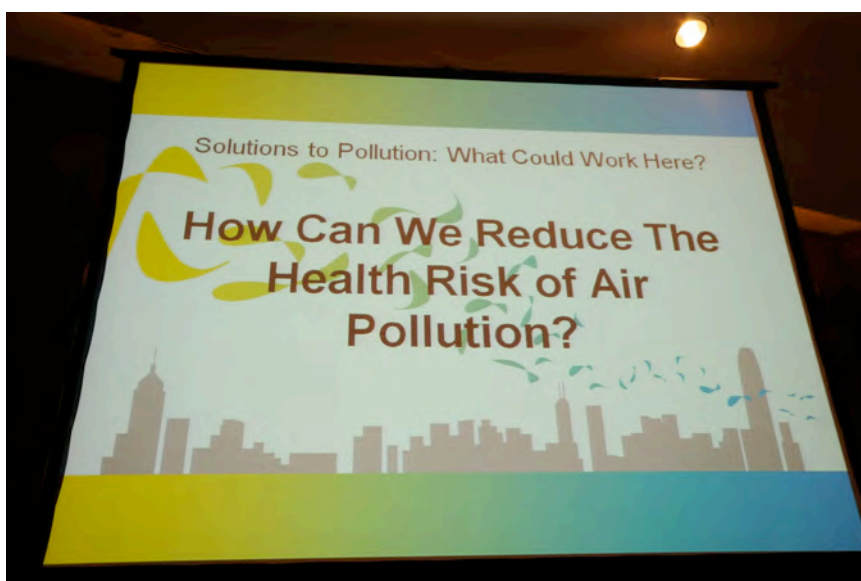




## Report

### PUBLIC CONFERENCE ON AIR QUALITY

Hong Kong Exhibition & Convention Centre  
10 January 2009



Signage at the entrance of the Key Question discussion groups

**Date of Report: April 2009**

Organized by:



Funded by:



香港賽馬會慈善信託基金  
The Hong Kong Jockey Club Charities Trust

## EXECUTIVE SUMMARY

On 10 January 2009 in Hong Kong, Civic Exchange organized a public conference on air quality, which was the second day of a two-day event on air quality called '*THE AIR WE BREATHE – a public health dialogue*'. The first day was a closed event invitation-only gathering of local and international experts. The two-day event was organized by Civic Exchange, funded by the Hong Kong Jockey Club Charities Trust, and supported by leading health and atmosphere research institutions.

The Conference attracted 425 delegates from Government, the Legislative Council, business and business associations, environmental groups, health-related community groups, universities and other research institutes, high schools, press and media, as well as the general public of Hong Kong.

**Conference sessions:** This report provides summaries of the seven sessions:

- **Session 1:** Take a Deep Breath: This is Important – Background facts and figures on public health and air quality in Hong Kong and the Pearl River Delta.
- **Session 2:** Communicating the Risks – Presentation of the Hedley Environmental Index.
- **Session 3:** Now Exhale: Your Questions Answered – Question and Answer session with local and international experts on atmospheric science, public health, public opinion, and law.
- **Session 4:** So what's working elsewhere? – Question and Answer session with international experts on public policy, transport, health, chemistry and politics from Beijing, Thailand, USA, and European Union.
- **Session 5:** Solutions to Pollution in the World Café – small breakout group discussions that focussed on solutions.
- **Session 6:** Keynote Address: the World Health Organization (WHO) guidelines to Hong Kong and the drivers of better air quality in the USA.
- **Session 7:** Our Air, Our Health, Our Answers – small group reports to plenary and community panel responses.

**Discussion Highlights:** The small group discussions proved a fertile ground for suggestions. Some highlights included:

- **Politics, policy, and legislation** – the need for institutional reform of the policymaking process and air quality administration; and the need for stronger political leadership.
- **A campaign for cleaner air** – the need to mobilize public concern, leverage media attention, and support Government action to improve air quality.
- **Vehicles, traffic, transport, and ships** – pollution from these sources needs addressing through pricing and financial mechanisms, regulatory mechanisms, and support for alternative modes of transport and technologies.
- **Energy and appliances** – the need to develop a less polluting energy supply and improve energy efficiency.
- **Buildings & urban planning** – the need to encourage, subsidize and legislate for higher standards in building design and urban planning.
- **Public awareness & education** – built up through school curricula, community education, and educating decision-makers.

**Participants Feedback** – Participants responded positively to the events as well as providing constructive suggestions that will be taken on board for future activities and events. Many participants expressed their surprise and disappointment at the levels of air pollution and effects on public health. Two quotes from participants that summarize the mood of the Conference:

**“Nice to have people excited and asking relevant questions.”**

**“The key message is that it is always cost-effective to combat air pollution from the perspective of the whole community – so much so that the ‘high cost’ to implement an improvement measure will eventually turn out to be a great investment.”**

## TABLE OF CONTENTS

<b>Executive Summary</b> .....	<b>2</b>
<b>Introduction</b> .....	<b>4</b>
<b>Session 1 – Take a Deep Breath: This Is Important</b> .....	<b>7</b>
<b>Session 2 – Communicating the Risks</b> .....	<b>9</b>
<b>Session 3 – Now Exhale: Your Questions Answered</b> .....	<b>10</b>
<b>Session 4 – So what’s working elsewhere?</b> .....	<b>13</b>
<b>Session 5 – Solutions to Pollution – World Café</b> .....	<b>15</b>
<b>Session 6 – Keynote Address: WHO &amp; How</b> .....	<b>17</b>
(a) The World Health Organization Guidelines – Prof. Ross Anderson .....	17
(b) US Politics & Laws – Drivers for Air Quality Management – Prof. John Watson .....	18
<b>Session 7: Our Air, Our Health, Our Answers</b> .....	<b>20</b>
Summary of Small Group Reports on the Four Key Questions to the Plenary .....	20
Summary of Responses from Community Panel .....	23
<b>Appendix 1 – Biographies of Special Guests</b> .....	<b>27</b>
<b>Appendix 2 – Programme – Public Conference</b> .....	<b>30</b>
<b>Appendix 3 – Feedback from evaluation cards</b> .....	<b>32</b>
(i) Audience Feedback – Session 1 – Take a Deep Breath.....	32
(ii) Audience Feedback – Session 2 – Communicating the Risks.....	35
(iii) Audience Feedback – Session 3 – Your Questions Answered .....	38
(iv) Audience Feedback – Session 4 – So what’s working elsewhere?.....	40
(v) Audience Feedback – Session 6 – Keynote Addresses.....	42
<b>Appendix 4 – Summary of Small Group Deliberations</b> .....	<b>43</b>

## INTRODUCTION

The Public Conference on Air Quality was an open event involving local and international experts on air quality and the general public of Hong Kong held on Saturday 10 January 2009. The Conference was the second day of a two-day event on air quality called 'THE AIR WE BREATHE – a public health dialogue'. The first day, Friday 9 January, was a closed event invitation-only gathering of local and international experts (see the separate summary called Experts Symposium Report, March 2009). The two-day event was organized by Civic Exchange, funded by the Hong Kong Jockey Club Charities Trust, and supported by:

- Department of Community and Family Medicine, School of Public Health, Chinese University of Hong Kong (CUHK),
- Department of Community Medicine, School of Public Health, Li Ka Shing Faculty of Medicine, University of Hong Kong (HKU),
- Institute for the Environment, Hong Kong University of Science & Technology (HKUST),
- Research Centre for Urban Environmental Technology & Management, Hong Kong Polytechnic University (HK Poly U),
- Hong Kong Thoracic Society,
- Hong Kong Transition Project at Hong Kong Baptist University (HKBU), and
- Clean Air Initiative-Asia for Asian Cities (CAI-Asia) Center.

425 delegates participated in the Conference, from a wide range of sectors and professions, as seen in Table 1. Brief biographies of the presenters and panellists appear in Appendix 1. Delegates came together to listen, learn, share information, network, develop a community of interest, increase the capacity of local experts, and to consider the policy needs of Hong Kong in order to improve air quality.

**Table 1: Categories and numbers of delegates at the Public Conference.<sup>1</sup>**

Category	No. Delegates	Category	No. Delegates
Government	13	University	33
Elected/Public officials	3	Other Research Institute	6
Business & Business Associations	173	School	27
Environmental Community Group	40	General Public	64
Health-related Community Group	4	Press/Media	6
Other NGO	12	Other	44
<b>Total</b>			<b>425</b>

The delegates to the Public Conference included most of the experts who attended the Experts Symposium the day before. As well, a number of high-profile delegates attended, including:

- The Hon. Edward Yau, Secretary for the Environment, Hong Kong SAR Government,
- The Hon. Audrey Eu, Chair of LegCo's Environmental Affairs Panel, and LegCo members, the Hon. Kam Nai Wai and the Hon. Tania Chan,
- Mr Edwin Lau, Director of Friends of the Earth (Hong Kong),
- Mr Oscar Chow, Chairman of Environment Committee, Hong Kong General Chamber of Commerce,

<sup>1</sup> Categories are based on those that delegates were asked to self-nominate at registration.

- Prof Hu Tao, Ministry of Environmental Protection, Beijing,
- Mr Sam Tsoi, Ove Arup (the consultant responsible for the AQO Review),
- Several staff members from companies and associations in the power, shipping and transport sectors, and
- Several staff members from the Environmental Protection Department of the Hong Kong SAR Government.

Also noteworthy was the attendance of 42 high-school students (who registered under both school and general public categories).



**Fig. 1 – Student participants at “THE AIR WE BEATHE – a public health dialogue”**

The programme was arranged in seven sessions (see Appendix 2):

**Session 1: Take a Deep Breath: This is Important**

Bloomberg news anchor, Ms Susan Li gave background facts and figures on public health and air quality in Hong Kong and the Pearl River Delta.

**Session 2: Communicating the Risks**

Susan Li moderated a discussion on the Hedley Environmental Index with Prof. Tony Hedley, Dr Quentin Chiotti and Mr Edwin Lau.

**Session 3: Now Exhale: Your Questions Answered**

Christine Loh moderated a Question & Answer session with the audience and Prof. Alexis Lau, Prof. Sarah McGhee, Dr Aaron Cohen, Prof. Michael DeGolyer, and Mr Antonio da Roza.

**Session 4: So what’s working elsewhere?**

Mike Kilburn moderated a discussion of different policies that have been implemented overseas, with a panel of international experts, comprising Prof. Zhu Tong, Prof Nuntavarn Vichit-Vadakan, Dr Alan Lloyd, Dr Judy Chow, and Mr Anders Wijkman.

**Session 5: Solutions to Pollution in the World Café**

Delegates and experts gathered in small break-out groups to focus on the solutions.

**Session 6: Keynote Address: WHO & How**

Internationally respected researchers, Professor Ross Anderson and Prof. John Watson gave presentations on applying the World Health Organization (WHO) guidelines to Hong Kong and the drivers of better air quality in the USA.

**Session 7: Our Air, Our Health, Our Answers**

Spokespeople from the small-break out groups presented the groups' deliberations to a panel of representatives from the Government and community.

Summaries of each session are provided below. The PowerPoint presentations for Sessions 1 and 6 are available from the Resources page of the Conference website: <http://air.dialogue.org.hk/web/eng/resources/top.html>

## SESSION 1 – TAKE A DEEP BREATH: THIS IS IMPORTANT

Presented by Susan Li. Powerpoint presentation can be accessed through the Resources page of the Conference website: <http://air.dialogue.org.hk/web/eng/resources/top.html>. For a summary of audience feedback on this session, see Appendix 3.

Everyone needs to become “Air Aware”. Everybody plays a part in the solution.

### Some technical terms and effects:

#### Particulate Matter (PM)

Increased risk of diseases of the heart, lung, and blood vessels. Research in China shows that PM affects unborn children in the womb.

#### Sulphur Dioxide (SO<sub>2</sub>)

Premature deaths from heart and lung disease. Primary source is from power plants.

#### Nitrogen Oxides (NO<sub>x</sub>)

Several forms including NO<sub>2</sub>. Produced by power plants, vehicles, ships and ports. Traffic exhaust is a major source. Stunts childhood lung development.

There are others; e.g. Volatile Organic Compounds (VOC), but won't have time to go into detail.

The TV news usually blames the Mainland for Hong Kong's air pollution, but on most days the dominant air pollution actually comes from Hong Kong. Days of exposure matter. Low pollution days in a year: 41 days. 324 polluted days: 132 days or 36% of the year: dominant source of pollution is regional. 192 days or 53% of the year: dominant source of pollution is local.

[Powerpoint slide: Bar graph showing low, regional, and local days of pollution]: No low air pollution days in April at all. August was the “cleanest” month.



Fig. 2 – Susan Li gives the Opening Address: “Take a Deep Breath – This is Important!”

How do we clean up Hong Kong's air? What local sources can we address?

### 3 main sources: Power plants; motor vehicles; and ships & ports.

**Power plants** emit the biggest volume of pollutants in Hong Kong. 32% of particulate matter. 89% of SO<sub>2</sub>. 44% of NO<sub>x</sub>. Coal is the most polluting fuel, but we depend on it in Hong Kong. New technology: Flue gas desulphurization (FGD) can reduce emissions dramatically. Use cleaner fuels: Natural gas. However, natural gas resources are limited and hard to procure.

---

This summary is based on presentations and participants' comments from 'THE AIR WE BREATHE: a public health dialogue' and does not necessarily represent the views of Civic Exchange, the Hong Kong Jockey Club, or participants' organizations, nor a consensus of all participants.

Efficiency: More energy produced for each unit of fossil fuel burned. Management, maintenance, and technology can improve efficiency, but the first two depend on the government taking action. Cleaner coal: Ultra low sulphur coal can reduce SO<sub>2</sub> emissions.

**Vehicles** produce 31% of particulate matter, 1% of SO<sub>2</sub>, and 23% of NO<sub>x</sub> in Hong Kong. Vehicles produce the emissions most harmful to health because you breathe it in at street level. 80% of vehicle emissions in Hong Kong are caused by diesel freight trucks. We have a fleet of 120,000 trucks on the roads, most of them with very old engines. Street canyons effect: In Hong Kong we have roads flanked by tall buildings that trap emissions at street level.

**Ships and ports:** Hong Kong and Shenzhen together handle about 10% of the world's container traffic. Marine-related emissions are small in terms of quantity, but ships burn bunker fuel, the most polluting kind of fuel per unit burned. Ports are surrounded by heavily populated areas, so the emissions affect people directly.

### **The Air Pollution Situation in Hong Kong**

Graph showing increase in smoggy days per month 1977-2006. In 2004 and 2006, there were months with no clear days. Graph showing average levels of PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub> 1994-2007.

### **Hong Kong Government Air Quality Objectives (AQOs)**

Problem with AQOs: They don't take into account latest health science. Have not been reviewed since 1987.

Latest quality standards are WHO 2006. WHO 1 year and WHO 24 hour guidelines are much stricter than Hong Kong's AQOs. Current average levels of PM and NO<sub>2</sub> are very far off from the WHO guidelines, at least twice as high.

### **Regional Pollution**

Hong Kong's manufacturing industry has been moving over to the Pearl River Delta since the 1980s. 50 million people live in the PRD. It's a very large area with a huge industrial output. When pollution is dominantly from the Western part of the PRD, pollution levels are much worse. Hong Kong has to cooperate with authorities across the border.

### **How Air Pollution affects people**

Public opinion survey: 2/3 close their windows and turn on the air conditioning during high pollution days. 1/2 suffer coughing, choking, and stinging and itchy eyes. 1/3 have gone to a clinic with air pollution related health problems (mostly productive working-age people). 1/4 buy lozenges, cough medicines, Chinese medicines to deal with pollution-related health concerns. 1/5 suffer shortness of breath and sore chest after outdoor activity or suffer asthma. 1/10 miss school or work because of breathing difficulties, coughing, or feeling ill from air pollution. 1/10 have gone to hospital with air-pollution related health problems (mostly productive working-age people).

### **Health costs, according to the Hedley Index**

1,155 premature deaths in 2008. 81,023 hospital bed days. 7,250,000 doctor visits. HK\$2.3 billion in direct health costs (health care spending and lost productivity)

## SESSION 2 – COMMUNICATING THE RISKS

Susan Li moderated a discussion on the Hedley Environmental Index with Prof. Tony Hedley, Dr Quentin Chiotti and Mr Edwin Lau (see Appendix 2 for biographies). For a summary of audience feedback on this session, see Appendix 3.

The Hedley Environmental Index is a new online tool developed by the University of Hong Kong's School of Public Health and Civic Exchange to measure the health impacts and costs of air pollution. Named in honour of long-serving public health expert Professor Anthony Hedley, the Index indicates that in 2008 alone there were 1,155 premature deaths, 81,023 avoidable hospital bed days, and 7.25 million avoidable doctor visits caused by air pollution. The Hedley Environmental Index can be accessed from the Resources page of the Conference website at: <http://air.dialogue.org.hk/web/eng/resources/top.html>

**Question: Why do we need a tool such as the Hedley Environmental Index?**

**Response:**

- Hong Kong is a beautiful city but increasingly air has gotten worse. Headline from the Hong Kong Standard: "Putrid Air is Killing us Slowly". Air pollution is damaging hearts and lungs – especially of children – and unborn children. We're creating a generational problem. Air pollution is a cause of social inequity – the impact of air pollution falls heaviest on poor, elderly, very young and sick. Twice the risk of dying of air pollution-related illness if you live in public housing rather than private. Hong Kong's AQO system is outdated and falls well short of WHO Guidelines. We need a means of determining costs in terms of money, lives lost, health costs etc.
- Policy and decision makers need to know costs and effects of air pollution and HEI is effective in communicating those costs. Accumulative effect of daily figures is alarming. The Air Quality Health Index in Canada would be complementary to the HEI.



**Fig. 3 – Edwin Lau (Friends of the Earth – Hong Kong) presents the Hedley Environmental Index in Cantonese**

## SESSION 3 – NOW EXHALE: YOUR QUESTIONS ANSWERED

**Moderator:** Christine Loh. **Panel Members:** Dr. Alexis Lau, Dr. Sarah McGhee, Dr. Aaron Cohen, Prof. Michael DeGolyer, and Mr Antonio da Roza (see Appendix 2 for biographies). For a summary of audience feedback on this session, see Appendix 3.

**Question:** Why is Hong Kong, which is such a beautiful city, so spoiled by air pollution? This is one of the world's great cities but the experience is damaged for tourists by the air pollution.

**Response:** The graph we saw earlier [during the presentation] shows the number of hazy days per month over the last 30 years. In the 1970s, there were 5-6 hazy days per month at most. Since then, there has been a steady rise. Firstly, Hong Kong has experienced rapid population growth and the construction of many tall buildings, which trap pollution. Roadside air pollution is a critical issue. Secondly, since the late 1970s, there has been a liberalization of trade and industry in the Pearl River Delta. Since the 1980s, the number of hazy days has grown due to increases in economic activity and emissions. During the winter, the wind blows from the north, bringing pollution to Hong Kong. But even during summer, there is a recirculation of air that keeps heavy pollutants in Hong Kong. Essentially, the two main sources of air pollution in Hong Kong are economic development across the border and local traffic.



Fig. 4 – Christine Loh moderates the Q&A session with Antonio da Roza, Prof. Michael DeGolyer, Dr Aaron Cohen, Prof. Sarah McGhee and Prof. Alexis Lau.

**Question:** Clarify the statistic that 53% of the pollution we experience is from local sources?

**Response:** During that year, we looked at the number of days considered “low pollution” days where air quality was within the WHO guidelines. It was a very small percentage of the year. For the rest of the time, when air quality was not as good as the WHO guideline, we found the dominant source of air pollution on each day. 53% of the time, local sources dominated over regional sources. 37% of the

time, regional sources dominated over the local sources. That is *time* domination, and not *quantity* domination of local sources.

**Question: How can the Hedley Environmental Index tell how many deaths or illnesses are in fact caused by air pollution?**

**Response:**

- It's true that deaths don't come with a label that says "due to air pollution". This makes it difficult for people to accept it when we say that air pollution caused a death. However, we used a statistical methodology which is accepted around the world, where we compare the number of deaths on days with high pollution to days with low pollution. Over time, you can use the comparison to estimate how many illnesses and deaths happen due to pollution. Of course, we have to control for variations in things like temperature and humidity, so it's quite a complex statistical model. But we do get estimates that are repeatable and similar to results from other places around the world. Also, when the HEI shows one death occurring today, those estimates are based on "short term risks", that is, risks due to the short-term effects of air pollution. It doesn't take into account long-term risks (which are probably 10 times greater than the short-term risks), such as damage to children's lungs.
- People tend to distrust results based on statistics, so it's important to stress how consistent the evidence is – there have been hundreds of studies all over the world, and the research done in Hong Kong is world class. It looks very similar to what you see in North America, Europe, Latin America, and Australia, not just in terms of people affected and the diseases they suffer from, but also in terms of magnitude. When scientists see consistency and repeatability, it strengthens our views about the nature of these relationships.

**Question: On the HEI, there were definite peaks in pollution on some days. What are the correlations between peak pollution days and external factors? Are they correlated with peak energy usage, for example?**

**Response:** Variations in pollutant concentrations are related to weather systems, and you tend to see pollution peaking when the air in Hong Kong is very calm. It makes pollution more difficult to disperse. But the weather is not the main cause; we have a lot of pollutants being produced in Hong Kong. Also, when you have a long period of calm, and then the wind switches, you often get a plume of polluted air brought to Hong Kong. It's a combination of local and regional pollution. Every case is different.

**Question: Where do the toxins come from? What about public apathy?**

**Response:**

- There are methods, which are internationally accepted, to tell where pollutants come from and identify their sources. The chemical compositions of pollutants are different for power plants, vehicles, etc. We can identify the sources of pollution by studying air samples, and we can tell which source it comes from, and where. Around Hong Kong, the major source of pollution is actually vehicular. Power plants actually produce the largest amount of emissions, but they are dispersed by tall chimneys. Traffic blows pollution right in your face. Local pollution is more important in terms of health effects, but regional pollution is probably more important in terms of creating hazy skies.
- Public opinion is no longer apathetic. In the October survey,<sup>2</sup> we found the majority of people were concerned. Air pollution was the second highest priority that people wanted the government to have. It increased from 62% in 2001 to 81% in 2008. The only bigger environmental concern people had was food safety, and the survey was done during the melamine scare where babies were being harmed. A large proportion of people are considering leaving, and a fair number is actually planning to leave. The richest and most educated people want to leave in larger proportions.

---

<sup>2</sup> See the results of the Public Opinion Survey via the Resources page of the Conference website: <http://air.dialogue.org.hk/web/eng/resources/top.html>

**Question:** When people plan to leave, or talk about leaving, who are these people? Are they non-Chinese or Chinese people?

**Response:** Our sample was dominated by Hong Kong Chinese and mainland Chinese, who made up 97% of the total. If you break it down by profession, 30% of people who said they were considering leaving were professional associates. The second biggest group were business managers. 40% of people with master's degrees and PhDs were thinking about leaving. There will be a few more expats in that group than in the general population, but it's dominated by Chinese people.

**Question:** In the full report, you found that Hong Kong people are not talking about air pollution outside home and work. Is this creating an impression of apathy?

**Response:** A lot of people are talking to their family and friends about air pollution, but they don't talk to the Chief Executive, government officials, the media, or LegCo. Why is this? The Government thinks that if nobody is complaining, there's no problem. Well, people have concluded that the government isn't listening and wouldn't change its mind even if you did talk to them. Many people in Hong Kong live in public housing, and when they look around do they get any indication that energy efficiency or air pollution is a priority for the government? Are there any double-glazed windows or insulation? When people look at their government-provided living space, they get the impression that the government does not think the environment is a problem. The survey results show overwhelming public concern so that if the government were to implement a plan, they would have public support.

**Question:** What are some of the issues that require legal reform?

**Response:** The Air Pollution Control Ordinance does not require the government to review its objectives. There is no time limit to achieve them, and no external references for these objectives. The government does not have to look at any external references such as the WHO guidelines. That's why Hong Kong's standards they are so out of date. They haven't been touched since they were established.

## SESSION 4 – SO WHAT'S WORKING ELSEWHERE?

**Moderator:** Mike Kilburn. **Panel members:** Prof Nuntavarn Vichit-Vadakan, Dr Allan Lloyd, Prof Judy Chow, Mr Anders Wijkman (see Appendix 2 for biographies). For a summary of audience feedback on this session, see Appendix 3.

**Question:** How does Hong Kong's air pollution levels compare globally with other cities?

**Response:** In Bangkok, PM<sub>10</sub> levels are similar to Hong Kong. Hong Kong is where Europe was 40 or 50 years ago. For Hong Kong there is not such a big sulphur issue, though it does have high Ozone levels. Biggest issue is PM levels.

**Question:** What about using law suits to change air quality?

**Response:** In USA, attacking pollution via law suits was a significant part. In Hong Kong, there was a case taken against government, and though the judge was very supportive, it was defeated as it was a policy decision not a legal issue. HK is not a litigious place as the law does not really allow law suits for environmental issues.

**Question:** HK uses public transport such as buses with pre-Euro I engines. Are other countries still using old buses? Costs?

**Response:** For Beijing to introduce Euro IV it took a long time. It came from scientific research being translated into policy. Cost issues warrant discussion. Any action taken to reduce pollution has benefited society well in excess of the out laid costs. Apart from engines, there other public transport efficiencies that can be introduced: US and Europe have synchronised traffic signals to get better traffic flow; better bus driver skills so that the driving technique reduces engine pollution; reducing the weight of buses; London enforced parking and congestion charges; some cities are giving free central public transport. Bangkok has bus issues: now has a target of Euro IV by 2012. California set up a fund to retrofit dirty diesels – this scheme worked.

**Question:** How can Hong Kong improve?

**Response:** HK wastes a lot of energy. Restaurants are too cold. Do something about air conditioning. Talk to the architects as there are solutions. HK could offer electric supply at wharf so vessels do not have to burn poor fuel. Harbour fees that are different in separate areas of the harbour. Lower fees for better fuels. Application process for incentive funds (e.g. to replace older engines) should be simple and have education programme and assistance to fill in the forms. Greater % of funds provided to early adopters. Maybe a fuel tax to reduce use.

**Question:** What about demand side management especially for air conditioning and building regulations.

**Response:** Demand side needs to be addressed. We need to do more with less to save money and save the environment. E.g. equipment on standby using almost the same energy as being on full. Appoint special office of government to focus on demand side management and share experiences with international groups.

**Question:** Should there be stringent air quality standards and Climate Changes measures together?

**Response:** Co-benefits are great. Need to understand some of the science. We need to rigorously look at Public Health and Climate Change together. Need a horizontal approach across Government departments. There are efficiencies to be gained through CO<sub>2</sub> reduction. Need to look at NO<sub>x</sub> and SO<sub>2</sub>. In China, there is more concern with pollution than Climate Change. It is coming together though. Single pollutant control: it works ok on initial polluters but now one atmosphere is the focus. Multi pollutants require different strategies.

**Question: WHO Guidelines: what are the views from other countries?**

**Response:** Thailand: The public and scientists should advocate using them as they are often avoided by politicians. China: used as a guideline, not a standard. A good reference though need cost benefit analyses for particular cases. In Europe the discussion is about health and 100,000s of people that die from pollution. California updates its standards regularly to take science into account. WHO is a benchmark for safety. Very little dispute amongst the experts on these guidelines. It is a very good steer. Biggest obstacles are over political aims and objectives that dilute the science. Health protection for children should have primacy!



**Fig. 5 – European Parliament member, Mr Anders Wijkman (with microphone), responds to questions at the International Q&A session. Other panelists (right to left): Prof. Nuntavarn Vichit-Vadakan, Dr Alan Lloyd, Prof. Judy Chow and Prof. Zhu Tong. Mike Kilburn moderating (far right).**

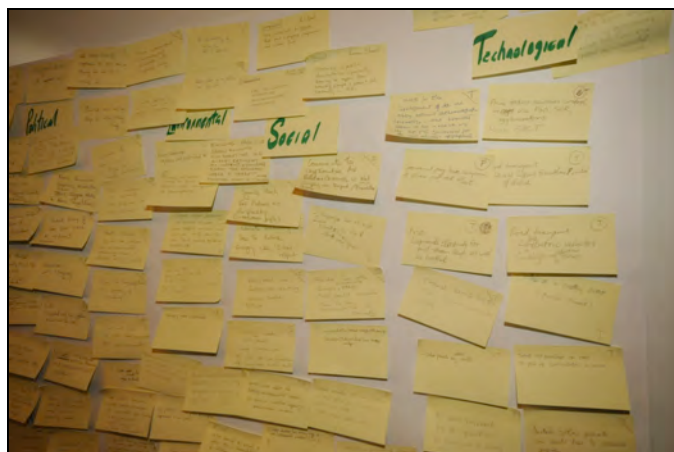
## SESSION 5 – SOLUTIONS TO POLLUTION – WORLD CAFÉ

Delegates and experts gathered in small break-out groups to focus on the solutions. Discussion was directed around four Key Questions (roughly 100 delegates to each Key Question, and within each Key Question, discussion proceeded around tables of about 5 people). Delegates had the assistance of facilitators, notetakers, and experts who were available to answer technical queries when required.

The four Key Questions were:

1. How can we reduce the **health** risks of air pollution?
2. How can we address **local** sources of air pollution?
3. How can we reduce the **regional** sources of air pollution?
4. How can we improve the dialogue on air pollution amongst **stakeholders**?

After deliberating this question for about 15 to 20 minutes, delegates reconvened at a different table (with different delegates) to discuss the question further. Delegates were given Post-It notes to record comments and suggestions. At the end of Session 5, these notes were collated and categorised by a team of facilitators, notetakers and experts as well as a spokesperson for each question. The spokesperson reported a summary of deliberations back to a plenary in Session 7.



**Fig. 6 – Discussion notes from the small group deliberations**

To simplify analysis, this report condenses and summarizes the comments from the small groups around the six themes below. See Appendix 4 for a more detailed summary of comments.

### 1. Politics, policy, and legislation

Groups across all four Key Questions had suggestions relating to this theme, including:

- Institutional reform of policymaking process and Government's air quality administration;
- Economic opportunities, impediments, and role models;
- The need for regional planning;
- The need for stronger political leadership;
- Better incentives, penalties, and enforcement;
- More effective standards that protect public health;
- Internalization of air pollution costs; and
- Cost benefit analyses incorporating medical and health costs.

### 2. Creating a campaign for cleaner air

This was a strong thread running through the discussions of the Stakeholder Question groups, and to a lesser extent, the Local and Regional Questions. Comments ranged across several topics, including:

- How to mobilize public concern;
- The need to leverage media support;
- Suggestions to support Government action to improve air quality;

- Suggestions for the business community, green groups, and individuals;
- Feedback on extending the role of the Hedley Environmental Index; and
- The need to deal with the concerns of young people, on whom the burden of air pollution will fall heavily in the future.

### 3. Vehicles, traffic, transport, and ships

Groups discussing the Local Question, and to a lesser extent Regional and Stakeholder Question groups, had detailed conversations on this theme, including:

- The introduction of pricing and financial mechanisms to manage vehicles and traffic emissions;
- Introducing and encouraging electric and hybrid vehicles in Hong Kong and Guangdong;
- Regulatory mechanisms including mandatory engine standards;
- Alternatives to combustion transport – bicycles, walking and working from home;
- Support for public transport, but with improved efficiency through rationalization and routing reforms; and
- Cleaner fuels and other technologies.

### 4. Energy and appliances

The Local Question groups, and to a lesser extent the Regional Question groups, focussed on energy supply and improving energy efficiency, including:

- Renewables – wind, solar, methane from landfills and agricultural waste, and biofuels;
- Demand-side management and energy labelling schemes;
- Manipulating the fuel mix of power stations; and
- Technology needs and opportunities.

### 5. Buildings & urban planning

Groups discussing the Local Question and few working on the Regional Question made several suggestions around encouraging, subsidizing and legislating for higher standards in building design and urban planning.

### 6. Public awareness & education

This was a popular theme amongst groups discussing the Local, Regional, and Stakeholder Questions, with comments on school curriculum, community education, and educating decision-makers.



Fig. 7 – Delegates deliberate the Key Questions in the small group discussion session

## SESSION 6 – KEYNOTE ADDRESS: WHO & HOW

PowerPoint presentations of the two keynote addresses are available from the Resources page of the Conference website: <http://air.dialogue.org.hk/web/eng/resources/top.html>. For biographies, see Appendix 2 and for a summary of audience feedback on this session, see Appendix 3.

### (a) The World Health Organization Guidelines – Prof. Ross Anderson

**There are a number of steps to get from science to policy:** (1) Hazard identification; (2) Exposure response; (3) Health impact assessment for specified exposure scenarios (risk characterization); (4) Cost/benefit effectiveness analysis; (5) Development of air quality strategy; (6) Implementation; and (7) Evaluation in order to have accountability.

**Background on WHO Guidelines:** Before the WHO guidelines were written there were “expert” reviews on the subject. These reviews could not give a holistic understanding of the big picture because their focus was limited. WHO set systematic guidelines. The WHO Air Quality Guidelines (AQGs) were not set simply after a room of people discussed the issue. There was a lot of work and research behind them.

**A Paradigm Shift: Threshold vs. No Threshold:** The Hong Kong Air Quality Guidelines were created in 1987, but since then there has been fundamental changes in thinking and advances in science. In the 1970s there was the idea of a threshold concept, where there pollutants under a certain level would be considered “safe.” This was calculated by taking the lowest level in which health effects were observed and then dividing that by two for extra precaution. More sensitive epidemiological methods have since shown that the health relationship goes all the way down to the bottom of the ambient air pollution range in cities. Because of this, there is the new view of “No Threshold”. Effects extend beyond the respiratory system, as there are cardiovascular effects as well.

**The Meaning of WHO Guidelines:** The Interim Targets of the WHO are not meant to be standards. They were meant as an interim measure to aid polluted, developing cities get started on cleaning up air pollution. It was only supposed to get them on a downwards path. There are key differences between guidelines and standards. WHO used guidelines to keep them flexible: Guidelines are recommendations on the protection of health or the environment; and standards are enforceable and require instruments for implementation and reporting.

**Implications of No Threshold:** The No Threshold idea is critical. When there is a concept of a safe level, the idea is to reduce excessive exposure; however, with No Threshold, the concept of time exposure reduction is important. This has started to take root in Europe. The main aim in the UK is to set a 15% reduction in average annual urban background conditions from 2010 to 2020. In the graph showing bell curve of population exposure,<sup>3</sup> most of the exposure (the hump of the bell curve) occurs below the guideline. Reducing moderate levels, to which the biggest portion of the population is exposed, has a bigger effect than reducing only the most severe exposures, which affects few people.

**Is Hong Kong different from other cities?** The evidence comparing Hong Kong and London shows there is little difference when talking about air pollution’s effects on public health. Given this, there are similarities and differences between the cities: Similarities – Size, population, toxicity of the pollution, and large regional contributions of pollution. Differences – Hong Kong has more power generation within its city limits, marine sources make up a larger portion of the pollution profile, and there is a larger regional component of the pollution.

**Differences that compound the air pollution problem:** HK is not embedded in a regional strategy (London works with Europe). HK’s AQOs are not adequately based on the protection of public health. HK is not setting a challenging standard based on the best possible technology and information. HK has no effective legal framework to enforce compliance with standards.

---

<sup>3</sup> See the PowerPoint in the Resources page of the Conference website: <http://air.dialogue.org.hk/web/eng/resources/top.html>

**Conclusion:** The affects of air pollution on public health in Hong Kong are like those on to other places, but Hong Kong needs to take local conditions into account when thinking of solutions. There must be the political will and enforcement to make the change.



**Fig. 8 – Keynote presenters, Prof. Ross Anderson, St George’s, University of London, and Prof. John Watson of the Desert Research Institute, Nevada, USA**

## **(b) US Politics & Laws – Drivers for Air Quality Management – Prof. John Watson**

**Introduction:** Basic needs need to be met first before citizens care to address air pollution. People react to what they see and smell. America did not start regulating until the advent of the National Ambient Air Quality Standards (NAAQS). When they did, they focused on regulating specific pollutants, which was very effective. This being said, many countries can learn from America and leapfrog certain steps to make regulations more effective. The piecemeal system of regulating pollutants sometimes hampers development (i.e. excessive litigation, retention of old technologies).

**Reasons for US success:** One factor that helped was that people saw the visible effects (hazy days) and the corresponding emissions sources (e.g. Four Corners Power Plant). People could point out what they wanted to put under control. The 1970s America passed the Clean Air Act. This piece of legislation showed a lot of foresight because it was based on ambient standards, rather than just mandating the technology of the day. Another key feature was that the review system was iterative. Every 5 years the standards were reviewed to make sure there were always improvements to reflect the latest information. Note: CO<sub>2</sub> was not regulated in the U.S., which is why there is a rise on the graph.<sup>4</sup>

**Economics of air pollution management:** People often worry that setting pollution standards will hurt growth, but every case study has shown the opposite. Cleaning the air goes hand in hand with economic growth. In every US study without exception – and this is likely to be the same in other places – the benefits of air pollution control far outweighed the costs.

<sup>4</sup> See PowerPoint in the Resources page of the Conference website:  
<http://air.dialogue.org.hk/web/eng/resources/top.html>

**Future Challenges for US Air Quality Management:** There is a need to simplify the overlapping regulations, regulate pollution combinations, redesign source characterization and ambient networks, and expand spatial domains for AQM beyond local, state, and national boundaries.

## SESSION 7: OUR AIR, OUR HEALTH, OUR ANSWERS

Four spokespeople – one for each of the four Key Questions – presented deliberations from the small-break out groups to a panel of representatives from the Government and community, including:

- Government: Hon. Edward Yau, Secretary for the Environment;
- LegCo: Hon. Audrey Eu, Chair of the Environmental Affairs Panel, and Hon. Kam Nai Wai and the Hon. Tania Chan;
- Business community: Mr Oscar Chow, Hong Kong General Chamber of Commerce;
- Academic community: Prof. Alexis Lau, Hong Kong University of Science & Technology;
- Health professionals: Prof. TW Wong, Chinese University of Hong Kong;
- Environmental NGO: Mr Hahn Chu, Friends of the Earth; and
- Young people of Hong Kong: Mr Xiang Ding – King George V School.



Fig. 9 – Community stakeholder panel receives feedback from the small group discussions

## Summary of Small Group Reports on the Four Key Questions to the Plenary

### Question 1 – How to Reduce Public Health Risks of Pollution?

(Presented by Dr Steve Paine - The Holistic Healthcare Practice)

Minimizing health risks has two main components: (a) Reduce air pollution; and (b) Reduce health effects.

**Individuals & Business Actions:** Start with the individual (eating well, being eco-friendly). Businesses can encourage ideas. They must set a good example and change work behaviours. Collaboration amongst individuals and companies, to set up a model of corporations and individuals working together. It is important to build a stronger community.

**Government Engagement:** It is an important question of how to get Hong Kong's government involved; they may need to be pushed. Mandate solar panels on apartments and roof gardens. Government should bring all stakeholders together; perhaps engage the people (i.e. 1,000 flowers campaign) to pull ideas together.

### Question 2 – How to Reduce Local Sources?

(Presented by Ms Andrea SEE - Chinese International School and Ms Jennifer Lam Nga Ching - Shun Lee Catholic Secondary School)

**Policy:** Transport is the main source of emissions so we should tighten the standards. In the building sector we should improve the building code. We should reduce the impact of fuel on air pollution with such methods as spot-checking and registration taxes. Discourage the idle burning of fuel. Reduce traffic by limiting parking spaces. Make better use of solar technologies.

**Improving Communication:** Deteriorating quality of the air demands attention, but the government is not listening. Ethnic Chinese people like us care too! Local people need to voice their opinion and media needs to play its part by reporting it. Report the Hedley Environmental Index next to the Hang Seng Index in the newspapers.

### Question 3 – How to Reduce Regional Pollution?

(Presented by Mr Anson Wong - Chinese International School and Tiffany Chan - Chinese International School)

**Political:** Top officials in China and Guangdong should commit to support. If people at the top do not do anything, no one will move to do anything. Set up an effective institutional framework to allow ideas to be transferred and to have constructive action in the community. Stakeholders on both sides need to collaborate and have a say in the regional cooperation between Hong Kong and the Pearl River Delta. More transparent data: everyone should have the right of access to data. As Spiderman says, “With great power comes great responsibility”.

**Technology:** Reduce energy demand, increase energy efficiency, and enhance renewable fuels. Taiwan has already been dealing with methane and agricultural waste for years. We need to fund technology to make dirty vehicles cleaner. Alternatively, we can take them off the road. Improve the source. Hong Kong can introduce cleaner fuels. Increase infrastructure for alternative modes of transportation (i.e. bike paths). Tax dirty vehicles and marine sources to penalize polluters.

**Environmental:** Expand the Hedley Environmental Index to the Pearl River Delta. Start an air pollution programme between Guangdong and Hong Kong to get more detailed studies in areas such as shipping. Set Pearl River Delta-Hong Kong joint industrial standards to improve pollution. Increase vehicle license fees to discourage their use.

**Social:** Media can report the Hedley Environmental Index to inform the public. Encourage public participation, such as bringing the scientific data about air pollution to elementary schools to educate children. Cross-boundary communications with Guangdong and get all stakeholders involved.

### Question 4 – How to Improve Stakeholder Dialogue?

(Presented by Mr David Chan – Compass Architects)

**Raise Awareness:** Start with the youth and educate them about environmental issues. Right now there is no education at the lower levels of education. A “Clean Air” day to build awareness. Organize a similar conference to the one today among the youth and tap into new media sources (YouTube, create an online discussion, online petition). We need more attention in the Chinese language media about air pollution. Right now any reports on the issue are mainly in English media.

**Non-Governmental Coordination:** Green groups should work together and unite to improve their message. We need more independent think tanks to take up this issue. Talk about green jobs! In this economic downturn, promoting green jobs could solve both problems at the same

time. We need more involvement from the corporate level and recognize those companies that encourage Corporate Social Responsibility.

**Government Initiatives:** Use WHO standards on air pollution. The Government also needs to set a timeframe on how to achieve them. The current consultation process has obviously not gotten through to the people. There needs to be improvement on this front. Hong Kong seems to move slower than mainland China on this issue.

## Summary of Responses from Community Panel

### Government – Hon. Edward Yau – Secretary for the Environment



**Fig. 10 – Hon. Edward Yau addresses the Conference**

Time is of the essence in terms of reacting to the air pollution we are facing.

**Government action:** Government will update the Air Quality Objectives making full reference to the WHO guidelines. The question is not whether, but how. How are we going to update these antiquated objectives? The Chief Executive has said that we will go ahead with the AQO review. We are not trying to set interim targets as an alternate goal, but we must go about it in stages, taking into account the circumstances. Public health is a concern of the government. The task of government during the coming 12 months: Devise a package of policy measures. Set priorities. Determine the pace. What price we are willing to pay. The ultimate goal is to improve air quality to bring about a better quality of life: The Government does not distinguish between locals and expats. Everyone breathes the same air.

**Transport sector and phasing out outdated vehicles:** Government is currently offering \$3.2 billion as an incentive to replace old vehicles. We have carrots, how about sticks? Have adopted Euro V standards, but there is still a significant amount of emissions. Must consider off-road vehicles.

**Energy Policy:** In latest policy address, Chief Executive announced minimum building energy efficiency standards. Plans for communal district air cooling system (at Kai Tak). \$0.5 billion incentive for energy audits and improvements in buildings. New energy policy has been developed over the last 18 months. For the first time, we have adopted a carrot-and-stick program for power companies. Government will reduce permitted returns if they fail to meet emissions targets. Emissions caps have been placed under legislative control, and LegCo has accepted it. Emissions caps are no longer part of the power companies' contractual obligations but subject to statutory control. Last August, Hong Kong signed a major agreement with the Mainland ensuring better supply of natural gas and nuclear power to Hong Kong to reduce coal fired generation.

**Regional Planning Beyond Hong Kong:** 57 page document by National Development and Reform Commission of the State Council. A planning outline for the Pearl River Delta including Hong Kong, Guangdong, and Macau. For the first time, planning document showed a wider and deeper coverage of building a greener Delta. New party secretary in Guangdong is interested in a greener PRD and sustainable development. It is encouraging to see ideas

beyond air pollution in document: recycling, renewable energy, cleaner energy. The common goal of Hong Kong as a modern city and the PRD as a fast-developing area: Future development must be low wastage, low pollution, low carbon. A green economy.

### Health Professionals – Prof. TW Wong – CUHK

Air control legislation should state very clearly that the aim is **to protect public health**. We should have (enforceable) air quality *standards*, not just air quality objectives. Information about the links between air pollution and health are old news, known facts. Not sure why the public has not taken this on – people seem to be more interested in celebrity gossip. While academics do publicize findings every now and then, it is not their primary duty to influence the general public. Government should take the lead. It has the mechanisms and infrastructure to run public awareness campaigns. It is not true that there is a disconnect because the information isn't available. It is there, the problem is how we make use of it. Who is in the best position, and who has the responsibility to bring this information to the general public?

### Science & Research – Dr Alexis Lau – HKUST

Speaking as a scientist, most scientists are pretty boring and use a lot of jargon. We need help because air pollution is an interdisciplinary issue. The media and the creative industry must help us to publicize our science, and scientists must be more forthcoming to work with these groups. Both sides have not done enough. Not enough scientists talk to the public or to government, and there is not enough reporting from the media. Interactive media can change the scene – e.g. when the movie 'An Inconvenient Truth' came out a few years ago. We need to ask the creative industry to come out and help scientists explain the issues to the public, talk to government, and talk about evidence-based policy making. The evidence and the technology are already there. The hard part is selecting and prioritizing what we spend our energy on. Evidence-based policy making is important: if you take an action, how much does it cost, and how much benefit does it provide in the long and short term? Hong Kong citizens are mature and responsible; they will accept policies that are based on good evidence.

### Legislative Council – Ms Audrey EU Yuet-mee - Legislator

Very important to have cross-border cooperation, but unfortunately most discussion is on an intergovernmental level. They very seldom involve community, legislators, civil society. As chair of LegCo's Environmental Affairs Panel, the first thing I did was write to our equivalent in the Guangdong National People's Congress, asking for a visit or exchange between environmental affairs people. They finally replied to us, and said they were too busy. I call upon those [conference delegates] from the Mainland to please help us set up dialogues. Pride is an important motivator, but the thing that often moves people to urgent action is fear. When I was young, we were taught it doesn't matter what you eat. We are big worms, we eat small worms, it doesn't matter. But now we see all these food scares on TV, we are starting to change our behaviour. To make people really change, you have to explain how things affect them. Numbers and statistics alone are not enough. You have to explain to them how it really hurts them; air pollution can kill you. Final point: the incentive that Hong Kong people really respond to is money. It's very reassuring to hear from Dr. Watson that the benefits of environmental intervention have always exceeded the cost. It's a myth here in Hong Kong that we are healthy because we have long lives. It's a myth that it is costly to be environmentally friendly. To make change you have to explain that it benefits you [financially] in long run to go green. Everyone should participate in a green economy. That will help reach the tipping point to get necessary legislation in place.

### Legislative Council – Ms Tanya Chan – Legislator

I'm impressed and inspired by the comments from young people I heard today. Two students from Chinese International School came in my group. Many things can be done in schools to

help address the problem. As a legislator, I hope I can help them stay connected with each other to apply solutions. All of us should begin applying solutions in our daily lives. Hope the students can influence their parents and spread the message to everyone. I will keep in touch with the students and bring their voices to LegCo.

### Legislative Council – Mr KAM Nai-wai – Legislator

Some said that green issues are discussed more on the English media channels than on the Chinese ones. There is a communication gap. A lot of the time, the public worry about things. If you ask people, do you think air pollution is a problem? Yes. Do things need to change? Yes. But what does that have to do with me? People feel powerless. I'm a little worried that if Secretary Yau does a lot of interviews with the media, it will make people think they don't have to do anything because the government is handling the problem. Thanks to Prof. Hedley and his Environmental Index, Hong Kong people can become more aware of the impact of pollution on public health. If we can get the public to care about the impact on health, bring this awareness to each citizen, then more pressure will reach the government. How can we bring public, private sectors, and citizens together to work together on this problem? I hope this conference today will send out a signal.

### Business – Mr Oscar Chow – Hong Kong General Chamber of Commerce

Hong Kong General Chamber of Commerce is the most representative business chamber in Hong Kong, with members from many different sectors of the economy. There is a healthy trend where we see increasing numbers of Corporate Social Responsibility officers appointed in large corporations. Need more education in small businesses. We have to educate them about how pollution impacts them before they will make a change. Necessary to attract talent, investment, and tourists for Hong Kong to remain competitive. It might be too late when business realizes the negative impact of air pollution. The Chamber of Commerce must reach out to businesses more. Need help of government and scientists to make very simple and clear arguments to them. Regional pollution requires the same standard targets and transparency as local pollution. People in Hong Kong who play roles in the CPPCC and NPC should use their influence and access to officials to promote a Green Pearl River Delta. Education: there should be more collaboration between the environmental and education bureaux to establish synchronized curricula, and promote a culture of environmentalism in the long term.

### Young People of Hong Kong – Mr Xiang Ding – King George V School

#### Three big areas of disconnect:

1. **Air and Health:** It should be obvious that they are linked, but there is a disconnect in policy-making. Scientific community has said clearly that air invariably affects health. Public, government, business leaders, and politicians must understand this link. Secretary Yau said that we must think about what price we are willing to pay for cleaner air, but our health is priceless. Hong Kong has a culture of monetary well-being but in other countries people are more concerned with quality of life – a significant cultural difference.
2. **Disconnect between different sectors:** government, business, youth, science, medical and international. Today is an example of successful convergence, but it should be like this every day. Important for different sectors to work together to find solutions. Everyone has a part to play. Draw connections between different parts of Hong Kong and we will see great success, because we already have the money and the technology. It is a matter of will power.
3. **Disconnect within Government itself:** Different government departments don't have good communication channels between them. The environment is connected to everything else – agriculture, fishing, business, and tourism. It should not just be the Environmental Protection Department's job to address environmental concerns. The Government should address these issues across the board.

### Environmental NGO – Hahn Chu – Friends of the Earth

I wanted to bring my son here to see this conference, but when I checked the Hedley Environmental Index this morning, I thought better of it. He's nearly 13 years old and has asthma and has started taking medication for asthma. As a member of an environmental NGO, I'm very aware of the impact of air pollution on my health, but a lot of ordinary members of the public aren't, especially those in lower income groups. They're living in polluted environments every day. The Government says it is doing a lot about pollution, and yes they are doing some things, but it is not enough and they are not reaching their targets. If the Government is going to review its AQOs, it should update them to the full WHO AQGs, in order to let the public know the true health and financial costs of air pollution. If we don't know the true costs, then how can people have a sense of urgency about the problem? We all know the AQOs haven't been updated in the last 20 years so they'd better do it now, and they'd better do it to the fullest.

We are not demanding that Hong Kong's air quality should meet the WHO guidelines immediately. There are a lot of political and policy choices to be made. But if we haven't got the basic guidelines in place, how can we tackle the problem? Knowing the links between air quality and health, we should be tackling the problem far more urgently. Earlier Secretary Yau mentioned an incentive scheme to replace vehicles, but it was all carrot and no stick. So the government has done something, but without any sticks or deadlines, the problem will not be solved quickly. But we are losing lives, and being hospitalized – these costs are not something an international city should accept complacently. Many scholars said earlier that addressing air pollution is not something that carries heavy costs; the benefits will outweigh the costs.

Finally, I hope our leaders will cooperate with Mainland authorities. The Chinese Government has said it wants Guangdong to spearhead China's economy, but Hong Kong's leaders should make the case that Hong Kong and Guangdong should also be environmental leaders. Guangdong should become China's California. It's not only for our benefit, but a contribution to our country, to Hong Kong, and the next generation.

### Reflections - Christine Loh - Moderator

We depend on civil society, green groups, and community groups, to give us honest reflection in plain language. We have pleas from Professors Alexis Lau and TW Wong, who have spent their lives working in the field. They are the best not only in Hong Kong but have amazing international reputation as well. They are calling on people with other areas of competence to help translate what you saw today, which is pretty complex stuff. But it is possible to distil it down to the central elements where others can understand. For generalists like me, it's important for us to grasp the essentials in order to make important decisions. We should continue to fund complex research in Hong Kong and the Delta. There is quite a lot of cross-border research going on now, and the body of information that is coming through is quite good. Taking that and creating the kind of dialogue where people from different disciplines can share that information and make use of it for policy makers and business leaders to work upon, that is hard to do.

The role of the Legislators: Audrey Eu will lead an air quality subgroup as part of Environmental Affairs Panel. Community has great hope for it. The Legislature can do things continuously, which are hard for the rest of us to do. LegCo can continue to ask questions, and get experts to explain science and learning to generalist legislators. It's a public institution, so people can go and listen, media can report. LegCo can ask critical questions of government on a regular basis; e.g. "Why don't various departments (Environmental, Planning, and Transport) work together more?" Ask questions to top government secretaries and Chief Executive – get them to make this a high priority.

## APPENDIX 1 – BIOGRAPHIES OF SPECIAL GUESTS

(In alphabetic order)

**Prof. Ross ANDERSON** is Professor of Epidemiology at St George's, University of London, and is an internationally respected expert on the public health consequences of air pollution. Prof. Anderson has held a number of high profile community health positions both in the UK and internationally. He was a member of the World Health Organization (WHO) Steering Committee for the Revision of Air Quality Guidelines 2004–2006, the WHO Task Force on Health Aspects of Long-range Transboundary Air Pollution and the WHO Scientific Advisory Committee on the Health Effects of Air Pollution in Europe 2003–2004. He has been a long-time collaborator with other air quality research institutions in the UK, USA, Greece, Rome and Hong Kong.

**Dr Quentin CHIOTTI** is the Climate Change Programme Director and Senior Scientist at Pollution Probe, a non-government, research, education, and advocacy organization in Canada. He has published numerous articles in scholarly journals and books, and has taught at various universities across Canada. He is a member of several important environment-related advisory boards and committees in Canada.

**Dr Judith CHOW**, Nazir and Mary Ansari Chair Research Professor in Entrepreneurialism and Science in the Division of Atmospheric Sciences at the Desert Research Institute (DRI) in Nevada USA, has over 30 years of experience in atmospheric, air quality, and environmental health research and education. Dr. Chow is the principal author or co-author of hundreds of scholarly papers, book chapters, presentations, and technical reports. Dr. Chow is fluent in spoken and written Mandarin Chinese and English and has been principal investigator or a major collaborator in more than 50 large atmospheric studies in California and China.

**Dr Aaron COHEN** is Principal Scientist at the Health Effects Institute (HEI), Boston, USA. He manages an international programme of epidemiologic research on the health effects of air pollution, and lectures in environmental epidemiology at Boston University. He is a consultant to the World Health Organization (WHO), and was closely involved in estimating the global burden of disease due to outdoor air pollution for the WHO.

**Mr Antonio DA ROZA** is a Barrister-at-law, AM HKI Arb, Senior Research Assistant for the Asian Institute of International Financial Law and the Centre for Comparative and Public Law, HKU.

**Prof. Michael DeGOLYER** is a Professor at the Department of Government and International Studies, Hong Kong Baptist University, lecturing in Statistical and Survey Methods for Political Science, Introduction to Political Economy, Contemporary Europe and Asia, and World Order Issues. His major research interests include comparative/historical political development and political economy; Hong Kong political development; technology and learning. He is the Director of the Hong Kong Transition Project.

**Prof. Tony HEDLEY** has been Chair Professor of Community Medicine at the School of Public Health, University of Hong Kong since 1988. Professor Hedley trained in the medical schools of Aberdeen and Edinburgh universities. His main research and public health advocacy interests in recent years have been in the field of environmental health, including outdoor and indoor air pollution.

**Prof. Alexis LAU Kai-Hon** is Director of the Environmental Central Facility, at the Hong Kong University of Science & Technology. His main research interests include atmospheric data analysis, numerical modelling of the atmosphere, regional and urban air pollution, and environmental education. He has published widely in international journals of atmospheric and environmental science.

**Mr Edwin LAU** is the Director of Friends of the Earth (HK) and he has been working on environmental issues in particular on waste and air pollution issues for almost 20 years. Mr Lau initiated the first waste paper recycling programme for schools and he developed Hong Kong's first "Sort & Recycle" system for public housing estate. In 1997, he launched the "Stop Idling Engines Campaign" to lobby the government to tackle air pollution problems. In 2000, he initiated the first

Solar Cart Race in Hong Kong to promote renewable energy. In recent years, he encourages the community to conserve energy to address both local air pollution and global climate change problems. He gives talks regularly to various sectors of the community to raise their environmental awareness and encourage them to take action to make a difference. He is a member of the Advisory Council on the Environment.

**Ms Susan LI** is the host of *Asia Business Tonight* for Bloomberg Television and is based in Bloomberg's Hong Kong bureau. Ms Li began her journalism career at the Canadian Broadcasting Corporation, and her experience included working on Canada's longest-running nationwide newscast, *The National*. In China, Ms Li was anchor and editor at CCTV International's two highest-rated programs, *BizChina* and the primetime newscast. Ms Li has interviewed scores of the world's leading business executives and politicians. She counts Venezuela's Hugo Chavez, former Canadian Prime Minister Jean Chrétien and sports idol Yao Ming among her interviewees.

**Dr Alan LLOYD** is a founding member and currently President of the International Council on Clean Transportation (ICCT). He has served in several important government and research capacities, including Secretary of the California Environmental Protection Agency, where he led Governor Arnold Schwarzenegger's Climate Action Team and Chairman of the influential California Air Resources Board (CARB).

**Ms Christine LOH**, OBE, is the co-founder and Chief Executive Officer of Civic Exchange. Prior to this, she was a member of Hong Kong's Legislative Council from 1992 to 1997 and 1998 to 2000. Today, she is an International Advisor to the G8 + 5 Climate Change Dialogue, Senior Policy Advisor to the C40 Cities Climate Change Leadership Group (London) and an elected Director of the Hong Kong Exchanges and Clearing Ltd. In October 2007, she was recognized as one of the "Heroes of the Environment" by TIME magazine.

**Prof. Sarah MCGHEE** is Professor at the Department of Community Medicine, School of Public Health, University of Hong Kong. Her current research covers aspects of health economics including costing of the impacts of air pollution and tobacco, assessment of quality of life and cost-effectiveness of childhood vaccines.

**Prof. Nuntavarn VICHIT-VADAKAN** is Associate Professor and Dean of Environmental Health and Epidemiology at the Faculty of Public Health Thammasat University, Rangsit, Thailand. Her research interests include environmental exposures and health; policy oriented studies in environmental and occupational health; and health promotion. She has published a wide range of scholarly papers public health management, including disaster management, the effect of power plant emissions on children, unleaded gasoline, as well as Bangkok's air quality with a special focus on particulate matter.

**Dr. John WATSON**, Research Professor in the Division of Atmospheric Sciences at the Desert Research Institute in Nevada USA, is well-known for the organization and planning of large-scale multi-year air quality studies in the U.S., with government, state, and local agencies, academies, consulting firms, and instrument manufacturers. Dr Watson has been involved in numerous other atmospheric studies including: California Regional PM2.5/PM10 Air Quality Study (CRPAQS); and the National Academy of Engineering's U.S. Committee on Energy Futures and Air Pollution in Urban China and the United States.

**Mr Anders WIJMAN** has been a Member of the European Parliament since 1999, where he is currently a member of the Committees on Environment, Development Cooperation and Climate Change. Previously, he served as Assistant Secretary-General of the United Nations and Policy Director of UNDP (1995-1997), and Director-General of SAREC - Swedish Agency for Research Cooperation with Developing Countries - (1992-1994). He is chairman of GLOBE EU and the ZERI Foundation. He is a member of the Club of Rome, the Swedish Royal Academy of Sciences and the Swedish Royal Academy of Agriculture and Forestry and a Board member of the Stockholm Resilience Center.

**Prof. WONG Tze Wai** is a Professor of Community and Family Medicine at the Chinese University of Hong Kong. His primary research interest is the relationship between air pollution and health, including cardiovascular and respiratory diseases, a topic on which he has published widely in international journals. He is currently involved in a major research project on The Long-term Impact of

Air Pollution on the Respiratory Health, Lung Functions and Cardiopulmonary Fitness among Schoolchildren.

**Prof. ZHU Tong** is Professor at the College of Environmental Sciences and Engineering and Director of the Centre for Environment and Sciences at Peking University. Air Pollution (especially particulate matter) and its related health impact is one of his main research focuses. He is the one of the leading professors in air pollution projects in the Pearl River Delta and was an advisor to the Beijing Olympics on air quality in Beijing.

## APPENDIX 2 – PROGRAMME – PUBLIC CONFERENCE

### 9:00 – 9:10 Opening the Dialogue

Mr William Y Yiu, Executive Director, Charities of The Hong Kong Jockey Club.

### 9:10 – 9:30 Take a Deep Breath: This is Important

Bloomberg news anchor, Ms Susan Li will give a dynamic presentation explaining exactly where we are now – the facts on public health and air quality in Hong Kong and the Pearl River Delta.

### 9.30 – 9.50 Communicating the Risks

Prof. Tony Hedley – a leading public health researcher at the University of Hong Kong will introduce a new tool - The Hedley Environmental Index, followed by expert comment on risk communication from Dr Quentin Chiotti – of Pollution Probe, Canada. Mr Edwin Lau, Director, Friends of the Earth (HK), will then run a demonstration of the Index.

### 9:50 – 10:20 Now Exhale: Your Questions Answered

A panel of experts answer your questions. Moderator: Christine Loh, CEO of Civic Exchange. Panellists include: Prof. Alexis Lau – atmosphere scientist, Hong Kong University of Science & Technology; Prof. Sarah McGhee – public health economist, University of Hong Kong; Dr Aaron Cohen – public health and air pollution expert, Health Effects Institute, USA; Prof. Michael DeGolyer – public opinion researcher, Hong Kong Baptist University; Mr Antonio da Roza – barrister-at-law and senior research assistant, Faculty of Law, University of Hong Kong

### 10:20 – 11:00 So what's working elsewhere?

A look at different policies that have been implemented overseas. What has worked, where, why, and when? What was the impact on public health and what could Hong Kong learn? Moderated by Mike Kilburn, Civic Exchange. Beijing – Prof. Zhu Tong – Professor at Peking University and air quality advisor to the Beijing Olympics; Bangkok – Prof Nuntavarn Vichit-Vadakan – Public health researcher from Thammasat University, Thailand; USA - Dr Alan Lloyd, President of the International Council on Clean Transportation – and – Dr Judy Chow, Atmosphere Scientist at the Desert Research Institute in Nevada; Europe – Mr Anders Wijkman – Member of the European Parliament.

**11:00 – 11:10 Solutions to Pollution in the World Café** – A brief introduction to the break-out session.

**11:10 – 11:45 MORNING TEA** – Served in the breakout rooms.

### 11:45 – 13:00 Solutions to Pollution in the World Café – what could work here?

Delegates and experts will gather in small break-out groups to focus on the solutions for Hong Kong in a relaxed but facilitated café discussion. Select which conversation you'd like to join:  
 ➤ How can we Reduce the Health Risks of Air Pollution ➤ How can we Reduce the Regional Sources of Air Pollution ➤ How can we Address Local Sources of Air Pollution ➤ How can we Improve the Dialogue on Air Pollution?

**13:00 – 14:00 VEGETARIAN LUNCH** ... and more open dialogue!

### 14:00 – 14:30 Keynote Address: WHO & How

Internationally respected researchers, Professors Ross Anderson and John Watson give presentations on applying the World Health Organization (WHO) guidelines to Hong Kong and the drivers of better air quality in the USA. Prof. Anderson is based at St George's, University of London and has been a member of the major WHO committees dealing with health and pollution. Dr Watson is from the Desert Research Institute in Nevada and well-known for the

organization and planning of large-scale multi-year air quality studies in the USA and China.

#### **14:30 – 15:15 Our Air, Our Health, Our Answers**

Representatives from the Government and community hear short presentations outlining delegates' solutions. Representatives include Hon Edward Yau, Secretary for the Environment (Government); Hon. Audrey Eu, Chairman, Environmental Affairs Panel (LegCo); Mr Oscar Chow, Hong Kong General Chamber of Commerce (business community); Prof. Alexis Lau, Hong Kong University of Science & Technology (academic community); Prof. TW Wong, Chinese University of Hong Kong (health professionals); Mr Hahn Chu, Friends of the Earth (NGO); and Mr Xiang Ding, King George V School (young people of Hong Kong).

#### **15:15 – 16:00 The End of the Day ... but the dialogue continues**

The final session of the day takes a look at where we can go and what we can each do to facilitate change.

#### **CLOSE, AFTERNOON TEA & NETWORKING**

## APPENDIX 3 – FEEDBACK FROM EVALUATION CARDS

**Rationale** – In the conference planning stage, Civic Exchange put considerable thought into the most effective method of gathering feedback on the Conference. There are several models that could have been chosen, including focus groups and formal evaluation sheets, but all have limitations, in terms of costs, convenience, and the usefulness of the responses and in terms of motivating delegates to make a constructive comment. In the end, it was decided that capturing feedback as close to each session as possible using cards handed out during proceedings would be most effective. Delegates responded well to this process and about 470 individual items of feedback were received on five key sessions:

- (i) Session 1 – Take a Deep Breath – presented by Susan Li
- (ii) Session 2 – Communicating the Risks
- (iii) Session 3 – Your Questions Answered
- (iv) Session 4 – So what’s working elsewhere?
- (v) Session 6 – Keynote Address: WHO & How

### (i) Audience Feedback – Session 1 – Take a Deep Breath

**Audience feedback mostly positive** – The main purpose of this presentation was communication and we deliberately chose a professional communicator – Ms Susan Li of Bloomberg News – rather than a health academic or atmosphere scientist. We pitched the presentation to the intelligent non-expert.

Feedback suggests that we got this right for the most part, with most people who offered feedback saying that the presentation was useful, informative and comprehensible to a lay audience:

“A comprehensible introduction to the air pollution in HK. Easy to understand for people of various education background ...”

“A talk with great impact. Got a clear message across to everyone at the start the conference.”

“Good idea to have Susan Li do the presentation. Useful information.”

“This is good. The information is extremely useful for me. By the way, I am a district councillor.”

“Susan Li’s delivery was excellent – energetic + clear enough for any adult or child to understand.”

“Great visuals. Good to stick to the basics. Having news anchor helps ‘popularise’ the air quality message...”

**Some people wanted more** – However, some participants were obviously hungry for more technical and in-depth commentary, with comments like these:

“Presentation could have been more technical and detailed.”

“Bit simple for the audience?”

“It could have been better presented by an academic.”

“Should have been presented by an expert in public health.”

This of course was the first session for the day and the dialogue got increasingly more technical and detailed and the Conference progressed, culminating in the keynote addresses in the afternoon by renowned experts in public health and air quality, Professors Ross Anderson and John Watson.

**Shock and disappointment** – Many comments revealed a palpable sense of shock and disappointment at the state of Hong Kong’s air quality and its impacts on health:

“It is shocking that the Government has an outdated AQO that is ½ the level of WHO standards.”

“I just relocated to HK and was completely stunned by the figures demonstrated through the talk.”

“It was no secret that the air quality of HK is bad but I was shocked at the actual number of good air days in a year.”

“It’s amazing to know that our port (through the emissions of ships) also plays a critical role in HK’s air pollution as we rarely hear about it.”

“Shocking statistics. Makes me wonder why I am raising my children in this environment.”

**Would have liked more on ...** Some people pointed out issues they would have liked to see more focus on, including:

- The political dimension:  
“There is a lot of emphasis on the science of air pollution and its effects, but it strikes me that the science on air pollution and its harm is in 2009 quite well-established. The key problem in HK on this issue is political. The energy and focus should be devoted to how to pressure the political and economic powers that be to take real action that makes a difference.”
- More detail on the links between air quality and electricity generation, particularly the role of demand side management.  
We agree – demand-side energy management would lead to reduced emissions of both key pollutants and greenhouse gases.
- How an ‘acceptable’ level of air pollution is determined.  
Again, Prof. Ross Anderson’s later presentation discussed this in more detail.
- How the distinction between local sources and regional sources is made.  
For more information on this question, see “*Relative Significance of Local vs. Regional Sources: Hong Kong’s Air Pollution*” a joint publication of the HK University of Science & Technology and Civic Exchange, which can be downloaded from the Resources page of the Conference website: <http://air.dialogue.org.hk/web/eng/resources/top.html>).
- PM<sub>2.5</sub> as a crucial health issue.  
We agree – for more information, see a presentation by Dr John Froines called “*Latest news on PM 2.5 – Implications for Public Health*”, delivered to the Experts Symposium on Air Quality on 9<sup>th</sup> January 2009, which can be downloaded from

the Resources page of the Conference website:  
[http://air.dialogue.org.hk/web/eng/pdf/090109/09010902\\_JohnFroines.pdf](http://air.dialogue.org.hk/web/eng/pdf/090109/09010902_JohnFroines.pdf)

- Air transport as a source of air pollution.
- More detail on the cross-border component.

**Questions** – For some, the presentation raised more questions than it answered:

“How come we’re supposed to be so advanced in many areas but the HK govt is so outdated in terms of air quality standards!?”

“How do we compare to other major cities?”

“Can any one explain how the taxes we pay are used?”

“Why do we need to generate power locally?”

“If the western PRD and diesel trucks are so polluting, why build the Macau–Zuhai bridge, which will make both places worse?”

“How does the port’s anti-pollution policies compare to those of the leading ports?”

For more on port and other marine related emissions, see the Civic Exchange publication “*Green Harbours: Hong Kong and Shenzhen—Reducing Marine and Port-related Emissions*”, which can be downloaded from the Resources page of the Conference website: <http://air.dialogue.org.hk/web/eng/resources/top.html>.

**Clarifications and corrections** – Some people helpfully pointed out some clarifications and corrections:

- Power plants contribute 89% of Hong Kong’s SO<sub>2</sub>.  
89% added to the version available from the Resources page of the Conference website: [http://air.dialogue.org.hk/web/eng/pdf/090110/09011003\\_SusanLi.pdf](http://air.dialogue.org.hk/web/eng/pdf/090110/09011003_SusanLi.pdf)
- “Flue gas de-sulphurisation was described as ‘new’ technology – it is not. It is 20-30 years old. The fact that we do not have it is a disgrace.”
- “Roadside pollution figures understate the truth. Roadside stations (e.g. outside Alexandra House) are 20-30 feet above street level, and in open, well-ventilated areas – not in the ‘traffic zones’.”
- “Data sources not provided in some instances or well explained.”  
All data is sourced from Government sources and from research conducted by Hong Kong universities. We will add all data sources to the version available from the Resources page of the Conference website.

## (ii) Audience Feedback – Session 2 – Communicating the Risks

**Audience feedback** – Similar to the address from Susan Li, participants provided much positive feedback:

“Very impressive demonstration of the Hedley Index. Very educational.”

“Useful information and excellent presentations.”

“It is interesting to see how a scientific index has transformed to a visual tool, which directly communicates the cost to the public ...”

“Good sources of information to the audience, especially the laymen.”

“The Hedley Index is the single most important health device for protecting public health in the Pearl River Delta (and beyond). It is high time we took data into the public’s control. BRAVO!”

“Hedley Index presentation very enlightening. Very impressed with the work done. Simultaneous translation excellent.”

[However, one participant commented that he/she didn’t have a headset for simultaneous interpretation (headsets were available for all participants at the door of the Conference room) and another didn’t realize that there were two screens in the room – one showing the Chinese version and the other showing the English version. We’ll do better next time to point out these facilities more clearly!]

“Live demo of Index very useful.”

**Spurred to action** – Some comments show that participants are considering how to use the Hedley Environmental Index beyond the Conference:

“I’ll certainly introduce the HEI to my friends and students at CUHK.”

“... makes this air pollution issue an even more important problem for me personally.”

“I look forward to looking at it in more detail in English later.”

“I can’t wait to get on the internet to check out Hedley Index tracker.”

“I will definitely spread the word about the Index. It’s shameful that the government does not adopt WHO standards.”

“The Hedley Index is interesting. This is the first time I am exposed to the Index. Perhaps I should go to the web site to get more information. I have an idea of the scientific background behind the Index.”

“Beautiful website, will be passing along to all friends.”

**Questions** – Once again, the presentation raised plenty of questions:

“Why is this (Hedley Index) not adopted by the HK Government in communicating the risks of pollution?”

“The risks are scary, how do we communicate these risks to the general public effectively?”

“Tell us how we get the Hedley Index on our screens all the time.”

“Hedley Index is great! But how are our port/container terminals, huge pollution contributors, able to change?”

“What are the immediate practical steps that we as citizens and parents can take to protect our families? (E.g. Stay inside? Use air purifiers? Air conditioners?)”

“On a session on communication, why was there not more information on how to better publicize the issue of air quality?”

“Why is the HK Government so reluctant to adopt the WHO standard?”

“Stunned that the Government has not revised its AQO score 1987. What is their explanation?”

“For the Hedley Index, I don’t understand why we have to create a new index. Are there any international adopted indices and that can be applied to HK?”

In fact, to our knowledge the Index is the first of its type in the world. As with many communication devices, it must be tailored to local data and communication needs.

**Would have liked more on ...** A number of comments showed participants are hungry for the detail:

- Background to the assumptions that drive the Index
- How the dollar figures were calculated
- How is a death classified as caused by air pollution?
- Why are some baselines 1 year and some 24hr?
- What’s the URL for the Hedley Index?
- Who (age/sex) is dying prematurely?
- The difference between WHO and HK AQO standards.
- Particulate matter tracking.

There is information on many of these issues in the FAQs section of the Hedley Environmental Index: <http://hedleyindex/sph.hku.hk>

**Constructive criticisms –** Some respondents wanted more time in this session for more detail on the Index and would have welcomed more interaction between the experts on stage and time for questions. This was a common theme in the feedback of several sessions, so it is difficult to know how we could have gained more time. Having had a ‘taste’ of many different and important air quality subject matters, we hope that participants took the opportunity to follow-up in detail with the experts later in the day. Other comments included:

“Personal risks not explained: if I don’t know anyone who died or is sick from pollution, I don’t perceive any risk.”

“More explanation on what is actually being done to deal with HK’s air pollutant issues, rather than the emphasis on dialogue.”

**Some general reflections –**

“Understanding social and development risk and placing in an economic context are the only ways to truly integrate the decision making process towards sustainable development/management in HK. It is shameful deaths from air pollution (because they are statistical) are not considered equal to bird flu death, tainted milk impacts etc. This is a pandemic.”

“The Hedley Index should be exposed to the greater community of HK, in which most are aware of the air pollution problem but certainly not severe health and socio-economic consequence that it bears.”

“Turning air pollution problems into economic loss/health risk is quite interesting.”

“My heart nearly stopped when I saw the distance of the green line over the blue line on the Hedley index, and tears when I saw 24 people have already died this year. Closed loop: air pollution -> closed windows -> aircon ->increase pollution.”

“Air pollution in HK is improving this year with the implementation with the emission reduction measure and closing of factories at Pearl Delta River region due to financial crisis.”

Perhaps ... but a few days after the Conference on 22 January, Hong Kong experienced its worst day of pollution for 12 months, with roadside levels in Causeway Bay and Mong Kok of the most harmful major pollutant – respirable suspended particles – reaching levels ten times higher than the WHO annual guidelines for healthy air. Sulphur dioxide and nitrogen dioxide levels were five times higher than WHO guidelines.

“The difference between the HK air quality measurement compared with the WHO is quite frightening. The lack of an up-to-date health measurement system is shameful.”

### (iii) Audience Feedback – Session 3 – Your Questions Answered

**Audience feedback** – The overwhelming message from the feedback on this session was that it was too short:

“Session not long enough; too many interesting speakers.”

“This section was much too short; the surface had only been scratched.”

“There should be more time allocated for this session, because by listening to the questions asked, we get to know what’s puzzling people in terms of the air pollution issues and the obstacles in pushing government to act.”

“Qualified, articulate panel, but session should have been twice as long, very little time to explore issues.”

Given that it was a full day and there was positive feedback on every session (indicating that it was what participants wanted), we’re struggling to decide what we should have left out to allow more time in this session! We hope that participants took the opportunity to follow-up on unanswered questions with the numerous experts at the Conference over lunch, morning tea, in the break-out sessions and in the networking session at the close of the Conference.

Some people made suggestions on how to maximize the session time by managing the questions:

“Maybe next time questions could be submitted and answered online.”

“Random questions from the floor not as effective as asking for question in advance to measure interest in the greater audience.”

We will consider some of these ideas for future events but the aim of the session was not to ‘engineer’ the questions but allow what was on people’s minds to come to the surface. Obviously, people had a lot on their minds and appreciated the chance to interact with experts in this format. As one participant wrote in feedback:

“Nice to have people excited and asking relevant questions.”

**Positive feedback** – Apart from the time constraint, participants were generally positive about this session:

“Excellent panel! Moderator was fantastic and speakers informative. This could have lasted for an hour ...”

“Honest and entertaining presentations by Michael DeGolyer and Antonio de Roza.”

“Dr Lau’s simple explanation of regional sources of air pollution is very good ...”

**Would have liked more of ...** Participants indicated they would have liked to see more:

- Discussion on the impact of the business community and how to help business engage successfully and profitably.
- Hong Kong Government representatives on the panel.
- Guangdong representatives on the panel.
- Discussion of the legal issues relating to air pollution, including legislation and law suits against Government or against polluting industries.
- The socio-economic profile of the interviewees contacted for the Public Opinion Survey. “Views from ‘grass roots’ and ‘blue collar’ were not sufficiently covered ...”

**Questions** – Some of the queries raised by participants:

“The HK government needs to be more accountable and responsive to the people’s welfare. How to change government’s mentality and attitudes?”

“... how about a voice from the Pearl River Delta? How much impact is HK having on air quality there?”

“How do scientists calculate power plant emission coming from HK power plants and mainland ones?”

“Why is government ignoring people’s wants?”

“How polluting are fireworks on celebration days? Should this be discouraged in the future?”

### Other general reflections –

“We always talk about the expected reduction of loss if we improve the air quality, but what is the cost of implementing the series of fighting-air-pollution measures?”

Prof. John Watson suggested that research in California – one of the most experienced and relatively successful jurisdictions in the world at improving air quality – shows that the benefits always outweigh the costs.

“Would implementing drastic solutions actually undermine HK’s economic ambitions? Surely, any plan would require HK to scale back development (e.g. build less, produce less, provide more residential space, etc.).”

Again, the US experience was that at the same time as air quality improved, GDP per capita increased, which indicates the two are not necessarily at odds.

“We spend 80% of our time indoors, not outdoors. So I suggest that we have 80% of our health related problems due to indoor air!”

Indoor air quality is certainly a topic that could occupy an entire conference by itself and we encourage people interested in IAQ to organize such a conference. As a public policy think tank, Civic Exchange concentrated on outdoor air quality given that 100% of indoor air comes from the outdoors.

“... I’d like to see the results of the opinion survey made public and known to the government.”

They have been. A 10-page summary of the Survey and the full report (about 100 pages) can be downloaded from the Resources page of the Conference website: <http://air.dialogue.org.hk/web/eng/resources/top.html>

## (iv) Audience Feedback – Session 4 – So what’s working elsewhere?

**Audience feedback** – Some participants offered constructive feedback on ways to better facilitate this type of session, such as allowing each of the international panelists to give a brief synopsis of what their cities/countries are doing before putting questions to the floor – we’ll keep this in mind for future events.

Generally, participants’ comments were positive:

“Excellent presentation and engagement by panel.”

“Very informative & good to know what the world is doing.”

“Quite insightful with global solutions and problems discussed, many of which are applicable to HK. I hope the suggestions of the panels will be taken seriously. Quite entertaining too.”

“... got gems from each person.”

**Would like to know more about ...** – The panel session sparked considerable interest in Beijing’s experience with improving air quality for the Olympic Games with some delegates particularly keen to learn more from Prof. Zhu Tong about the reasons for success in Beijing and the long-term effects. Prof. Zhu Tong’s presentation to the Experts Symposium (9<sup>th</sup> January 2009) is available on the Resources page of the Conference website: <http://air.dialogue.org.hk/web/eng/resources/top.html>.

Other aspects that participants said they would like to have seen more of during the session included:

- Participation by government officials in the debate and discussion.
- Discussion of the feasibility and practicality of standards and scientific input.
- WHO guidelines (Prof. Ross Anderson spoke directly to this subject later in the day – his presentation is available from the Resources page of the Conference website: <http://air.dialogue.org.hk/web/eng/resources/top.html>).
- How to incentivize electricity companies to produce less polluting electricity (not only from the air pollution angle but also from a greenhouse gas standpoint).
- The role of legislation - “In the UK, the early legislation on air quality of the 1950s has been superseded by targets for reductions in major pollutants related to WHO guidelines. Does HK legislation need to be brought up to date?”
- How to apply European and North American experience to Hong Kong.
- Developing an eco-friendly economy in HK.

### Some general reflections –

“The key message is that it is always cost-effective to combat air pollution from the perspective of the whole community – so much so that the ‘high cost’ to implement an improvement measure will eventually turn out to be a great investment.”

“It’s frustrating that experts from overseas can get to the heart of the problem, suggest practical solutions and see the flaws in HK government and yet our own government seems to do nothing.”

“Transport is clearly important in dealing with air pollution, not only out-of-date engines, etc, but traffic management; e.g. running engines of cars queuing up to go through the central cross harbor tunnel.”

“Did not realize that lawsuits could impact change. Training bus drivers and synchronizing traffic lights to help decrease emission!? New idea. Haven’t heard of that.”

“Deal with climate change & air pollution together ...”

We agree – linking two issues to a single intervention – known as the ‘co-benefits approach’ – is an important component of discussions on financing climate change, especially in developing countries.

“I didn’t know we had an incentive fund for truck drivers. Never heard of it, probably why the uptake is low!”

“Encourage Public Transport. Reconsider inefficient routes and congestion, rationalize routes.”

“Don’t agree that lawsuit is the best way to change the behavior of polluters.”

## (v) Audience Feedback – Session 6 – Keynote Addresses

**Audience feedback** – Participants’ responses were generally positive, for example, “Excellent keynote. Very informative” although some participants thought that the presentations were “... a bit technical for the after lunch session.” This of course contrasts with the Opening Address by Susan Li where most were satisfied but a few wanted more technical detail. Overall, between the Opening Address and the Keynote Addresses, we hope that the right balance was struck with simple enough explanations for the interested non-expert and more detailed and technical information for those more experienced with the science and the issues.

**General reflections** – The cost-benefit analysis of air quality improvement was striking to some participants:

“Benefits of improving air quality far outweigh the costs and should be demonstrated and communicated to the public and business community.”

“Excellent to promote the fact that the costs are never higher than the benefits achieved (at least in the US) & likely to be the case elsewhere.”

Other comments focussed on the importance of regular review of air quality standards and policies and the findings of public health research showing that there are no easily identifiable safe thresholds of pollutant – the impact to health from air pollution is a continuous spectrum of damage.



	H	L	R	S
the potency of emissions. Look at manipulating the mix to reduce toxic effects. Coordination has to take place - what takes place in one sector affects another sector. Reduce emissions at source rather than at the end. Don't forget environmental solutions can have their <i>own</i> environmental impact; e.g. electricity consumption.				
<b>Economic opportunities, impediments, and role models:</b> Any stimulus package in the economy should be aimed at better air quality. Implement 'user pays'. Guangdong Province cannot change rapidly due to economic problems. The change should be done step-by-step over a period of time. Environment does not overtake the economy as a priority in Guangdong because they need to first settle the problem of livelihoods. Government funded programs should provide example of environmental best practices: energy management; green buildings; fuel use. HK-owned factories in Guangdong should follow a certain standard set by the HK government. HK-based companies should reduce emissions on both sides of the border. Influence Guangdong manufacturing industries through HK and Guangdong Government procurement policies. Use Tamar as a role model on how to design energy-efficient buildings. Green Jobs: Green rooftops; retraining; policing; construction workers – cleaning, garbage pick-up. Technologies should be not only environmental efficient but cost effective to encourage change. Government can provide subsidies for factories to use cleaner technologies. Establish a carbon trading system. Market-driven technologies.	*	*	*	*
<b>Regional planning:</b> Set up environmental target and Air Pollution Control Plan to reduce emission. Establish regional emissions caps and a system for SO <sub>2</sub> from large sources. Integration of air quality planning in China's 12 <sup>th</sup> 5-year plan. A more comprehensive and transparent air quality plan for the PRD region between HK and Guangdong. Establish programmes in the PRD for common areas of interest to address air pollution (and energy efficiency + GHG), e.g. ports (HK/SZ); buildings/construction; trucks/buses; Asian Games/East Asia Games; power plants. One air quality standard in the whole PRD. Cooperation between Guangdong and HK: communication and development of standards. Expand the Hedley Index to the PRD. Enhance the cooperate level of two government in HK and PRD. Regular meet between HK (different stakeholders/parties) and cities in PRD. Regional board for air pollution control for PRD. Establish labelling programmes for energy efficiency for products, vehicles, buildings that is consistent for PRD.			*	
<b>Leadership:</b> Need strong political will and legislation. Government must lead, with enthusiasm: education, proscriptio. The Government must lead and admit there is a serious health risk in the present situation. They must educate, provide information and implement and provide incentives to the public that lead to informed decisions on scheduling their daily activities/exercise. Should take a strong leadership role; reward-penalty mechanism; do not tackle the problem only when problem occurs. We need the commitment and support of top level policy makers within Government (including China, Guangdong and Hong Kong). It is the people in control who have to buy into this issue. HK should provide strong leadership for regional-scale emission reductions along the lines of California in US. Government should have environmental strategy/manifesto, not just a list of actions and tactics. Recognition that it is not just a regional problem, it is also a local problem and local solutions can help.	*	*	*	*
<b>Incentives, Penalties, and Enforcement:</b> 'Carrots and sticks'. Offer incentives to those who exceed standards. Penalize those who don't meet the standard. Tax policy to support greening (green rooftop, green gardens, green fuel). Give more practical power to local authorities (police) to tackle pollution cases. Measures for encouraging public reporting of polluters, black smoke vehicles etc. Legislate a Clean Air Act. SMS/text line for complaints against vehicles emitting black smoke.	*	*		

	H	L	R	S
<b>Standards:</b> Need government to implement realistic standards. Establish standards and review them regularly. Standards should be set by government as to what levels are safe for exercise. Change from objectives to standards. Raise the air quality standards closer to WHO. Government to use professional bodies to establish standards. Convert Hedley Index into independent monitoring agency.	*	* * *		* *
<b>Internalize air pollution costs:</b> Government has to take environmental cost into account. Government should introduce the “green accounting” to force the companies to account for environmental impact when making business decision. Government should not just take lowest bid for infrastructure projects, should evaluate environmental parameters. Encourage the adoption new business models which are environmental friendly to showcase improvement. WHO should be asked to state that HK is unsuitable for children.	*	*		* * *
<b>Cost benefit analyses:</b> Cost comparison: using better filtration system vs. cost of the medical spending. Compare the cost of using lower sulphur fuel vs. medical costs. Work productivity study on health impact of air pollution. Relationships between the health hazard and economical interest. Study how health cost should be factored into the overall cost-benefit analysis of environmental problems. Incentive for action on air quality: less medical costs in the future.		*		*
<b>Constitutional ‘solutions’:</b> Universal suffrage; government directly accountable to the people. Abolish functional constituencies as the vested interests often stop actions to the detriment of society as a whole. Bypass Hong Kong and take petition to Beijing. Ask Beijing to “assist” in stakeholder dialogue. Central Government should provide air quality standards for Guangdong to encourage change and raise standards. Talk to Chinese Government.		*		* * * *
<b>Data:</b> More transparent data reporting is necessary – everyone should have access to air quality and health data. Open-data policy on air quality data. Real time release (should able to do it because it’s funded by taxpayer). Establish a recognized set of data points and parameters. Measure of air pollution need to be standardized. Change the Air Pollution Index to be more “alerting” to the public.		*	* *	* *
<b>2. CREATING A CAMPAIGN FOR CLEANER AIR</b>				
<b>Mobilizing public concern:</b> Making the issue and potential solutions POPULAR using marketing expertise. Link air pollution to other popular issues. Organize march for action on air quality (more than 500,000 people). Use SMS to inform public on the air quality information (e.g. API) and its health effect. Use different media to communicate and to increase public awareness. Organize a public demonstration, especially drawing on support from women’s group and women in HK. Public march/demonstration for clean air to convince Chief Executive of public awareness. Organize a public petition to be signed by at least 100,000 people. Internet-based virtual petition to express public’s view on air pollution. Facilitate law suits. Civil suit against government. Create internet forum for general public to access. Online petition participation (post video on YouTube, online donation). Online platform. Stage demonstrations/protests to raise local and government awareness – get the media involved. Website; public campaign; media; governmental information; education. Set up a vehicle to vote → million signatures campaign → website? Weblog site – mail a link button with request to put on homepages. Stage demonstrations/protests to raise local and government awareness – get the media involved. Get celebrities involved. Society needs to exert more pressure on the government to be guardian of long term public health. A community-wide campaign to give pressure to government to change the policy. Alliance-building: experts, think tanks, political groups, green groups, Legco members. Communicate with LegCo candidates prior to elections. Manage complaint channels –receive, transit, and record complaints. Present issues to		* * * * *	* *	* *

This summary is based on presentations and participants’ comments from ‘*THE AIR WE BREATHE: a public health dialogue*’ and does not necessarily represent the views of Civic Exchange, the Hong Kong Jockey Club, or participants’ organizations, nor a consensus of all participants.

	H	L	R	S
professional organizations/associations. Cultural campaign to help Chinese feel comfortable with voicing strong opinions. Campaign for “Safe Air” – need good/catchy overall slogan, graphic presentation. Have follow-up sessions to this conference → keep the environmental issues in the public’s mind. Accumulate lists of persons and groups who could make submissions to consultations; provide those people with email information for submission. Mask March – raise profile and urgency of issue by community protest/activism, e.g. Democracy March. Independent think tank to monitor the government. Identify where to participate in administrative and legislative process to effect change, i.e. issue of bus/maxibus license. Establish clear system/mechanism for follow-up action – so people see merit in participation. Increase public pressure – through elections, lobbying, environmental enhance.				* * * * *
<b>Media:</b> More media promotion to call for action and improve the air. Work with media to create pressure. Leverage media rationally to gauge public views. The media to be more active. Create a free “clean air” media (ad sponsored?) Leverage of existing free newspaper – educate people on environmental stats. ‘Take-out pages’ in local newspapers to demand action. Clean air media forum – TV/ Radio/ Blog. Form a media coalition “Deep and urgent issue”. TV programme – media channel “Air Attack” “Clean-Up”. Demonstration – Get 1 million people out – is this the only way to engage government. Community awareness – local campaigns – engage emotions to motivate groups. Put out message that poor people suffer more than rich people – get the real story – hit emotion. Emotions – passionate; Engagement – Statistics/ research. Draw social community through weekly themes such as Sunday pollution free day. Shame campaign – communications in mass media. We should promote on media (TV and newspaper) like weather report also.		*		* * * * * * * * * * *
<b>Individual action:</b> Check pollution levels on sites such as Hedley Index when deciding whether to exercise inside or out (requires recommendations we can follow). Reduce exposure (personal). Healthy Diet. Greening can contribute to health as well as an emotional and spiritual therapy! Use of monitoring and filtering technologies to detect pollutants and clean up air before it comes inside. Intervention devices (tools for personal protection to populace to reduce exposure). Refrain from use electricity appliances everyday. Turn the temperature of the air conditioners to 25.5 °C. Encourage simple life style to reduce consumption. Behavioural changes, e.g. changing speed in driving and diving behaviour. The start-stop diving should be changed into smooth diving. When you park your car, please switch off the engine. Use private eating utensils and reuse-able materials. Needs to change the view points of living and promote simple living. Encourage less air-con use in offices. No air-conditioning from September to February. Car sharing. Move country.		* * * * * *	*	
<b>Supporting Government action:</b> Encourage the government to take progressive steps to reach international standards, e.g. WHO standards. Put up signage at cross harbour tunnel – advertising subsidies for changing to cleaner engines. Provide Government with simple achievable steps that would enable them to be accountable to the society. Communicate to Chief Executive that air pollution concerns are not simply an expat/gwai lo issue. Community participation of ideas on which dialogue can happen. Forum to engage with Hong Kong government. The government should run a campaign like the back of cigarette packets – warning the public of the harmful effects of breathing bad air, and how this will affect the next generation. New price tag for goods at the supermarket reflecting environmental damage. Establish a PPP (public-private partnership) body to bring views together. More initiatives from the public to push legislation. “Clean Air Day” – no car, free trains, get cycling, info in schools. Promote participation. No air-conditioning day. More technologies to assess and explain risks, e.g. Hedley Index.		* * * *		* * * * * * *
<b>Business Community:</b> Feature corporate Leadership & identify business opportunities in pollution reduction. The tourism board to conduct exist survey on how				* *

This summary is based on presentations and participants’ comments from ‘THE AIR WE BREATHE: a public health dialogue’ and does not necessarily represent the views of Civic Exchange, the Hong Kong Jockey Club, or participants’ organizations, nor a consensus of all participants.







