買電動汽車的可能性會大幅增加。"

replace subsidy = 5 if 如果政府對電動汽車的補貼提高閣下有多大的程度購買電動汽車 == "我一定會選擇購買電動汽車。"

gen ICEtax =.

replace ICEtax = 1 if 如果內燃機汽車的稅率或登記費用提高閣下在內燃機汽車與電動汽車之 == "完全沒有影響

我仍會購買內燃機汽車。"

replace ICEtax = 2 if 如果內燃機汽車的稅率或登記費用提高閣下在內燃機汽車與電動汽車之 == "這對我買內燃機汽車沒有太大影響。"

replace ICEtax = 3 if 如果內燃機汽車的稅率或登記費用提高閣下在內燃機汽車與電動汽車之 == "我不太可能購買內燃機汽車，但我仍會將其視為一種選擇。"

replace ICEtax = 4 if 如果內燃機汽車的稅率或登記費用提高閣下在內燃機汽車與電動汽車之 == "我很有可能從購買內燃機汽車變為購買電動汽車。"

replace ICEtax = 5 if 如果內燃機汽車的稅率或登記費用提高閣下在內燃機汽車與電動汽車之 == "我一定會放棄購買內燃機汽車，轉而選擇電動汽車。"

gen electricity =.

replace electricity = 1 if 如果政府推出對於電動汽車充電電力的補貼或激勵措施閣下購買電動汽 == "這完全不會影響我的購買決定；電力補貼對我而言不是主要的考慮因素。"

replace electricity = 2 if 如果政府推出對於電動汽車充電電力的補貼或激勵措施閣下購買電動汽 == "這對我的決定影響很小。"

replace electricity = 3 if 如果政府推出對於電動汽車充電電力的補貼或激勵措施閣下購買電動汽 == "這在一定程度上會增加我購買的可能性，但我仍需要考慮其他因素。"

replace electricity = 4 if 如果政府推出對於電動汽車充電電力的補貼或激勵措施閣下購買電動汽 == "我買電動汽車的可能性會大幅增加。"

replace electricity = 5 if 如果政府推出對於電動汽車充電電力的補貼或激勵措施閣下購買電動汽 == "我一定會選擇購買電動汽車。"

gen charge =.

replace charge = 1 if 為了更有效緩解消費者的里程焦慮和充電排長龍的問題如果在閣下 == "這完全不會影響我的購買決定。"

replace charge = 2 if 為了更有效緩解消費者的里程焦慮和充電排長龍的問題如果在閣下 == "這對我的決定影響極小。"

replace charge = 3 if 為了更有效緩解消費者的里程焦慮和充電排長龍的問題如果在閣下 == "這在一定程度上會增加我購買的可能性，但我仍需要考慮其他因素。"

replace charge = 4 if 為了更有效緩解消費者的里程焦慮和充電排長龍的問題如果在閣下 == "我買電動汽車的可能性會大幅增加。"

replace charge = 5 if 為了更有效緩解消費者的里程焦慮和充電排長龍的問題如果在閣下 == "我一定會選擇購買電動汽車。"

gen recommendation =.

replace recommendation = 1 if 如果閣下周圍的人包括朋友家人或同事向閣下推薦電動汽車閣下 == "這完全不會影響我的購買決定。"

replace recommendation = 2 if 如果閣下周圍的人包括朋友家人或同事向閣下推薦電動汽車閣下 == "這對我的決定影響極小。"

replace recommendation = 3 if 如果閣下周圍的人包括朋友家人或同事向閣下推薦電動汽車閣下 == "這在一定程度上會增加我購買的可能性，但我仍需要考慮其他因素。"

replace recommendation = 4 if 如果閣下周圍的人包括朋友家人或同事向閣下推薦電動汽車閣下 == "我買電動汽車的可能性會大幅增加。"

replace recommendation = 5 if 如果閣下周圍的人包括朋友家人或同事向閣下推薦電動汽車閣下 == "我一定會選擇購買電動汽車。"

gen environment =.

replace environment = 1 if 閣下對電動汽車的環境效益瞭解多少 == "完全不明白"
replace environment = 2 if 閣下對電動汽車的環境效益瞭解多少 == "比較不明白"
replace environment = 3 if 閣下對電動汽車的環境效益瞭解多少 == "大概明白"
replace environment = 4 if 閣下對電動汽車的環境效益瞭解多少 == "比較明白"
replace environment = 5 if 閣下對電動汽車的環境效益瞭解多少 == "完全明白"

gen advertise =.

replace advertise = 1 if 如果在閣下主要使用的媒體平臺上廣泛宣傳電動汽車閣下有多大機會購 == "完全不會增加我的興趣，因為我不信任宣傳推廣活動。"

replace advertise = 2 if 如果在閣下主要使用的媒體平臺上廣泛宣傳電動汽車閣下有多大機會購 == "這會稍微提高我的興趣，但影響有限。"

replace advertise = 3 if 如果在閣下主要使用的媒體平臺上廣泛宣傳電動汽車閣下有多大機會購 == ".這會在一定程度上提高我的興趣，讓我更有購買的傾向。"

replace advertise = 4 if 如果在閣下主要使用的媒體平臺上廣泛宣傳電動汽車閣下有多大機會購 == "這會大幅增加我的購買意願，而且我很有可能會購買。"

replace advertise = 5 if 如果在閣下主要使用的媒體平臺上廣泛宣傳電動汽車閣下有多大機會購 == "我一定會購買電動汽車。"

gen label =.

replace label = 1 if 在進行下面的問題之前請先閱讀下文為了突出宣傳電動汽車相比於 == "Image-2"
replace label = 0 if 在進行下面的問題之前請先閱讀下文為了突出宣傳電動汽車相比於 == "Image-1"

** 3. Control Variables

gen is_male = 1 if 請問閣下的性別是 == "男"
replace is_male = 0 if 請問閣下的性別是 == "女"

gen income =.

replace income = 1 if 請問閣下的家庭月收入是多少閣下可以以家庭作為單位回答 == "少於 20,000 港幣"
replace income= 2 if 請問閣下的家庭月收入是多少閣下可以以家庭作為單位回答 == "20,001-50,000 港幣"
replace income = 3 if 請問閣下的家庭月收入是多少閣下可以以家庭作為單位回答 == "50,001-80,000 港幣"
replace income = 4 if 請問閣下的家庭月收入是多少閣下可以以家庭作為單位回答 == "80,001-100,000 港幣"
replace income = 5 if 請問閣下的家庭月收入是多少閣下可以以家庭作為單位回答 == "多於 100,001 港幣"

gen understand =.

replace understand = 1 if 閣下目前是否瞭解政府對於電動汽車的補貼政策 == "瞭解"
replace understand = 0 if 閣下目前是否瞭解政府對於電動汽車的補貼政策 == "不瞭解"

gen satisfaction =.

replace satisfaction = 1 if 閣下所在的居住地區或工作場所附近有足夠數量的電動汽車充電器嗎 == "完全不能滿足。"
replace satisfaction = 2 if 閣下所在的居住地區或工作場所附近有足夠數量的電動汽車充電器嗎 == "勉強滿足需求。"
replace satisfaction = 3 if 閣下所在的居住地區或工作場所附近有足夠數量的電動汽車充電器嗎 == "充分滿足需求。"
replace satisfaction = 4 if 閣下所在的居住地區或工作場所附近有足夠數量的電動汽車充電器嗎 == "超過需求。"
replace satisfaction = 5 if 閣下所在的居住地區或工作場所附近有足夠數量的電動汽車充電器嗎 == "明顯超出需求。"

gen age =.

```
replace age = 1 if 請問閣下的年齡是 == "18-25 歲"
replace age = 2 if 請問閣下的年齡是 == "26-35 歲"
replace age = 3 if 請問閣下的年齡是 == "36-45 歲"
replace age = 4 if 請問閣下的年齡是 == "46-55 歲"
replace age = 5 if 請問閣下的年齡是 == "大於 55 歲"

** Run Logistic Regressions
logit evinterest subsidy ICEtax charge understand recommendation environment advertise label

logit evinterest subsidy ICEtax electricity charge understand recommendation environment advertise label is_male age income

*** 1. Principal Component Analysis
pca subsidy ICEtax
predict policy_incentives, score

logit evinterest policy_incentives electricity charge understand recommendation environment advertise label

logit evinterest policy_incentives electricity charge understand recommendation environment advertise label, or

logit evinterest policy_incentives electricity charge understand recommendation environment advertise label is_male age income

logit evinterest policy_incentives electricity charge understand recommendation environment advertise label is_male age income,
or


*** 2. Correlation Coefficient heatmap
corr subsidy ICEtax charge understand recommendation environment advertise label

local varlist subsidy ICEtax charge understand recommendation environment advertise label
correlate `varlist'
matrix corr = r(C)
matrix colnames corr = `varlist'
matrix rownames corr = `varlist'

**** Convert to a long format and enforce the order
preserve
clear
svmat corr, names(col)

**** Generate the line name (var1) and encode it in the specified order
gen var1 = ""
```

```
local index = 1
foreach var of local varlist {
        replace var1 = "`var'" in `index'
        local ++index
}

**** Add the suffix "_value" to the variable
foreach var of local varlist {
        rename `var' `var'_value
}

**** Convert to long format
reshape long @_value, i(var1) j(var2) string
rename _value corr_value

**** Clean up the variable names of var2
replace var2 = subinstr(var2, "_value", "", 1)

**** Delete the old label
capture label drop var1_label
capture label drop var2_label

**** Define the labels in the specified order
local order_list "subsidy ICEtax charge understand recommendation environment advertise label"
local i = 1
foreach var of local order_list {
        label define var1_num `i' "`var'", add
        label define var2_num `i' "`var'", add
        local ++i
}

**** Generate numerical variables and apply labels
encode var1, generate(var1_num) label(var1_label)
encode var2, generate(var2_num) label(var2_label)

**** setting fronts as Times New Roman
graph set window fontface "Times New Roman"

**** Draw a heat map
heatplot corr_value var1_num var2_num, ///
        color(plasma, reverse)                  ///
        cuts(-1(0.25)1)                           ///
```

```
values(format(%4.2f))                          ///
aspect(1)                                      ///
xlabel(1(1)8, valuelabel angle(45) labsize(small))    ///
ylabel(1(1)8, valuelabel angle(0) labsize(small))     ///
xtitle("") ytitle("")                          ///
name(heatmap, replace)
```

Appendix B: Logit Regression Result

```
. logit evinterest policy_incentives electricity charge understand recommendation environment advertise label

Iteration 0:   log likelihood = -74.095083
Iteration 1:   log likelihood =   -54.5104
Iteration 2:   log likelihood = -53.544125
Iteration 3:   log likelihood = -53.534297
Iteration 4:   log likelihood = -53.534295

Logistic regression                                     Number of obs =    112
                                                        LR chi2(8)    =  41.12
                                                        Prob > chi2   = 0.0000
Log likelihood = -53.534295                             Pseudo R2     = 0.2775
```

evinterest	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
policy_incentives	.8365765	.3730842	2.24	0.025	.1053449	1.567808
electricity	-.9855821	.4619466	-2.13	0.033	-1.890981	-.0801834
charge	.5940834	.3944505	1.51	0.132	-.1790254	1.367192
understand	1.159783	.5817295	1.99	0.046	.0196138	2.299951
recommendation	.6291783	.3205978	1.96	0.050	.0008181	1.257538
environment	.4344406	.2858271	1.52	0.129	-.1257702	.9946513
advertise	.6249084	.3544642	1.76	0.078	-.0698287	1.319646
label	1.183907	.6115426	1.94	0.053	-.0146947	2.382508
_cons	-3.990931	2.012073	-1.98	0.047	-7.934521	-.0473408

```
. logit evinterest policy_incentives electricity charge understand recommendation environment advertise label, or

Iteration 0:   log likelihood = -74.095083
Iteration 1:   log likelihood =   -54.5104
Iteration 2:   log likelihood = -53.544125
Iteration 3:   log likelihood = -53.534297
Iteration 4:   log likelihood = -53.534295

Logistic regression                                     Number of obs =    112
                                                        LR chi2(8)    =  41.12
                                                        Prob > chi2   = 0.0000
Log likelihood = -53.534295                             Pseudo R2     = 0.2775
```

evinterest	Odds ratio	Std. err.	z	P>|z|	[95% conf.	interval]
policy_incentives	2.30845	.8612464	2.24	0.025	1.111094	4.796124
electricity	.3732219	.1724086	-2.13	0.033	.1509237	.9229471
charge	1.81137	.7144957	1.51	0.132	.8360847	3.924316
understand	3.18924	1.855275	1.99	0.046	1.019807	9.973699
recommendation	1.876068	.6014634	1.96	0.050	1.000818	3.516754
environment	1.544099	.4413453	1.52	0.129	.8818175	2.703781
advertise	1.868075	.6621657	1.76	0.078	.9325536	3.742095
label	3.267113	1.997979	1.94	0.053	.9854127	10.83204
_cons	.0184825	.0371881	-1.98	0.047	.0003582	.9537623

Note: **_cons** estimates baseline odds.

```
. logit evinterest policy_incentives electricity charge understand recommendation environment advertise label is_male age
> income

Iteration 0:   log likelihood = -74.095083
Iteration 1:   log likelihood = -52.095551
Iteration 2:   log likelihood = -50.487313
Iteration 3:   log likelihood = -50.445085
Iteration 4:   log likelihood = -50.445069
Iteration 5:   log likelihood = -50.445069

Logistic regression                                     Number of obs =    112
                                                        LR chi2(11)   =  47.30
                                                        Prob > chi2   = 0.0000
Log likelihood = -50.445069                             Pseudo R2     = 0.3192
```

evinterest	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
policy_incentives	1.00762	.4108136	2.45	0.014	.2024402	1.8128
electricity	-1.027773	.4686894	-2.19	0.028	-1.946387	-.1091585
charge	.597107	.423603	1.41	0.159	-.2331396	1.427354
understand	1.347654	.6251506	2.16	0.031	.1223811	2.572926
recommendation	.7033661	.344788	2.04	0.041	.027594	1.379138
environment	.7267964	.340544	2.13	0.033	.0593424	1.39425
advertise	.836665	.3846892	2.17	0.030	.0826881	1.590642
label	1.183283	.6918211	1.71	0.087	-.1726615	2.539227
is_male	.4922854	.5552527	0.89	0.375	-.5959899	1.580561
age	-.0417108	.2959904	-0.14	0.888	-.6218413	.5384196
income	-.5681158	.2817782	-2.02	0.044	-1.120391	-.0158407
_cons	-3.972768	2.138655	-1.86	0.063	-8.164454	.2189191

```
. logit evinterest policy_incentives electricity charge understand recommendation environment advertise label is_male age
> income, or

Iteration 0:   log likelihood = -74.095083
Iteration 1:   log likelihood = -52.095551
Iteration 2:   log likelihood = -50.487313
Iteration 3:   log likelihood = -50.445085
Iteration 4:   log likelihood = -50.445069
Iteration 5:   log likelihood = -50.445069

Logistic regression                                     Number of obs =    112
                                                        LR chi2(11)   =  47.30
                                                        Prob > chi2   = 0.0000
Log likelihood = -50.445069                             Pseudo R2     = 0.3192
```

evinterest	Odds ratio	Std. err.	z	P>|z|	[95% conf.	interval]
policy_incentives	2.739074	1.125249	2.45	0.014	1.224387	6.12758
electricity	.357803	.1676985	-2.19	0.028	.142789	.8965883
charge	1.816855	.7696252	1.41	0.159	.792043	4.167655
understand	3.848386	2.405821	2.16	0.031	1.130185	13.10412
recommendation	2.020543	.6966588	2.04	0.041	1.027978	3.971477
environment	2.068444	.7043961	2.13	0.033	1.061139	4.031951
advertise	2.308655	.8881146	2.17	0.030	1.086203	4.906898
label	3.265076	2.258848	1.71	0.087	.8414224	12.66988
is_male	1.636051	.9084217	0.89	0.375	.5510169	4.857678
age	.9591471	.2838983	-0.14	0.888	.5369549	1.713297
income	.566592	.1596533	-2.02	0.044	.3261523	.9842841
_cons	.0188213	.0402522	-1.86	0.063	.0002846	1.244731

Note: _cons estimates baseline odds.

Appendix C: Questionnaire

香港科技大學 THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

PPOL DIVISION OF PUBLIC POLICY 公共政策學部

Survey on Factors Influencing Electric Private Vehicle Adoption and Potential Promoting Solutions in Hong Kong

香港私家電動汽車普及的影響因素與潛在推廣方案調查

Dear Participants,

親愛的參與者,

Hello!

閣下好!

We are Master of Public Policy students from the Division of Public Policy at **the Hong Kong University of Science and Technology (HKUST)**. As part of our Policy Analysis Exercise (PAE) project, we are studying the factors influencing Hong Kong residents' adoption of e-PCs and evaluating potential strategies to increase their use.

我們是來自**香港科技大學（HKUST）**公共政策學部的公共政策碩士學生。作為政策分析練習（PAE）項目的一部分，我們正在研究影響香港居民採用私家電動汽車的因素，並評估進一步促進私家電動汽車普及的潛在策略。

We kindly invite you to complete this questionnaire on the above topic. Your valuable input will provide essential data for our research. Please rest assured that all information collected will be used **exclusively for academic purposes only**, and **strict confidentiality** will be maintained.

我們誠意邀請閣下就上述議題填寫本問卷。閣下的寶貴意見將為我們的研究提供重要數據。請放心，所有收集到的資料**只會用於學術用途**，並會**嚴格保密**。

If you have any questions about this survey or the research, feel free to contact us at **yyanggp@connect.ust.hk**.

如果閣下對此調查或研究有任何疑問，請隨時通過 **yyanggp@connect.ust.hk** 與我們聯繫。

We greatly appreciate your time and insights! Your input is invaluable in helping our recommendations for policies aimed at shaping a greener future for Hong Kong.

我們非常感謝閣下抽出時間並提供見解！閣下的意見對於我們提出為香港塑造一個更綠色的未來的政策建議非常寶貴。

※ This survey consists of **26-28 questions**, and should take approximately **10 minutes** to complete.

※ 是次問卷共計 **26-28 個問題**，完成時間大約需要 **10 分鐘**。

(1) Let Us Get to Know You Better 讓我們更好地認識你

1. What is your gender?

請問閣下的性別是?

☐ Male 男

☐ Female 女

☐ Others: _____ 其他：_____

2. What is your age?

請問閣下的年齡是?

☐ 18-25 years 18-25 歲

☐ 26-35 years 26-35 歲

☐ 36-45 years 36-45 歲

☐ 46-55 years 46-55 歲

☐ Over 55 years 大於 55 歲

3. What is your family monthly income? (You may respond as a household if preferred)

請問閣下的家庭月收入是多少？（閣下可以以家庭作為單位回答）

☐ Below HKD 20,000 少於 20,000 港幣

☐ HKD 20,001-50,000 20,001-50,000 港幣

☐ HKD 50,001-80,000 50,001-80,000 港幣

☐ HKD 80,001-100,000 80,001-100,000 港幣

☐ Above HKD 100,001 多於 100,001 港幣

4. Do you currently own any vehicles, including electric vehicles (EVs) or internal combustion engine (ICE) vehicles? (You can choose more than one box)

請問閣下現在是否擁有車輛，包括電動汽車和內燃機汽車？（閣下可選擇多項）

☐ Yes. And I own EV(s). 是的。並且我的車是電動汽車。

☐ Yes. And I own ICE vehicle(s). 是的。並且我的車是內燃機汽車。

☐ No, I do not own any vehicle. 否，我沒有擁有任何車輛。

5. If you currently do NOT own any EVs, will you consider purchasing an EV in the next few years?

如果閣下目前沒有擁有電動汽車，閣下是否會考慮在未來幾年內購買電動汽車?

☐ Yes, I will. 是的，我會考慮。

☐ No, I will not (for any reason such as cost, convenience, etc.). 不，我不會考慮（例如出於成本、便利性等原因）。

6. If you currently own a vehicle or plan to own a vehicle, what are the main scenarios in which your cars are used? (You can select all boxes that apply)

如果閣下目前擁有車輛或計畫擁有車輛，請問閣下使用汽車的主要場景是？（閣下可選擇多項）

☐ Daily commute 日常通勤

☐ Family travel 家庭出行

☐ Business reception 商務接待

☐ Cross-border travel 跨境出行

☐ Other (If any, please specify): _____ 其他（如有，請註明）：_____

(2) Factors Influencing e-PC Adoption 影響採用私家電動汽車的因素

7. What are the most important factors you consider when deciding whether to purchase an EV? (Select at least 5 ones)

在決定是否購買電動汽車時，閣下主要的考慮因素有哪些？（至少選擇 5 項）

☐ Purchase cost of the EV (capital cost) 電動汽車的購買成本（資本成本）

☐ Electricity cost 電力成本

☐ Battery replacement cost (maintenance cost) 電池更換成本（維護成本）

☐ The availability of government incentives 政府激勵措施的有效性

☐ The accessibility of EV chargers 電動汽車充電樁的便利性

☐ The availability of car repair services 汽車維修服務的可及性

☐ Charging time 充電時間

☐ Battery life 電池壽命

☐ The social trend of purchasing EVs in Hong Kong (peer and social pressure)
香港購買電動汽車的社會趨勢（朋輩和社會壓力）

☐ The vehicle environmental impact (carbon emissions, other air pollutants, noise, battery disposal, etc.)
車輛環境影響（碳排放、其他空氣污染物、噪音、廢電池處理等）

☐ Mile range 續航里程

☐ Vehicle performance (power, handling system, speed, etc.) 汽車性能（動力、操控系統、速度等）

☐ Future technological trends (autonomous parking, driverless driving) 未來科技趨勢（自動泊車、無人駕駛）

☐ Advertisement (brand reputation, advertising platforms and contents) 廣告（品牌聲譽、廣告的渠道和內容）

☐ Other (If any, please specify): _____

其他（如有，請註明）：_____

8. How important you think each of the following factors is when people make decisions to buy the EV? (5: Extremely important. 4: Slightly important. 3: Moderately important. 2: Barely unimportant. 1: Completely unimportant.)

阁下认为以下几类因素在人们购买电动汽车时所占据的重要性分别有多少比重呢?

(5 为最重要，4 为比较重要，3 为一般重要，2 为比较不重要，1 为最不重要)

		5	4	3	2	1
Cost factors	成本因素	☐	☐	☐	☐	☐
Charging/Parking Accessibility	充電/停車便利性	☐	☐	☐	☐	☐
Environmental benefits	環境效益	☐	☐	☐	☐	☐
Peer/ Social pressure	同輩/社會壓力	☐	☐	☐	☐	☐
Advertisement	廣告宣傳	☐	☐	☐	☐	☐
Vehicle performance	汽車性能	☐	☐	☐	☐	☐

(3) Cost Considerations for EVs 電動汽車的成本考量

9. What do you think about the current purchase price of EVs compared to ICE vehicles?

與內燃機汽車相比，閣下認為目前電動汽車的購買價格如何?

- ☐ The price of EVs is significantly higher than that of ICE vehicles, making EVs difficult to afford.
  電動汽車的價格明顯高於內燃機汽車，因此我難以承擔電動汽車的價格。
- ☐ The price of EVs is slightly higher than that of ICE vehicles, but I am open to considering EVs.
  雖然電動汽車的價格比內燃機汽車略高，但我考慮購買電動汽車。
- ☐ The prices of EVs and ICE vehicles are similar, both are affordable.
  電動汽車和內燃機汽車的價格相近，都在我的承受範圍內。
- ☐ The price of EVs is slightly lower than that of ICE vehicles, which makes EVs appealing.
  電動汽車的價格略低於內燃機汽車，因此電動汽車對我更具有吸引力。

10. If the government's subsidies for EVs increase, how likely are you to purchase an EV?

如果政府對電動汽車的補貼提高，閣下有多大的程度購買電動汽車?

- ☐ I would definitely choose to purchase an EV. 我一定會選擇購買電動汽車。
- ☐ It would significantly increase my likelihood of purchasing an EV. 我買電動汽車的可能性會大幅增加。
- ☐ It would moderately increase my likelihood, but I would still need to consider other factors.
  這在一定程度上會增加我購買的可能性，但我仍需要考慮其他因素。
- ☐ It would have a minimal impact on my decision. 這對我的決定影響極小。
- ☐ It would not influence my decision at all; subsidies are not a major factor for me.
  這完全不會影響我的購買決定；政府補貼對我而言不是主要因素。

11. If tax rates or the registration fee on ICE vehicles were to increase, how likely are you to consider your decision between purchasing an ICE vehicle and an EV?

如果內燃機汽車的稅率或登記費用提高，閣下在內燃機汽車與電動汽車之間的購買選擇會如何做決定?

- ☐ I would definitely give up considering ICE vehicles and choose EVs instead.
  我一定會放棄購買內燃機汽車，轉而選擇電動汽車。
- ☐ I am very likely to switch from purchasing ICE vehicles to EVs. 我很有可能從購買內燃機汽車變為購買電動汽車。
- ☐ I might be less inclined to purchase ICE vehicles, but I would still consider them as an option.
  我不太可能購買內燃機汽車，但我仍會將其視為一種選擇。
- ☐ It would not significantly influence my decision to purchase ICE vehicles. 這對我買內燃機汽車沒有太大影響。
- ☐ It would have no impact at all; I will still purchase ICE vehicles as planned. 完全沒有影響；我仍會購買內燃機汽車。

12. Whether you know current subsidies for EVs of the government?

閣下目前是否瞭解政府對於電動汽車的補貼政策?

- ☐ Yes. 瞭解。
- ☐ No. 不瞭解。

13. How likely would you be to buy an EV, if the government introduced subsidies or incentives for charging electricity?

如果政府推出對於電動汽車充電電力的補貼或激勵措施，閣下購買電動汽車的可能性有多大?

- ☐ I would definitely choose to purchase an EV. 我一定會選擇購買電動汽車。
- ☐ It would significantly increase my likelihood of purchasing an EV. 我買電動汽車的可能性會大幅增加。
- ☐ It would moderately increase my likelihood, but I would still need to consider other factors.
  這在一定程度上會增加我購買的可能性，但我仍需要考慮其他因素。
- ☐ It would have a minimal impact on my decision. 這對我的決定影響很小。
- ☐ It would not influence my decision at all; electricity subsidies are not a major factor for me.
  這完全不會影響我的購買決定；電力補貼對我而言不是主要的考慮因素。

(4) Accessibility Considerations for EVs 電動汽車的便利性考量

14. Do you think there are sufficient number of EV chargers in your neighborhood or near your workplace?
閣下所在的居住地區或工作場所附近有足夠數量的電動汽車充電器嗎?

- ☐ Not at all. 完全不能滿足。
- ☐ Barely meets the needs. 勉強滿足需求。
- ☐ Adequately meets the needs. 充分滿足需求。
- ☐ Exceeds the needs. 超過需求。
- ☐ Significantly exceeds the needs. 明顯超出需求。
- ☐ Don't know. 不清楚情況。

15. Is it easy to access an EV charger in your neighborhood? *
在閣下居住的地方附近，找到電動汽車充電樁並使用起來是否便捷? *

** Participants were required to answer this question if their choices in the previous Question 4 included the option "Yes, I own EV(s)".*

** 如果參與者在前面的第 4 題中的選擇包含"是的，我有電動汽車"的選項，則需要回答這一問題。*

- ☐ Yes. 便捷。
- ☐ No. 不便捷。

16. On average, how long do you wait in line each time to charge your EV? *
閣下每次為電動汽車充電時，平均要排隊等候多久? *

** Participants were required to answer this question if their choices in the previous Question 4 included the option "Yes, I own EV(s)".*

** 如果參與者在前面的第 4 題中的選擇包含"是的，我有電動汽車"的選項，則需要回答這一問題。*

- ☐ Below 20 minutes 少於 20 分鐘
- ☐ 20-40 minutes 20-40 分鐘
- ☐ 40-60 minutes 40-60 分鐘
- ☐ Above 1 hour 多於 1 小時

17. In order to better alleviate "mileage anxiety" of consumers and the problem of long charging queues, if the number of EV chargers were increased in the area where you often use your car, how likely would you be to purchase an EV?
為了更有效緩解消費者的「里程焦慮」和充電排長龍的問題，如果在閣下經常使用汽車的地區增加充電樁的數量，閣下有多大機會考慮購買電動汽車?

- ☐ I would definitely choose to purchase an EV. 我一定會選擇購買電動汽車。

- ☐ It would significantly increase my likelihood of purchasing an EV. 我買電動汽車的可能性會大幅增加。
- ☐ It would moderately increase my likelihood, but I would still need to consider other factors.
  這在一定程度上會增加我購買的可能性，但我仍需要考慮其他因素。
- ☐ It would have a minimal impact on my decision. 這對我的決定影響極小。
- ☐ It would not influence my decision at all. 這完全不會影響我的購買決定。

(5) Peer and Social Influence on EV Adoption 群體及社會對電動汽車採用的影響

18. Are there many people who bought EV(s) in people in your social circle, for instance, friends, colleagues, etc.?
在閣下的生活中，周圍購買電動汽車的人多嗎？例如朋友、同事等。

- ☐ A lot 很多
- ☐ Many 多
- ☐ A few 一般
- ☐ Less 少
- ☐ Very few 很少
- ☐ Don't know 不知道

19. To what extent would you consider buying an EV if people around you (including friends, family or colleagues) recommended it to you?
如果閣下周圍的人（包括朋友、家人或同事）向閣下推薦電動汽車，閣下會在多大程度上考慮購買？

- ☐ I would definitely choose to purchase an EV. 我一定會選擇購買電動汽車。
- ☐ It would significantly increase my likelihood of purchasing an EV. 我買電動汽車的可能性會大幅增加。
- ☐ It would moderately increase my likelihood, but I would still need to consider other factors.
  這在一定程度上會增加我購買的可能性，但我仍需要考慮其他因素。
- ☐ It would have a minimal impact on my decision. 這對我的決定影響極小。
- ☐ It would not influence my decision at all. 這完全不會影響我的購買決定。

(6) Vehicle Performance & Environmental Benefits of EVs 電動汽車的汽車性能&環境效益

20. Are you aware of the environmental benefits of EVs?
閣下對電動汽車的環境效益瞭解多少？

- ☐ Completely unaware. 完全不明白。
- ☐ Slightly aware. 比較不明白。
- ☐ Moderately aware. 大概明白。
- ☐ Highly aware. 比較明白。
- ☐ Fully aware. 完全明白。

21. If you were considering purchasing a vehicle, what would be your main concern in terms of performance? (Select at least 3 ones)
如果閣下正在考慮購買一輛汽車，在汽車性能方面閣下主要關注什麼？（至少選擇 3 項）

☐	Energy Consumption	能耗
☐	Mile Range	續航里程
☐	Power	動力
☐	Handling system	操控系統
☐	Speed	速度
☐	Safety	安全性
☐	Vehicle Weight	車重
☐	Noise	噪音
☐	Other (If any, please specify) : _____	其他（如有，請註明）: _____

22. Based on the vehicle performance aspects you selected in Question 20, how do you perceive the current development level of EVs technology? Do you think it has matured and become reliable enough in those aspects?

(5: Fully developed. 4: Well developed.3: Moderate. 2: Barely developed. 1: Not developed at all.)

根據第 20 題中閣下所選的汽車性能，閣下如何看待目前電動汽車技術在哪些方面的發展水準？是否已經夠成熟和可靠？

（5：發展完備。 4：發展較好。3：發展一般。 2：比較不成熟。 1：完全不成熟。）

Vehicle performance*	**性能***	**5**	**4**	**3**	**2**	**1**
Energy Consumption	能耗	☐	☐	☐	☐	☐
Mile Range	續航里程	☐	☐	☐	☐	☐
Power	動力	☐	☐	☐	☐	☐
Handling system	操控系統	☐	☐	☐	☐	☐
Speed	速度	☐	☐	☐	☐	☐
Safety	安全性	☐	☐	☐	☐	☐
Vehicle Weight	車重	☐	☐	☐	☐	☐
Noise	噪音	☐	☐	☐	☐	☐
Other	其他	☐	☐	☐	☐	☐

** Note: Only the aspects selected by the participant in Question 20 will appear in this table.*

** 注：該表格只會出現參與者在第 20 題中所選擇的性能選項。*

(7) Advertising channels for EVs 電動汽車的宣傳渠道

In recent years, advertising campaigns have been actively promoting the benefits of the EV through a variety of channels, including television media, broadcast media, paper media, and the internet. These efforts aim to inform public perception and encourage the adoption of this cleaner transportation option.

近年來，資訊宣傳活動借助各種平臺和形式，包括電視媒體、廣播媒體、紙媒體和互聯網，積極宣傳電動汽車的優勢，旨在讓公眾瞭解電動汽車，並鼓勵大家選擇這種更環保的交通方式。

23. What are the main media channels you currently use? (You can select all boxes that apply)

閣下目前主要使用的媒體平臺是什麼？（閣下可選擇多項）

- ☐ Broadcast media 廣播媒體
- ☐ Television media 電視媒體
- ☐ Paper media (newspapers, magazines) 紙質媒體（報紙、雜誌）
- ☐ The internet 互聯網

24. How often do you see electric vehicle-related advertisements on the media platforms you currently use?

在閣下目前主要使用的媒體平臺上看到電動汽車相關的宣傳的頻率是多少?

- ☐ Very high 很高
- ☐ High 高
- ☐ Moderate 一般
- ☐ Low 低
- ☐ Very low 很低

25. If advertisements for EVs are widely conducted on your major media platforms, how likely are you to purchase an EV?

如果在閣下主要使用的媒體平臺上廣泛宣傳電動汽車，閣下有多大機會購買電動汽車?

- ☐ I would definitely purchase an EV. 我一定會購買電動汽車。
- ☐ It would significantly increase my intention to purchase, and I would be very likely to buy one.
  這會大幅增加我的購買意願，而且我很有可能會購買。
- ☐ It would moderately increase my interest, making me more inclined to purchase.
  這會在一定程度上提高我的興趣，讓我更有購買的傾向。
- ☐ It would slightly increase my interest, but the impact would be limited. 這會稍微提高我的興趣，但影響有限。
- ☐ It would not increase my interest at all, as I don't trust promotional activities.
  完全不會增加我的興趣，因為我不信任宣傳推廣活動。

(8) The Role of information design of in EV advertisements 電動汽車宣傳活動中資訊設計的作用

26. How familiar are you with the lifetime cost savings associated with owning an EV compared to a traditional ICE vehicle?

閣下知悉一輛電動汽車從購買到日後使用的整個週期中，相比一輛傳統的內燃機汽車總體能節省的成本嗎?

- ☐ Completely unfamiliar. 完全不明白。
- ☐ Slightly familiar. 比較不明白。
- ☐ Moderately familiar. 一般瞭解。
- ☐ Highly familiar. 比較明白。
- ☐ Fully familiar. 完全明白。

Before proceeding to the next questions, please read the following first:

在進行下面的問題之前，請先閱讀下文:

To better highlight the benefits of EVs over traditional ICE vehicles, including cost savings, environmental impact, and performance, and so on, designers have developed a new label (Label B) for use in upcoming advertising campaigns.Label A

emphasizes qualitative, descriptive statements to highlight the advantages of EVs, which is currently used as the common design format. Label B focuses on specific, quantitative data to illustrate the advantages of EVs.

為了突出宣傳電動汽車相比於傳統內燃機汽車的優勢，包括節省成本、環境效益、車輛使用性能等，設計師提供了新的標籤設計（標籤 B），用於即將開展的宣傳活動。標籤 A 側重於定性描述來突出電動汽車的優勢，也是目前常見的設計形式。標籤 B 側重於用具體的量化資料說明電動汽車的優勢。

Examples: To promote the aspect of lifetime cost savings of EVs, the following sample labels are provided:

例如：為宣傳電動汽車在節省成本方面的優勢，有以下兩種標籤設計：

A

B*

** Note: The actual amount (on Label B) may vary depending on various factors such as brand, model, etc. This number is selected here for demonstration from a range by our literature review and does not represent the real situation.*

** 注：实际金额（在标签 B 上）可能因品牌、车型等各种因素而异。此处的数字是根据我们从文献中总结出的一定范围内选取的，仅作示范，并不代表实际情况。*

27. Which label (A or B) do you find more convincing when considering the purchase of an EV?

在考慮購買電動汽車時，閣下認為哪個標籤（A 或 B）更有說服力？

☐ Label A 標籤 A

☐ Label B 標籤 B

(9) Measures about Promoting Adoption of EVs 推廣電動汽車普及的措施

In previous discussions, we have mentioned several measures to promote EVs. We wish to select the most practical and effective ones from them. Please answer the following questions:

在先前探討中，我們已提及若干促進電動汽車的舉措。我們希望從這些舉措裡篩選出閣下覺得更行之有效的方案。請回答下麵的問題：

28. Please rate each of the following solutions for promoting adoption of EVs in Hong Kong, with 5 as the highest score.

依照閣下的判斷，請為下列旨在提高香港電動汽車普及率的每個方案打分，其中 5 分為最高分。

	5	4	3	2	1
Increasing financial incentives of EVs (e.g., purchase price subsidies, charging fee subsidies, tax rebates). 增加電動汽車的經濟獎勵（例如，購買價格補貼、電費補貼、稅費減免）	☐	☐	☐	☐	☐
Improving infrastructure (e.g. increasing the number and distribution density of chargers). 完善基礎設施建設（例如提高充電樁數量和分佈密度）	☐	☐	☐	☐	☐

Promoting EV adoption through peer influence and owner ambassadors 通过周围的电动车车主担任宣传大使推动普及	☐	☐	☐	☐	☐
Broadening information campaigns (e.g. advertising the advantages of EVs on various media platforms to enhance public perception). 拓寬資訊宣傳渠道（例如在更多媒體平臺上宣傳電動汽車的優勢以提高民眾對其的認知）	☐	☐	☐	☐	☐
Using quantitative label design through information campaigns to clarify the advantages of EVs. 在資訊宣傳的過程中使用更加量化的標籤以向公眾明晰電動汽車的優勢	☐	☐	☐	☐	☐

—End—

—問卷結束—

Thank you once again for your valuable time and insights!

再次感謝閣下的寶貴時間和見解！

Your responses will greatly contribute to our research. If you have any additional thoughts or suggestions, please feel free to share them in the space below.

閣下的參與將極大地幫助我們的研究工作。如閣下有任何其他想法或建議，請隨時在下面的空白處與我們分享。

_____

If you would like to receive updates on the findings, please leave your email address (optional):

如閣下希望收到有關調查結果的最新資訊，請留下閣下的電郵位址（可選）：

Email 電郵: _____

Appendix D: Interview Transcript 1

Interview Date		February 26, 2025	
Interviewee's Name		Professor. S	
Position Title	Head and Professor	**Position Dept.**	Division of Public Policy of HKUST

Bufan LIANG: Do you have an electric car?

Prof. S: Yes.

Bufan LIANG: What factors are most important to you when choosing an EV, like the price, charging convenience, the brand, or environmental benefits?

Prof. S: So, you are asking when I first originally made my purchase, what was the most important factor to me.

Bufan LIANG: Yeah, exactly.

Prof. S: So actually, in my case, I was an early adopter of Ev. I have been using it for more than 10 years. So when I 1st purchased it, I was excited by the new technology and **I was really eager to try it out to see what the new technology is like** and compare it to the old model (A type of Tesla EV) because I have been driving for 30, 30, something years. And then 10 years ago, when I changed to EV, it wasn't price, it wasn't charging, it wasn't environmental. All of those factors were important, but the main factor, the most overriding factor, **was my eagerness to embrace a new technology that was electric, using electric to power vehicles rather than gasoline fuel.**

Bufan LIANG: So do you think the EV prices are reasonable?

Prof. S: So like, I said, I 1st started using EVs 10 years ago. At that time, it was a Tesla, I thought that the **price was extremely high**. But I thought that the price was high **because it's new technology**. It's **not mature. It's not commonplace. It's not widespread production. So that is high**. Today in 2025, I feel that the price of electric vehicles, particularly those manufactured from **mainland China, are very reasonable**. But those manufactured in Germany, I feel, are overpriced. So that is my view on price. Is that clear? Do you want to ask any? Follow-up question on that.

Bufan LIANG: So I mean, how important like. How do you perceive the cost of EVs compared to ICE vehicles.

Prof. S: Okay. So today, let's just yeah, let's maybe stop talking about 10 years ago. And today, I think today, the price of **EV if they are manufactured in China, it's extremely reasonable, extremely competitive**, and very. They are fair. and they compare very well in terms of price as compared to ICE vehicles.

Bufan LIANG: So do you think the EVs is more expensive than I see in Hong Kong?

Prof. S: Hmm, I think, for the mainland Chinese manufactured EVs. They're cheaper than ICE vehicles for the same level of quality, comfort, and design, and style, I think EVs manufactured in China are far more competitive.

Bufan LIANG: Oh, I see. So if it could significantly reduce the operating cost, like the energy cost or the maintenance cost, would it increase your interest to purchasing a new one?

Prof. S: Absolutely, because even 10 years ago I told you what my overriding reason was. But a secondary or **a subsidiary reason** for my interest in EVs was the lower cost of using the vehicle for gasoline cars. **It costs a lot of money for to buy gasoline in Hong Kong.** As you probably know. I think **gasoline is 3 times more expensive than mainland China**. I think it's one of the most expensive cities for gasoline. So I was very interested **in switching to electricity,** to lower the running cost of the vehicle. So I think that the cost, the **running cost, is a really important consideration**. In addition to the initial purchase price, the initial purchase price is one off. The running cost is, oh, is continuous over months, years, and so forth. So the **running cost is a very important consideration**.

Bufan LIANG: So do you have the private charging point.

Prof. S: Yes, I do. I do.

Bufan LIANG: Do you think it's more convenient than a public one or.

Prof. S: Yes, so like I, said I when I first purchased my electric vehicle, it was actually more than 10 years ago, the 1st one I purchased was a small Nissan leaf Ev. It was like 12 years ago. At that time, I did not have a private charging port, and my main learning that very original experience 12 years ago is that if you want EVs to make sense for you to be worthwhile for you, you must have your own private, dedicated charging spot. So then I worked with my apartment complex building management company to install a dedicated charging spot, charging infrastructure. And after that I switched to a Tesla, and I only switched when it was clear that I could rely on my own charging station.

Bufan LIANG: Oh, I see!

Prof. S: So this is a really important factor for me. Because when I first started using EVs even more than 10 years ago, actually, like the Nissan leaf that I'm mentioning. I felt I was very dependent on public charging stations, and that reliability was extremely low, because sometimes they would be occupied, and my car was out of battery, and it's a very frustrating situation to be in, so I thought. EVs cannot work for me unless I have my own dedicated charging station. So. having a dedicated charging station 12 years ago, was an even more important factor as compared to the range of the vehicle. The range of kilometers that the car can run for.

Bufan LIANG: So you think the public charging point is not enough in Hong Kong, and it's like the quantity, the location. The waiting time is also the factors in to, in effect, that.

Prof. S: So I I think to be clear over the last few years. The number of charging spots in Hong Kong has increased dramatically, significantly, because the Government has a number of subsidy schemes to promote the installation of charging stations. But still I think it is much more convenient for drivers for me especially to be able to just go home and just use my own dedicated charging spot without having to find a public station, see if it is occupied, and maybe get. You know, I might, even if you sometimes go to public stations, when your charge, your car is charged fully, then you are required to leave quiet, quite quickly, so as to release the spot for another user. So that is a bit of a hassle. If you're in a meeting, then your car is charged. They might call you, or you might get a notification on your phone to say you must leave the spot to release the spot for someone else to charge. It's just a hassle. So, even though the I so to answer your question, I think the number of charging stations is, is quite has increased a lot, and I think, I don't know, because I don't use public station public charging stations, but from my observation I think there are many, many more public charging stations now, and it's quite easy to charge publicly, but I think the reliability and the dependability of finding a station is still questionable.

Bufan LIANG: So do you consider a safety, or battery issues a major concern when you buy EVs?

Prof. S: Not at all, not at all. It's not a safety issue. What was a concern for me is the battery life that will the battery life remain after 4, 5, 6, 7 years, not the safety. I don't worry about the battery exploding or leaking, or anything like that. But battery life was a major consideration.

Bufan LIANG: So the battery is more major concern than the safety.

Prof. S: Yes, the battery life, because like in your phone, after you use your mobile phone for 2 or 3 years, the battery life diminishes right decreases as compared to a new phone. So I was worried. How fast with the battery life for the electric vehicle diminish after 1, 2, 3, 5, 7 years, that was more of a consideration.

Bufan LIANG: I see. So do you believe, owing an EV enhance your image as environmentally conscious or technically forward thinking in your social circle? How much does social identity influence your purchase decision.

Prof. S: Social identity. No, maybe very minimally, maybe a few percent, maybe 5% or something out of a hundred, because I did not purchase the electric vehicle for public recognition or public displays. I purchased it because of my own inherent desire and my interest in electric vehicles, but I do think that sometimes when I discuss with my friends or colleagues about vehicles, and it comes out that I have an electric vehicle, I do think that my image is slightly enhanced. But this was not a driving factor for me personally in my purchase decision.

Bufan LIANG: Oh, I see. So do you think, other guys, if you're free on purchasing an Ev as a way to elevate their social status.

Prof. S: I think so. I think some people definitely purchase EVs to elevate their social status, to demonstrate their environmental consciousness and their forward, looking forward, nature forward, thinking I for some people yes, I think it is a consideration.

Bufan LIANG: what do you think is the biggest challenge for Hong Kong, facing in the promoting Ev adoption.

Prof. S: You know. To be honest with you, Bufan. I think that now the challenges have. almost, in my opinion, been eliminated. I think Ev. Adoption is extremely widespread. Now I think Hong Kong has been experimenting with EV adoption for more than 10 years like I mentioned, my 1st purchase was about 12, if I remember correctly, about 12 years ago. I think now EV. Adoption is very widespread. Maybe having more variety of cars now is probably, it's not a big challenge, but among the small challenges having a wide variety of choice is probably the biggest challenge, because if you go to Shenzhen or Guangzhou, you will see the number of models of EVs is tremendous, is far greater than the number of models of EVs in Hong Kong. So if Hong Kong consumers had such a large choice as consumers in in mainland China do that would probably help accelerate the adoption of EVs even more.

Bufan LIANG: Oh, I see. So, Professor. The last question is, if the Government provided some more incentives, like the free charging like the reduce the parking fees. Would it increase your willingness to purchase an EV.

Prof. S: Absolutely, I think free charging is a big deal, because, as you know. Charging, depending on how much you drive. Charging is much more frequent as compared to putting gasoline in your car. If you put gasoline in your car and you drive for 100 kilometers, maybe you don't need to put refill your tank, but if you put, if you change your electric vehicle and you drive for 100 kilometers, maybe you need to charge after one day or something. So I think free charging would definitely be a huge bonus, because free charging would mean that your running costs are basically 0. Right? So that would, in my opinion, tremendously increase the adoption of EVs. If the running costs could be reduced significantly by making the electricity free for charging vehicles.

Shusen DENG: Based on what you know about the current situation of electric cars in Hong Kong. And what policy suggestion do you have for the Government to facilitate the promotion of private cars?

Prof. S: I think, what we just discussed at the tail end of our previous questions, making electricity the cost of electricity for charging a vehicle cheaper or 0 would be a big plus, and maybe providing more subsidies for the 1st registration tax. As you know. Now, there is a subsidy for the 1st registration tax. That subsidy was greater in the past, and now it is less so. If that subsidy can be increased, I think it will help with the adoption of EVs. So when I purchased my Tesla 10 years ago. The 1st registration tax was 0. There was 0 1st registration tax. You might. If you've done your research, you probably know that in the past Hong Kong was waiving the 1st registration tax, and that was a huge incentive to purchase EVs. Now there is some subsidy, but the subsidy is much less, and it also is dependent on you. Trading or changing your ICE vehicle in favor of EV.

Shusen DENG: This suggestion is also what we want to give into the government. But when we discuss with our clients and our professors, they will doubt the feasibility of such suggestions. It's like you give more subsidy. You give free of charge. It will increase the burden of the government. The government will not be likely to accept this suggestion. So, is there any way to balance the burden and flexibility, or also can increase the willingness to purchase a next EV?

Prof. S: Yeah. So the current way, I think, is quite a good balance, because the current way is, you must submit. You must trade in your ICE vehicle in place of an electric vehicle. and I feel the current way has arrived after rounds and rounds of negotiation and discussion among the agents and sellers, and also the government goals. So your question is, what else? How do you balance everything? I think, then, gives us what I said earlier, encouraging more mainland EV manufacturers to offer more choices to consumers in Hong Kong. When I go to the mainland, I see EVs. And I say, wow! That looks like a Porsche. I would like to buy that EV, but it's not available in Hong Kong. So if I have a choice that will increase my desire to purchase the best EVs.

Haotian WEN: If your Tesla model has an autonomous driving feature 10 years ago.

Prof. S: Yes, the one I'm driving now is was purchased 7 years ago, and it that one does have autonomous, driving features.

Haotian WEN: And would the inclusion of like full, autonomous, driving features in the future influence your decision when you purchase the next EV?

Prof. S: No, because autonomous driving can be in ICE cars as well. Right? Autonomous driving is not necessarily connected to EVs only. So that feature for me is actually not a big game changer in terms of my decision. I think one thing is that you know. Now, the if you look at the mainland, Chinese manufacturers, their electronics are very good, the display, the voice recognition, the interface and the Internet connection that has become very, very, very advanced in the mainland Chinese EVs. And those kinds of features are quite attractive for purchasers. But once again. As Haotian's previous question, I'm not sure if those features can only be in EVs. If they can be in ICE cars, then it once again. It's not a game-changer. But I just noticed that in many of the EVs that are manufactured in by mainland Chinese manufacturers. They have very advanced and very sophisticated electronic interface and you know the displays inside the car that display voice recognition, the capabilities. You can play movies; you can listen to songs you can connect to the Internet blah blah blah blah. You can do so many things. Those kinds of features make the mainland Chinese manufactured. EV is very attractive.

Appendix E: Interview Transcript 2

Interview Date		March 27, 2025	
Interviewee's Name		Mr. F	
Position Title	The Legislative Council of Hong Kong	**Position Dept.**	The Transport functional constituency

Interviewer: Thank you. To briefly introduce our project, we focus on promoting the adoption of electric private vehicles (EVs) in Hong Kong. As you represent the shipping and transportation sector in the Legislative Council, we would like to discuss challenges and opportunities related to private EV adoption in Hong Kong. Firstly, we'd like to understand if the government has evaluated the effectiveness of incentive policies such as the "One-for-One" replacement scheme and the first registration tax exemption. Have these policies met expected targets?

Mr. F: Regarding your question, originally EVs were completely tax-exempt to encourage adoption, which lasted around two to three years. Subsequently, the government reduced the tax exemption benefits, especially for vehicles priced over HK$500,000, for which subsidies were eliminated. Vehicles priced below this threshold still enjoy reduced tax benefits. This adjustment reflects the government's perception that EV market penetration has significantly increased, indicating current policies are effective.

As to whether we should further increase tax incentives to encourage EV purchases, I think EVs in Hong Kong are already quite affordable, especially with lower-priced EVs from Mainland China. People primarily switch to EVs due to expensive petrol prices in Hong Kong, among the highest globally. For frequent drivers, switching to EVs significantly reduces fuel expenses. However, convenience of charging remains a major consideration. If people can install chargers at home, adopting EVs immediately saves substantial money. Without home charging options, however, external charging becomes inconvenient and time-consuming, reducing the attractiveness for busy individuals.

Mr. F: Currently, many Hong Kong residents closely observe government efforts to enhance charging infrastructure. If charging facilities become widely available, residents might accelerate their switch to EVs, especially considering potential cancellation of tax incentives in the future. People are calculating and weighing these factors carefully.

Interviewer: We are also aware of the roadmap to phase out new registrations of fuel vehicles by 2035. Do you foresee any issues with this target?

Mr. F: Stopping new registrations of fuel vehicles by 2035 poses no significant problems. Existing fuel vehicles can still operate, just no new licenses issued. With about ten years left, EV adoption rates should be sufficiently high by then.

Interviewer: Considering fuel vehicles, might there be tougher measures or reduction in related support and incentives to encourage shifting more towards EVs?

Mr. F: In the next decade, developments like BYD's new ultra-fast charging technology, which can fully charge a vehicle within about five minutes—comparable to refueling ICE vehicles—might change the scenario dramatically. Currently, commercialization still faces challenges. Besides charging efficiency, battery capacity to handle such energy transfer also requires development. Nonetheless, significant technological breakthroughs in EVs are expected within the coming years. The EV industry in Mainland China is highly competitive, causing some manufacturers like NETA to close. Hence, when choosing an EV, brand stability, like Geely's, is crucial to avoid future issues.

Interviewer: Regarding charging, you previously mentioned Hong Kong's public charging infrastructure is significantly inadequate compared to EV adoption rates—approximately one charger per eleven EVs, versus one per three in Mainland China. Given Hong Kong's limited land resources, what optimization measures could be implemented for charging infrastructure?

Mr. F: The government's current thinking is that ideally, every residential parking space should have its own charging station. However, this is difficult to achieve. Firstly, not all housing estates have sufficient power supply capacity. Secondly, in densely populated areas, challenges arise with older developments. Under the previous subsidy scheme, the cost of installing a charging station was estimated at HK$30,000 per unit. If a parking facility had fewer than 500 spaces, the government could subsidize the full cost, but above that threshold, it became complicated. Even though the actual installation cost is less than HK$30,000, a cap of HK$15 million was set per application.

When funding is insufficient, residents are asked to contribute. But some may not find it worthwhile—for example, those planning to move in a year may not want to pay for a charger they won't use. This leads to disputes and delays. In many cases, nothing gets implemented due to conflicting interests among residents. In my view, however, at least HK$15 million should be invested per site, considering future electrification is inevitable. Still, there are many who say: "I just bought this flat. I'll move in a year. Why should I pay?"—especially when they don't plan to use EVs. Therefore, consensus is hard to reach. In such cases, the government needs to work more actively with fuel companies, as is already being done in Mainland China. In Mainland China, many gas stations already provide

electric and hydrogen charging services. Safety is generally not a major concern. But Hong Kong has limited space compared to the Mainland, where gas stations are much larger, so implementation here is more challenging.

Alternative methods are being considered. For example, in some parking lots, mobile charging services—like large portable battery packs—are being deployed. Another innovation involves installing battery swap stations in public areas, similar to tire replacement services. When an EV is low on power, a technician can come and quickly swap the battery. We are currently helping develop this idea.
If implemented, over 100 such charging or swapping points could be distributed across Hong Kong, which would significantly help. Additionally, many private investors are showing interest, especially those who own land in the New Territories. They are applying to change land use designations to build charging facilities. If the government could simplify related procedures, it would be very helpful.

Currently, if the land's designated use is not for charging infrastructure, developers must apply for rezoning—an often lengthy and complex process. Negotiating with power companies to provide electricity to these sites may also take several years.

Interviewer: This ties into land use planning. How does the government balance the interests of developers, property owners, and the public when it comes to allocating land for charging infrastructure? We've also learned that the "EV-charging at Home Subsidy Scheme" (EHSS) has been suspended. Can you comment on that?

Mr. F: Yes, the EHSS has run out of funds. Some housing estates were unable to implement installations in time. Although many applied, the allocated budget has been fully used. We currently face a funding shortfall.

Interviewer: Have there been any appeals from industry stakeholders—developers, property owners, or residents—regarding land use for EV charging infrastructure?

Mr. F: Now, newly constructed residential buildings are required to be 100% EV-ready. This is a good development, as pre-installation during construction is cost-effective. However, retrofitting existing buildings is far more difficult. Fortunately, most new buildings are already compliant.

Interviewer: As EVs become more popular in Hong Kong, the demand for fast charging is increasing. This could strain the power grid and drive-up energy costs. What measures might the government take to alleviate this?

Mr. F: There's not much the government can do in this area. Electricity is supplied by private utilities, not the government. Hong Kong has never subsidized electricity costs. People often compare the per-kilometer cost of

petrol versus electricity—petrol costs about HK$2 to HK$3 per km, while electricity only costs a few cents. So it's already very affordable.

Interviewer: But as fast-charging becomes more widespread, won't the per-unit cost of electricity increase?

Mr. F: Yes, fast chargers require higher investment, so the cost per unit of electricity may rise. However, this raises a fundamental question of value of time: how much is your time worth? Are you willing to spend an hour charging slowly to save money, or would you rather pay more for a five-minute fast charge? This is ultimately a market decision. People can choose between ultra-fast, fast, or slow charging based on their preferences.

Interviewer: Now moving to technology—what about emerging R&D in hydrogen fuel cells, fast charging, and battery recycling? Will the government support industry-academic-research collaboration to drive innovation?
Mr. F: In Hong Kong, we've traditionally focused more on academic research than on commercialization. Local universities are research-heavy, but turning research into market-ready products remains rare. So, our approach now is to partner with businesses—conduct R&D in Hong Kong but commercialize in the Mainland. Hong Kong simply doesn't have the cost structure or land resources to compete. That said, R&D partnerships with the Mainland are viable and increasingly common.

Interviewer: Some argue that such collaboration is not highly feasible. What's your view?

Mr. F: Actually, many are already doing it. It's not unfeasible. While success stories are few, interest is growing. For example, companies have approached me about importing advanced charging equipment from Mainland partners and installing it in Hong Kong. Mainland China leads in this area, particularly battery technology.
As for hydrogen fuel cells, they are promising for larger vehicles like buses. For smaller cars, regular EVs suffice. Hydrogen, however, presents safety and storage challenges—it requires special temperature and pressure controls. Despite this, by 2026 or 2027, we expect hydrogen refueling stations to appear in Hong Kong.

Last year, I visited a demo site in Shanghai where a container truck using methanol fuel was showcased. The vehicle cost RMB 500,000—significantly cheaper than current hydrogen trucks, which cost around RMB 1 million.

Mr. F: Green hydrogen is still expensive, but Hong Kong has a transitional advantage—our town gas already contains 50% grey hydrogen. While it's not green, it can serve as a bridge solution. Extracting hydrogen from gas pipelines allows interim use until greener solutions mature.

Hydrogen-fueled vehicles have similar interfaces to conventional vehicles, though the engine and fuel tank require added protection. While the energy density is lower, the difference isn't drastic. Overall, hydrogen is relatively safe, and Hong Kong is already piloting hydrogen vehicle programs. I believe hydrogen fuel adoption is promising in specific segments.

Interviewer: In light of Greater Bay Area integration, how can Hong Kong collaborate more closely with cities like Guangzhou and Shenzhen? Is a unified charging standard or a cross-border charging network possible?

Mr. F: Honestly, I don't see much movement on that yet. In shipping, yes, we talk about green corridors. But for EVs, Mainland China is already mature in terms of charging. Hong Kong is just trying to catch up on infrastructure.

We currently follow many EU standards, but I believe we should shift toward Chinese national standards. After all, China is the global leader in EVs. If we align with national standards, we'll benefit from greater integration and broader market access.

Interviewer: Lastly, what gaps do you see in current government efforts to promote private EV adoption, and what opportunities should be pursued?

Mr. F: Frankly, the government doesn't need to push much—many people already want to switch to EVs. In the early days, choices were limited, but now there are many models. One issue is the lack of right-hand-drive vehicles. Most options are for left-hand-drive markets like Southeast Asia and the UK. But model diversity is improving.

Mainland China's market is huge. If you want a ICE vehicle, you still need to queue for license plates. But with EVs, you can buy and drive immediately. Domestic production can barely meet local demand, and manufacturers are also targeting international markets. Eventually, traditional markets will slow down, but more affordable EV models will continue to emerge.

From a consumer standpoint, EVs are already very affordable. In Hong Kong, BYD models cost HK$200,000–300,000—much cheaper than comparable European models. For example, when I visited Shanghai, I rode in a Hongqi EV that felt incredibly smooth and quiet. It cost about RMB 500,000. If that car were sold in Hong Kong, it would easily outcompete a Mercedes costing double.

Interviewer: Do you think colleges should help train EV technicians?

Mr. F: Yes, we are discussing this. Currently, there are some training programs related to EV battery recycling and disposal, but not enough. I've heard some suppliers and automakers are offering training, particularly for dealerships to handle battery replacement and vehicle maintenance. However, this area still needs substantial improvement.

Interviewer: Some regions are discouraging ICE vehicles by increasing fuel taxes to incentivize EV adoption. Could this approach work in Hong Kong?

Mr. F: We don't need that in Hong Kong. If charging infrastructure becomes more widespread and accessible, people will naturally switch to EVs. The main barrier now is inconvenience in charging. In my residential estate in Kowloon, we are among the first with 100% EV charging readiness, and many cars are already EVs.
Earlier, model selection was limited, but now the range is expanding, which boosts attractiveness. Also, if someone has only owned a car for three or four years, they likely won't replace it immediately. However, if tax incentives are removed next year, people will have to re-evaluate.

Even without incentives, current EV prices are low enough to attract buyers. For example, BYD EVs cost only HK$200,000–300,000. I recently rode in a Hongqi in Shanghai—its suspension and interior were excellent. It cost RMB 500,000. If brought to Hong Kong, it would rival a Mercedes priced at HK$1 million. There's little reason to pay double for a European brand when Chinese EVs offer comparable quality at a lower price.

Appendix F: Interview Transcript 3

Interview Date		March 27, 2025	
Interviewee's Name		Mr. J	
Position Title	Car Rental Staff	**Position Dept.**	Carfun Club Limted

On Charging Infrastructure

Q1: What is the most commonly used method for daily charging for your Tesla fleet (e.g., private charging stations, public stations, Superchargers)?

Mr. J: Regarding charging infrastructure, over 95% of our company's Tesla vehicles primarily rely on Tesla Superchargers.

Q2: From your customers' feedback, do they frequently mention issues related to charging (e.g., insufficient number of chargers, long waiting times, inconvenient locations)?

Mr. J: Most customer feedback centers around the charging speed and occasionally insufficient numbers of charging stations, resulting in waiting times extending by an extra 20 to 30 minutes.

Q3: In the short term, what types of charging infrastructure or areas in Hong Kong do you believe should be prioritized (e.g., fast or medium-speed chargers)?

Mr. J: I think Hong Kong generally has an adequate number of charging stations—around 600 fast Superchargers and approximately 2800 medium-speed chargers that cover extensive areas. However, some remote locations, such as Clearwater Bay, Sai Kung, and parts of the Northern District, still have insufficient charging facilities, leading to longer waiting times.

On Maintenance and Repairs

Q4: What are the most frequent repair or maintenance issues encountered with the Tesla vehicles you lease?

Mr. J: Regarding maintenance and repairs, common issues for our Tesla vehicles primarily include malfunctions in the air conditioning system and door handle mechanisms, both of which are frequent minor problems.

Q4: Do you consider the current electric vehicle maintenance services in Hong Kong convenient? Have you encountered problems such as high costs, shortage of spare parts, or prolonged waiting times when repairing Tesla vehicles?

Mr. J: In my view, the convenience of electric vehicle maintenance services in Hong Kong is quite low, mainly due to a shortage of skilled technicians. Throughout our two to three years of operation, we have struggled significantly to recruit qualified personnel and identify suitable partners, making the situation particularly challenging.

Q5: Do you perceive a shortage of qualified electric vehicle technicians in Hong Kong, and how significantly does this impact your rental business?

Mr. J: As mentioned earlier, there is a significant shortage of specialized electric vehicle technicians in Hong Kong. This shortage impacts our business by approximately 20 to 30 percent. Extensive waiting times and difficulties in finding competent maintenance workshops—despite collaborating with over 20 repair shops—have limited our viable partnerships to just one or two workshops, substantially affecting our overall business operations during the exploratory phase.

On Electric Vehicle Batteries and Environmental Issues

Q6: With the increasing number of electric vehicles in Hong Kong, do you believe the government faces pressure regarding battery recycling and reuse, and what measures should be adopted to address these environmental concerns?

Mr. J: With the growth of electric vehicles, the Hong Kong government undoubtedly faces pressure concerning battery recycling and reuse. However, I have not strongly sensed active government attention or support in this area. Compared to Mainland China, where substantial efforts and technological initiatives exist for recycling and efficiently reusing electric vehicle batteries, Hong Kong significantly lags behind. Therefore, it would be beneficial for Hong Kong to learn from Mainland China's approach to battery recycling and reuse.

On Consumer Behavior and Market Demand

Q7: What are the main reasons your customers choose Tesla for rentals (brand, performance, environmental factors, government policies)?

Mr. J: Our customers primarily choose Tesla because of its strong brand recognition and competitive pricing. Recently, the prices in the second-hand car market have decreased, reducing our acquisition costs. This cost reduction allows us to pass on savings to consumers, making Tesla rentals comparatively affordable. Tesla's strong brand identity further enhances its attractiveness relative to other electric vehicle brands.

Q8: How do most customers feel about their experience with electric vehicles? Do concerns such as range anxiety or charging issues cause customers to reconsider renting?

Mr. J: Most customers express high satisfaction with the driving experience and comfort of electric vehicles. However, a small percentage, about 5 to 8 percent, still experience range anxiety and frequently face concerns about recharging requirements.

Social Influence and Advertising

Q9: Have you observed customers choosing Tesla rentals due to recommendations from their social circles or peer influence?

Mr. J: Indeed, I have observed many customers noting Tesla's growing market presence in Hong Kong, further reinforced by strong brand recognition and peer recommendations. Our customers often discuss and share their experiences and reasons for selecting Tesla, especially since Tesla was among the first electric vehicle brands to enter the Hong Kong market, benefiting from substantial geographic advantages. Tesla also enjoys priority access in various shopping malls and corporate parking facilities, significantly contributing to its success in the Hong Kong market.

Q10: Does Tesla's advertising or market promotion significantly impact your rental business?

Mr. J: Tesla's advertising and promotional strategies have not significantly influenced our business growth. Most customers already have strong brand familiarity, either through previous riding or driving experiences, reducing the necessity of additional advertising or promotional measures to stimulate interest.

On Government Policies

Q11: Which electric vehicle promotion policies (such as first registration tax exemption, "One-for-One" replacement scheme) do you consider most effective, and what measures require immediate adjustment or improvement?

Mr. J: The government's "One-for-One" replacement scheme has proven highly successful, greatly increasing the market penetration of electric vehicles. Previously, Tesla sightings were rare—perhaps one Tesla per fifty vehicles—but now Tesla are frequently seen, dominating the streets. Additionally, preferential policies on parking fees have also positively impacted electric vehicle adoption. The expansion of charging infrastructure in public housing estates and government parking facilities further supports electric vehicle proliferation and growth in Hong Kong.

Appendix G: Interview Transcript 4

Interview Date		April 16, 2025	
Interviewee's Name		Ms. M	
Position Title	Councilor of Central and Western District	**Position Dept.**	Central and Western District Council

Issues related to promoting the adoption rate of electric private cars in Hong Kong:

Interviewer: In recent years, the number of new registrations of e-PCs in Hong Kong has increased significantly. As one of the core areas of Hong Kong, the Central and Western District, as a member of the Central and Western District Council, from your observation, what is the current adoption rate of e-PCs in the Central and Western District of Hong Kong?

Ms. M: From the data, it can be seen that the proportion of electric private cars is less than 10%, which is relatively low. Overall, most people currently do not have the power to switch to electric vehicles. There are three reasons for this:

The first issue is the incomplete charging facilities. For the Central and western districts, there are usually only 4 to 5 parking lots with charging facilities, and they are often fully occupied throughout the day. At the same time, the charging speed of the charger is low, with only 10-20% of them being fast chargers. This leads to a long charging time for car owners, which is inconvenient in HK. The best solution is to have your own charging facilities, but this cannot be achieved in Central and Western Districts (because there are not many parking lots to start with, and without parking Spaces, people naturally won't consider buying a car). Those who have their own parking Spaces are usually in the mid-mountain area, where most of the people are middle-class.

The second is the issue of approval. Previously, the number of EHSS applications was large, but the approval time was very long. Some have not been approved yet, and some have been approved but the funds have not been in place, making it impossible to tender. So people's desire to buy or replace electric vehicles is not high either.

The third is the issue of the market. At present, there are very few brands of electric vehicles in the Hong Kong market. BYD only started to exist recently. It didn't exist one year ago. At present, Tesla still dominates the market alone, and the prices of its electric vehicles are very high. While in the mainland, there are discounts for charging electric vehicles in parking lots, there are none in Hong Kong. There were indeed subsidies for electric vehicle replacement in the early stage, but currently the supply has not increased. The price of cars is still very high, and

the effect of the subsidies is actually not significant, especially when compared with the mainland. At present, we are stuck at this stage, and the proportion of electric private cars remains at this level. Moreover, the government cannot force the public to switch to electric vehicles.

Interviewer: According to the previously released roadmap for the popularization of electric vehicles, the Hong Kong government plans to stop the registration of new traditional fossil fuel private cars (including hybrid vehicles) by 2035. According to your understanding, given the current popularization speed and development trend of e-PCs, apart from policies such as “One-for-One” and tax reduction plans, in what other aspects does more effort need to be made to achieve this goal? Will the government consider introducing more policies in the future to further promote the popularization of electric private cars in Hong Kong?

Ms. M: At present, there are no large-scale incentive policies. This is because the government’s fiscal deficit is still quite serious at present. Besides, this goal (about EV) is not the most urgent at present. Therefore, the government has not introduced any new major policies. However, as far as I know, there are currently some new minor policies, but they are mainly those related to supporting measures. For instance, with the “Easy Charge” APP, you can see whether the nearest charging facility has available positions (vacancy rate) and what the speed is, etc. It didn’t exist before.

Then the government is currently attempting to communicate and negotiate with private parking lots to set aside a portion of the private parking lots for public use. For example, there are about 15 charging facilities under the Bank of China Building, which are only used by the members of their own company. So now the government wants to try to negotiate with the Bank of China to see if, if these charging facilities are already sufficient for the members to use, about five can be made available for public use to relieve the pressure on public parking lots. Of course, this does not mean that free ones can be charged in the form of monthly passes or other methods. In conclusion, it is intended to utilize the existing resources to provide public services. This might be of some help to the popularity rate.

But the most important thing is still to look at the data. Not only is there a shortage in Central and Western Districts, but also the overall situation of Hong Kong needs to be taken into consideration. Since the total number of charging facilities is limited, it is necessary to consider how many charging facilities should be allocated for the residents of which area to use. Moreover, in many cases, his place of residence and place of work are across districts. If there is enough place of residence but not enough place of work, it is also not acceptable. So the government needs to calculate how much demand there is, how many charging facilities there are, and what the situation is like. It would be best if the data could be shared with these private parking lots. See when the usage is relatively high. It serves as a reference basis and adjustment plan for future charging and parking adjustments. But it cannot be achieved in

the short term. Because some parking lots are private and you can't even get in, the current data transfer is a bit difficult.

Interviewer: The difficulties related to charging are one of the key factors affecting the growth of electric private cars, and the land resources and related planning in Hong Kong are actually quite tight. We have learned that many charging facilities are concentrated in the central commercial area. Moreover, many residents in the residential buildings are old, and the approval process for installing charging facilities is also very complicated. In response to this situation, in our own project, there is a measure that is to add several more charging devices to the existing charging base stations. This way, it will not increase the pressure and economic cost of building new charging infrastructures significantly. Do you think this method is feasible?

Ms. M: We have also mentioned this method. Especially in government parking lots, for instance, the number of charging facilities should be increased from 20 to 50. However, this also requires data support to see where the increase is needed and where it is not, because it cannot be said that the overall increase will occur as you also know the financial situation of the Hong Kong government. Another point is to understand the travel range of the residents, whether they cross districts, and the usage of charging facilities in each area. For instance, if the Central and Western Districts are full 24 hours a day, then it's definitely necessary to add more. Some parking lots in the government can be added first. However, it is difficult for the private sector to release parking spaces that can be charged, and the government is currently unable to obtain the data either, so it cannot be analyzed.

Interviewer: As the market share of domestic electric vehicle brands in Hong Kong gradually increases, what opportunities and impacts do you think this will bring to the improvement of the adoption rate of e-PCs in Hong Kong and the development of related local industries?

Ms. M: From an economic perspective, if more brands enter Hong Kong, it will increase the choices of residents, which is a good thing for consumers. There must be many brands. More brands can enable this market to compete in a healthy way. Firstly, it can bring down the price of electric vehicles. Compared with Tesla, they have a competitive edge, and the price can be reduced. This must be beneficial to citizens. After all, the cost of buying a car will decrease. Another point is that many Hong Kong people actually have concerns about the technology of domestic brand cars. But the reality is that, for instance, companies like BYD and XiaoPeng, if they have technical issues, cannot enter the Hong Kong market. Since Hong Kong adopts international standards, if there are technical issues and the technology fails to meet the international standards, it will not be able to enter the Hong Kong market. So there is no need to worry about this aspect. Overall, I think that for the citizens, when there are more brands and styles, there will be competition in the EV market, and it will also promote the overall penetration rate in Hong Kong.

But there is a core issue here, which is recycling (not just batteries). At present, Hong Kong is unable to handle such a large volume of recycling. Regardless of whether it is an EV or not, from the perspective of the entire recycling industry, currently only 20% of all recycling in Hong Kong is handled locally, while the remaining 80% is processed in the mainland or Southeast Asia. If Hong Kong is to vigorously develop electric vehicles in the future, it must deal with the recycling problem of electric vehicles by itself. Whether the recycling facilities can be properly implemented is also a very important factor affecting the popularization of EVs. Then citizens would consider saying, "I bought an electric vehicle. How can I deal with such a big battery? I'm sure I can't handle it myself. There must be a dedicated company to handle this." Tesla itself does offer such services. It says that if there are used batteries, they have their own dedicated processing plants to handle them. However, there are still relatively few other brands at present, and the local recycling industry in Hong Kong is also far from mature and complete. Therefore, more progress is needed in the recycling sector.

Interviewer: In terms of the environment, promoting e-PCs plays a relatively important role in Hong Kong's achievement of environmental goals such as reducing carbon emissions and improving air quality. With the increase in the number of EVs, the disposal of used batteries has become a new environmental challenge. From the perspective of ESG environmental dimensions, how is Hong Kong making progress in the construction of an electric vehicle battery recycling and reuse system at present? In which aspects does it still need to be strengthened and improved?

Ms. M: (It was answered when answering the previous question)

Interviewer: At the community level, promoting e-PCs requires the extensive participation and support of community residents. Do Hong Kong have any relevant community advertisement plans, such as holding lectures on electric vehicle knowledge and other community activities, to enhance residents' awareness and acceptance of electric vehicles and promote their popularization?

Ms. M: At present, the Environmental Protection Department under the Environmental Ecology Bureau is promoting this matter in terms of publicity. There was an advertisement of EV charging in housing estates before. But the intensity is not sufficient. At that time, not many people had private cars and there weren't enough parking lots either. Those who have the money to buy cars all live halfway up the mountain and are very scattered, which is not conducive to large-scale promotion. Of course, there have been cases of sending leaflets as well. But such face-to-face advertisement is definitely not enough. If it is directly promoted to the public, then the next questions for everyone will be how many charging facilities there are, whether there are enough charging facilities, whether there are many parking lots, whether it is convenient to park and charge, and where to recycle the batteries after

they are used up... Before these problems are solved, the advertisement will not be particularly vigorous and will not have significant results.

At present, what the government mainly promotes is about recycling, just like the garbage classification and so on as you all know. At present, negotiations are also underway to introduce different car brands. Now, the views of many Hong Kong officials and the public have changed, and many people are going to the mainland to look at cars. So after such voices emerged, the government has begun to approach some brands, saying that the time is ripe now to see if they can cooperate. It would be best if they could offer a one-stop service, from purchasing electric vehicles to recycling batteries. If there are such enterprises that can undertake the entire set of services and if there are more and more such brands, it is believed that the government will vigorously promote electric vehicles. Hong Kong is currently lacking such a complete industrial chain. It is hoped that the existing industrial chain can be mobilized as soon as possible. After being mobilized and developed, it is quite effective to carry out promotion. So in general, promotion depends on the time period.

Interviewer: Then, if the entire industrial chain is to be developed, how can the government cooperate better with enterprises? How can a complete cooperation or communication mechanism be established?

Ms. M: The government will discuss the relevant situation with enterprises. Now a dedicated responsible team has been established to handle this matter. At present, the government will go out to promote Hong Kong. Businesses are welcome to come. Businesses also need to consider commercial value. The current negotiation mechanism is both a government decision and a business decision, so it may not be fully disclosed to everyone about who is responsible for which company contacted whom. But in any case, there is a clear negotiation mechanism at present, and the government is also making efforts to do so.

Issues related to the popularity of electric private vehicles in Hong Kong from an ESG perspective:

Interviewer: ESG emphasizes the concept of long-term sustainable development. In the process of increasing the penetration rate of e-PCs in Hong Kong, in your opinion, how should the government balance short-term investments (such as infrastructure construction costs, subsidy expenditures, etc.) with long-term environmental and social benefits to ensure the long-term advancement of the electric vehicle popularization plan?

Ms. M: From the perspective of the government, it is impossible to complete the entire project alone. The distinctive feature of the Hong Kong government is that first of all, it introduces the business community (enterprises) to build some parking lots and charging facilities, and the government offers appropriate incentives. Since the government currently has no independently profitable projects but only funds, it needs the help of the

business community to invest and finance projects. The second one is to issue bonds. At present, the main focus is on promoting ESG projects, publicizing some ESG and environmental protection concepts, and seeing if citizens think there are any with investment prospects, then recruiting citizens to purchase. Because you also know that what the financial industry invests in is never the future of this enterprise, but the concept of this enterprise. You see, Tesla actually mainly sells its ESG concept, which is why so many investors are willing to invest in it.

Of course, the government will also allocate funds for investment on its own, but currently the largest source of income in Hong Kong is land sales. But how much land can be sold? How much land is still available for sale? So if the government were to rely solely on setting up charging facilities and parking lots, it would be quite difficult to obtain funds. So at present, green bonds are still mainly relied upon to supplement the insufficient funds for this kind of infrastructure.

Interviewer: Has the government invested in any research institutions, universities, etc. to study the technologies related to electric vehicles at present? Let the industry develop.

Ms. M: At present, it is mainly the Trade and Industry Department under the Innovation and Technology Commission that has investments and funds to promote industrial research and development. These funds will be available when enterprises apply. However, the government will not personally get involved in promoting technological research and development. Because professional tasks should still be assigned to professionals. At most, enterprises and industries can be regarded as advanced demonstration industries, and then the government can act as an institution providing funds to help enterprises raise funds, etc. However, research and development still basically rely on the enterprises themselves. For instance, Citybus has applied for funds for research and development and obtained some funds from the government to develop the technology of its electric buses. Now these buses can pass through undersea tunnels (because they were previously afraid of some potential safety hazards). From the government's perspective, it's impossible to provide you with 100% of the funds, but basically 50% is also acceptable. Hong Kong's Science Park and Cyberport are places provided by the Hong Kong government for enterprises to raise funds for research and development. However, at present, there is only data on "how many enterprises have settled in", and it is not clear exactly how many of these enterprises are involved in electric vehicles.

In fact, if it is a research team that studies electric vehicles, such teams are actually not many. Many important technologies ultimately still rely on car manufacturers (vehicle producers). Without car manufacturers to produce products, independent research and development is rather difficult. The current research and development efforts of universities might also be to assist some car manufacturers/ producers in having products. Or rather, if some university professors have their own technologies, they usually cooperate with industrial companies (sell to them or serve as technical advisors, etc.).

Interviewer: We currently have a policy alternative, which is to increase the registration tax on ICE vehicles. Do you think this plan is feasible in Hong Kong?

Ms. M: From an economic perspective, there are two aspects: one is the cost of purchasing a car, and the other is the operating cost. From the perspective of enterprises, doing so would actually undermine the business environment in Hong Kong. However, after Trump took office, the cost of diesel locomotives is bound to rise. So if this is not done, the cost may not drop very low either. The second is about the issue of increasing the fuel tax. In fact, if you want to change people's behavior through taxes, I wonder if you have heard that the entry and exit taxes in Hong Kong have increased recently. For example, the entry and exit taxes you have to pay when taking a flight will be higher (some purposes for doing so are mentioned here, but I have forgotten). In other words, raising tax rates is one approach, but such actions should only be initiated after all other issues are fully prepared, such as charging problems, time costs, and financial costs. There are also issues such as recycling and so on. If costs are raised before these problems are solved, it will definitely cause dissatisfaction or even resistance from the public. For instance, when it comes to garbage charging, in Hong Kong, the recycling system is not yet very good. If you can't sort the garbage clearly, you have to pay. Moreover, if you don't do it, it's like breaking the law. Many people have come to me to complain and ask why I charge. I can only mediate, saying that the government has its own purpose in doing so while helping them submit opposition letters.

Sure, the practice of increasing taxes and fees also exists in other countries. There are examples in reality, but these countries only implement such policies at the final stage. To put it in sequence, first solve the charging facilities issue. After the charging problem, the recycling problem and the supporting facilities are complete, then carry out publicity. After the publicity is in place, then increase the money to "force" the remaining people to switch to electric vehicles.

Then there is the comparison of costs. It is also due to the current issue of incomplete infrastructure in Hong Kong. Even if you increase taxes on ICE vehicles now, the cost is still lower than that of electric vehicles (as mentioned earlier, it is not only a financial cost but also a time cost). Therefore, people will think that even if they pay taxes, it is still more cost-effective than electric vehicles. As a result, many people still do not want to switch. Overall, this measure is feasible, but it is necessary to find an appropriate time to implement it.

Interviewer: Currently, this situation is stuck at the stage where there are no supporting facilities (e.g., charging facilities). How is the government breaking the deadlock at present?

Ms. M: It is still necessary to conduct research and find data. This is the top priority. Without data, it is impossible to make any progress. There must be data as the basis for action. When we, as district councilors, communicate

with government departments, we always ask them to come up with a timetable. Which tasks should be accomplished as soon as possible, where there is a shortage and where there is a surplus? In this way, it will be easier for the people below to work. Just having those ideas is not enough.

The second step is that the supporting publicity can be carried out. The district council and others will go to collect opinions from residents (community research) on how to add charging facilities and where to add them. (For example, whether this community is sufficient) place funds and time in the right positions.

Of course, at the same time, as the academic community or legislators with relevant backgrounds, we also feedback the information we can collect to the government. Utilize the power of the people to promote the government's actions.

Interviewer: At present, ICE vehicles and EVs are clearly distinct. Will EV's entry into the Hong Kong market be hindered by the ICE brand?

Ms. M: The biggest obstacle before was that domestic brands had a lot of problems entering the Hong Kong market. Previously, the people of Hong Kong were very reserved about the technology and quality of domestic brands. This is why Tesla holds an 80% market share. Tesla's most profitable approach is also the ESG idea, not by selling cars. In this case, the traditional ice, a foreign brand. There aren't many mainland brands in HK to begin with. Former civil servants in HK were also somewhat resistant to the mainland and its technology. After being introduced, it's fine to explain the technology. Everything is fine, but the explanation is very troublesome. Now let's gradually introduce it for explanation. The cost of Tesla is also very high. It has also been broken at present. All the objective conditions indicate that there is no problem. Many voices have come out saying that they want some brands from the mainland. From the perspective of citizens and the government, gradually change their minds. There is no such sound now.

Appendix H: Interview Transcript 5

Interview Date		April 30, 2025	
Interviewee's Name		Ms. K	
Position Title	Environmental Protection Officer (Air Policy)	**Position Dept.**	Environment and Ecology Bureau

Issues related to the construction of charging facilities:

Interviewer: What are the main challenges or difficulties that the Hong Kong government has encountered in promoting the construction of charging facilities in private residential areas?

Ms. K: Owners of parking spaces in existing private residential buildings often have difficulties in reaching consensus on the installation of charging facilities and sharing of the related costs, making it impossible for individual vehicle owners to charge their EVs at their residences. To promote the installation of EV charging infrastructure in car parks of existing private residential buildings, the Government has launched the $3.5 billion EV- charging at Home Subsidy Scheme (EHSS) in two phases starting from October 2020 to assist car parks in existing private residential buildings and parking lots of housing estates to install EV charging infrastructure, so as to address the technical and financial difficulties often encountered by car park owners in retrofitting such infrastructure.

Interviewer: We have learned that the "EV-charging at Home Subsidy Scheme (EHSS)" launched by the Government has been interrupted due to insufficient funding, do you think the progress before the interruption has met the expected target? Will it continue if there is sufficient funding?

Ms. K: There is no application under the "EV-charging at Home Subsidy Scheme" where the construction progress has been interrupted due to insufficient funding. As at end-February 2025, of the 724 applications approved, 198 parking lots in housing estates (about 34870 parking spaces) have completed the installation works. 2025 will be the peak year for completion of the installation works under the Scheme. Based on the current progress estimation, we expect that a cumulative total of about 77000 parking spaces will have been installed with EV charging infrastructure by the end of 2025. It is expected that by the end of the financial year 2027-28, the funding scheme will have achieved the target of completing the installation of EV charging infrastructure for about 140 000 parking spaces in existing private residential buildings or parking lots of housing estates.

The incentive scheme has successfully facilitated the installation of EV charging infrastructure in many private residential buildings and car parks of housing estates, and at the same time boosted the market demand for and

supply of charging facilities for electric private cars. At this stage, the Government has no plan to further inject funds into the Scheme.

Interviewer: How does the Government co-ordinate the co-operation among property management companies, power companies and private owners to facilitate the smooth construction of charging facilities in residential areas?

Ms. K: Under the "EV-charging at Home Subsidy Scheme (EHSS)", the Environmental Protection Department (EPD) has been maintaining close communication with owners' corporations, property management companies and power companies to provide assistance and technical support, including arranging dedicated project assistants and engineers to follow up on the relevant progress and provide technical support for each approved application, compiling relevant guidelines to assist applicants and project consultants in preparing project specifications and tenders, and holding technical meetings with applicants, project consultants and power companies from time to time, so as to facilitate the smooth construction of charging facilities. These include arranging dedicated project assistants and engineers for each approved application to follow up the relevant progress and provide technical support, compiling relevant guidelines to assist applicants and project consultants in preparing project specifications and tenders, and organizing technical meetings with applicants, project consultants and power companies from time to time, etc., so as to facilitate the smooth construction of charging facilities.

Interviewer: Do you think the current number and distribution of public charging facilities are sufficient to meet the needs of electric vehicle owners?

Ms. K: The government's policy guideline is that owners of electric private cars should try to charge their vehicles on a daily basis at their residences, offices, etc. Public charging facilities are used to recharge electric vehicles during the day. As of March 2025, there were approximately 11180 public charging facilities available for electric vehicle drivers in all 18 districts of Hong Kong, a significant increase of about three times compared to 3350 at the beginning of 2021.

The government has been taking multiple measures to encourage the industry to expand charging facilities and is also glad to see the active participation of the private market. To promote market participation in providing electric vehicle charging services, the Environmental Protection Department completed the marketization of electric vehicle charging services in 74 government car parks in June 2024, entrusting them to the market for operation and charging service fees. With the marketization of the government's electric vehicle charging services, it is expected that more private parking lot operators will install charging facilities in their public parking lots to provide charging services.

Interviewer: Has the government considered which areas to prioritize the layout of the 3,000 fast chargers it plans to build in the next five years?

Ms. K: The Chief Executive's 2024 Policy Address announced that the government will invest 300 million Hong Kong dollars to launch a new plan to encourage private institutions to install high-speed charging facilities (with a rated output power of 100 kilowatts or more). By 2030, an additional 3000 high-speed chargers will be installed to support approximately 160000 electric vehicles, further expanding the charging infrastructure to meet charging demands.

Under the guidance of government policies and the impetus of encouraging measures, we believe that all stakeholders in the industry will comprehensively consider various factors such as the supply and demand of the charging market, technical feasibility, and commercial operation, and select and install charging facilities at appropriate locations throughout Hong Kong (such as areas where charging facilities are still relatively scarce), thereby gradually forming an effective, reasonable and user-demand-friendly high-speed charging network. Promote the further popularization of electric vehicles in Hong Kong. Drivers can also obtain real-time information on the availability of public charging stations through various mobile applications, including the "Easy Charge" launched by the Environmental Protection Department, to find the most convenient location to charge their vehicles.

Interviewer: Can the overall load capacity of the Hong Kong power grid keep up with the expansion speed of electric vehicle charging infrastructure? Are there any relevant evaluations or solutions?

Ms. K: According to the "Regulatory Scheme Agreement" signed by the government and the two power companies, the power companies are responsible for providing, operating and maintaining adequate electricity-related facilities for the development of Hong Kong, and supplying electricity to meet the electricity demand.

Issues related to the advertisement policies and incentive measures for electric vehicles:

Interviewer: How effective are the current first-time registration tax reduction policies and the "One-for-One" replacement plans of the government in promoting the adoption of electric vehicles? How does the government evaluate the effects of these policies? What new policy measures or incentive mechanisms are being considered for introduction in the future?

Ms. K: The government has been encouraging citizens to switch to electric vehicles through various measures, such as the first registration tax reduction arrangement for electric vehicles, including the "One-for-One" scheme, while avoiding the growth of vehicles. Hong Kong has achieved remarkable results in promoting the popularization of

electric vehicles in recent years. At present, the number of electric vehicles in Hong Kong has exceeded 110,000, which is about eight times that of five years ago. The proportion of electric private cars among newly registered private cars has also increased from over 20% in 2021 to more than 70% now, ranking among the top in the world. In addition, the government has funded the industry to test various new energy transport technologies (including hydrogen fuel cell heavy-duty vehicles) under the New Energy Transport Fund and has also launched a subsidy scheme for electric taxis and electric franchised buses to support and promote the orderly green transformation of the industry. The government will also continue to vigorously promote the development of electric vehicles and charging facilities and encourage the active participation of the private market. For instance, it plans to launch a high-speed charging station incentive scheme in the middle of this year. It is expected that this will enable the industry to install an additional 3,000 high-speed charging stations by 2030 or earlier, which will be sufficient to support the daily use of 160,000 electric vehicles. Further expand the charging facilities to meet the charging demands.

Interviewer: How does the government view the possibility of gradually reducing or adjusting the subsidy policy for electric vehicles? How will the future policy direction ensure the continuous development of the electric vehicle market? Has the government considered further enhancing the appeal of electric vehicles by raising taxes on ICE vehicles (such as increasing the initial registration tax or fuel tax for ICE vehicles)?

Ms. K: The government has been committed to promoting the use of electric vehicles, including providing economic incentives to reduce roadside air pollutant emissions and achieve the goal of zero vehicle emissions in Hong Kong by 2050. Nevertheless, to ensure the prudent use of public funds, the government will only provide subsidies after considering relevant factors such as technology and market development and having sufficient grounds.

Therefore, in response to the increasing popularity of electric private cars, along with factors such as the reduction in electric vehicle prices and the increase in vehicle options, the tax reduction for the first registration of electric private cars has been reduced by 40% as of April 1, 2024. Electric private cars with a taxable value (pre-tax vehicle price) exceeding 500000 HKD will not be exempted. The first registration tax for electric commercial vehicles, electric motorcycles and electric motorized tricycles will continue to be fully exempted. The above-mentioned first registration tax relief arrangements (including the “One-for-One” scheme) will expire on March 31, 2026. The government currently has no plans to make adjustments and will review the future relief arrangements in due course.

Interviewer: Has the government already or will it carry out specific public publicity or information advertisement activities to enhance the public’s understanding and acceptance of the electric vehicle policy? If so, which specific methods will be used?

Ms. K: In terms of promoting new energy transportation to the public, the Environment and Ecology Bureau and the Environmental Protection Department hold the "International Environmental Expo" every year, setting up display boards to publicize and promote the use of new energy transportation. Different types of new energy transportation tools were displayed at the expo, with a large number of participants, including suppliers, industry professionals and the public.

The government has also organized other activities to promote new energy transportation in the past. For instance, the New Energy Bus Experience Day and Carnival held on March 2, 2024, was jointly organized by the Environmental Campaign Committee, the Environment and Ecology Bureau, and the Electrical and Mechanical Services Department. Through exhibitions and games, it promoted the safety and sustainability of new energy transportation to participants. Making the public understand that new energy transportation can improve roadside air quality and reduce carbon emissions, which will help Hong Kong achieve carbon neutrality by 2050. Citybus Company Limited and Kowloon Motor Bus (1933) Company Limited also respectively offer hydrogen buses and electric buses, providing free transportation for citizens from designated locations to the Construction Industry's zero-carbon World, allowing citizens to personally experience the more environmentally friendly and superior travel experience brought by new energy buses.

The Environmental Protection Department also lists the current policies and information on promoting the use of electric vehicles on its website. It also has a hotline for electric vehicles and an email address to facilitate the public's understanding and inquiries.

Appendix I: Inductive Thematic Analysis Results

Table 11. Interview results about barriers and challenges

Codes	Example Quotes (Partly)	Theme	Frequency
Private/ Public Charging Facility	"The first issue is the incomplete charging facilities. For … there are usually only 4 to 5 parking lots with charging facilities, and they are often fully occupied throughout the day." "But Hong Kong has limited space compared to the Mainland, where gas stations are much larger, so implementation here is more challenging." "The main barrier now is inconvenience in charging." "Some remote locations, such as …, still have insufficient charging facilities, leading to longer waiting times." "The government's current thinking is that ideally, every residential parking space should have its own charging station. However, this is difficult to achieve."	**Charge**	**15**
Fast Charging	"At the same time, the charging speed of the charger is low, with only 10-20% of them being fast chargers. This leads to a long charging time for car owners." "Currently, (fast charger) commercialization still faces challenges. Besides charging efficiency, battery capacity to handle such energy transfer also requires development."		
Mile Range	"However, a small percentage, about 5 to 8 percent, still experience range anxiety and frequently face concerns about recharging requirements."		
Demand Side & Supply Side	"Maybe having more variety of cars now is probably, it's not a big challenge, but among the small challenges having a wide variety of choice is probably the biggest challenge."	**Market**	**8**

	"One issue is the lack of right-hand-drive vehicles. Most options are for left-hand-drive markets like Southeast Asia and the UK." "The third is the issue of the market. At present, there are very few brands of electric vehicles in the Hong Kong market."		
Market Acceptance	"Another point is that many Hong Kong people actually have concerns about the technology of domestic brand cars."		
Market Survey Data	"The government needs to calculate how much demand there is, how many charging facilities there are, and what the situation is like. It would be best if the data could be shared with these private parking lots. … But it cannot be achieved in the short term. Because some parking lots are private and you can't even get in, the current data transfer is a bit difficult."		
Charger Installation Subsidies	"If a parking facility had fewer than 500 spaces, the government could subsidize the full cost, but above that threshold, it became complicated." "Yes, the EHSS has run out of funds. Some housing estates were unable to implement installations in time. Although many applied, the allocated budget has been fully used. We currently face a funding shortfall."	**Fiscal Burden**	**6**
Electricity Subsidies	"Electricity is supplied by private utilities, not the government. Hong Kong has never subsidized electricity costs."		
Tax Incentives	"However, if tax incentives are removed next year, people will have to re-evaluate."		
Battery Recycle	"With …, the Hong Kong government undoubtedly faces pressure concerning battery recycling and reuse. However, I have not strongly sensed active government attention or support in this area." "Compared…, where substantial efforts and technological initiatives exist for recycling and efficiently	**Recycle**	**4**

	reusing electric vehicle batteries, Hong Kong significantly lags behind."		
Recycling of Waste Parts	"But there is a core issue here, which is recycling (not just batteries). At present, Hong Kong is unable to handle such a large volume of recycling. … If Hong Kong is to vigorously develop electric vehicles in the future, it must deal with the recycling problem of electric vehicles by itself."		
Land Usage Approval	"If the government could simplify related procedures, it would be very helpful." "If the land's designated use is not for charging infrastructure, developers must apply for rezoning—an often lengthy and complex process. Negotiating with power companies to provide electricity to these sites may also take several years."	**Approval Procedure**	**4**
Fund Approval	"The second is the issue of approval. Previously, the number of EHSS applications was large, but the approval time was very long."		
Cultivation Program	"Currently, there are some training programs related to EV battery recycling and disposal, but not enough. …However, this area still needs substantial improvement."	**Technician Personnel**	**3**
Technician Sufficiency	"There is a significant shortage of specialized electric vehicle technicians in Hong Kong. This shortage impacts our business by approximately 20 to 30 percent."		
Service Convenience	"In my view, the convenience of electric vehicle maintenance services in Hong Kong is quite low, mainly due to a shortage of skilled technicians."		
Media Promotion	"There was an advertisement of EV charging in housing estates before. But the intensity is not sufficient."	**Advertisement**	**2**
Offline Face-to-Face Promotion	"But such face-to-face advertisement is definitely not enough."		

Appendix J: The Statistic of Public Chargers

Table 12. The Location and charger quantity of public chargers

Location	Charger Quantity			
	Standard	Medium (≦20kW)	Quick (>20kW & <100kW)	Fast (≧100kW)
Hong Kong Island	**81**	**1764**	**364**	**1**
Central & Western District	5	377	110	0
Eastern District	22	448	87	0
Southern District	4	488	68	0
Wan Chai District	50	451	99	1
Kowloon	**754**	**2088**	**693**	**0**
Kowloon City	102	390	81	0
Kwun Tong	551	887	221	0
Sham Shui Po	36	229	82	0
Wong Tai Sin	15	365	133	0
Yau Tsim Mong	50	217	175	0
New Territories	**1208**	**3260**	**971**	**4**
Kwai Tsing District	59	285	80	0
Tsuen Wan District	15	338	93	4
Sai Kung District	152	273	162	0
North District	160	375	52	0
Tai Po District	10	265	33	0
Sha Tin District	738	762	288	0
Yuen Long District	29	451	130	0
Tuen Mun District	10	195	75	0
Islands District	35	316	58	0

Source: Hong Kong Environmental Protection Department (2025)

Group 13

2025 PAE PROJECT

Driving Sustainable Change: Tackling Barriers to Electric Private Cars (e-PCs) Adoption in Hong Kong

香港科技大學
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

PPOL DIVISION OF PUBLIC POLICY 公共政策學部

POLICY ANALYSIS EXERCISE
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