Motion on "Air pollution and public health" at the Legislative Council Meeting on 8 December 2010

Progress Report

Purpose

At the Legislative Council meeting on 8 December 2010, the motion on "Air pollution and public health" moved by the Hon KAM Nai-wai as amended by Hon Chan Hak-kan, Hon Ip Wai-ming and Hon Ronny Tong Ka-wah was carried. Wording of the motion is at **Annex A**. This note updates Members on the follow-up actions taken in respect of the suggestions put forward by Members in the motion.

Promote energy conservation and further increase of the use of natural gas and renewable energy and low-emission technology to reduce emissions from power generation

2. To further improve energy efficiency in new and existing buildings, the Government introduced the Buildings Energy Efficiency Bill into the Legislative Council in December 2009 for mandatory implementation of the Building Energy Codes. The Bill was enacted by the Legislative Council in November 2010. We expect that the mandatory implementation of the Building Energy Codes will result in energy saving of 2.8 billion kilowatt-hour in new buildings in the first decade, which contributes to a reduction in carbon dioxide emission of 1.96 million tonnes. Upon the enactment of the subsidiary legislation, eligible persons will be encouraged to be registered as Registered Energy Assessors in an 18-month period to undertake duties under the Ordinance. It is expected that the Ordinance will be fully implemented in the third quarter of 2012.

3. In addition, the Government has planned to implement a District Cooling System (DCS) in Kai Tak Development. Compared with the traditional air-cooled air-conditioning system, this system is 35% more energy-efficient and could save at maximum about 85 million kilowatt-hour a year when fully operational. Subject to funding approval for the project in February 2011, the operation of DCS will commence in

September 2012.

4. To reduce the emissions from power generation, we amended the Air Pollution Control Ordinance in 2008 to impose statutory emission caps for the power sector from 2010 onwards via a Technical Memorandum (TM). To comply with these emission caps, the two power companies have retrofitted their generation units with emission reduction facilities as well as increasing the use of natural gas and ultra low sulphur coal for power generation. In December 2010, we promulgated a new TM to further tighten the emission caps of the power sector starting from 2015. The new emission caps are tighter than the current ones by 34% to 50%. To meet the new emission caps, the two power companies will have to maximize the use of their existing gas-fired generation units to further increase the use of natural gas and prioritize the use of coal-fired generation units that have been retrofitted with emission reduction facilities. Furthermore, under the Scheme of Control Agreement signed with the two power companies, we have linked their permitted rate of return to their achievement of the emission caps. If the emission of all the specified pollutants is less than the permitted levels, they will be rewarded with an increase in the rate of return. On the contrary, if any of the specified pollutants is emitted more than the permitted level, the rate of return will be deducted.

5. Achieving the new emission caps set out in the new TM does not involve any new capital investment. Given the volatile fuel market and that the tightened emission caps will take effect only from 2015, it would not be possible to provide a reliable estimation of the tariff implication until the cost of fuel (such as coal or natural gas) to be imported is available. The power companies will present their tariff assessment to the Government in accordance with the prevailing regulatory mechanism under the Scheme of Control Agreement.

6. The Government completed the public consultation on "Hong Kong Climate Change Strategy and Action Agenda" in December 2010. Among other things, we propose to increase the respective share of nuclear energy, natural gas and renewable energy in the fuel mix to around 50%, 40% and 3-4% by 2020.

7. Meanwhile, Hong Kong's two power companies are making progress in their attempts to use clean energy to produce electricity. Hongkong Electric Company Limited (HEC) started operating its wind turbine on Lamma Island in 2006. CLP Power Hong Kong Limited (CLP Power) commissioned its commercial scale photovoltaic (PV) system on

Town Island of Sai Kung in 2009 while the HEC completed its PV system on Lamma Power Station in 2010. Both companies are planning the development of off-shore commercial wind farms in Hong Kong waters and have completed the Environmental Impact Assessment for these projects.

Early phase out of high emission franchised buses and retrofit buses with emission reduction devices

8. When considering bus franchises, the Government takes into account various factors, including the provision of proper and efficient public bus services; quality of services in terms of reliability, bus safety measures and passenger satisfaction; and commitments by bus companies to service enhancement and implementation of environment-friendly measures.

9. At present, franchised bus companies are required to operate their franchised bus services with buses under the age of 18, and have been replacing their serving buses accordingly. This arrangement has taken account of the maintenance, operational and financial capability of the bus operators and their obligations to provide a proper and efficient service to the public. By 2015, about 35% of in-use franchised buses (about 2,000 buses), including all pre-Euro and Euro I buses, as well as some Euro II buses, will retire.

10. Besides, we have been encouraging the bus companies to implement the following environment-friendly measures –

(a) added in the bus franchises the provision to require the bus companies, as far as reasonably practicable, to adopt the latest commercially available and proven environment-friendly technologies for acquiring new buses to reduce emissions and noise nuisance;
(b) encouraging the bus companies to deploy cleaner vehicles along busy corridors;
(c) including the adoption of environment-friendly measures as a criterion in selecting operators for new bus route packages; and
(d) enhancing bus service rationalisation to reduce roadside air pollution, noise nuisance, traffic congestion and energy consumption.

11. The ultimate objective of the Government is to have zero emission buses running across the territory. When the current bus franchises

expire in the coming few years, we will impose additional requirements in the franchises for the bus companies to switch to zero emission buses or the most environment-friendly buses when replacing existing ones, taking into account the feasibility and affordability for bus operators and passengers.

12. The Government has all along been encouraging the franchised bus companies to install suitable emission reduction devices on its fleets. Franchised bus companies have retrofitted all of their pre-Euro and Euro I franchised buses (about 1,500 buses) with diesel oxidation catalysts (DOC) that can reduce their particulate emissions by about 30%. They have also retrofitted their Euro II and III franchised buses (about 3,500 buses) with diesel particulate filters (DPF) that can reduce their particulate emissions by about 80% to 90% alongside other pollutants such as hydrocarbon and carbon monoxide, where technically feasible.

13. At present, over 60% of franchised buses are Euro II and Euro III vehicles. Given their large numbers, it would be difficult to phase out all of them in the coming few years. As compared with accelerating their replacement through public subsidies, there is a more cost-effective option to reduce emissions from franchised buses, which is to retrofit them with suitable after-treatment devices to reduce emissions.

14. According to overseas experience, retrofitting buses with selective catalytic reduction (SCR) devices can reduce their NOx emissions by about 60%. Retrofitting SCRs on Euro II and Euro III buses that have been equipped with DPFs could upgrade their emission performance to Euro IV or above level. The Chief Executive proposed in his Policy Address last October that subject to satisfactory trial results, the Government will fully fund the retrofit of SCRs on all Euro II and Euro III franchised buses while the bus companies will bear the subsequent operational and maintenance costs.

15. We have set up a task force to prepare for and monitor the trial of retrofitting Euro II and Euro III buses with SCR devices. The task force comprises representatives from franchised bus companies operating routes serving busy corridors in the urban areas, overseas and local experts, bus and bus engine manufacturers, SCR device suppliers, and relevant government departments. Our plan is to launch the trial around mid 2011 and to review the trial data after six months.

Encourage deployment of electric buses in new development and busy districts

16. The Chief Executive proposed in the 2010-11 Policy Address to fund the full cost of procuring six hybrid buses for use by the franchised bus companies along busy corridors to test the operational efficiency and performance of these buses under Hong Kong conditions and to collect operational data. If the bus companies wish to test other more environment-friendly buses such as electric buses, the Government will be ready to provide them with the same financial support. The franchised bus companies are considering making use of the funding to test electric buses.

Designate low emission zones

17. Franchised buses could account for up to 40% of the traffic flow along busy corridors in Causeway Bay, Central and Mong Kok. Restricting the access of franchised buses to these corridors to greener bus models could bring significant improvement to their roadside air quality. Therefore, the Government has been encouraging the franchised bus companies to deploy greener buses to serve the busy corridors. As at end October 2010, all franchised buses serving along Yee Wo Street, 94% along Nathan Road, and 90% along Des Voeux Road Central already met Euro II or above emission standards. To further improve the roadside air quality, the Government plans to designate pilot low emission zones (LEZs) in these busy districts and will increase as far as possible the ratio of low emission franchised buses (i.e. Euro IV or above buses) running in these zones from 2011-12, with the target of having only low emission buses in these zones by 2015.

18. By making reference to the data collected at the roadside air quality monitoring stations, we will evaluate the effectiveness of pilot LEZs on improving roadside air quality. The evaluation will help us study the environmental benefits of extending the pilot LEZs to other busy traffic areas and vehicles.

Bus route rationalisation and interchange concessions

19. Rationalisation of bus services is an on-going exercise. The Transport Department (TD) has been working with the District Councils and the franchised bus companies to pursue cancellation, amalgamation, truncation and frequency reduction of bus routes so as to reduce the number of bus trips and bus stoppings particularly on bus corridors. In implementing bus route rationalisation, TD will consider whether reasonable alternative services are available for the affected passengers. On the other hand, the bus companies will redeploy surplus buses saved from bus route rationalisation to other bus routes that require additional services.

20. A number of new railways have come into operation since 2004, providing the public with more choices of railway services. In response to changes in the demand of bus passengers, under the bus route rationalisation schemes between 2004 and October 2010, TD cancelled 51 bus routes, truncated 22 routes and reduced the frequency of 148 routes. The number of franchised buses decreased from 6,179 in 2004 to 5,769 in end October 2010 (i.e. reduced by about 7.0%).

21. Besides, TD has all along been encouraging franchised bus operators to introduce fare concessions as far as possible in the light of the actual circumstances, so as to attract the affected passengers to switch to the alternative service, thereby facilitating the implementation of the rationalisation plans. The bus companies have introduced about 240 bus-bus interchange concession schemes on about 70% of the bus routes, and the average daily patronage benefitted was over 120,000. TD will continue to work with the bus companies to introduce more bus-bus interchange concession schemes on suitable bus routes.

Replace old diesel commercial vehicles

22. We do not agree to re-incorporate pre-Euro and Euro I commercial vehicles in the incentive scheme for replacing old diesel commercial vehicles because their owners had already been offered a 36-month incentive scheme for their replacement similar to the current scheme for Euro II commercial vehicles. Moreover, to cater for those vehicle owners whose replacement vehicles could not arrive on time to apply for the incentive, we have allowed them to retain their eligibility for the grant until 31 March 2011 under a special arrangement. Most of the remaining pre-Euro and Euro I diesel commercial vehicles are of age

14 years or more. We do not consider it appropriate to provide further incentive to these aged vehicles, which are already due for replacement. Instead, we consider it necessary to introduce appropriate disincentive measures to further encourage vehicle owners to replace them and will follow up with the Panel on Environmental Affairs of the Legislative Council on such proposals for improving roadside air quality.

23. We also consider it inappropriate to provide incentive to those vehicle owners who only de-register their old vehicles without replacing them. The incentive scheme aims to assist those vehicle owners who need to continue the use of the vehicles for their business operations to replace the older vehicles with new vehicles for better air quality. Should commercial vehicle owners decide to scrap their old vehicles without replacement, chances are that they no longer need the vehicles. In fact, about 11,000 pre-Euro and Euro I commercial vehicles have been voluntarily de-registered without participation in the incentive scheme over the three years period of the scheme.

Financial incentives to expedite the introduction of new minibuses with lower levels of emission

24. Light bus owners can make use of the incentive scheme for the replacement of old diesel commercial vehicles to replace their old light buses by new vehicles of lower emissions. Under the incentive scheme for the replacement of pre-Euro and Euro I diesel commercial vehicles that was completed by end of March 2010, 36% of the eligible public light buses participated in the scheme. Including some 130 public light buses that have been allowed to retain the eligibility for the subsidy until 31 March 2011 under the special arrangement mentioned in paragraph 22, we would have altogether 460 old public light buses replaced under the incentive scheme, accounting for about 50% of the eligible public light buses. It is also worth noting that under the Environment-friendly Commercial Vehicle Tax Incentive Scheme, light bus owners could enjoy full waiving of their first registration tax (subject to a cap of $27,000) if they purchase a Euro V light bus, which is already available on the local market. These financial incentives should encourage light bus owners to early replace their old light buses by the newer generation low-emission light buses.

Assist industries in resolving technical problems for replacement of Euro II diesel commercial vehicles

25. In line with international practices, the Government requires vehicles seeking first registration under the Road Traffic Ordinance to meet local statutory requirements in respect of safety, emissions and noise. In this regard, vehicle suppliers will provide the relevant information to the respective authorities. Also in line with international practices, the EPD requires vehicle manufacturers to randomly select their relevant vehicle models from the production line for emission tests and submit a test report annually. The EPD also sends professional staff to check the quality control measures at vehicle manufacturers' production plants. Should there be problems involving individual models, the Government will assist the transport trades to seek remedial actions from the relevant vehicle suppliers.

Promote electric vehicles

26. To promote the wider use of electric vehicles (EVs), the Government will continue to discuss with and encourage different EV manufacturers to introduce their EVs into Hong Kong. Besides, the procedure for handling applications for expressway permit for those EVs which have been type-approved to be suitable for use on expressways by TD has been streamlined. Under the streamlined process, the permit, together with the vehicle registration document and vehicle licence, can generally be issued to the owner on the next working day after receipt of the application.

27. The Government has been in close collaboration with the property development, property management and car park operation sectors, encouraging them to install charging facilities for EVs. As at end-2010, power companies and relevant sectors had set up about 180 charging points for use by the public free of charge. The Government is now actively working with the relevant trades to set up more EV charging facilities.

Green transport system

28. The Government has been promoting the use of public transport, particularly mass transit to reduce the number of vehicles on roads. With the quality of public transport services and network greatly

improved, nearly 90% of the commuters use the public transport services each day.

29. In addition, to encourage the transport sector to test out green and low-carbon transport technology, we are now working to set up a $300 million Pilot Green Transport Fund by the end of March 2011 for application by the transport trades.

30. In order to restrain vehicle growth, the Government has adopted a range of measures, such as enhancing the rail network coverage to reduce reliance on road-based transport; siting intensive developments and employment centres within easy pedestrian reach of rail stations; reducing the need for motorised travel at the local level by provision of walkway system, hillside escalator, etc. From the financial perspective, the Government will consider financial measures to restrain the growth of vehicles if and when necessary.

Collaborate with Guangdong on improvement of regional air quality after 2010

31. The Hong Kong Government and the Guangdong Provincial Government signed an Environmental Co-operation Agreement in August 2009 with a view to, *inter alia*, further improving the regional air quality. Under the Agreement, the two sides would undertake a study on the post-2010 arrangements for emission reduction in the PRD region. The study has already commenced. At the meeting of Joint Working Group on Sustainable Development and Environmental Protection held on 20 December 2010, both sides agreed to complete the work within this year.

Improve reporting mechanism in the situation where the Air Pollution Index reaches the 'extremely severe' level

32. After the incident of 'Severe' Air Pollution Index (API exceeding 200) in March 2010 due to dust plume, the Government has revised the health advices to the public for susceptible groups including persons with existing heart or respiratory illness, children and elderly, and outdoor workers to take precautionary actions under different air pollution levels.

33. The Education Bureau has revised the guidelines to schools when air pollution reaches high levels. When the API reaches the "Severe" level,

schools should arrange for all students to avoid physical exertion and outdoor activities and suspend, cancel or postpone physical education lessons (skill practice), games days, athletics meets, swimming galas and outdoor activities.

34. The Social Welfare Department has issued a set of general guidelines to all social service units on the health advice and precaution/ action to be taken at different air pollution levels, such as advising persons with existing respiratory illness and the elderly to reduce physical exertion and outdoor activities, and to suspend those activities when necessary.

35. In addition, the Labour Department has compiled a set of guidelines to assist employers to assess the risk of outdoor work at high air pollution levels and to arrange necessary precautionary measures in relation to the risk, e.g. reducing physical exertion with the use of mechanical aids and scheduling suitable rest breaks to protect the health of workers.

Update Air Quality Objectives

36. The Air Quality Guidelines of the World Health Organisation (WHO) have recommended a set of ultimate air quality objectives that are very stringent and to date, no countries including environmentally advanced ones have fully adopted them as their legal standards. Recognising the stringency of the ultimate air quality objectives, WHO has also proposed interim targets, the attainment of which would "result in significantly reduced rates of adverse health effects". In addition, WHO has also advised that "the standards set in each country will vary according to specific approaches to balancing risks to health, technological feasibility, economic considerations and other political and social factors" and has recommended that "in formulating policy targets, governments should consider their own local circumstances carefully before using the guidelines directly as legal standards".

37. Taking account of the above recommendations of the WHO and the practices of other advanced countries, we have proposed a new set of AQOs. The proposed AQOs are on a par with those being adopted by the European Union, except for respirable suspended particulates the

concentration of which is subject to very strong regional influence and hence more modest objectives are warranted.

38. The attainment of the proposed new AQOs depends on the successful implementation of the proposed package of the air quality improvement measures. They are closely connected and equally important for improving the air quality of Hong Kong in the long run, i.e. in updating the existing AQOs, there must be corresponding improvement measures in place to achieve the new Objectives.

39. The recommended air quality improvement measures encompass a wide range of issues and cut across a number of policy areas. Many of them are as controversial as they are complicated. Some typical examples are the fuel mix for the power sector, bus route rationalization, low emission zones, etc. We are now carefully studying the views collected during the public consultation in order to map out the best way to update the AQOs and to implement the improvement measures.

40. To bring early improvement to our air quality, we are endeavouring to introduce those improvement measures that are already supported or likely supported by the community, including maximizing the use of the existing natural gas-fired generation units by the power companies; further tightening the emission caps of the power sector that have been set for 2010 onwards by about 34 to 50% from 2015; introducing relevant regulations to promote energy efficiency for electrical appliances and buildings; and proposing emission standards for non-road mobile sources. To reduce emissions from the transport sector, a host of new measures are also proposed, such as providing subsidies to encourage early replacement of Euro II diesel commercial vehicles with new ones, conducting a trial of retrofitting on franchised buses with "Selective Catalytic Reduction" devices to reduce emissions, designating pilot low emission zones at busy corridors in Causeway Bay, Central and Mong Kok, setting up a Pilot Green Transport Fund to encourage innovative transport technology, and so on.

Food and Health Bureau's participation in the formulation of policies on improving air quality

41. The Food and Health Bureau (FHB) and the Department of Health

(DH) have been playing an important role in providing professional advice on the health impacts of air pollution. FHB and DH actively participated in the consultancy study on the air quality objective review and the formulation of the long-term air quality improvement policy. DH has also provided useful advice on the on-going Air Pollution Index Review Study. In accordance with the existing mechanism, FHB will continue to be consulted and contribute to the formulation of the air pollution control policy in the Administration.

Environment Bureau
14 February 2011

Annex A

Motion on
"Air pollution and public health"
moved by Hon KAM Nai-wai
at the Legislative Council meeting commencing
on Wednesday, 8 December 2010

Motion as amended by Hon CHAN Hak-kan, Hon IP Wai-ming and Hon Ronny TONG Ka-wah

That, given that the problem of air pollution in Hong Kong has continued to be serious, posing threats to public health, yet the Government has not updated Hong Kong's Air Quality Objectives ('AQOs'), and at present, many highly polluting franchised buses and lorries still run on the roads, continuing to emit exhaust gas, this Council expresses its disappointment in this regard; according to the statistics of the Hedley Environmental Index, in the first 10 months of this year, air pollution caused as many as 635 premature deaths and more than 4 million attendances of medical consultation in Hong Kong; given that air pollution has incurred huge monetary losses and social costs, this Council urges the Government to implement the following proposals, so as to expeditiously improve air quality for the protection of public health:

(a) to immediately update AQOs and formulate a timetable and relevant measures for eventually adopting the most stringent standards of the World Health Organization's air quality guidelines, and undertake to review AQOs regularly and the effectiveness of the relevant measures in the future;

(b) by way of financial subsidy or franchise extension, to push ahead the early phasing out and replacement of franchised buses with high emissions, so as to improve roadside air quality, and immediately install emission reduction devices on all buses that have not been phased out or replaced;

(c) to enhance the scheme for the replacement of Euro II diesel commercial vehicles mentioned in the Budget of this year, including

placing Pre-Euro and Euro-I vehicles under the scheme and allowing those vehicle owners who only write off their vehicles to receive subsidies under the scheme;

(d) to increase the number, usage and types of electric vehicles; improve and strengthen support facilities to tie in with the introduction of electric vehicles by, for example, actively discussing with various developers the provision of recharging facilities for electric vehicles in the car parks of their properties; and expeditiously study amending the legislation to expedite and streamline the procedure for electric vehicle drivers to apply for the permit to drive on expressways, so as to assist in popularizing electric vehicles;

(e) to urge bus companies to expand and increase the provision of interchange concessions and services which appeal to passengers, and to expedite the reorganization and improve the arrangement of bus routes, with a view to avoiding the overlapping of bus routes, relieving traffic congestion and reducing air pollution;

(f) to encourage, through policy initiatives, the various bus companies to deploy wholly electric buses in new development areas and busy districts, so as to further improve roadside air quality in such areas;

(g) to expeditiously implement the proposal of designating 'low emission zones', so as to restrict the entry of vehicles with high emissions into designated areas;

(h) in respect of the situation where the Air Pollution Index reaches the 'extremely severe' level, to formulate specific guidelines, including implementation of measures to suspend schools and arrange for workers who need to work outdoors for long hours to suspend work, etc., so as to protect the health of school children and the socially disadvantaged, such as people with chronic illness, the elderly and workers working outdoors, in situations where the pollution is serious;

(i) to actively promote the energy conservation policy, and further increase the ratio of natural gas and renewable energy in the fuel mix for power generation in Hong Kong, so as to reduce emission by power

generation;

(j) when formulating measures to improve air pollution, to adopt the latest objectives and benchmarks of the World Health Organization, and evaluate the effectiveness of each measure in improving public health, and set improving public health as the primary policy objective in addressing the problem of air pollution;

(k) to recognize that air pollution is a public health issue, and require accountable officials from the Food and Health Bureau to participate in the formulation of policies on improving air quality; and

(l) to actively follow up the work of collaborating with Guangdong Province on improving regional air quality after 2010, so as to ensure continuous improvement of regional air quality;

(m) to assist the industries in resolving the technical problems that occur after the implementation of the scheme for the replacement of Euro II diesel commercial vehicles, with a view to ensuring that the repair, design and parts availability, etc., of the new vehicles after replacement can tie in with the operation of the industries;

(n) to study and consult the public and the transport sector on a specific proposal of designating 'low emission zones';

(o) to require power companies in Hong Kong to fully adopt low-emission power generation technologies and clean fuel for power generation on the premise of not increasing electricity tariffs and affecting public health, with a view to alleviating the air pollution caused by power generation emission in Hong Kong; and

(p) to classify the related diseases contracted by employees who have to work outdoors under severe air pollution conditions as occupational diseases;

(q) to curb the number of vehicle growth through policy formulation, green transport planning, financial measures and building a better green transport system in urban areas; and

(r) to provide financial incentives to induce minibus operators to expedite the introduction of new minibuses with lower levels of emission to replace old minibuses.