

**Confirmed Minutes of the 230th Meeting
of the Advisory Council on the Environment (ACE)
held on 5 March 2018 at 2:30 pm**

Present:

Mr Stanley WONG, SBS, JP (Chairman)
Prof Nora TAM, BBS, JP (Deputy Chairman)
Ir Cary CHAN, JP
Dr Billy HAU
Dr HUNG Wing-tat, MH
Ms Julia LAU
Dr Michael LAU
Mr Andrew LEE
Prof Kenneth LEUNG
Ir MA Lee-tak, SBS
Dr Eric TSANG
Prof WONG Sze-chun, BBS, JP
Ir Conrad WONG, BBS, JP
Mrs Alice CHEUNG, JP (Secretary)

Absent with Apologies:

Prof LAU Chi-pang, JP
Prof Albert LEE
Ir Prof Irene LO, JP
Mr Anthony LOCK
Prof John NG
Ir Michelle TANG
Mr Simon WONG, JP
Mr Luther WONG, JP
Prof Jonathan WONG, MH, JP

In Attendance:

Mr Donald TONG, JP	Permanent Secretary for the Environment/Director of Environmental Protection
Mr Edward LO	Assistant Director of Planning/Technical Services, Planning Department (Acting) (PlanD)
Mr Simon CHAN	Assistant Director (Conservation), Agriculture, Fisheries and Conservation Department (AFCD)
Miss Heidi LIU	Principal Information Officer, Environmental Protection Department (EPD)

Ms Becky LAM	Chief Executive Officer (CBD), EPD
Miss Dora CHU	Executive Officer (CBD) 1, EPD
Miss Apple LEUNG	Executive Officer (CBD) 2, EPD

In Attendance for Item 3:

Mr Dave HO	Assistant Director (Air Policy), EPD
Mr Brian LAU	Principal Environmental Protection Officer (Air Policy), EPD

Action

The Chairman welcomed Members to the meeting. Apologies of absence had been received from Prof Lau Chi-pang, Prof Albert Lee, Ir Prof Irene Lo, Mr Anthony Lock, Prof John Ng, Ir Michelle Tang, Mr Simon Wong, Mr Luther Wong and Prof Jonathan Wong.

Item 1 : Confirmation of the draft minutes of the 229th meeting held on 4 December 2017 (Closed-door session)

2. The draft minutes were confirmed with proposed amendments by Dr Michael Lau in paras. 5, 12, 28 and 29.

Item 2 : Matters arising (Closed-door session)

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

Item 3 : Proposals to Tighten Emission Standards for Newly Supplied Non-Road Vehicles under the Air Pollution Control (Non-road Mobile Machinery) (Emissions) Regulation

(ACE Papers 3/2018 and 4/2018)

4. The Chairman informed Members that *ACE Paper 3/2018* briefed Members on the proposal to tighten the statutory emission standards for newly approved non-road vehicles for local use under the Air Pollution Control (Non-road Mobile Machinery) (Emissions) Regulation (the Regulation), and a background note on the subject matter (i.e. *ACE Paper 4/2018*) prepared by the secretariat had been circulated to Members for reference before the meeting.

5. Upon the invitation of the Chairman, a Member declared that his company owned and operated a number of non-road mobile machineries (NRMMs).

Another Member declared that he had provided services to the Environmental Protection Department (EPD) to conduct technical assessment on Pilot Green Transport Fund (PGTF) applications. The meeting agreed that both Members 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)

6. Mr Dave Ho introduced the background of the proposal to tighten emission standards for newly approved NRMMs (the Proposal) in line with the tightening of the emission standards for road vehicles. With the aid of a powerpoint presentation, Mr Brian Lau briefed Members on the details of the Proposal, including the implementation timetable and comments received from relevant NRMM stakeholders.

Implementation timetable for the Proposal

7. In reply to a Member's question on the different implementation timetables of the proposed emission standards for road and non-road vehicles, Mr Dave Ho explained that in setting the implementation timetable of non-road vehicles, considerations had to be given to the fact that the operating conditions of non-road vehicles in the airport and container terminals could be quite different from those of road vehicles, and therefore more time would be needed to ascertain that Euro VI road vehicle models available on the market could meet the operating conditions under non-road applications. For instance, under normal road operation of a Euro VI vehicle equipped with a diesel particulate filter (DPF), the temperature of engine exhaust gas passing through the DPF should normally be high enough to burn off the trapped respirable suspended particulates (RSP). However, due to speed restriction in airport and container terminals and operations requiring prolonged idling, the temperature of engine exhaust gas of a non-road vehicle operating in these areas might not be high enough to burn off the trapped RSP in the DPF. He added that, during consultation, one of the major operators at the airport advised that it had purchased a few Euro VI catering trucks for trial operation. The trial found that manual regeneration of DPF for these Euro VI vehicles at a frequency of weekly to monthly was required to remove the trapped RSP. The airport operator advised that it needed to make effort to adapt to the operational requirement of these Euro VI vehicles by scheduling manual DPF regeneration on a regular basis. Mr Ho also said that a European vehicle manufacturer had been requested to refine

the manual regeneration process to reduce the frequency of DPF regenerations. Mr Ho said that, for the container terminals, some operators had conducted trial operation of Euro VI container trucks supplied by another European vehicle manufacturer. The engine of the Euro VI container truck was specially designed to suit local container terminal operations and manual regeneration of DPF was required once a month. As it would take time for operators to conduct trials of Euro VI vehicles to suit their specific operations, the proposed timetable for implementing new emission standards for non-road vehicles would be slightly later than that for road vehicles.

8. A Member considered that some road vehicles, for instance freight trucks, faced the same problem of having to perform regular manual DPF regenerations as they often operated at slow speed and made stops for loading and unloading goods. He believed that many road and non-road vehicles were of the same brands and/or models, and many operators possessed licenses for both road and non-road vehicles. It was likely that some of the operators of non-road vehicles might already be accustomed to perform manual regenerations regularly. As such, he considered that when the Government sought to tighten the emission standards in future, it might not be necessary to implement the new emission standards for non-road vehicles at a later time than that for road vehicles. He was concerned that such a time gap between the implementation of emission standards for road and non-road vehicles might cause confusions and create a loophole for retired road vehicles to be used as non-road vehicles.

9. Mr Dave Ho said that while DPF had been widely adopted by various Japanese vehicle manufacturers starting from their Euro IV models since 2006, some European vehicle manufacturers only started adopting DPF in their Euro VI models in recent years. As such, those operators using European vehicle models would have less experience in the manual regeneration of DPF than those using Japanese models and therefore needed time to test out and adapt to the operating requirements of Euro VI models. Mr Ho said that the NRMM Regulation was enacted in 2015 requiring all new non-road vehicles to meet the Euro V emission standards. As Euro V emission standard for newly registered vehicles was introduced in 2012, Euro V vehicles were still relatively new and could be used in both road and non-road applications, and owners would have little incentive for them to convert into non-road vehicles because they had paid the first registration tax (FRT) when registering these vehicles as road vehicles. Furthermore, in-use vehicles would be required to pass a vehicle emission test to demonstrate that they could meet the prescribed emission standards under the Regulation when applying

for use as non-road vehicles. As the emission performance of vehicles would decline with age and usage, it was highly unlikely for aged vehicles to pass the vehicle emission test. Nevertheless, he added that, if the emission standard was to be further tightened in the future, consideration would be given to minimize the gap between the implementation timetables of road and non-road vehicles, or implement the standards for both road and non-road vehicles at the same time as far as practicable.

10. In response to a Member's suggestion to provide subsidies to the trades in using vehicles equipped with more reliable DPFs, Mr Dave Ho said that, despite the need for occasional manual regeneration of DPF for vehicles operating under low speeds, DPF was a mature emission reduction technology which had now been widely adopted by vehicle manufacturers and its performance was considered effective.

Promoting the use of electric NRMMs

11. A Member suggested that the Government could provide greater incentives for the use of electric vehicles (EVs). He considered that space available for the provision of charging facilities at the airport and container terminals was an advantage for the full adoption of electric non-road vehicles.

12. Mr Dave Ho said that the Hong Kong International Airport (HKIA) would adopt EVs in its operations as far as possible when suitable models were available in the market. For instance, all saloon cars operating at airport restricted areas were already EVs. For container terminals, the majority of gantry cranes had been converted into electric ones. He shared that the PGTF had recently received an application for trial operation of a prototype electric truck. The Government would keep in view the latest development and supply of electric trucks in the market.

13. A Member considered a single trial operation ineffective and greater incentives should be provided for trial operations on a larger scale such that the manufacturer might provide on-site technical support should there be any malfunctioning of the electric trucks.

Regulated Machines

14. A Member pointed out that NRMMs referred to both non-road vehicles and regulated machines, and the number of the latter was around 33,800, much more than that of non-road vehicles. He enquired about measures to further control emissions from these regulated machines.

15. Mr Dave Ho advised that during the review of the Air Quality Objectives (AQO), EPD had engaged stakeholders to explore possible new air improvement measures to reduce emissions from various sources including regulated machines. During meetings with relevant NRMM stakeholders including operators, trade associations and machine suppliers on the feasibility to tighten the emission standard to the EU Stage IV standard, it was noted that only very few compliant regulated machines were available in the market. EPD would keep in view the supply of compliant machines in the market and consult the trades on the feasibility to tighten the emission standard in due course.

16. A Member suggested that the Government could promote the use of regulated machines powered by electricity with a view to further reducing their emissions. In particular, he mentioned that portable generators were widely used in construction sites and buildings. With reference to experiences in the Mainland and overseas countries, some portable generators were powered by new batteries or retired batteries from EVs.

Regulatory measures on existing NRMMs

17. In reply to a Member's question regarding the implementation/enforcement of the tightened emission standard for non-road vehicles, Mr Dave Ho said that there would not be any change to the existing mechanism for processing applications for approval of non-road vehicles. All approved non-road vehicles had to comply with the prevailing emission standards prior to their use at specified locations and a label would be granted by EPD to be affixed onto each vehicle. Prosecution would be initiated by EPD should any non-road vehicles be found to operate without prior approval.

18. A Member suggested that monitoring should be conducted to detect excessive emissions due to the deterioration of selective catalytic reduction (SCR) systems of Euro VI non-road vehicles. Mr Dave Ho said that Euro VI vehicles would be equipped with on-board diagnostics (OBD) system which would monitor

the performance of the SCR system and alert owners/operators of any abnormal performance and the need for rectification. If the operator did not rectify the abnormal operation of the SCR system, the Euro VI vehicles would be rendered inoperable and had to be returned to the manufacturer or service workshop for repair.

19. Addressing a Member's enquiry on whether annual checkups were required for non-road vehicles, Mr Dave Ho said that Transport Department (TD) would require commercial vehicles as well as certain private vehicles to undergo an annual examination for the purpose of ensuring their road safety and road worthiness. He explained that in view of the relatively low usage of non-road vehicles as compared with road vehicles, non-road vehicles were not required to undergo TD's annual examination.

20. Noting that diesel commercial vehicles newly registered after 1 February 2014 would only have a statutory service life of 15 years, a Member asked and Mr Dave Ho said that the same requirement was not applicable to non-road vehicles. Due to the varied usages of non-road vehicles, Mr Ho said that it would be difficult to impose a service life for non-road vehicles.

21. As the labels for NRMMs did not have to be renewed and there was no upper limit on their service life, a Member was concerned that this could create a loophole for the use of road vehicles that were no longer road worthy as non-road vehicles. Mr Dave Ho reiterated that used vehicles would be required to pass a vehicle emission test to demonstrate their compliance with the prescribed emission standards under the Regulation when applying for approval to be used as non-road vehicles. As the emission performance of vehicles would decline with age and usage, it was highly unlikely for aged or heavily-used vehicles to pass the vehicle emission test. He mentioned that EPD had received neither enquiry nor application for using used vehicles as non-road vehicles after the implementation of the Regulation. The Chairman also pointed out that as the prescribed emission standard under the Regulation would apply to both road and non-road vehicles, the loophole would only exist if there was no further tightening of the emission standard for non-road vehicles.

22. Considering that the remote sensing devices only targeted road vehicles, a Member considered that it was important for the Government to send a clear message to the operators that the aged NRMMs not complying with the emission standards should be replaced.

23. Mr Dave Ho advised that pre-existing NRMMs that were already in Hong Kong before the enactment of the Regulation had been exempted from complying with the emission requirements. Therefore, there was yet to be a unified emission standard for all NRMMs. Furthermore, due to the varying sizes and configurations of different types of NRMMs, there had yet to be emission test imposed on in-use NRMMs overseas. He said that the Government would keep in view the latest technological advancements and experiences in other economies with a view to measuring emissions from NRMMs effectively.

Effectiveness of the Proposal

24. While expressing support for the Proposal, a Member considered that a baseline survey should be conducted at the airport and container terminals to assess the effectiveness of the Proposal upon its implementation.

25. Mr Dave Ho said that as there were a number of air pollution sources in the vicinity of the airport and container terminals, it would be difficult to differentiate between the air quality improvement due to the Proposal and those for controlling emissions from other sources. Nevertheless, he considered that the Proposal would contribute to the improvement of the overall air quality of Hong Kong which could be reflected by air quality data recorded at EPD's air quality monitoring network.

Conclusion

26. The Chairman thanked the subject team of EPD for their presentation. He summarized the views of Members and concluded that Members were in general supportive of the Proposal to tighten emission standards for NRMMs.

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

Internal Discussion Session (Closed-door session)

Emission data of NRMMs

27. A Member suggested that more emission data of NRMMs should be available in order to assess the environmental impacts brought by the Proposal on air quality. Another Member shared a similar view that showing more emission data to the public would facilitate the stakeholders and the relevant trades to better

understand how this Proposal would positively affect local emissions.

28. Mrs Alice Cheung said that she would consider studying the feasibility of projecting the emission data of NRMMs based on the emission inventory with a view to assessing the effectiveness of the Proposal. Having regard to the comments received during the consultation with stakeholders and the need to keep in view latest development and enforcement of the Regulation, Mrs Cheung said that the Government would adopt a step by step approach before reviewing the need to further control existing NRMMs, as part of an ongoing plan to improve the environment.

Regulatory measures on existing NRMMs

29. To better improve air quality and control existing NRMMs, a Member suggested setting a specific timeframe for which in-use NRMMs such as industrial equipment used at construction sites would undergo regular testing. To encourage the relevant industries to use more environmentally friendly NRMMs, he suggested the Government maintain close collaboration with the stakeholders to keep them abreast of the latest technology advancement, for instance, the use of biodiesel in heavy machinery and construction equipment.

30. A Member suggested that existing NRMMs that had travelled certain miles or operated for a certain period to undergo regular tests to ensure NRMMs in use were able to meet the emission compliance requirements, and encourage early replacement of polluting NRMMs.

31. In response to two Members' suggestions of measuring the emission standards of NRMMs, a Member explained that all NRMMs to be sold or leased for use in Hong Kong had to be approved by EPD. Each NRMM would undergo inspection by its manufacturer to ensure its emission standard comply with the labelling requirements. As such, by tightening the statutory emission standards for newly registered NRMMs from Euro V to Euro VI, certain percentages of the local emissions of nitrogen oxides (NO_x) and RSP would be reduced. For existing NRMMs, while the Portable Emissions Measurement Systems (PEMS) could be used to measure their vehicular emissions, it would be difficult and impractical given the cost involved and the different working environment they operated in.

32. The Chairman concluded that Members were in support of the Proposal.

He suggested the Government keep in view the implementation of the Regulation and devise effective measures to improve its enforcement in the future.

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

Arrangements for first registration tax (FRT) concessions for EVs

33. The meeting agreed to discuss matters in respect of promoting the use of EVs under the new arrangements for FRT concessions that was announced in the 2018-19 Budget Speech.

34. Mrs Alice Cheung said that the current policy was to encourage the public to use public transport as far as possible, and in case private cars were to be acquired, encourage buyers to choose EVs instead of conventional ones. The “One-for-One Replacement” Scheme would allow private car owners who de-registered their own eligible old private car and registered a new electric private car (e-PC) to enjoy a higher FRT concession up to \$250,000.

Promoting the use of EVs in the public transport sector

35. A Member expressed support for the “One-for-One Replacement” Scheme and considered the new measure might contain the growth of the private car fleet to prevent aggravating traffic congestion and roadside air pollution. In response to his question regarding measures to try out electric buses, Mrs Alice Cheung said that \$180 million was earmarked to fully subsidise the franchised bus companies to purchase 36 single-deck electric buses for trial. At present, 26 electric buses had commenced operations on their two-year trials, and the remaining electric buses would gradually commence operation. However, the initial trial results showed that the driving range of electric buses with full charge was still lower than that of diesel public buses, while the hilly terrain in Hong Kong as well as air-conditioning requirement during summer both present a big challenge to the batteries of electric buses. The Government would continue to examine the operational efficiency and performance of these electric buses during the trial periods to ascertain their readiness to take up the role of conventional public buses.

36. Mrs Alice Cheung said that the technology for double-deck electric buses was still under development and there were only limited models available in the market at present. The Government had studied the models of double-deck

electric buses in Beijing and found that their passenger carrying capacity and operational efficiency could not meet operational needs of Hong Kong. As such, the Government would explore the wider use of single-deck electric buses and would keep in view the development of double-deck electric buses with a view to exploring the availability of models suitable for use in Hong Kong.

Pilot Green Transport Fund (PGTF)

37. Mrs Alice Cheung said that the PGTF was set up to try out innovative green transport technologies. Apart from electric buses, the PGTF also approved trials on other e-commercial vehicles (e-CVs) including taxis, coaches and light goods vehicles. However, the overall technological development of e-CVs had been slower than that of e-PCs, and the high production cost, limited service life, long charging time and low energy density of EV batteries were still the key constraints for e-CVs to become popular. She said that the Government would keep in view the development of e-CV technologies, and explore other measures to promote the adoption of e-CVs by other transport operators when e-CVs had become viable options for replacing conventional fuel vehicles.

The development and enhancement of charging networks

38. Noting that more affordable e-PC models were now available in the market, a Member expressed support for the new FRT concessions to encourage car owners to acquire EVs. However, he considered that the shortage of EV charging facilities might hinder the development and wider use of e-CVs in Hong Kong. He suggested that more EV charging facilities should be provided and a wider charging network should be developed to offer greater incentive for drivers to choose EVs instead of conventional ones.

39. Mrs Alice Cheung said that in order to meet the increasing demand for EV charging facilities and services, the Government had tightened the granting of gross floor area (GFA) concessions for new development projects in 2011. This had paved the way for the use of EVs in future, and parking space owners would not be hindered from installing the required EV chargers due to constraints in respect of power supply capacity, cabling and conduits, etc.

40. Mrs Alice Cheung said that several private service providers had been providing one-stop EV charging services, including installation of charging facilities at EV owners' parking spaces and provision of charging services at

housing estates, business establishments and other specified locations. The Government would keep enhancing relevant policies and measures to facilitate the installation of EV charging facilities in existing private premises.

41. Mrs Alice Cheung added that currently, the Government provided a total of 624 public chargers in Government-owned car parks. Since these parking spaces were available for public use, the occupation by drivers with non-EVs might result in long queueing hours for EV drivers to charge their vehicles. In order to reduce charging time and enhance charging efficiency, the Government was upgrading the existing standard chargers in these car parks to medium chargers. Moreover, EPD was conducting trials to develop mobile applications to facilitate EV owners to search for vacant public parking spaces that were equipped with charging facilities and make reservations on-line. Mrs Cheung said that efforts had been made to retrofit and improve the management of existing Government car parks with charging facilities.

42. The Chairman shared his experience that it might be difficult to obtain the consent from the owners' corporations to install charging facilities at their own private parking spaces, and suggested individual EV owners to acquire the one-stop EV charging services provided by private service providers.

43. A Member suggested the Government explore availability of land supply for developing charging facilities through open land tender and inviting contractors to install EV charging facilities and manage the charging services, with the aim to expanding the charging network throughout Hong Kong to cater for the operational needs of different transport sectors.

44. Mr Donald Tong thanked Members for their suggestions and said that the key policy and measures to promote the use of EVs had been discussed at the Legislative Council Panel on Environmental Affairs meeting on 26 February 2018. Information on the updates on the FRT concessions for EVs were set out in the 2018-19 Budget Speech and the press release on the new arrangements for FRT Concessions for EVs issued on 28 February 2018. The relevant information would be made available to Members after the meeting.

[Post meeting note: The information was circulated to ACE Members for information on 7 March 2018.]

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

45. The Chairman advised Members that there was no proposed item for discussion at the ACE meeting in April 2018 and hence the meeting scheduled on 9 April 2018 would be cancelled. The next ACE meeting was scheduled for 7 May 2018 (Monday) and Members would be advised on the agenda in due course.

ACE Secretariat
June 2018