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For discussion on 18 March 2013

Phasing out Heavily Polluting Diesel Commercial Vehicles

PURPOSE

This paper seeks Members' views on the proposal to phase out pre-Euro IV diesel commercial vehicles through an incentive-cum-regulatory approach and to limit the service life of newly registered diesel commercial vehicles at 15 years as proposed in the 2013 Policy Address

BACKGROUND

2. As at end December 2012, there were some 129,000 diesel commercial vehicles (excluding franchised buses)¹ in Hong Kong. In 2010, they accounted for 88% of respirable suspended particulates (RSP) and 46% of nitrogen oxides (NOx) emissions from all vehicles and have posed a direct health threat to the public. A profile of the registered diesel commercial vehicles is at **Annex I** and of the emission levels from these vehicles is at **Annex II**. In June 2012, the International Agency for Research on Cancer (IARC) of World Health Organization (WHO) declared diesel engine exhaust as carcinogenic to humans. To address the health risk, we need to retire as soon as practicable the heavily polluting ones in the diesel commercial fleet.

3. Despite the general improvement of the air quality at the ambient level after the introduction of a series of air quality improvement measures, the

¹ Among the 129,000 diesel commercial vehicles, 122,000 are with a valid vehicle licence.

roadside air pollution has worsened. Between 2006 and 2012, the roadside nitrogen dioxide (NO₂) level has increased by 24%, resulting in a rise in the number of days with air pollution index exceeding 100 (i.e. reaching very high level) at the roadsides from 57 days to 145 days.

4. Among the 129,000 diesel commercial vehicles, about 86,000 are pre-Euro IV diesel commercial vehicles (account for 66% of the diesel commercial vehicle fleet). These vehicles together emit about 90% of RSP and 63% of NO_x from all diesel vehicles. To expedite the phasing out of heavily polluting diesel commercial vehicles, the Government launched two 36-month subsidy schemes – one in 2007 for pre-Euro and Euro I diesel commercial vehicles with a take-up rate of about 30% and the other in 2010 for Euro II ones with a take up rate of 17% as at end-January 2013 (i.e. five months from its expiry).

5. The lukewarm response to the two voluntary incentive schemes underlines the need for more resolute actions to phase out heavily polluting diesel commercial vehicles. In the 2013 Policy Address, the Chief Executive proposed to phase out pre-Euro IV diesel commercial vehicles with greater financial incentives and put in place more stringent regulatory measures.

THE PROPOSAL

6. Under the proposal, the Government will –

- (a) offer an ex-gratia payment up to 30% of the taxable values of new vehicles to vehicle owners for phasing out their pre-Euro IV diesel commercial vehicles. Details of the proposed payment level are at **Annex III**. Unlike previous incentive schemes, ex-gratia payment will also be provided to vehicle owners who scrap their pre-Euro IV diesel commercial vehicles without replacement by new vehicles. The payment level will be correlated inversely with the age of the vehicle to be scrapped. This will give extra impetus for vehicle owners to take action earlier;
- (b) stop the renewal of licences for pre-Euro IV diesel commercial vehicles with effect from specified dates. The proposed ban will be implemented in phases, with the banning of the most polluting pre-Euro and Euro I vehicles on 1 January 2016, and Euro II on 1 January 2017 and Euro III on 1 January 2019 respectively; and

- (c) set a statutory retirement age of 15 years for newly registered diesel commercial vehicles. This will provide a long term solution to the pollution problem caused by aged diesel commercial vehicles through a continued upgrading in the emission standard of the commercial vehicle fleet.

7. To take forward the above proposal, the Government has earmarked \$10 billion for the proposed ex-gratia payment to facilitate the early phasing out of heavily polluting diesel commercial vehicles with effect from specified dates. Details of the proposed arrangements are summarized in **Annex III**. Subject to the positive feedback in the consultation with the trades and the support of Legislative Council (LegCo), our plan is to seek funding approval from the Finance Committee (FC) for the ex-gratia payment after the approval of the legislative proposal for effecting the proposed ban on licence renewal by LegCo.

ENVIRONMENTAL AND PUBLIC HEALTH IMPLICATIONS

8. Phasing out all pre-Euro IV diesel commercial vehicles will help improve roadside air quality and reduce the cancer risk associated with the exposure to diesel engine exhaust. The following is our assessment –

- (a) If the proposals as in paragraph 6 above are implemented, the emissions of RSP and NO_x from vehicles will be reduced by 80% and 30% respectively. The reduction would lead to PM₁₀ and PM_{2.5} levels at roadside meeting the respective proposed new AQO. It will lead to a reduction in the estimated number of premature deaths due to long-term exposure to these pollutants by around 14% per annum. The reduction of cancer risk due to exposure to diesel engine exhaust is estimated to around 50% per annum; and
- (b) Upon the replacement of these vehicles by Euro V ones according to the proposed schedules, together with the implementation of other committed air quality improvement measures, the NO₂ concentrations will broadly meet the new AQO at the ambient level by 2020. At the busy corridors, the NO₂ concentrations will be reduced by about 40%, and we will pursue additional measures to further improve roadside air quality.

CONSULTATION

9. We are consulting the relevant transport trades and other stakeholders on the proposals. So far, the major feedback is that the Government should provide a higher subsidy and a longer phasing out period to ease the financial burden of the affected vehicle owners and to provide sufficient lead time for vehicle replacements and body building work for the new vehicles. We will take them into account alongside other views collected during the consultation, when working out the final proposal.

ADVICE SOUGHT

10. Members' views are sought on the proposal outlined in paragraph 6 above.

Environmental Protection Department
March 2013

Annex I

Profile of Registered Diesel Commercial Vehicles (as at end of December 2012)

Engine Standard (Years of service)	Light Goods Vehicles		Medium Goods Vehicles (5.5<gvw<=24 T)		Heavy Goods Vehicles (gvw>24 T)		Non-franchised Bus		Public Light Bus (diesel)		Private Light Bus (diesel)		All Diesel Commercial Vehicles	
	<i>No. of vehicles</i>	<i>% of total</i>	<i>No. of vehicles</i>	<i>% of total</i>	<i>No. of vehicles</i>	<i>% of total</i>	<i>No. of vehicles</i>	<i>% of total</i>	<i>No. of vehicles</i>	<i>% of total</i>	<i>No. of vehicles</i>	<i>% of total</i>	<i>No. of vehicles</i>	<i>% of total</i>
Pre-Euro (18+ years)	10,625	8.2%	7,629	5.9%	678	0.5%	192	0.1%	15	0.0%	329	0.3%	19,468	15.0%
Euro II (15-18 years)	9,643	7.4%	2,509	1.9%	316	0.2%	140	0.1%	315	0.2%	371	0.3%	13,294	10.3%
Euro II (12-15 years)	12,681	9.8%	6,645	5.1%	882	0.7%	1,013	0.8%	540	0.4%	375	0.3%	22,136	17.1%
Euro III (7-12 years)	17,608	13.6%	9,670	7.5%	516	0.4%	2,687	2.1%	389	0.3%	156	0.1%	31,026	24.0%
Euro IV or above (0-7 years)	24,335	18.8%	12,817	9.9%	1,954	1.5%	3,580	2.8%	218	0.2%	634	0.5%	43,538	33.6%
Total	74,892	57.8%	39,270	30.3%	4,346	3.4%	7,612	5.9%	1,477	1.1%	1,865	1.4%	129,462	100%

Emissions from diesel commercial vehicles

The following table shows the emissions from the 122 000 licensed diesel commercial vehicles. The emissions of RSP and NO_x of pre-Euro IV vehicles are 5 to 34 times and 2.5 to 4.5 times as much as those of Euro V vehicles respectively.

Euro Grading	No. of licenced vehicles	Years of Service (by end-2012)	% of the diesel fleet	% contribution to the overall vehicular RSP emission	% contribution to the overall vehicular NO _x emission	% contribution to the overall vehicular NO ₂ emission
Pre-Euro	16 000	Over 18	13%	41%	10%	6%
Euro I	12 000	15-18	10%	15%	6%	4%
Euro II	21 000	12-15	17%	19%	16%	11%
Euro III	30 000	7-12	25%	13%	14%	8%
Euro IV and V	43 000	Less than 7	35%	4%	7%	10%

**“Carrot and Stick” Approach to Phase Out
Pre-Euro IV Diesel Commercial Vehicles**

Proposed Ex-gratia Payment for Owners

	Age of Scrapped vehicles and Ex-gratia Payment Level				
	18 years or above	16 years - below 18 years	13 years - below 16 years	10 years - below 13 years	Below 10 years
Those who do not seek replacement by newly registered vehicles	10%	12%	14%	16%	18%
Those who replace them with newly registered vehicles of the same class	18%	21%	24%	27%	30%

**Proposed Timetable for Non-renewal of Licences for
Pre-Euro IV Diesel Commercial Vehicles**

	Pre-Euro II	Euro II	Euro III
Date after which the vehicle licence will not be renewed	1 Jan 2016	1 Jan 2017	1 Jan 2019
Range of age of the vehicles by the proposed date of non-renewal of vehicle licence	Over 18 years	16 to 19 years	13 to 18 years