Confirmed Minutes of the 242nd Meeting
of the Advisory Council on the Environment (ACE)
held on 5 October 2020 at 2:30 pm

Present:
Mr Stanley WONG, SBS, JP (Chairman)
Prof Nora TAM, BBS, JP (Deputy Chairman)
Ir Dr Cary CHAN, JP
Ms Julia LAU
Dr Michael LAU
Prof Albert LEE
Prof Kenneth LEUNG, JP
Ir Dr Conrad WONG, BBS, JP
Ms Carmen CHAN, BBS, JP
Ms Sylvia CHAN, MH
Dr Winnie LAW
Dr SUNG Yik-hei
Ms Christina TANG
Prof WONG Sze-chun, BBS, JP
Mr Owin FUNG, JP (Secretary)

Absent with Apologies:
Ir Samantha KONG
Mr Adam KOO
Miss LAM Chung-yan
Prof LAU Chi-pang, BBS, JP
Mr Andrew LEE
Ir Prof Irene LO, JP
Ir MA Lee-tak, SBS
Mr Simon WONG, JP

In Attendance:

Ms Maisie CHENG, JP	Permanent Secretary for the Environment / Director of Environmental Protection
Mr Simon CHAN	Assistant Director (Conservation), Agriculture, Fisheries and Conservation Department (AFCD)
Mr Adrian WU	Senior Information Officer (1), Environmental

	Protection Department (EPD)
Ms Maggie CHIN	Assistant Director of Planning / Technical Services (Acting), Planning Department (PlanD)
Ms Becky LAM	Chief Executive Officer (CBD), EPD
Miss Dora CHU	Executive Officer (CBD) 1, EPD
Miss Ingrid SUEN	Executive Officer (CBD) 2, EPD

In Attendance for Item 3:

Mr Dave HO, JP	Assistant Director (Air Policy), EPD
Dr MAK Shing-tat	Principal Environmental Protection Officer (Mobile Source), EPD
Miss LAM I-ching	Senior Administrative Officer (Air Policy), EPD

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Action

The Chairman welcomed Members to the meeting and informed that apologies of absence had been received from Ir Samantha Kong, Mr Adam Koo, Ms Lam Chung-yan, Prof Lau Chi-pang, Mr Andrew Lee, Ir Prof Irene Lo, Ir Ma Lee-tak and Mr Simon Wong.

Item 1 : Confirmation of the draft minutes of the 241st meeting held on 11 May 2020 (Closed-door session)

2. The draft minutes were confirmed with proposed amendments by a Member in paragraph 30.

Item 2 : Matters arising (Closed-door session)

3. There were no matters arising from the minutes of the last meeting.

4. The Chairman informed the meeting that Airport Authority Hong Kong had provided information on the percentage of tagged fishes detected under the fish restocking pilot test after the meeting. The information was included in the post-meeting notes to para. 10 of the minutes of the 241st ACE meeting.

Action

Item 3 : The Roadmap on the Popularisation of Electric Vehicles
(ACE Paper 10/2020)

5. The Chairman informed Members that *ACE Paper 10/2020* briefed Members on the Government's strategy for promoting the use of electric vehicles (EVs) and the way forward of the formulation of the Roadmap on the Popularisation of Electric Vehicles (EV Roadmap).

6. Upon the invitation of the Chairman, a Member declared that her spouse's company was involved in the operation of green public light buses (PLBs). The Chairman agreed that the Member could stay on and continue participating in the discussion.

[The presentation team joined the meeting at this juncture.]

Presentation cum Question-and-Answer Session (Open session)

7. Mr Dave Ho made opening remarks and Miss Lam I-ching briefed Members on the EV development in Hong Kong, and the way forward of the EV Roadmap with the aid of a PowerPoint presentation.

Enhancing EV Charging Infrastructure and Networks

8. The Chairman pointed out that it was encouraging to note that some 65 000 out of over 80 000 private parking spaces for new developments approved from April 2011 to March 2020 had been provided with EV charging-enabling infrastructure. In response to the Chairman's query about the 80 000 private parking spaces approved during the specified years, Mr Owin Fung said that the new developments covered both new residential and commercial buildings. Of which, some of these developments had not completed as of today.

9. A Member suggested with the support of another Member that charging facilities should also be provided at open-air car parks and on-street parking spaces. This might help demonstrate to the public the Government's determination to push forward the transition to EVs and motivate vehicle owners to make the switch to EVs.

Action

10. Mr Dave Ho advised that the Government had taken the lead in providing and upgrading public charging facilities at government car parks. The government and non-government sectors were now providing more than 3 000 public chargers in total, and it was anticipated that the supply of public chargers would continue to increase. In the meantime, the Government had commissioned a consultancy study to identify sites suitable for establishing a territory wide network for quick charging facilities. In consultation with relevant government departments, EPD was looking for suitable on-street parking spaces to install charging facilities for trial, taking into account the adverse impacts onto nearby traffic.

11. In reply to a Member's enquiry regarding the timeline for constructing a territory wide network of quick charging facilities, Mr Dave Ho said that the Government was exploring the feasibility of installing quick charging facilities in a few selected districts first, such as the Lantau Island where traffic was more confined. Upon consolidation of additional experience, the network would be extended to other districts.

12. A Member suggested that the Government should consider encouraging EV owners to install their own chargers. Mr Dave Ho stated that the government policy direction was that daily charging of private EVs should be carried out at home and/or work places to minimise the burden on the public charging network which served mainly the charging needs of commercial EVs in the future and provided merely top-up charging for private EVs. To enable EV owners to install chargers at their parking spaces at home, the Government had tightened the gross floor area (GFA) concession requirements since 2011 such that only underground car parks in new private buildings provided with EV charging-enabling infrastructure at each parking space could be fully exempted from the GFA calculations. Mr Ho added that the major impediments faced by EV owners in installing charging facilities in their residential buildings were related to technical and financial matters including insufficient power supply capacity and high costs to be shared by flat owners not only carpark owners, and unavailability of consent from the owners' corporations (OCs). To address the concerns mentioned above, the Government was devising a $2 billion pilot subsidy scheme to provide existing private residential car parks with financial and technical assistance for the installation of charging-enabling infrastructure, with a view to enabling EV owners to install chargers suitable for their own use at their parking spaces. The scheme would also require the subsidy applicants to secure their OCs' consent for the

project.

13. A Member enquired whether the Government would provide mediation to help EV owners and OCs to reach consensus. Mr Dave Ho replied that the Government was not in a position to interfere with the decision of OCs but would provide appropriate information of the scheme to facilitate the OCs to make informed decision. Mr Ho stressed that financial and technical support to be provided under the $2 billion pilot subsidy scheme, coupled with the rapid adoption of EVs in Hong Kong and around the world, should provide strong incentive for OCs to apply for the subsidies to install EV charging-enabling infrastructure in their existing private residential buildings.

14. The Chairman pointed out that some flat owners/non EV owners were reluctant to shoulder the costs of installing EV charging-enabling infrastructure as EVs currently accounted for only a small percentage of vehicles in the existing private residence. Mr Dave Ho replied that as the subsidy was granted according to the number of car parking spaces (i.e. $30,000 per parking space), subject to a cap (i.e. $15 million per carpark) and was considered on the generous side, OCs should take this opportunity to upgrade their carparks to be fully EV charging ready.

15. In response to a Member's enquiry on whether subsidy would continue to be provided for installing EV charging-enabling infrastructure in car parks of existing private residential buildings after the completion of the $2 billion pilot subsidy scheme, Mr Dave Ho advised that a review would be conducted at appropriate juncture to assess its effectiveness in motivating private residential developments to get EV charging ready before considering the way forward.

16. A Member agreed that the provision of charging facilities was a prerequisite for wider adoption of EVs in Hong Kong. While acknowledging that the continuous increase in the number of parking spaces with EV charging-enabling infrastructure in Hong Kong was encouraging, he also pointed out that many existing and potential EV owners were unable to secure reliable access to such facilities due to resource mismatch and the lack of fixed parking spaces. Considering that the ultimate goal was to phase out conventional internal combustion engine cars, the Member opined that EV charging infrastructure should be a basic provision to be provided in all car parks in the long run.

Parking and Charging Management

17. The Chairman raised that the provision of charging facilities, especially those at on-street parking spaces, might lead to traffic disruptions due to queuing for charging. Other parking management problems might include the parking spaces might be occupied by conventional private cars (PCs) or fully charged EVs.

18. Mr Dave Ho shared the view that there was a need to address competing needs for parking and EV charging. He pointed out that the Transport Department (TD) was implementing a trial scheme with effect from 1 August 2020 to designate one-third of the parking spaces equipped with EV chargers in four government car parks under its management for exclusive use by EVs. Non-EVs occupying the designated parking spaces would be impounded. TD would conduct a review six months after the implementation of the scheme. The trial scheme should provide some valuable pointers on how to manage the parking spaces with EV chargers in future.

19. A Member suggested that the Government should also make reference to overseas experience in introducing progressive rates for on-street parking in order to increase turnover and discourage prolonged parking.

20. Mr Dave Ho advised the meeting that although EV charging service was currently free at government car parks as that was one of the government measures to promote wider use of EVs, the Government had plans to impose a fee for using EV charging facilities at an opportune time in future. The Government would carefully examine different modes to charge the fees taking into account the objective to promote higher car parking space turnover rate.

21. A Member suggested that the Government should consider introducing a smart parking system in car parks which involved the use of advanced technologies to enable automated parking and charging.

22. Mr Owin Fung informed that EPD, in collaboration with the TD, was working on the development of a system that would gather real-time information of the number of vacant car parks and availability of EV chargers and make such information available to the public via a mobile application.

Setting of goals on EV adoption

23. The Chairman suggested with the support of five Members that the Government should set timetables and targets on EV adoption. These might include for instance, the percentage of EVs out of the total number of PCs, as well as the percentage of parking spaces installed with chargers. He opined that milestones should also be set for the $2 billion pilot subsidy scheme for the installation of EV charging-enabling infrastructure in car parks of existing private residential buildings, with a view to justifying the use of public resources and continuation of the subsidy scheme if deemed effective.

24. A Member further suggested that the Government should conduct reviews from time to time to monitor the performance of the targets. She aspired that the sale of conventional internal combustion engine (ICE) vehicles would be banned at an appropriate time in future with a view to paying the way to full EV stage. Another Member considered that quantitative targets should be set for different development phases along the EV Roadmap.

25. Mr Dave Ho mentioned that the number of electric private cars (e-PCs) in Hong Kong represented about 2.5% of the total number of PCs, which compared well with other major cities in Asia. Furthermore, 6.3% of the first registered PCs in Hong Kong were electric in 2019, and about 11% in the first eight months of 2020. He said that the Government was determined to promote further EV adoption and would take into account Members' suggestion with regard to target setting when drawing up the EV Roadmap.

26. A Member pointed out that many overseas countries had set out timetables for a total ban on the sale of ICE vehicles. He opined that Hong Kong should consider adopting the same policy. In anticipation of the ban on the sale of conventional ICE vehicles, the Chairman pointed out that the market supply as well as research and development (R&D) would gradually shift to new energy vehicles including EVs.

27. A Member informed the meeting that the European Union (EU) had devised a clear roadmap with public charging infrastructure deployment targets set for each member state for 2020, 2025 and 2030. He considered that such policy

transparency could help promote public engagement, drive the industry and stakeholders to meet the targets in a coordinated manner, enable accurate projections of emission levels, enhance further improvement in air quality, understand the resources implications, etc.

28. Mr Owin Fung explained that unlike other car producing economies, Hong Kong totally relied on vehicular supply from outside. This made it extremely difficult, if not impossible, for Hong Kong to set specific targets on EV adoption at a particular date in future. Having said the above, Hong Kong was one of the leading cities in the region with a relatively high percentage of e-PCs out of the total number of PCs, even higher than that of some car producing economies such as Japan and South Korea. The Government would make reference to overseas experience and examine the possibility to establish a timeline to ban the sale of ICE vehicles in Hong Kong.

Alternatives to EVs

29. A Member pointed out that the need for charging would likely cause the taxi and public light bus (PLB) trades to make adjustments to cater for their operation and shift arrangement when quick charging stations were set up. She suggested that the Government should keep in view of the development of technologies and consider encouraging the R&D of hydrogen-powered vehicles which might serve as a better alternative for taxis and PLBs. Another Member supported the suggestion and considered that hydrogen fuel cells had a higher energy density than electric batteries, enabling vehicles to run for greater distances between charges.

30. Mr Dave Ho said that the hydrogen fuel cell vehicles were one of the new energy vehicles that were gaining traction in some overseas economies. However, as Hong Kong was a high-density city, setting up infrastructure for hydrogen fuel cell vehicles including hydrogen storage facilities and refilling stations in Hong Kong would be a major challenge in view of the spatial requirements and safety requirements associated with hydrogen handling and storage. This notwithstanding, the Government was open-minded and would keep in view of the technological development in vehicles around the globe.

31. A Member pointed out that the charging of EVs relied on the local

electricity supply, and thus the local fuel mix was the key to decide whether the use of EVs was cleaner than ICE cars. She enquired the feasibility of introducing hydrogen fuel into the fuel mix for electricity generation by commissioning a centralised hydrogen power plant in Hong Kong.

32. Mr Dave Ho said that as Hong Kong had limited renewable energy resources for producing hydrogen, the carbon footprint of using hydrogen as fuel for power generation would depend on where and how the hydrogen was produced and transported to Hong Kong. In view of this, the actual carbon footprint of using hydrogen for power generation might not necessarily compare favourably with that of using the current fuel mix. Having said that, he undertook to relay the suggestion to the Environment Bureau for consideration.

33. While expressing support for the EV roadmap, a Member considered that there was a need to keep in view of the rapid technological advancement and explore road transport of next generation, such as autonomous taxis, with the aim of minimising the need for building extra roads and car parks in an already compact and congested city.

34. Mr Owin Fung concurred and said that EVs would open up new avenues for building a sustainable traffic management system and help Hong Kong to equip itself to become a smart city.

35. In reply to a Member's question on whether hybrid vehicles would serve as a good interim option, Mr Dave Ho pointed out that hybrid PCs were no longer a good alternative to ICE vehicles with regard to emission as e-PCs were becoming more and more mature. In fact, more affordable e-PC models with driving range over 300 kilometers (km) were currently available in the market. Use of hybrid commercial vehicles (CVs), on the other hand, would still be encouraged as the availability of electric counterparts was still limited in the market. However, he added that the fuel economy and emissions of hybrid vehicles depended heavily on individual driving styles and travel pattern.

R&D

36. In response to a Member's suggestion that there should be R&D in EV battery technology with a view to improving the lifespan of EV batteries, Mr Dave Ho advised that while the technology of e-PCs had registered rapid developments in recent years, the technology of electric commercial vehicles (e-CVs) was still developing at a slower pace due to high cost and relatively limited breakthrough in batteries for supporting the operation of heavy vehicles. Acknowledging that electric buses had been fully adopted in Shenzhen, Mr Ho pointed out that the use of electric buses in Hong Kong was constrained by the hilly terrain and heavy use of air conditioning all year round, and as a result, electric buses would typically consume 30% more energy in Hong Kong than in Shenzhen. The higher daily mileage of buses in Hong Kong had further exacerbated the requirement. Furthermore, the electric buses used in Shenzhen were single-decked, whereas 95% of the franchised buses in Hong Kong were double-decked. Although there were double-deck electric buses in use in the Mainland and overseas cities such as London, these buses had a smaller passenger capacity of only around 80 to 90, which was much less than that of the double-deck buses in Hong Kong (i.e over 120). Hong Kong also faced limited space for installation of charging facilities. That said, the Government was proactively exploring solutions to overcome the local constraints. For example, the franchised bus companies (FBCs) had been fully subsidized to purchase 36 single-deck electric buses for conducting trials to assess their suitability to be operated in local environment. The Government would continue to keep in view of the advancements in battery technology and development of EVs, and identify suitable sites for setting up charging stations in Hong Kong.

37. Given the unique topography and vehicle types in Hong Kong, a Member supported that more R&D should be conducted locally to identify tailor-made solutions that could help us overcome our problems. As more and more EVs were introduced to the market, she opined that there was a need to explore the feasibility of reusing or recycling car bodies of retired EVs on top of their batteries.

38. A Member remarked that the challenges encountered in the adoption of e-CVs had been discussed for a few years. She opined that the Government should accord priority to the R&D of e-CVs with a view to finding solutions that could address local constraints, and proactively identify suitable routes, as well as

types of e-CVs such as school buses and tourist coaches, for carrying out more trials.

39. Mr Dave Ho said that the New Energy Transport Fund had been subsidising operators of non-franchised public and private buses to conduct trials of e-CVs. The trials were monitored and reports on the operational performance of the green innovative transport technology under trial were made available for public information.

40. Ms Maisie Cheng informed the meeting that the Government was paving the way for introducing a Green Tech Fund by year-end of 2020, with air quality and green transport among the priority themes. The fund would have a high funding ceiling and streamlined application arrangements, and target a wide range of eligible applicants including local companies and higher academic institutions in addition to non-governmental organisations. She added that priorities would be given to the practicability and potential contributions to decarbonisation and environmental protection when assessing the applications. The Government would also compile a list of priority areas to encourage and promote R&D in specific research areas that dovetail with the Government's policy priorities, such as EVs.

Adoption of e-CVs

41. In response to a Member's concerns on the operation of electric pubic light buses (e-PLBs), Mr Dave Ho pointed out that there was good potential for green PLBs to use e-PLBs as they ran on fixed routes, normally between public transport interchanges (PTIs) or PLB termini with relatively short journeys as compared with red PLBs and franchised buses, and their charging needs could be supported by installing quick charging facilities at the PTIs and/or PLB termini. Given the demanding operating environment for public transport in Hong Kong and that PLBs were very unique to the local market due to their size and passenger capacity and very few models of the electric version of such vehicles were available in the global market, the Government had earmarked $80 million to launch a pilot scheme for e-PLBs. A set of technical specifications and requirements for quick charging facilities for e-PLBs had already been developed in consultation with local experts and the trade. The Government would invite manufacturers to develop e-PLBs and operators of green PLBs to participate in the pilot scheme. Considering the round-the-clock operation of red PLBs with neither fixed operators nor routes in

many cases, Ms Maisie Cheng added that the use of e-PLBs for red PLBs would be considered after consolidating the experience of the pilot scheme.

42. As regards the operation of electric taxis, Mr Dave Ho explained that the establishment of an extensive quick charging network alone was inadequate to meet the challenges arising from the high daily mileage of taxis. The batteries for electric taxis were likely to wear out and had to be replaced frequently which would increase the cost for operators significantly. The Government would encourage the industry to test out suitable models of electric taxi and keep in view the development of the battery technology.

43. A Member opined that the Government should provide extra support to operators of commercial vehicles in addition to establishing an EV charging network in order to ease their concerns. He further pointed out that switching to e-CVs would inevitably lead to fundamental changes in operation, requiring detailed preparation and planning in advance.

44. A Member suggested that the Government should publicise the data and experience gathered in the trials of e-CVs with a view to facilitating local and overseas R&D to come up with solutions that could help tackle the problems that we faced.

45. In response to a Member's remarks that a greater emphasis should be placed on e-CVs promotion, Mr Dave Ho said that policies had been devised for different types of e-PCs and e-CVs with variance in technological maturity. Despite the enormous challenges, the Government was proactively exploring different solutions and providing the means for the wider adoption of e-CVs. For example, charging facilities were installed along bus routes to enable top-up charging during daytime in addition to overnight charging in order to provide flexibility and improve the opportunity to use electric buses. Mr Ho expressed optimism that wider adoption of e-CVs was conceivable in light of rapid advancements in EV battery technology in the coming years, and highlight that local universities had allocated resources to the R&D of EV batteries.

Promoting the Use of EVs

46. The Chairman enquired and Mr Dave Ho affirmed that existing e-PC owners were eligible for first registration tax (FRT) concession under the

"One-for-one Replacement Scheme" for the purchase of replacement e-PCs. Mr Ho explained that the objective of the scheme was to not only promote the wider use of EVs, but also avoid the overall growth of PCs in order to improve roadside air quality and ease traffic congestion. Furthermore, extending the eligibility coverage to existing e-PC owners could help prevent them from switching back to ICE vehicles.

47. In response to a Member's enquiry on the reasons that led some organisations and individuals to switch back from EVs to ICE vehicles, Mr Owin Fung said that it was uncommon for EV owners to switch back to ICE vehicles given the various benefits of using EVs including zero tailpipe emissions and lower running costs (i.e. in electricity and maintenance expenses). He added that the switch back to ICE vehicles could possibly be attributed to the lack of charging facilities and limited choices of EVs with regard to the brands and models compared with ICE vehicles. That said, the situations mentioned above changed in a rapid pace as more charging facilities and affordable e-PC models became available.

48. A Member suggested that the Government should consider providing incentives to vehicles suppliers with a view to introducing more EV brands and models to Hong Kong.

49. In response to a Member's suggestion that the Government should clearly define the objective of promotion of EVs in Hong Kong in the EV roadmap and avoid giving the impression that the public were encouraged to buy more PCs, Mr Owin Fung explained that the standing policy of the Government was to encourage the public to use public transport as far as possible, and should they have a need to buy PCs, they were encouraged to choose e-PCs. On the other hand, with a view to facilitating the vehicle suppliers to plan for the amounts and models of EVs to be imported in a timely manner, he pointed out that the Financial Secretary had made an early announcement in August 2022 about the extension of the deadline of the FRT concession arrangement for EVs for three years to end March 2024.

50. The Chairman opined that the Government should take a lead to use more EVs. Mr Dave Ho advised that at present near ten percent of government saloon cars were EVs. The Government would strive to promote wider adoption of EVs in its fleet.

Conclusion

51. The Chairman summarised the views made by Members and thanked the representatives of EPD for their presentation and detailed explanations. Mr Dave Ho thanked Members for their invaluable comments and suggestions.

[The presentation team left the meeting at this juncture.]

Internal Discussion Session (Closed-door session)

52. In reply to a Member's question with regard to the setting of targets and devising a timeline for the adoption of EVs, Mr Owin Fung reiterated that it was extremely difficult for Hong Kong, as a place totally relying on imports, to set specific targets or timeline for EV adoption. He added that the use of right-hand drive cars in Hong Kong further limited the models of EVs imported, given that the production of right-hand drive cars took up less than 10% of all cars produced worldwide. On the other hand, the Government was considering setting targets for the number of public chargers and EV charging-enabling infrastructure to be installed in carparks which would form the backbone facilities to support the adoption of EVs. Last but not the least, the Government would make reference to overseas experience and establish a timeline to ban the sale of conventional ICE vehicles.

53. The Chairman stressed that it was of paramount importance for the Government to take the lead in using more EVs. He opined that a timeline should first be set for banning the procurement of conventional ICE cars for use as government vehicles.

54. Ms Maisie Cheng shared that the Government had in earlier years attempted to introduce EVs into the government fleet when the EV technology was much less mature. As a result, the poor performance of the EVs, with regard to the short driving range and long charging time, had brought bad experience and hence drawn negative feedback from many government drivers and users. She said that the Government was working earnestly to restore the confidence of drivers/users in EVs. She further explained that the overall number of EVs in the government fleet remained on the low side as the market had yet to offer suitable EV models to replace some special purpose vehicles (for example, refuse collection vehicles, fire engines, ambulances, etc.) that formed the majority part of the

government fleet.

55. A Member opined that there was good potential for school buses and shuttle buses in university campuses to use EVs taking into account that they run on fixed and relatively short routes. Another Member shared her observation that many school buses parked in open spaces and suggested that chargers facilities should also be provided there to encourage the switch to EVs.

56. With the support of the New Energy Transport Fund, Mr Owin Fung advised that the Government would welcome applications to test out the electric school buses and tourist coaches with a view to critically examining their suitability to be used in Hong Kong. In response to a Member's enquiry, Mr Owin Fung affirmed that the use of EVs was required and specified in public work contracts.

Item 4 : Any other business (Closed-door session)

57. There was no other business for discussion at the meeting.

Item 5 : Date of next meeting (Closed-door session)

58. The next ACE meeting was scheduled for 9 November 2020 (Monday). Members would be advised on the agenda in due course.

[Post-meeting notes: As there was no proposed item for discussion at the ACE meeting, the meeting scheduled for November had been cancelled. The next ACE meeting was scheduled for 7 December2020.]

ACE Secretariat
December 2020