

NONE TOO SOON: NEW AIR QUALITY STANDARDS FOR HONG KONG

By Christine Loh

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After a long delay, Hong Kong seems about to take a major step to clean up air pollution and improve public health. In July, the government finally launched a long-awaited public consultation on the city's air quality standards, peculiarly referred to as its Air Quality Objectives (AQO). The Environment Bureau acknowledged that these new standards "should be set with a view to protecting public health", as called for by experts and civil society groups. This point needs to be stressed because Hong Kong's Air Pollution Control Ordinance (APCO) is oddly framed. Officially, the AQOs are not explicitly drafted to protect human or environmental health but somewhat vaguely "to promote the conservation and the best use of air in the public interest"¹—even though this October, in normal times a period of sunny skies and cooler weather, has brought Hong Kong near-record levels of air pollution.

The Environment Bureau hired Ove Arup & Partners, an international consultancy, to conduct a review of the AQOs and advise on an air quality strategy for Hong Kong.² The Environmental Protection Department (EPD) then established an advisory panel to steer the review. Controversy arose immediately over why public health was not the key focus, for Ove Arup was asked only to examine how the World Health Organisation devised its own advisory air quality guidelines and how other jurisdictions set air quality standards while making reference to general research results on health impacts.³

This is not to say the Environmental Bureau and the EPD do not want to reduce air pollution. Responsible officers have played a critical role in planning and implementing many initiatives over the years. But the review process provides clues to their attitudes and assumptions, what they see as barriers to change and how they take advice. There are also broader issues relating to Hong Kong's political circumstances.

The first observation is the inescapable fact that until very recently the public health dimension of air pollution was not emphasized by the government, and the Department of Health was never really involved. Hong Kong's most senior officials and even its elected politicians did not focus on health aspects until these could no longer be ignored. Indeed, as recently as in 2006, in an interview with the Hong Kong Journal, Chief Executive Donald Tsang appeared shockingly ignorant about the state of Hong Kong's air quality.⁴

The High Costs of Bad Air

Thus it was the work of local experts and not the government that alerted the public to the health costs related to air pollution. Seminal research published in 2008 showed that annual but avoidable deaths attributable to the 2006 pollution levels could be conservatively estimated at 10,000, with 94% occurring in the Pearl River Delta and the rest in Hong Kong and Macao. Moreover, air pollution was responsible for some 440,000 annual hospital bed-days and 11 million out-patient visits annually. The costs of these hospital stays, lost productivity and doctor visits amounted to 1.8 billion yuan per year in the delta, HK\$1.1 billion in Hong Kong, and HK\$18 million in Macao (a total of approximately US\$410 million). When adjusted for differences in per capita income across the region, the delta's yearly health-related costs are seven times higher than in Hong Kong and total 6.7 billion yuan.⁵

These findings indicate there is an iceberg of disease lurking, with many residents in the region suffering health problems that require doctor visits or hospitalisation, and sometimes cause premature death. These findings also indicate considerable pain and suffering, with costs that are difficult to estimate. Thus the monetary estimates represent only a small part of the real burdens of health impairment.⁶

The second observation is how the government seeks advice. The advisory panel set up to review the highly technical AQOs are an odd assortment of major polluters—including power companies, transport operators, vehicle sellers and associations of barging and container terminal operators—in the majority, with a minority consisting of experts

with relevant expertise on air quality science and health. The body was never meant to be an expert panel giving independent advice but instead was a platform for the environmental department to assess how polluters would react to stricter air quality standards. Under Hong Kong's unique political system, such business interests dominate a restricted electoral system that chooses half of the legislature's 60 members, as well as an 800-person committee that elects the chief executive.⁷

Government officials view balancing these interests as their key responsibility, ahead of using policy to drive an outcome.⁸ As such, the Environment Bureau could not replicate, say, the main goal of London's policy, which is "to improve outdoor air quality to the point where air pollution no longer poses a significant risk to human health as it does at present".⁹ Instead, after reviewing the AQOs, the bureau put forward a list of control measures intended to seek public views on "the price that the community is willing to pay in return for better air quality".¹⁰ Thus rather than focus directly on public health and its benefits, officials stressed the costs of cleaning up the bad air and asked the public: "Are you willing to bear the costs arising from the implementation of the proposed emission control measures, such as higher electricity tariff and bus fares, as well as adjustments in your way of living?"¹¹

The British Didn't Do It

The third observation is that Hong Kong has to make up for lost time. It could have done more to control emissions from transportation and power generators—the two main local sources of pollution. For example, street-level pollution, mostly from vehicles, has become the city's greatest public health threat.¹² Meantime, the two power utilities are only now adding key emission reduction technologies – flue gas desulphurization and low NOx burners – to their coal-burning plants.¹³ Pre-1997 British authorities could have required them to do so much earlier but the 1997 political transition to China diverted policy attention elsewhere. By the late 1990s, air quality had deteriorated significantly.

Hong Kong finally banned leaded gasoline in 1999, decades after, for example, the United States. At that time, the Tung Chee-hwa administration also put forward a range of important road transport

emission reduction initiatives, including switching diesel taxis to LPG, adding particulate traps to diesel trucks, importing ultra-low sulphur diesel fuel and tightening engine standards for new vehicles. Each initiative took considerable time, effort and resources to implement. While essential, these end-of-pipe measures did not decrease street-level pollution significantly because there was no associated effort to ban the dirtiest engines and no linking of these solutions to broader city planning and pricing decisions. Several rounds of government studies on road pricing failed to move the issue forward due to opposition from vested interests. Meanwhile, road building continued unabated and the government's modest efforts to create pedestrian-only zones have not been expanded.

Then-Chief Executive Tung's other major contribution was to start a dialogue with the Guangdong Provincial authorities in 1999 on how to manage regional air quality issues because, by then, the Pearl River Delta had become one of the world's most active exporting regions.¹⁴ This industrial growth was powered by Hong Kong investors, but it made regional air pollution a major headache for Hong Kong itself. The dialogue led to an agreement by the two governments to monitor air pollution jointly. In April 2002, they also reached a best-effort agreement to reduce the region's emissions of SO₂, NO_x, PM₁₀ and VOCs—some of the most harmful pollutants—by 40%, 20%, 55% and 55% respectively by 2010, using 1997 levels as the base year. In 2003, the two sides then drew up a regional air quality management plan to carry the effort forward.¹⁵ Based on this effort, Hong Kong authorities pushed the two local power utilities to reduce emissions, leading to emission limits (referred to as caps) being imposed on them in 2005, plus an agreement to install new emission reduction equipment.¹⁶

Fear of Falling Short

The Environment Bureau believes that, with these measures in place, it has a chance of meeting the agreed reduction targets in 2010. This could allow Hong Kong to meet its current AQOs, but the government acknowledges that this alone would not in fact be enough to protect public health. However, officials do not want to adopt such tight new standards that Hong Kong would fall short by an even bigger margin than

it does today. By contrast, many air quality and public health experts argue that adopting stricter standards would make them a powerful driver for change. This is a key debate during the consultation period.

Setting new goals is essential but there must also be a package of control actions to drive down air pollution. The consultation document lists 19 potential measures, with some obviously more important than others. What is most significant about them is that they are provided as a list, and are not integrated into an operational plan. For example, roadside emissions are exceptionally high in Hong Kong, thus road transportation should be an area for special emphasis. However, the six measures related to this problem have not been combined into a useful plan.

An examination of the measures relating to transport is revealing. The consultation document acknowledges that early retirement of heavy-polluting diesel vehicles (mainly buses and trucks) would bring significant health benefits. But it also estimates that updating Hong Kong's old bus fleet by 2014 would cause fares to rise 15% to cover the costs. While upgrading trucks also is important, the government emphasizes that truck owners likely would be reluctant to do so. The relatively few franchised bus operators (owned by big conglomerates) could pass along additional costs to riders, but the many smaller trucking companies would be finding doing so much harder even though there is a government scheme to subsidise truck owners who buy replacements.

In London, the creation of low emissions zones was designed to force owners of trucks with old engines to replace them. While acknowledging that similar zones would help in Hong Kong, the government clearly is much less enthusiastic because success would depend on "whether the affected vehicle owners would agree to upgrade or replace their vehicles". Thus rather than tackle the truck problem, Hong Kong may focus on getting bus companies to agree on a upgrade plan that takes effect earlier than the 2019 date required under existing franchises. And road pricing is not among the 19 control measures unlike in London, where low emission zones are coupled with an electronically-monitored pricing system that requires polluting vehicles entering them to pay a penalty. As for pedestrian-free zones, the Hong Kong government agrees they could bring considerable health benefits at relatively low cost but

worries about business objections.¹⁷ Overall, the consultation document does not in fact seek a public view on any policy plan, but merely offers a menu that does not clearly state their potential community benefits. Because costs are involved, the Environment Bureau does not even propose a timeline for implementation but instead asks the public: “How soon do you think these proposed emissions control measures should be implemented?”¹⁸

New Rules: Sooner or Later?

The government is certain to receive strong community support for tightening air pollution rules to protect public health. And there will be intense debate between the government and experts on where to set the AQOs, with experts calling for tighter standards and interim targets that would impose them sooner rather than later. The experts and civic groups also will use research data to galvanise public opinion, and will stress reducing roadside pollution because it is both Hong Kong’s number one public health threat and yet has solutions within the city’s control. And they will call upon ministers and politicians to have various government departments cooperate on all the management, pricing and regulatory measures needed to reduce air pollution—something distinctly lacking today.¹⁹

In addition, there is increasing pressure to curb shipping emissions because bunker fuel is extremely toxic. Because the city’s container terminals are located within the urban area, these emissions present a substantial public health threat even though the total quantity is much lower than from vehicles or power generation. Indeed, there have already been calls from civil society for Hong Kong and neighboring Shenzhen to collaborate on “green” port policies; owners and managers of container terminals on both sides of the border are essentially the same.²⁰

Hong Kong’s increasingly lively debate is spilling over into the delta region because it is crucial that there be collaboration with Guangdong provincial authorities if emissions are to be reduced across the region. Moreover, Hong Kong manufacturers have a responsibility, and should have a sense of self interest, to clean up their mainland operations because their factory, seaport and logistics activities affect Hong Kong

residents directly. The next decade should see much more policy attention and investment to reduce air pollution by the government. In addition, think tanks, universities and private philanthropic bodies have a crucial role to play in supporting air quality and public health research, as well as serving as advocates for action, leading the effort to educate the Hong Kong public about both local and regional problems. Perhaps the tipping point has been reached at last.

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¹ It is only in recent months that the Hong Kong government accepts the legislation must be read to mean protection public health is in the public interest *Air Quality Objective Review: Public Consultation*, July 2009, p.14,

http://www.epd.gov.hk/epd/english/environmentinhk/air/pub_consult/files/book_en.pdf

² Ove Arup, Agreement No. CE57/2006 (EP) Review of Air Quality Objectives and Development of a Long Term Air Quality Strategy for Hong Kong – Feasibility Study, Final Report, July 2009, pp. 4-5.

³ Appendix F of *Air Quality Objective Review: Public Consultation* document provides a summary of various research that show the health impacts of key air pollutants and the international practices (including the WHO) in setting air quality standards. Professor Anthony J Hedley of the University of Hong Kong was a member of the WHO team that worked on the revision of its recommended air quality guidelines published in 2006. He was not invited to join the advisory panel.

⁴ Chief Executive said: “In fact the air is not all that bad”, *An Interview with Donald Tsang*, Hong Kong Journal, July 2006, http://www.hkjournal.org/archive/2006_summer/tsanf.html.

⁵ AJ Hedley, SM McGhee, HK Lai, J Chau, PYK Chau, KWY Chung, CM Wong and CQ Jiang, *Report on Air Quality and the State of Public Health in Southern China*, June 2008, http://www.civic-exchange.org/eng/upload/files/200806_AirQualityPublicHealth.pdf.

⁶ Ibid, and C Loh, A Stevenson, M Weldon, AJ Hedley, SM McGhee, HK Lai, J Chau, PYK Chau, CM Wong, Wong Tse Wai, S Ng, A Lau, *Price Too High: The Health Impacts of Air Pollution in Southern China*, June 2008, p.15, http://www.civic-exchange.org/eng/upload/files/200806_pricetoohigh.prd.

⁷ Hong Kong uses a functional basis for these elections, see Michael DeGolyer, *Hong Kong's 2007 Elections and What They Mean*, Hong Kong Journal, January 2008, http://www.hkjournal.org/archive/2008_spring/1.htm.

⁸ In Donald Tsang's 2007 election platform, he stressed that balancing interests was the most important task of government officials.

⁹ *Cleaning London's Air: The Mayor's Air Quality Strategy – Executive Summary*, September 2002, p. 1. This was the policy goal under Mayor Ken Livingston.

¹⁰ *Air Quality Objective Review: Public Consultation*, pp. 3-4, paragraphs 1.1-2.1.

¹¹ Ibid, Question 9, p. 36. The consultation document asks a series of 9 questions in which the government wants positive answers, such as “Do you agree that the existing AQOs need updating”, and “Do you agree that protection of public health should be the key consideration in updating the AQOs?”.

¹² Ove Arup's *Final Report* acknowledges street-level pollution is one of two major problems Hong Kong faces today, p. 13, paragraph 2.3.

¹³ Flue gas desulphurization is a technology used for removing sulphur from the exhaust in power plants that burns coal or oil. Low-NO_x burners similarly deal with nitrogen oxides. Both CLP Power and Hongkong Electric have significant portions of their plants burning coal.

¹⁴ For a brief history of China's economic reform and the early designation of the PRD region for foreign direct investment and export production in the early 1980s, see Michael J Enright, Edith E Scott and Enright Scott & Associates, *The Greater Pearl River Delta*, 5th Edition 2007, pp. 4-6, http://www.investhk.gov.hk/UploadFile/GPRD_5th.pdf. The PRD's GDP grew from US\$8 billion in 1980 to more than US\$89 billion in 2000.

¹⁵ In 2002, the Hong Kong and Guangdong authorities agreed on a best effort basis to reduce emissions of SO₂, NO_x, PM₁₀ and VOCs by 40%, 20%, 55% and 55% respectively by 2010 using 1997 as the base year. In 2003, the two governments drew-up a regional air quality management plan to meet those targets, which included a joint emissions inventory for the region. The emissions inventory was updated in 2007, *Air Quality Objective Review: Public Consultation*, p. 10, http://www.epd.gov.hk/epd/english/environmentinhk/air/pub_consult/files/book_en.pdf. Guangdong also has a list of emissions reduction initiatives.

¹⁶ SO₂ (sulphur dioxide), NO_x (nitrogen oxides), PM₁₀ (particulate matter) and VOCs (volatile organic compounds). For details on the agreement see, *Air Quality Objective Review: Public Consultation*, p. 10, paragraph 2.6.

¹⁷ *Air Quality Objective Review: Public Consultation*, pp. 26-27 and 29-30, paragraphs 2.6.

¹⁸ *Ibid*, Question 7, p. 36,

¹⁹ This will require the Chief Secretary to bring ministers heading infrastructure development, urban planning, transport, housing, law, health and environment together to devise policies and implementation plans that cut across departments. A new NGO has been formed in 2009 to galvanize public opinion for the public consultation, see the Clean Air Network (CAN), <http://www.hongkongcan.org>.

²⁰ For a discussion about the potential collaboration opportunities between the ports of Hong Kong and Shenzhen, see Veronica Galbraith, Lynne Curry and Christine Loh, *Green Harbours: Hong Kong & Shenzhen –Reducing Marine and Port-related Emissions*, June 2008, Civic Exchange, http://www.civic-exchange.org/end/upload/files/200806_Gports.pdf.