



Carrots & Sticks:

Accelerating the Replacement of Diesel Vehicles

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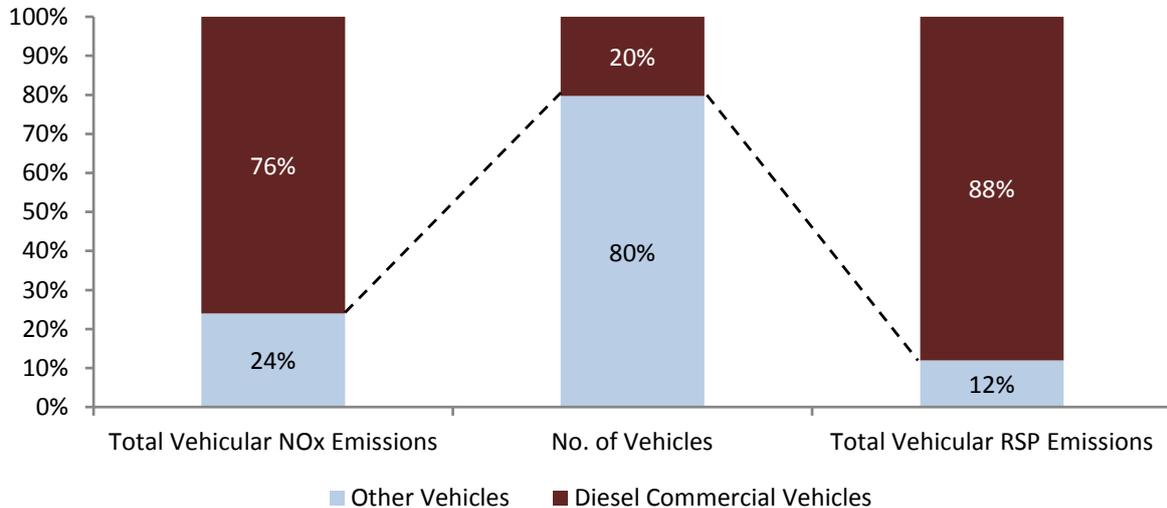
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Background

Hong Kong's air pollution is the most serious unmanaged threat to public health in Hong Kong.¹ Motor vehicles are one of the major sources, accounting for 30% and 22% of total respirable suspended particle (RSP) and nitrogen oxides (NOx) emissions,² two of the most harmful pollutants (See Appendix).

Of these, diesel commercial vehicles, which account for just 20% of all vehicles (130,703 of 643,371), contribute to about 88% and 76% of total vehicular emissions of RSP and NOx respectively (See Figure 1).

Figure 1: Relative Percentage of Vehicular NOx and RSP emissions³



Replacing pre-Euro and Euro I vehicles

In April 2007, the Environmental Protection Department (EPD) of the HKSAR Government introduced a one-off grant scheme to encourage early replacement of Pre-Euro and Euro I diesel vehicles. The scheme subsidized commercial vehicle owners to replace their Pre-Euro and Euro I vehicles by 12% and 18% of the cost respectively. Pre-Euro diesels are up to 34 times more polluting than Euro V's.⁴

Table 1: Emissions Relative to those of Euro IV Diesel Commercial Vehicles⁵

	RSP	NOx
Pre-Euro	34	2.6
Euro I	18	2.3
Euro II	7.5	2
Euro III	5	1.4
Euro IV	1	1
Euro V	1	.6

¹ Hedley, Anthony J. (February 2009). Air Pollution and Public Health: The current avoidable burden of health problems, community costs and harm to future generations (LC Paper No: CB(1) 733/89-89(02)).

² Environmental Protection Department. (22 January 2010). Hong Kong Air Pollutant Emission Inventory. Retrieved 6 May 2010, from http://www.epd.gov.hk/epd/english/environmentinhk/air/data/emission_inve.html

³ Environmental Protection Department. (10 March 2010). Early Replacement of Old Diesel Commercial Vehicles (LC Paper No: CB(1) 1250/09-10(01)). Retrieved 6 May 2010, from http://legco.gov.hk/yr09-10/english/panels/ea/ea_iaq/papers/ea_iaq0310cb1-1250-1-e.pdf

⁴ Ibid.

⁵ Ibid.

Between April 2007 and September 2008 uptake of the scheme averaged around 550 vehicles per month, but dropped to 269 vehicles when it was announced that the scheme would be extended for a further 18 months.

Table 2: Number of vehicles replaced under scheme⁶

	Total	Replaced	Percentage
Pre-Euro	39,600	9,142	23%
Euro I	20,200	4,230	21%
Total	59,800	13,372	22%

In total, 23% of pre-Euro vehicles (9,142) and 21% of Euro I vehicles (4,230) were replaced; amounting to a total of 22% of pre-Euro and Euro I vehicles. The scheme only had a limited effectiveness, spending only 18% (414 million) of the HK\$ 3.2 billion incentive scheme.⁷ The scheme ended in March, 2010.

While the transport sector complained that the subsidies were not sufficient to attract wider interest, it should be noted that it was difficult for vehicle owners to secure bank loans to replace their aging vehicles during the period because many banks were reluctant to provide loans during the financial crisis of 2008/9.

Proposal to Replace Euro II vehicles

The Hong Kong government is currently proposing a new scheme to encourage the early replacement of Euro II diesel commercial vehicles. This will be similar to the previous pre-Euro and Euro I scheme in providing a one-off grant of the amount equivalent to 18% of the value of either the original vehicle or the replacement, whichever amount is less.⁸

The Financial Secretary has set aside HK\$ 540 million, which is intended to fund one-off grants to replace up to 26% of the current Euro II diesel vehicle fleet; a target in line with the uptake rate of the pre-Euro and Euro I scheme.⁹

The scheme for early replacement of Euro II vehicles is expected to be more effective because, with the improving financial situation, it is now much easier to secure bank loans. There is also greater awareness of the government's "Small and Medium Enterprises Loan Guarantee Scheme" and "Special Loan Guarantee Scheme", which should also help to secure commercial bank loans.¹⁰

However, the government is limiting themselves to a target that addresses just 26% of the problem, while will still leave 74% (20,720) of all Euro II and the remaining pre-Euro and Euro I diesel vehicles on the road.

⁶ Ibid.

⁷ Ibid.

⁸ Ibid.

⁹ Ibid.

¹⁰ The "Small and Medium Enterprises (SME) Loan Guarantee Scheme" and "Special Loan Guarantee Scheme" aim to help SMEs acquire business installations and equipment; and meeting working capital needs of general business uses. For more information, see <http://www.smefund.tid.gov.hk>

The Need for Mandatory Measures

There are still 13,372 pre-Euro and Euro I diesel commercial vehicles left on the road and there is no current proposal to remove them. One way to address both these problems would be to introduce a mandatory disincentive to discourage diesel commercial vehicle owners to continue operating aging polluting vehicles.

So far, EPD has only introduced voluntary incentives without mandatory measures. This has proven to be ineffective. When the EPD originally discussed topic of raising license fees as a disincentive in November 2008¹¹, legislators did not support the proposal.

EPD's Proposal

In the 10 March 2010 meeting of the Legislative Council Panel on Environmental Affairs Subcommittee on Improving Air Quality, EPD was asked to provide more details on the proposal to raise vehicle license fees of aging commercial vehicles. EPD's proposal¹² suggests increasing license fees of vehicles older than 15 years – the majority of pre-Euro and Euro I vehicles.¹³ EPD has also opposed buying back aged commercial vehicles on the grounds that it is not cost effective, as all vehicles will eventually be scrapped.

While the introduction for a mandatory disincentive is encouraging, it does not sufficiently address the problem. EPD's overall approach remains uncoordinated. For pre-Euro and Euro I vehicles, there is a proposal for a disincentive with no incentive (a "stick" without a "carrot") while for Euro II vehicles, EPD is proposing a one-off grant without any corresponding punitive measures (a "carrot" without a "stick").

EPD's opposition to paying for scrapping of vehicles fails to recognize the urgency to address a pressing health problem. It should also be noted that paying operators to scrap their polluting vehicles provides an immediate environmental benefit - the polluting vehicles would no longer be on the road. Even though the majority of the most polluting vehicles are likely to cease running within 10 years, the seriousness of the health impacts of roadside pollution is still not being addressed with any urgency. Simply waiting for things to improve cannot be considered as a solution.

Policy Recommendations

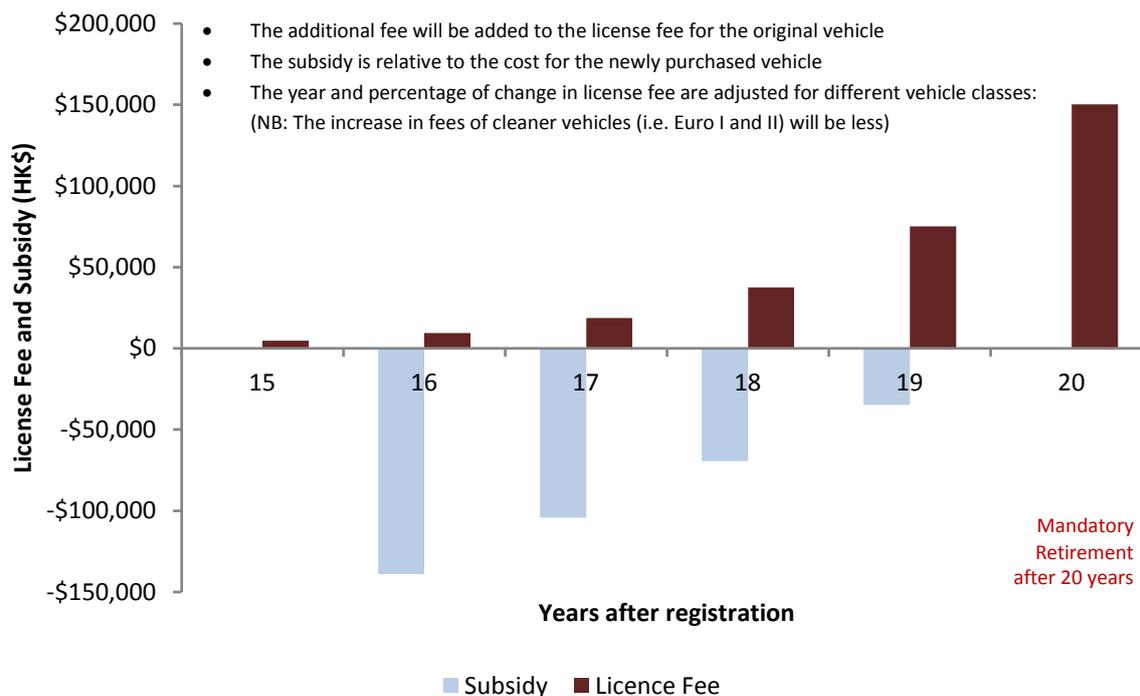
The government could reduce the threat to public health and improve Hong Kong's air quality by driving early replacement of heavily polluting vehicles. The key considerations are to combine incentives and disincentives (i.e. "carrots and sticks") that are applied simultaneously, to present the full range of measures in the most accessible manner, and to inject greater urgency into tackling this problem.

¹¹ Environmental Protection Department. (24 November 2008). Administration's paper on early replacement of old commercial vehicles (LC paper No: CB(1)223/08-09(08)). Retrieved May 6, 2010 from <http://www.legco.gov.hk/yr08-09/english/panels/ea/papers/ea1124cb1-223-8-e.pdf>

¹² Environmental Protection Department. (19 March 2010). Arising from the Discussion at the Meeting on 10 March 2010 (LC paper No: CB(1)1405/09-10(02)). Retrieved 6 May 2010, from http://legco.gov.hk/yr09-10/english/panels/ea/ea_iaq/papers/ea_iaq0511cb1-1838-2-e.pdf

¹³ Ibid.

Figure 2: Co-ordinated Subsidy and Additional License Fee Scheme (Pre-Euro Heavy Goods Vehicle)

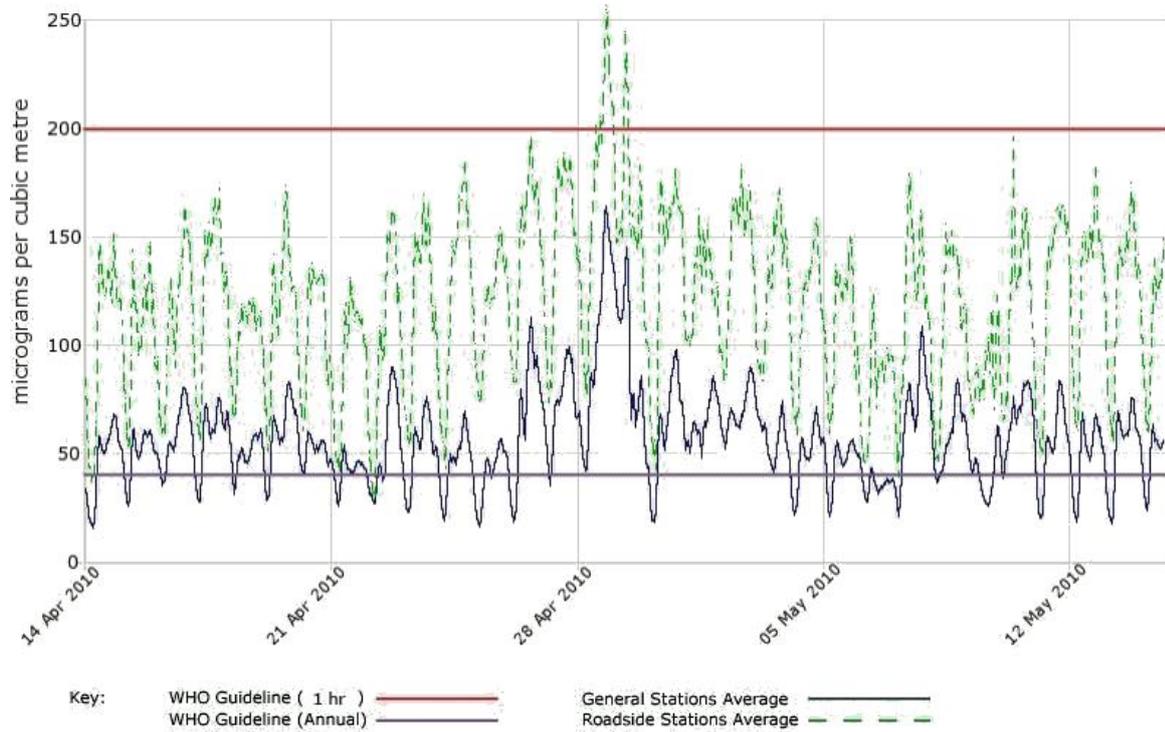


- Co-ordinated use of incentives and disincentives.** (See Figure 2) The principal drivers for commercial vehicle owners are costs and regulation. Introduction of co-ordinated measures that offer a financial reward for those who comply and a penalty for those who do not creates a stronger driver for change than a single incentive or disincentive. The following measures are proposed:

 - Disincentive: increase the license fees for vehicles each year proportional to the vehicles emission classification, with Pre-Euro vehicle licenses carrying the highest increase in fees.
 - Incentive: offer a license fee waiver for vehicle operators who replace their dirty vehicles early
 - i. A larger waiver will be given for earlier retirement;
 - ii. The waiver will be proportional to the vehicles emission classification such that Pre-Euro vehicles will have the highest fee waiver
 - Mandatory retirement of all vehicles (pre-Euro to Euro II) after a fixed timespan.
- Packaging the complete suite** of incentives, disincentives and other measures (e.g. Special Loan Guarantee Scheme) in a single document will allow vehicle owners to determine the full implications of a scheme, and help them to evaluate more accurately how it might affect them.
- Injecting urgency:** Polluting vehicles will be progressively replaced over time. However, it is important to note that there is an urgent need to replace the worst polluters as soon as possible in order to minimize the effects of roadside air pollution to the public's health.
- Timeframe for progressive tightening of standards.** Providing vehicle operators with a clear roadmap will allow vehicle owners to make provision for future technology upgrades.

Appendix

Comparison of roadside and ambient NO_x emissions between 14 April and 14 May 2010¹⁴



¹⁴ University of Hong Kong. (n.d.). Hedley Environmental Index. Retrieved 6 May 2010, from <http://hedleyindex.sph.hku.hk/home.php>