

**Council for Sustainable
Development's Report on the Better
Air Quality Engagement Process**

(February 2008)

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Executive Summary

1. Hong Kong seeks better air quality. The air that we breathe is influenced by many factors – both local and regional – but fundamentally it is the ambient air at roadside level that affects us.
2. This report by the Council for Sustainable Development which represents the fourth stage in its engagement process¹ seeks to bring about a fundamental change in Hong Kong's approach in tackling air pollution and aims to strengthen the political intent behind the Hong Kong Government's efforts in this area as well as freeing up much needed resources to resolve this urgent matter.
3. The Council has carried out one of the most intensive and comprehensive public engagement process in Hong Kong's history. Over 80,000 people responded to the Council's call insisting that action be taken to protect the health of Hong Kong's citizens – on the strength of this number, the Council now believes it has the right to speak out on behalf of the community.
4. Following on from its 2006 report, "Clean Air and Blue Skies – the Choice is Ours", after extensive stakeholder dialogue and research, three topics were identified as the focus of the public engagement exercise that the Council ran between June and October 2007. These topics were: High Air Pollution (HAP) Days, Road Pricing and Demand Side Management (DSM). These topics are discussed in detail in sections 2.5 to 2.8.
5. The Council's intention was to canvas the views of a broad range of stakeholders on the three topics through engaging the public. An Invitation and Response (IR) document together with an accompanying questionnaire was released to the wider community where each topic was presented with enough detail and discussion, case studies, and the context for Hong Kong to provide the basis for a meaningful consultation with a diverse range of community stakeholders. Stakeholders were pressed for their views. Further detail on the engagement process is provided in sections 2.9 to 2.15.
6. Based on what the Council has received and heard from the stakeholders, the following summarises the Council's position on the three topics having regard to the engagement process findings.
7. **HAP Days:** Hong Kong should be alerted when HAP days are imminent and information on what to do should be disseminated in a timely manner so that members of the public can take appropriate action. Outdoor activities for children and vulnerable groups should be cancelled on such days and citizens should use public transport and refrain from use of electrical or diesel powered equipment. (See sections 3.5 to 3.9).
8. **Road Pricing:** Hong Kong should adopt road pricing as soon as possible following a "polluter pays" principle to penalise polluting vehicles. Finances from road charges should be used to tackle Hong Kong's air pollution. Road

¹ The Council's engagement process comprises five stages: 1. Identification of priority areas; 2. Preparation of Invitation and Response Document; 3. Direct involvement of the wider community; 4. Reporting; and 5. Government Action.

pricing by itself will not completely curb roadside air pollution; rather it should be part of an overall transport strategy that includes more streamlined public transport systems, pedestrianisation, cycle paths and clean vehicle and clean fuel options. (See sections 3.10 to 3.14).

9. **Demand Side Management:** DSM in Hong Kong is not widespread; the Government must mandate appropriate measures as soon as possible to ensure that DSM is widely practised, and incentives to reward the correct institutional and individual behaviour should be provided. In promoting a higher level of awareness and responsibility regarding the resources consumed and the air pollution this activity generates, schemes such as energy efficient design, choice of equipment and general education should be inculcated. The market must also support energy efficiency by having technologies and products readily available for consumers. In addition, Hong Kong should not just think about tackling air pollution but also its contribution towards preventing the wider issue of climate change through the reduction of fossil fuel combustion and improved efficiency of energy consumption. (See sections 3.15 to 3.18).
10. Paying due regard to the results of the engagement process, the Council has formed the following recommendations.

- In addition to revising the set of Hong Kong's air quality objectives in line with international thinking (the subject of a current study due for completion in 2009), the Government should adopt roadside air pollution measurements as the target for improvement rather than emission inventory targets.
- A colour-coded system should be adopted to denote HAP days; the target for Government and the community at large should be to reduce the number of high pollution coloured days e.g. if red is taken as the chosen colour then a target of zero 'red' days within x years should be established.
- When "red" day alerts occur, the Government should, with timely notice, discourage activities that generate air pollutants namely driving of private vehicles and use of non-essential electrical and diesel equipment in certain zones. Organisers of outdoor activities involving schools and vulnerable groups should be advised to postpone such activities on "red" days and the use of public transport systems should be enforced in certain zones.
- The Government should adopt road pricing for Hong Kong as soon as possible in congested areas – to be finalised subsequent to discussion – such as Central, Wanchai, Causeway Bay and Mongkok. For road pricing to work, the Government must:
 - Impose full penalties on vehicles with high pollution outputs but reduce road charges for those meeting higher environmental standards such as hybrids;
 - Ensure that public service vehicles like public buses, transport for the disabled and school buses pay reduced road pricing fees;

- Provide and encourage use of alternative routes ; and
 - Maintain an equitable system so that livelihood transport industries like taxis, public and private buses (including mini-buses) and delivery vehicles are able to continue running their businesses, and that road use does not become a privilege for the wealthy.
- The Government should review its current policies on how to assist the transport industry through the HK\$3.2 billion allocation in upgrading light, medium and heavy vehicles to the latest EURO vehicle standards, as well as to support the franchised bus fleets as required. It should explore cleaner fuel options like liquefied petroleum gas (LPG) for light goods and passenger vehicles, build more pedestrianised areas and close roads in congested locations, and consolidate the number of transport options for the public e.g. reducing the number of unused or half-used bus routes during certain hours during the day. Selective vehicle restrictions on HAP days should also be considered.
- The Government must urgently look into ways of stopping the practice of fuelling Hong Kong privately owned vehicles in the Pearl River Delta region with low grade diesel and the subsequent driving of these vehicles on Hong Kong roads.
- The Government must introduce policies to mandate the use of low sulphur diesel for marine transport like ferries and private boats in line with road transport fuels used in Hong Kong.
- The Government should embed DSM practices by:
 - Mandating strict building codes and regulations for new and existing buildings to eliminate unnecessary and wasteful energy consumption, and making it compulsory to install energy efficient equipment and appliances (this is already in train with plans to introduce energy building codes as the subject of public consultation by March 2008);
 - Educating the public not to be wasteful in energy use e.g. street advertising lights should be turned off during early morning periods;
 - Encouraging building owners to switch off lighting and air conditioning in empty buildings;
 - Setting up incentives for the electricity companies to work with consumer groups and supply less environmentally damaging power with requisite rewards; and
 - Mandating eco-labels for electrical equipment and appliances and encouraging the market for energy efficient equipment and related services, promoting environmental design and construction methods for buildings and introducing off-peak pricing schemes for consumers.
- The Government should provide educational messages, work with consumer groups, explore more options for renewable energy within Hong Kong and lead by example themselves in the activities of their own

staff and facilities so that Hong Kong adopts more thoughtful habits on electricity consumption.

- Business employers should promote better environmental and energy practices amongst their staff like adjustments of lighting and air-conditioning settings, adopting green purchasing decisions when selecting electrical appliances and making transport choices and, in particular, the property industry should foster an energy and environmental business culture where it is the norm to plan, design, build and manage facilities in ways that are energy efficient.
- The Government must hasten legislation enactment to curtail solvent emissions (i.e. Volatile Organic Compounds) from retail and manufacturing products such as paints and inks.
- In addition to ferries and boats, the Government should mandate the switch from industrial-grade diesel to ultra-low-sulphur diesel for the catering, construction and port industries.
- The Government should continue to pursue its dialogue with the Guangdong authorities to tackle cross-boundary emissions.
- Research on air pollution and the health implications should be carried out to provide information for the public such as the source and nature of air pollution in the region and explaining the implications on our society and economy so that citizens can make the right choices in order to change methods of work and lifestyle as necessary.

11. In coming up with the recommendations, the Council stresses that the improvement of Hong Kong's air quality is the ultimate focus, however it is conscious that any proposed measures must be fair and not impinge unduly on livelihood issues; that being said, voluntary action is not enough and the Council urges the Government to take a strong line in mandating measures as necessary.
12. In keeping with the fifth stage of the engagement process, the Council welcomes the Government's response to these recommendations.
13. The stakeholder views gathered through the engagement process have helped shape the Council's intent and recommendations and, thereby, policy direction. These recommendations will assist Government and the Legislature in the next steps in improving Hong Kong's air for the long term and it has brought in interested and informed parties from a wide range of sectors including business, community and the health sector. The Council has taken the opportunity presented by this unprecedented call for action from stakeholders to spur the Government to respond quickly and urgently. The challenge is how to ensure that a comprehensive implementation plan is formulated to effectively implement all necessary measures to tackle the air pollution problem in order to meet the stakeholders' expectations.
14. The Council therefore **recommends** that the Government develop a holistic and comprehensive implementation plan which includes, amongst other things, the need to provide the much needed authority and resources to Environmental

Protection Department and various other government bureaux and departments charged with the task of implementation.

15. In formulating such a comprehensive implementation plan, the Government is urged to give serious consideration to not only making available the resources required (and where from) but also to drawing up a timetable to achieve the various targets. Any funding initiatives, in the Council's opinion, should not be just limited to tackling transport-related air pollution matters, even though transport is a major contributor. It should cover all issues – power, industry, consumers – related to cleaning up Hong Kong's air. Centralisation of the requisite resources will enable a one-off clean up of legacy issues related to air pollution and then enforcement of the polluter pays principles in a raft of ongoing fiscal and mandatory measures, at the same time ensuring that outcomes are rapid and transparent.
16. In conclusion, the Council firmly believes that Hong Kong is at a critical juncture in terms of the decisions it must take to respond forcefully to the challenge of improving its air quality. The Council looks forward to its deliberations with the Government to discuss the specific policy recommendations arising from the engagement process and the suggestions for changes to ensure the success of the implementation. It is the Council's vision that, once more, Hong Kong's citizens will wake up to clean air everyday. And, if Hong Kong people share this vision, then it is our responsibility to use all the power within our means to make this real.

1. Introduction

- 1.1 Hong Kong has wrestled with the challenges of development over the years. Transformed from a manufacturing-based city to becoming a provider of the sleek service operations that are now on offer, Hong Kong has been successful in re-inventing itself as the need calls. But the urgency now lies with tackling our air pollution problem.
- 1.2 For many years, the price for Hong Kong's development has been the environmental impacts caused by our energy consumption and transport usage. Our air quality has steadily declined as a result of the boosted levels of pollutants emitted and the lowered visibility that obscures our world famous landmarks like Victoria Harbour – and our health has suffered as a result.
- 1.3 It is not just our health either; Hong Kong's image as a modern city is not given credence by the state of our air. Companies are facing problems attracting talent to our shores, the efficiency of our workforce is being affected and our young and vulnerable are facing severe challenges from breathing polluted air. From Government officials to the grassroots, the message has been clear – it is time to act.
- 1.4 This report by the Council for Sustainable Development which represents the fourth stage in its engagement process seeks to bring about a fundamental change in Hong Kong's approach in tackling air pollution and aims to strengthen the political intent behind the Hong Kong Government's efforts in this area as well as freeing up much needed resources to resolve this urgent matter.
- 1.5 Working with the Government, business and civil society, the Council is a platform for the views of parties with different interests to converge with the joint aim of resolving Hong Kong's air quality problem. The Council has carried out one of the most intensive and comprehensive public engagement process in Hong Kong's history. Over 80,000 people responded to the Council's call insisting that action be taken to protect the health of Hong Kong's citizens – on the strength of this number – the Council now believes it has the right to speak out on behalf of the community.
- 1.6 The Council's report is structured as follows:
 - Background – in which the Council explains the basis for its work and the process through which it engaged over 80,000 stakeholders.
 - The Engagement Process – what the findings showed from the engagement process and what we have learned.
 - Recommendations – the Council provides its recommendations covering the major sectors including power, transport and business and invites the Government to respond.
- 1.7 The records of the written submissions received by the Council during the engagement process can be found on <http://www.susdev.org.hk>, as part of the Independent Evaluation of Feedback by the Social Sciences Research Centre of the University of Hong Kong.

2. Background

- 2.1 In the Council's 2006 exercise on population policy², a number of principles emerged to form the basis of ensuring that Hong Kong's future citizens would enjoy a sound quality of life upon which a prosperous and harmonious city could be founded.
- 2.2 Chief amongst these principles was the need to create a better living environment, including a statement to the effect that "the Government and the community should join hands to improve air quality...",³ and in doing so "provide an enjoyable living environment for our population and, at the same time, help attract and retain talent."
- 2.3 In 2006, to address the call for action from citizens, the Council produced a report, "Clean Air and Blue Skies – the Choice is Ours"⁴, in which, after extensive stakeholder dialogue and research, it identified four topics for public discussion that had pressing concern with Hong Kong's air. Three of these topics formed the focus of the public engagement that the Council ran between June and October 2007.
- 2.4 The Council's engagement process comprises five stages:
- Stage 1. Identification of priority areas
 - Stage 2. Preparation of Invitation and Response Document
 - Stage 3. Direct involvement of the wider community
 - Stage 4. Reporting
 - Stage 5. Government Action

Stage 1. Identification of Priority Areas

- 2.5 The topics selected from the 2006 report formed stage 1 of the engagement exercise as the Council believed there was a need to engage the community owing to the territory-wide implications of the issues concerned and where the Government required a stronger sense of public sentiment so that they could formulate appropriate policy measures.
- 2.6 The topics were:
- **High Air Pollution (HAP) Days** – on days of severe air pollution, measurements at specific locations throughout the city are converted into an index figure which denotes the severity of the pollution. By setting

² Council for Sustainable Development Report on the Public Engagement Process on Population Policy (June 2007)

³ Taken from the Council's Report on Population Policy (Chapter 2, Paragraph 6):

"Principle 1: The Government and the community should join hands to improve air quality, increase the provision of open space and recreational outlets, implement more greening measures, enhance investment in culture and the arts, conserve tangible and intangible heritage and promote sustainable urban design, with a view to creating a better living environment.

Target 1: To provide an enjoyable living environment for our population and, at the same time, help attract and retain talent."

⁴ The Council's Report on "Clean Air and Blue Skies – The Choice is Ours" (November 2006)

specific index values for "high air pollution alerts", actions can be triggered once an alert has been sounded to the general public. The key question would be whether a Government-imposed order to reduce pollution-creating activities, or voluntary action by businesses – like stopping transport or having employees work from home – would be the most effective way to curb pollution.

- **Road Pricing** – Road pricing is an option for Hong Kong to consider in managing traffic flow and hence reducing vehicle congestion, which is one of the primary causes of roadside air pollution. Based on a user-pays principle – which can be adapted to a polluter-pays principle – road pricing can be a valuable factor in planning for our future transport needs.
 - **Demand Side Management (DSM)** – Managing the demand of electricity is critical in minimising environmental impacts by reducing unnecessary consumption of fossil fuels and in turn, the generation of air pollutants. DSM is a widely used method of managing electricity consumption. It is also a means of encouraging energy efficiency and promoting energy savings which would have important climate change reduction implications.
- 2.7 The fourth topic, banning idling vehicles, is being dealt with separately by the Government in another consultation exercise⁵.
- 2.8 Also in its 2006 report the Council stated a comprehensive set of suggested measures, both bold and incremental, together with guideline costings on mitigation of air pollution in Hong Kong⁶. It advised next steps regarding institutional issues, actions for the electricity generating and transport sectors, as well as suggestions to tackle air-related problems facing the industrial sector. In all, fourteen recommendations⁷ were presented for the Government to consider and implement speedily, acknowledging that the Government was already working on them to varying degrees.

Stage 2. Preparation of Invitation and Response Document

- 2.9 To facilitate the discussions, and to help guide stakeholders in the thinking and articulation of their views, the Council set up a Support Group comprising business persons, professionals, academics, members of civil society and Government representatives⁸ in January 2007 to identify a range of key policy issues around the three topics. These issues were distilled into a series of key questions which were further narrowed down into a set that was incorporated in the Council's Invitation and Response (IR) document as stage 2 of the engagement exercise.
- 2.10 The Council's intent was to canvas the views of a broad range of stakeholders on the three topics through a public engagement exercise. This was

⁵ The Government launched a public consultation on 2 November 2007 on a proposal to ban idling vehicle engines. The consultation document can be found on <http://www.epd.gov.hk/epd/idling> and the public has until 31 March 2008 to respond.

⁶ "Clean Air and Blue Skies – The Choice is Ours" (November 2006) Chapters 5 and 6.

⁷ Ibid. Chapter 7.

⁸

implemented through the IR document together with an accompanying questionnaire which was released to the wider community in June 2007⁹ along with the launch of the stakeholder engagement exercise.

- 2.11 In the IR document, each topic was presented with enough detail and discussion, case studies, and the context for Hong Kong to provide the basis for a meaningful consultation with a diverse range of community stakeholders. Stakeholders were pressed for their views on the following key questions.

High Air Pollution Days

1. What would be the best system to use to alert Hong Kong when air pollution is severe enough to affect health?
2. What policies should we consider concerning outdoor events organised on high air pollution alert days?
3. How far should the Government go in imposing mandatory responses to high air pollution alerts?
4. What would be the best way to use the alert system to educate the public about the need to change its behaviour and contribute to reducing pollution?

Road Pricing

1. Should we use road pricing to reduce roadside air pollution as part of an overall policy to reduce transport-related air pollution?
2. How should the road pricing fee policies be designed based on the characteristics and polluting behaviour of the vehicle and the time and place of use in order to be most effective in terms of reducing roadside air pollution?
3. How can we link road pricing to policies that encourage less polluting means of transport like hybrid vehicles or avoid pollution generation altogether through walking or cycling?

Demand Side Management

1. Do you support new policies to promote demand side management that will address the direct link between energy consumption behaviour and air pollution caused by electricity generation?
2. What new policies would you support to achieve DSM energy targets and which ones should be made mandatory?
3. What new incentives and/or policies should Hong Kong adopt to encourage energy efficiency and reduce peak energy demand?

⁹ The Council's Invitation and Response Document "Clean Air – Clear Choices" (June 2007) and the questionnaire can be found on www.susdev.org.hk.

Stage 3. Direct Involvement of the Wider Community

- 2.12 In stage 3, strategic partners – which included housing estates, schools, universities, chambers of commerce, corporate sector and civil society bodies – were deployed to reach out via their various networks to involve members of the community. Roving exhibitions were also held to raise the public's attention and the media played an invaluable role in the broadcasting of the exercise.
- 2.13 In addition to the events organized by the strategic partners, specific topic **forums were organised by the Council for DSM, road pricing and high air pollution days on 25th July, 15th August and 25th August 2007 respectively** in the Kwai Tsing Theatre where roughly a hundred interested citizens were in attendance at each event to express their views.
- 2.14 The information gathered through the entire process was collated by an independent body, the University of Hong Kong's Social Sciences Research Centre¹⁰. Feedback data was through the returned responses on the IR questionnaire as well as written submissions from stakeholders. Further qualitative feedback was derived from the events mentioned earlier organised by the Council and its strategic partners.
- 2.15 It is clear from the response to the exercise that stakeholder views on improving Hong Kong's air quality were neither lacking in sentiment nor in quantity. It is an obvious measure of the public's concerns on the deterioration of our environment that it prompted **over 80,000 individuals** to take the time and effort to respond to the Council's call. This statistic furthermore belies the fact that both organised and individual activities spontaneously took place – and are still taking place now – reflecting citizens' anxieties on the state of our air.
- 2.16 The **summit held on 17th December 2007** at the Hongkong International Trade and Exhibition Centre at Kowloon Bay was a further measure of the Council's resolve to develop clear and precise recommendations for the Government's consideration. Over 350 stakeholders – citizens from varying walks of Hong Kong life – came to listen and respond to the results of the engagement exercise and to share their ideas on shaping future policies for Hong Kong's air quality.
- 2.17 The Council has taken heed of the grave nature of this issue. The deterioration of Hong Kong's air now demands urgent and appropriate action. Not only is it affecting the city's reputation overseas as a place to visit, work and enjoy, but most importantly it is adversely affecting the health of our population. The voices of the stakeholders have made this patently obvious.
- 2.18 While the latest Policy Address contains an important range of measures to address air quality, the Council urges the Government to consider its findings and recommendations in Sections 3 and 4 respectively.

¹⁰ <http://www.ssrc.hku.hk/>

3. Findings of Engagement Process

Every Voice Counts

- 3.1 In the Social Sciences Research Centre's (SSRC) independent analysis, feedback was counted if the response or comment contained text that was relevant to air quality or the engagement process. The statistics are shown below.

Number of completed questionnaires returned	81,112 forms (22,369 online/58,743 paper versions)
Number of written submissions	896 submissions (691 online forum comments/84 letters & faxes/121 emails)
Number of participants	5,800 people in 48 events (33 with feedback)

- 3.2 The SSRC stresses that the Council's **quantitative** work – the 81,112 returned forms – has not been drawn as a random sample, but rather it is an indication of the concerns felt by the many individuals about air quality in Hong Kong; there has been no discounting of respondents on account of age, employment status etc. and for most of the questions posed, demographic differences were small, hence general consensus across the demographic field can generally be assumed.
- 3.3 In the **qualitative** analysis, the SSRC based its findings on the 896 submissions and 33 event summaries, which yielded 3,558 comments addressing issues outside the questionnaire feedback form, many of which included research reports.
- 3.4 The SSRC's evaluation report together with the qualitative feedback can be found on the web link <http://www.susdev.org.hk>.

High Air Pollution Days

- 3.5 Overwhelmingly, 95 per cent of respondents pressed the need for a more active response on HAP days. Key to prompting such actions, stakeholders suggested that HAP alerts should be simple to understand and be announced to the public in advance so that plans can be made to curb certain activities on such days.
- 3.6 Coloured signals were the most favoured approach. Stakeholders requested that more health-related information should accompany the alerts together with practical advice on what to do; there was strong sentiment that vulnerable groups, especially children, should be protected by cancelling outdoor or other activities on HAP days.
- 3.7 The Government was urged to take actions on HAP days beyond education and warnings; these measures included: requiring Government employees to use public transport as much as possible (64 per cent); mandating private

employers to allow staff with special needs to work from home (51 per cent); and reducing the use of electrical and diesel equipment (48 per cent).

- 3.8 The need for mandatory action was one point of debate for stakeholders. In forum discussions, it was suggested that measures on HAP days should be voluntary rather than mandatory; however from the numerous responses to the questionnaires, mandatory action was favoured on HAP days particularly for cancellation of outdoor events and events involving physical activity as well as using public instead of private transport.
- 3.9 Other proposals from stakeholders included: a need for a specific symbol to denote HAP days; more channels to announce alerts (e.g. SMS text); more widely publicised information on the likely health impacts during HAP days; more education on the alert system; companies allowing employees to work indoors instead of outdoors on HAP days; wearing light and less formal clothing when going to work; enforcement of idling cars turning their engines off; switching off unnecessary advertisement lighting; increased road and electricity prices during HAP days; and setting up an 'air pollution hotline'.

Road Pricing

- 3.10 A majority of stakeholders agreed that road pricing should be part of the Government's air pollution policy: 42 per cent "for" compared to 21 per cent "against" of responses were received, with 37 per cent adopting a neutral stance. These results demonstrate that Hong Kong is ready to tackle vehicle emissions using this approach.
- 3.11 Despite the support for road pricing, concerns raised by stakeholders involved the higher additional costs that users incur if transport companies put up fares to meet the charges. However, over three quarters of stakeholders agreed that some increase in transport cost was acceptable in return for cleaner air and 70 per cent stated that they would be prepared to use public instead of private transport to reduce the number of vehicles on the roads.
- 3.12 More than half of the stakeholders who participated indicated that public buses, transport for the disabled and school buses should pay reduced road pricing fees but, on the other hand, full payment should be imposed on vehicles according to pollution output i.e. the precept of "polluter pays". Revenue from road charges should be put towards developing environmentally friendly transport systems such as cycle paths and pedestrian areas.
- 3.13 Road pricing will undoubtedly affect the motor industry. Stakeholders were unequivocal that the pricing mechanism should be applied equitably so that it did not unduly affect livelihood trades like buses, minibuses and taxis which rely on roads for their business. In this context, it was proposed that these industries should fully participate in discussions in deciding on the number of vehicles to be restricted, zone access periods and types of vehicles and fuels that would fulfill requisite environmental performance standards.
- 3.14 Other stakeholder ideas included: specific charges for low efficiency vehicles such as single driver cars; transit connection measures between charged and non-charged zones (such as parking spaces in the zone margins); shuttle bus services within the charged zone; covered pedestrian pathways to encourage

walking; bicycle pathways; traffic information so that drivers can choose their routes to encounter less congestion; and, generally, stopping drivers filling up with non-environmentally-friendly fuel in the Mainland and crossing back into Hong Kong.

Demand Side Management

- 3.15 Stakeholders showed a strong inclination for DSM with over 60 per cent responses indicating that lighting, air conditioning and energy efficient equipment be the key areas for mandatory actions. A number of stakeholders emphasised that the relationship between DSM and air pollution should be explicit otherwise this would become an energy rather than an environmental issue.
- 3.16 Over 70 per cent of stakeholders stated that the switching off of lighting and air conditioning in empty buildings should be made mandatory as should the extinguishing of street advertising lights in early morning periods. More than half also expressed the need to mandate the purchasing of energy efficient equipment in public and private sector establishments, replacement of incandescent light bulbs with energy efficient versions and greater efforts in designing and constructing environmentally conducive and energy efficient buildings. However from forum discussions, it was cautioned that the cost of administering mandatory measures should be factored into mandatory proposals and a voluntary approach should be considered where such costs would appear to be prohibitive.
- 3.17 Incentives for building designers and building managers to encourage energy performance were also favoured. So too was the use of off peak electricity pricing schemes for consumers, although this was more for managing load demand rather than reducing actual demand.
- 3.18 Other stakeholder ideas included: energy audits for companies and households; use of water-cooled air conditioning systems; five working day-weeks; promotion of roof gardening; widespread energy efficient labelling; rebates for energy savings; energy efficiency standards for new buildings; introduction of daylight energy saving hours; and incentives for electricity savings and penalties for those who are wasteful.

Other Stakeholder Concerns

- 3.19 In chapter 4 of the IR document, the Council included a section titled "The Government: Challenges and Efforts" where the Government presented its efforts in response to the Council's 2006 recommendations. Stakeholders were invited to comment on these as well as the three topics as part of the engagement exercise.
- 3.20 Over 40 submissions were provided concerning the review of Hong Kong's air quality objectives. Foremost in many stakeholders' minds was the need to set and enforce a robust set of objectives that were aligned with international standards such as those promulgated by the World Health Organisation. This

was noted in the Council's 2006 report¹¹ and in the Council's subsequent recommendation.

- 3.21 It should be noted that the Government has commissioned a consultancy study which is due for completion in 2009 to review the air quality objectives¹². This is in line with comments received from public health experts highlighting that Hong Kong should pay heed to the potential health impacts occurring from air pollution even when the Government's current air quality objective thresholds, as denoted by the Air Pollution Index (API), seem to be unbreached. This statement has implications for the findings of the HAP day alert suggestions as the setting of a lower level for trigger alarms will undoubtedly affect the Government's decisions on mandating cessation of certain polluting activities for periods that under the old system would not be considered necessary.
- 3.22 Further comments were made on transport choices looking at options such as hybrid vehicles, exhaust technologies; reducing the incidence of cross-boundary fuelling of vehicles; electricity generation choices discussed included more use of renewable energy, cleaner fuels (like natural gas) and emission control technologies (like flue gas desulphurisation). Other comments addressed the behaviour of corporations and individuals and the need to change present attitudes and practices to ones principled on sustainable development.
- 3.23 The text of these comments can be found in www.susdev.org.hk.

What did We Learn?

- 3.24 In the feedback to the Council, stakeholders raised questions on the selection of the three topics for engagement. Some felt that the choice of the topics was insufficient to tackle the problem of air pollution as a whole. Subsequent feedback on the questions in the IR questionnaire therefore challenged the scope and coverage of the latter.
- 3.25 The Council has taken heed of this point and acknowledges that, despite the level of discussion and consultation it undertook both in the 2006 report and the preparing of the topics with various stakeholder groups, there is still further scope in the future to engage in dialogue with stakeholder groups to ensure that the Council's choice of topics for the engagement process through the IR document are comprehensively qualified in a transparent manner. However, given the convergence of views in the end, the Council is satisfied that the topics have resonated with the concerns of the majority of stakeholders.

The Council's position

- 3.26 Based on what the Council has received and heard from the stakeholders, the following summarises the Council's position on the three topics having regard to the engagement process findings.

¹¹ "Clean Air and Blue Skies – The Choice is Ours" (November 2006), chapter 7, paragraph 7.2.

¹² The Environmental Protection Department, in June 2007, commissioned an 18-month comprehensive study to review Hong Kong's Air Quality Objectives (AQO) and develop a long-term air quality management strategy.

- 3.27 **HAP Days:** Hong Kong should be alerted when HAP days are imminent and information on what to do should be disseminated in a timely manner so that members of the public can take appropriate action. Outdoor activities for children and vulnerable groups should be cancelled on such days and citizens should use public transport and refrain from use of electrical or diesel powered equipment.
- 3.28 **Road Pricing:** Hong Kong should adopt road pricing as soon as possible following a “polluter pays” principle to penalise polluting vehicles. Finances from road charges should be used to tackle Hong Kong’s air pollution. Road pricing by itself will not completely curb roadside air pollution; rather it should be part of an overall transport strategy that includes more streamlined public transport systems, pedestrianisation, cycle paths and clean vehicle and clean fuel options.
- 3.29 **Demand Side Management:** DSM in Hong Kong is not widespread; the Government must mandate appropriate measures as soon as possible to ensure that DSM is widely practised, and incentives to reward the correct institutional and individual behaviour should be provided. In promoting a higher level of awareness and responsibility regarding the resources consumed and the air pollution this activity generates, schemes such as energy efficient design, choice of equipment and general education should be inculcated. The market must also support energy efficiency by having technologies and products readily available for consumers. In addition, Hong Kong should not just think about tackling air pollution but also its contribution towards preventing the wider issue of climate change through the reduction of fossil fuel combustion and improved efficiency of energy consumption.
- 3.30 The following section now considers what Hong Kong must do in the form of the Council’s recommendations.

4. The Council's Recommendations

- 4.1 It is worth noting that in 1990 a restriction was introduced that required all power plants and road vehicles to use fuel oil with a sulphur content of not more than 0.5 per cent by weight. In the 12 months that followed, medical evidence showed that there was a substantial reduction in seasonal deaths particularly related to respiratory and cardiovascular causes¹³. This case demonstrates that action can lead to results – if we are prepared to shoulder the changes and costs.
- 4.2 The Council has engaged widely with the community of Hong Kong to fathom their sentiments and wishes. Clearly, not every request can be accommodated, but it is clear that stakeholders are unanimous that Hong Kong must clean up its air. The Council has formulated the following recommendations based on the numerous discussions heard, and responses received from the engagement process.
- 4.3 In its 2006 report, the Council developed its own action statements for improving Hong Kong's air quality¹⁴. These are presented in the table below together:

- Hong Kong must have air quality objectives that reflect appropriate critical thresholds which, if exceeded, represent potential damage to public health.
- Hong Kong must have an efficient and clean transport system for both public and private purposes.
- Hong Kong must have a reliable supply of electricity, and it must be clean; it is not one or the other.
- Hong Kong's industry sector must adopt practices that will lead to improved emissions and sound environmental performance.

- 4.4 In addition, the Council recognises that impacts also arise from air emissions across the boundary from industries in the Pearl River Delta region and we must tackle these issues through our own business channels as well as continuing to support the Government in its joint efforts with its Mainland counterparts.
- 4.5 Hong Kong's citizens must make intelligent choices on the options available in order to change methods of work and lifestyle. Information on air pollution and the health implications must be readily available for them to do so.
- 4.6 Lastly, addressing air pollution requires a comprehensive and integrated approach. The Council therefore urges the Government to tackle the air pollution problem in a holistic and co-ordinated manner.

¹³ Peters, J., Hedley, A.J., Wong, C.M., Lam, T.H., Ong, S.G., Liu, J., and Spiegelhalter, D.J. (1996) Effects of an ambient air pollution intervention and environmental tobacco smoke on children's respiratory health in Hong Kong. *International of Epidemiology*, 25(4), 821-828.

¹⁴ "Clean Air and Blue Skies – The Choice is Ours" (November 2006) Chapter 7, section 7.2.

Air Quality Objectives

- 4.7 The Government's study due for completion in 2009 will review and, it is expected, realign Hong Kong's air quality objectives with international guidelines. The importance of our health is paramount. The Government's 2010 targets of emission reduction¹⁵ have served their purpose but do not reflect the true state of whether we are improving our air quality or not as they are taken from emission inventory calculations.
- 4.8 The Council **recommends** that Hong Kong adopt roadside air pollution measurements¹⁶ as the target for improvement and take reductions in pollutant concentration levels at appropriate locations as the goals to strive for rather than emission inventory targets.
- 4.9 Linking this to the stakeholder demands for better information on HAP days, the Council **recommends** that a colour-coded system be adopted and the target for the Government and the community at large should be to reduce the number of high pollution coloured days e.g. if red is taken as the chosen colour then a target of zero 'red' days within x years should be established.
- 4.10 When "red" day alerts do occur, the Council **recommends** that the Government must, with timely notice, discourage activities that generate air pollutants namely driving of private vehicles and use of non-essential electrical and diesel equipment in certain zones. Organisers of outdoor activities involving schools and vulnerable groups should be advised to postpone such activities on "red" days and the use of public transport systems should be enforced in certain zones.

Efficient and Clean Transport Systems

- 4.11 Modern cities like London and Singapore¹⁷ have tried and installed road pricing systems to great effect – with the result of reduced traffic congestion and lowered air pollution. Hong Kong should hold back no longer. In a compact and dense city as ours, road pricing based on "polluter pays" principles is logical and befitting. Simply building more roads is not an intelligent option any more.
- 4.12 The Council **recommends** that Hong Kong adopt road pricing as soon as possible in congested areas – to be finalized subsequent to discussion – such as Central, Wanchai, Causeway Bay and Mongkok. For road pricing to work for Hong Kong, the Government must:

¹⁵ Environmental Protection Department, "Air Pollution Strategies": To improve local and regional air quality, the Hong Kong SAR Government reached a consensus with Guangdong Provincial Government in April 2002 to reduce the emission of four major air pollutants, sulphur dioxide (SO₂), NO_x, RSP and volatile organic compounds (VOC) by 40 per cent, 20 per cent, 55 per cent and 55 per cent respectively in the region by 2010, using 1997 as the base year. These are measured according to air emission inventory calculated loads.

¹⁶ The Council proposes that these pollutant loads are used in units of concentration (milligrammes per litre of ambient air) as these more accurately reflect the air that is breathed at roadside level.

¹⁷ The Council's IR document, "Clean Air – Clear Choices", see section 5.2.

- Impose full penalties on vehicles with high pollution outputs but reduce road charges for those meeting higher environmental standards such as hybrids;
 - Ensure that public service vehicles like public buses, transport for the disabled and school buses pay reduced road pricing fees;
 - Provide and encourage use of alternative routes; and
 - Maintain an equitable system so that livelihood transport industries like taxis, public and private buses (including mini-buses) and delivery vehicles are able to continue running their businesses, and that road use does not become a privilege for the wealthy.
- 4.13 Road pricing by itself will not stop roadside air pollution. The Council **recommends** that the Government should: review its current policies on how to assist the transport industry through the HK\$3.2 billion allocation in upgrading light, medium and heavy vehicles to the latest EURO vehicle standards, as well as to support the franchised bus fleets as required; explore cleaner fuel options like liquefied petroleum gas (LPG) for light goods and passenger vehicles; build more pedestrianised areas and close roads in congested locations; and consolidate the number of transport options for the public e.g. reducing the number of unused or half-used bus routes during certain hours during the day. Selective vehicle restrictions on HAP days should also be considered.
- 4.14 The Council **recommends** that the Government urgently look into ways of stopping the practice of fuelling Hong Kong privately owned vehicles in the Pearl River Delta region with low grade diesel and the subsequent driving of these vehicles on Hong Kong roads.
- 4.15 On other transport systems, the Council wishes to point out that air emissions from marine transport¹⁸ like ferries and private boats also make a significant contribution to Hong Kong's transport-related air pollution. To tackle this, the Council **recommends** the introduction of policies to mandate the use of low sulphur diesel for these types of vessels in line with road transport fuels used in Hong Kong.

Reliable and Clean Supply of Electricity

- 4.16 The Government has embarked on a series of intense discussions with the electricity companies to establish sound and economic accords that are tenable for the latter in the post-2008 Scheme of Control agreements as well as consulting the public¹⁹. Embedded in these discussions are emission targets

¹⁸ Ocean going vessels are covered outside of Hong Kong's jurisdiction and fall under the International Maritime Organisation's ambit where ongoing discussions are taking place in introducing a scheme for reducing air pollution at coastal port zones. This is covered in the Council's 2006 report in Chapter 3, section 3.5.

¹⁹ The Government carried out a two-stage consultation on Future Development of the Electricity Market in Hong Kong in 2005 and 2006 to seek public views on various issues and possible options on the regulatory arrangements for the future electricity market. The objectives of the consultation proposals were to ensure that the public can enjoy reliable, safe and efficient energy supplies at

and incentives for the power companies to achieve better air emission performance. The Council has noted that the Government has completed the discussions and informed the public of the agreements reached.

- 4.17 The Council **recommends** that the Government embed DSM practices by:
- Mandating strict building codes and regulations for new and existing buildings to eliminate unnecessary and wasteful energy consumption (this is already in train with motions to introduce energy building codes that the Government is consulting the public on²⁰), and making it compulsory to install energy efficient equipment and appliances;
 - Educating the public not to be wasteful in energy use e.g. street advertising lights should be turned off during early morning periods;
 - Encouraging building owners to switch off lighting and air conditioning in empty buildings;
 - Setting up incentives for the electricity companies to work with consumer groups and supply less environmentally damaging power with requisite rewards – this is already in train with the recent agreements struck on the new post-2008 Scheme of Control agreements²¹; and
 - Mandating eco-labels for electrical equipment and appliances and encouraging the market for energy efficient equipment and related services, promoting environmental design and construction methods for buildings and introducing off-peak pricing schemes for consumers.
- 4.18 Hong Kong's air pollution problems are caused in part by our profligate use of electricity. The Council recognises that this is a sign of modernisation and it lodges the city's standing in international renown – the "City of Light" is one of our widely known sobriquets. But this is dated thinking and we should be more discerning in our future consumption of energy, particularly as the dilemma of energy security, fossil fuels and climate change reaches a worldwide zenith.
- 4.19 The Council **recommends** that Hong Kong should adopt more thoughtful habits on electricity consumption and the Government should encourage this through providing educational messages, working with consumer groups, exploring more options for renewable energy within Hong Kong and leading by example themselves in the activities of their own staff and facilities.

reasonable prices, minimise the environmental impact caused by the production and use of energy and to seek public views on the further opening of the electricity market.

²⁰ The Government has issued a consultation document, proposing the mandatory implementation of the Building Energy Codes. The consultation deadline is 31 March 2008 (see http://www.enb.gov.hk/en/resources_publications/policy_consultation/policy_consultation_energy.html).

²¹ New Scheme of Control Agreements were reached between the Government and Hong Kong's two power companies. Under them the power companies' permitted rate of return will be cut to below 10% and linked to their environmental performance. (Source: www.enb.gov.hk).

Role of Industry Sector

- 4.20 Hong Kong's business community provided much input to the Council's engagement process. The Council acknowledges these efforts, especially the setting up of the "Clean Air Charter", a business-led initiative in 2005²² which brought attention to the problems faced by Hong Kong and how businesses were adopting measures within their remits to tackle air pollution. However the Council acknowledges concerns that these voluntary efforts have not had much impact.
- 4.21 The time is ripe for business to further pursue this cause. If not, Hong Kong stands to lose out on its competitiveness and sustain major economic losses if its environmental performance continues on its current spiral descent. In addition, with business support, the Government will be able to mandate the required actions that community demands.
- 4.22 The Council **recommends** that business employers promote better environmental and energy practices amongst their staff. Simple measures like adjustments of lighting and air-conditioning settings are important, as are purchasing decisions when selecting electrical appliances and making transport choices. These should be reported so as to foster a process of continuous improvement.
- 4.23 Indoor air quality has not been included in the Council's discussions on air pollution; however, the property industry should foster an energy and environmental business culture where it is the norm to plan, design, build and manage facilities in ways that are energy efficient.
- 4.24 The Government has already introduced legislation to curtail solvent emissions (i.e. Volatile Organic Compounds) from certain retail and manufacturing products such as paints and inks²³. The Council **recommends** that the Government speed up this process to reduce emissions from this sector.
- 4.25 In addition to ferries and boats, the Council **recommends** that the Government mandate the switch from industrial-grade diesel to ultra-low-sulphur diesel for the catering, construction and port industries.

Cross Boundary Issues

- 4.26 In the Council's exercise, some stakeholders pointed out the impacts arising from emissions across the boundary emanating from the Pearl River Delta region which is an important component of Hong Kong's pollution and where we have little or not control over. Whilst it is essential to tackle the regional air quality issues, whether through Government channels or business practices, it is the Council's view that Hong Kong's first focus must be on local problems, starting by taking all the necessary precautionary measures and implementing the necessary policies.

²² <http://www.cleanair.hk/eng/charter.htm>

²³ The new VOC Regulation imposes maximum limits on the VOC content of architectural paints/coatings, printing inks and six selected consumer products - air fresheners, hairsprays, multi-purpose lubricants, floor wax strippers, insecticides and insect repellents. The limits will be enforced in phases from 1 April 2007.

- 4.27 As stated in the 2006 report²⁴, the Council is resolute that Hong Kong must address air quality issues in Hong Kong first, since the emissions in our immediate vicinity are the ones that affect us – economically and health-wise – directly and for which we must take responsibility. Any inaction borne on cross-boundary emissions is inexcusable and we must spare no effort to improve Hong Kong's air within Hong Kong's jurisdiction. Nonetheless the Council urges the Government to continue pursuing its dialogue with its Guangdong counterparts in tackling this source of pollution and sharing knowledge and resources where feasible, particularly in the setting of post 2010 air quality goals.

Air Pollution and Health

- 4.28 The dissemination of critical information regarding HAP days has been outlined earlier. The Council **recommends** that research on air pollution and the health implications, particularly at roadside level, be carried out to provide information to the public such as the local and regional sources and nature of air pollution and explaining the implications for our society and economy so that citizens can make the right choices in order to change methods of work and lifestyle as necessary.

What Next?

- 4.29 In keeping with the fifth stage of the engagement process, the Council welcomes the Government's response to these recommendations. Although not a topic of the engagement process, the Council believes that it has a responsibility – given the community's call for urgent action to tackle the air pollution problem – to draw the Government's attention to the fact that it should be institutionally and financially ready to expedite execution of all necessary measures to improve the air quality of Hong Kong.
- 4.30 It should be noted that the various air quality improvement recommendations included in this report span a wide range of sectors and in the first instance will require substantial inter-bureau coordination. The Council therefore **recommends** that the Government develop a holistic and comprehensive implementation plan which includes, amongst other things, the need to provide the much needed authority and resources to Environmental Protection Department and various other government bureaux and departments charged with the task of implementation.
- 4.31 In formulating such a comprehensive implementation plan, the Government is urged to give serious consideration to not only making available the resources required (and where from) but also to drawing up a timetable to achieve the various targets. Clearly, the financial resources required to clean up air pollution must come from a source, either private or public. It is worth noting that, in the Council's 2006 report, the cost estimates to implement the

²⁴ "Clean Air and Blue Skies – The Choice is Ours", (November 2006) Chapter 3, section 3.2.

recommendations therein to clean up air pollution from the power and transport industry sectors²⁵ were HK\$27 billion and HK\$24 billion respectively.

- 4.32 In the case of power, the Government may consider continuation of the existing agreement with the power companies in the short to medium term in order to ensure availability of funding to meet the costs of measures such as clean fuel (like natural gas) or retrofitting FGD. Additional measures like introducing more renewable energy technology may also be pursued.
- 4.33 Transport costs – which include the retrofitting of particulate devices to heavy and medium goods vehicles, upgrading of franchised bus fleets, conversion of light vehicles to LPG, setting up systems to prohibit cross-boundary fuel and encourage more hybrid vehicles – will have to be borne by vehicle owners. Although corporations may be able to deal with this cost, this would clearly impose a burden on individual citizens which cannot be shouldered alone and other sources will have to be found, such as the Government's reserves or a transport dedicated fund.
- 4.34 Any funding initiatives, in the Council's opinion, should not be just limited to tackling transport-related air pollution matters, even though transport is a major contributor. It should cover all issues – power, industry, consumers – related to cleaning up Hong Kong's air. Centralisation of the requisite resources could enable a one-off clean up of legacy issues related to air pollution and then enforcement of the polluter pays principles in a raft of ongoing fiscal and mandatory measures, at the same time ensuring that outcomes are rapid and transparent.

Closing Words

- 4.35 The stakeholder views gathered through the engagement process have helped shape the Council's intent and recommendations and, thereby, policy direction. These recommendations will assist the Government and the Legislature on the next steps in improving Hong Kong's air for the long term and it has brought in interested and informed parties from a wide range of sectors including business, community and the health sector.
- 4.36 The Council has taken the opportunity presented by this unprecedented call for action from stakeholders to spur the Government to respond quickly and urgently. The challenge is how to ensure that a comprehensive implementation plan is formulated to effectively implement all necessary measures to tackle the air pollution problem in order to meet the stakeholders' expectations.
- 4.37 In coming up with the recommendations, the Council stresses that the improvement of Hong Kong's air quality is the ultimate focus, however it is conscious that any proposed measures must be fair and not impinge unduly on livelihood issues; that being said, voluntary action is not enough and the Council urges the Government to take a strong line in mandating measures as necessary.
- 4.38 In conclusion the Council firmly believes that Hong Kong is at a critical juncture in terms of the decisions it must take to respond forcefully to the

²⁵ "Clean Air and Blue Skies – The Choice is Ours" (November 2006) Chapter 6, section 6.2.

challenge of improving its air quality. The Council looks forward to its deliberations with the Government to discuss the specific policy recommendations arising from the engagement process and the suggestions for changes to ensure the success of the implementation. It is the Council's vision that, once more, Hong Kong's citizens will wake up to clean air everyday. And, if Hong Kong people share this vision, then it is our responsibility to use all the power within our means to make this real.

Summary of the Council's Recommendations

Recommendation	Parties involved	Ref. in Report
Revise AQO	Government	4.7
Use of roadside measurements to set improvement targets	Government	4.8
Introduce new colour-coded HAP system	Government	4.9
Introduce mandatory measures on HAP days	Government	4.10
Introduce road pricing according to polluter pays principle and equity-based	Government and legislature	4.12
Review current policies to assist the transport industry	Government	4.13
Stop cross-boundary filling of diesel	Government	4.14
Switch marine vessels, construction, port and catering to low sulphur fuel oil	Government, Legislature and trade	4.15
DSM institutional measures for power companies	Government and power companies	4.17
Introduce new energy building codes	Government, Legislature and property industry	4.17
Introduce laws penalising energy wasteful practices	Government and Legislature	4.17
Mandate eco-labelling of electrical products and appliances	Government and Legislature	4.17
Introduce market incentives for energy efficient equipment and services	Government and trade	4.17
Educate consumers to adopt more thoughtful habits on electricity consumption	Government and consumer groups	4.19
Educate employers on best staff practices	Government, trade and chambers of commerce	4.22
Property industry to foster an energy-saving and environmental business culture	Government, property owners	4.23
Speed up phasing out of VOCs	Government	4.24
Carry out research on air pollution and health	Government	4.28
Formulate comprehensive plan to expedite implementation of recommendations	Government	4.30