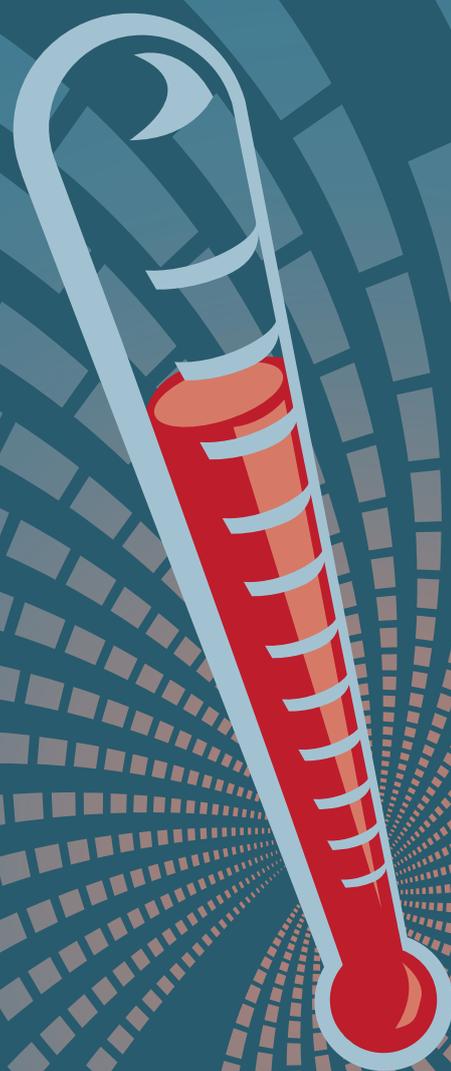


A submission on
**Hong Kong's Climate Change
Strategy and Action Agenda**

Civic Exchange

December 2010



EXECUTIVE SUMMARY

The core requirement missing—sustainable development

The core requirement for Hong Kong to address climate change is a Sustainable Low Carbon Development (SLCD) framework. This would set a broad policy direction that integrates all actions within the HKSAR Government. The SLCD framework should be built upon a clear vision and roadmap and with a focus on measurable and transparent reductions of GHG emissions. Such a framework will also require bolder targets than the proposed 50%-60% improvements in energy intensity by 2020.

Mitigation

- **Fuel switch**—The public's view on nuclear power remains divided, and it is essential for the HKSAR Government to increase public education and discussion on areas of concern.
- **Buildings**—The HKSAR Government must focus on reducing energy usage in existing buildings. Mandatory disclosure of energy performance is the key to stimulating market-driven transformation, while better integration of policies and processes (including procurement, design and management) will lead to more effective and efficient interventions. The key technical interventions are commissioning, re-commissioning and retrofitting of buildings.
- **Greener Transport**—The starting point should be the development of a vision for people-oriented, low carbon transport in a livable and sustainable city. Various options should then be considered in light of how effectively they help Hong Kong meet this vision. Walking, cycling and public transport should be a key part to a sustainable transport plan for Hong Kong. Private electric vehicles (EVs) could be one part of that vision, but will require a co-ordinated approach the complex aspects of policy necessary to engender public confidence, so that EVs become their preferred option when choosing a private automobile.
- **Waste**—Capturing methane and combining incineration with small scale generation seem obvious steps to take within a much deeper rethink of the large-scale crisis that has driven the demand to turn country parks into landfills.

Adaptation

Issues that require much more attention include uncertainty in our water supply as a result of changed rainfall patterns, the need to provide linkages between our country parks to help our biodiversity adapt, and developing plan to address shoreline flooding.

Building a more robust, efficient and livable city

We need new tools to promote sustainable low carbon development. A new approach for Hong Kong would be to require net GHG emissions to be assessed in any planning application, EIA study or sustainability assessment for any development project. This should also be mandatory for all government planning at the district, regional, territory, and PRD level. In the wider context, this could also be used to assess the sustainability of all new policy initiatives, an approach that is being widely adopted overseas.

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RESPONSE TO CONSULTATION DOCUMENT

Section I: Government Vision to Achieve Sustainable Low Carbon Development

While the HKSAR Government uses the term “sustainable development” in its various policy statements, it does not truly practice sustainable development. Unless the government makes achieving sustainable development an over-arching policy goal that runs through the entire administration, initiatives will continue to be piecemeal, ad hoc and incremental.

This sub-optimal approach is evidenced by a plethora of initiatives and measures without a clearly stated policy and goals. The building sector provides a good example for reflection. Building regulation and urban planning come under the purview of the Development Bureau while energy, environment and climate change come under the Environment Bureau. Despite the importance of reducing electricity consumption and achieving higher energy efficiency of buildings and the many initiatives from both bureaux, there is no clear policy and targets that by a certain date a major portion of public sector buildings would be climate neutral and by a certain time, only climate neutral buildings would be built in Hong Kong. What Hong Kong needs is a directional change in policy approach if it is to achieve larger and faster gains.

The Consultation Document calls upon the community to make a “conscious effort” to put low carbon living into practice and recognizes that it requires “a change in value and culture”. A critical step for the Government to make is for it to state an overall policy goal to achieve Sustainable, Low Carbon Development (SLCD). With this, there will be a better chance for coordinated policy-making and implementation across the whole administration.

While the Inter-departmental Working Group on Climate Change (IWGCC) has been set-up since 2007 with representatives from five Bureaux and 16 Departments, its terms of reference is only to co-ordinate planned activities to fulfil the HKSAR’s obligation under the UNFCCC (which has no mandatory GHG emissions limits or reduction targets¹) and not to coordinate decision-making and implementation within an over-arching policy.

Thus, there is no policy for SLCD is to be integrated in every aspect of Hong Kong’s urban planning and development at present. Government policy should require that every time decisions about urban planning, buildings, roads, bridges, transportation, energy, water and waste are made, the focus must be on achieving SLCD. There is nothing to prevent Hong Kong from making SLCD an over-arching policy goal, elevate the IWGCC and change its terms of reference to implement SLCD. Indeed, only by doing this could Hong Kong truly consider how to achieve a sustainable low carbon economy.²

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1 Consultation Document, Annex I; and paragraphs 4.8-4.9.

2 Consultation Document, paragraphs 1.5-1.6.

Section II: About Climate Change

The Consultation Document is weighted heavily towards the change of fuel mix and neglects other crucial areas.

The Hong Kong Observatory reports that Hong Kong will experience higher frequency of extreme conditions (extremely wet and dry years) for the rest of the 21st century and the number of heavy rain days, as well as mean sea level in the South China Sea, will rise. Yet, there is a lack of emphasis on specific risks and vulnerability assessments and adaptation needs.

The challenge for cities, including Hong Kong, is to improve the quality of urban living through addressing livability and sustainability while reducing carbon emissions.³ Livability linked to sustainability involves making a comfortable living environment beneficial to its residents' physical and mental well-being, using low carbon, energy-efficient and environmentally sensitive means. Livability is linked to both mitigation and adaptation. Buildings will need to enable citizens to take refuge from the effects of climate change—warmer temperatures (exacerbating the impact of the urban heat island effect), more intense rain events, longer dry spells—but in a low carbon way. Ideally, this would mean designing buildings to take advantage of natural air flow and passive solar principles.

In practical terms Hong Kong requires:

- Cleaner air, because buildings cannot make use of natural, fresh air flows if outdoor air quality is poor. Thus, there is a strong link between the causes of poor air quality (e.g. old diesel trucks and buses, shipping emissions, coal burning etc.) and a climate strategy and action agenda.
- District ventilation through open spaces and building gaps. This requires a focus on whole neighbourhoods rather than individual buildings and a re-consideration of the rationale behind the Government's land policy of maximizing revenues through high plot ratios.⁴
- Increased attention to making (or re-making) buildings both comfortable and energy efficient is essential. Building energy labelling and stronger mandatory standards for all buildings (new and old, commercial and residential) are good starting points.

It is a short leap of thinking to appreciate two important consequences. Firstly, these issues are inextricably connected, so an integrated, overarching framework makes sense. Secondly, these are matters that require attention at the *public policy level*, as they are beyond the abilities of individual residents and private companies to realize without the support of government policy. An overarching SLCD framework would concentrate the minds of planners and decision makers to ensure land and development practices dovetail with the climate strategy and action agenda.⁵ This point should be made at the highest level of the Government and reflected in policies across bureaux and departments.

3 Tang Zilai, Chief Planner of the Urban Best Practice Area at the Shanghai Expo 2010, speaking at the C40 Workshop in Hong Kong, 5-6 November 2010.

4 For a more detailed discussion of these issues see Christine Loh, Mike Kilburn and Jonas Chau (2010) "Hot, Stacked and Crowded—Improving the livability of Hong Kong's urban environment", Civic Exchange, www.civic-exchange.org/en/live/upload/files/100430REDA.pdf.

5 Ibid.

Section III: GHG Emissions in Hong Kong

Hong Kong's real GHG emissions are much higher than those stated in the Consultation Document. While Hong Kong has largely followed UN guidelines to put its GHG emissions together, this does not mean it provides an accurate picture for numerous technical reasons, which can be seen from another Civic Exchange-HKIED report.⁶

Hong Kong should make use of new methodologies (such as the World Bank's recommended methodology)⁷ for cities to calculate their GHG emissions, as this will give the Government and community a clearer picture of the city's total emissions. The Government's comparisons with other jurisdictions (large countries and cities) are misleading since the measurement methodologies used were different.⁸

In any event, the world trend is the continuous development of GHG emissions measurements for greater accuracy so as to guide decision-makers.⁹ The Government should become a leader in this regard and reap the many benefits, including more effective mitigation, rather than to focus decision-making based on an emissions measurement methodology that doesn't produce accurate information.¹⁰ This approach would dovetail with the Government's statement that in setting a reduction target for Hong Kong, "objective analyses on the mitigation potential of various measures" should be conducted.¹¹

Section IV: Joining Hands to Combat Climate Change

The Consultation Documents refers to the APEC voluntary target that Hong Kong signed on to in 2007 of at least 25% reduction in energy intensity by 2030. Since the Government is proposing a new target, it should state explicitly that the APEC target is being replaced.

It is encouraging that the Government is proposing a target that is tighter than the national target. This principle is right because as the most developed and wealthiest part of China, Hong Kong must take on the responsibility to do better than the national average target.

We do not wish to not support the proposed voluntary carbon intensity reduction target of 50%-60% by 2020 compared with 2005 level because we recognize this as a sign of progress within the Government. However, we feel Hong Kong can in fact do better. Hong Kong has the capacity to reduce carbon emissions in absolute terms and analysis of how this could be done should be discussed. This would require the Government to look seriously at emissions reductions across the board rather than to focus primarily on the changing the fuel mix.

6 Paul G Harris, Alice S Y Chow and Jonathan Symons [2010] *Greenhouse Gas Emissions: How Hong Kong Compares*, Civic Exchange and HKIED, www.civic-exchange.org/wp/greenhouse-gas-emissions-how-hong-kong-compares/

7 World Bank *et al*, *Draft International Standard for Determining Greenhouse Gas Emissions for Cities*, 2010.

8 Consultation Document, Box on page 16 entitled "GHG emissions elsewhere".

9 For example, Hong Kong has the second largest cargo airport and third largest shipping container port in the world. And yet emissions from marine transport and aviation are not being counted, so there is no imperative to monitor and reduce emissions from these sources. For statistics, see Marine Department, *Ranking of Container Ports of the World*, www.mardep.gov.hk/en/publication/pdf/portstat_2_y_b5.pdf; http://www.aci.aero/cda/aci_common/display/main/aci_content07_c.jsp?zn=aci&cp=1-5-54-4819_666_2__; and http://www.aci.aero/cda/aci_common/display/main/aci_content07_c.jsp?zn=aci&cp=1-5-54-55_666_2__

10 Christine Loh [Oct 2010] *Greenhouse Gas Emissions: How Hong Kong Compares—Policy Recommendations*, Civic Exchange, www.civic-exchange.org/wp/wp-content/uploads/2010/10/20101007Greenhouse-gas_E.pdf

11 Consultation Document, paragraph 4.12.

Section V: Part 1—GHG Reduction Measures

1. REVAMPING FUEL MIX FOR ELECTRICITY GENERATION

We support the principle of revamping Hong Kong's fuel mix. We agree with reducing the proportion of energy coming from burning coal as this is vital to reduce carbon emissions. We recognize Hong Kong has limited renewable power potentials (which can more clearly stated in the Consultation Document); and we recognize the energy resources Hong Kong can tap depends to a great extent on national policies. Thus, Guangdong's nuclear power potential should not be dismissed, as it has major expansion plans in the coming years. Neither should the issue of carbon leakage be ignored. By selling a part of its nuclear power to Hong Kong, Guangdong will have to find other sources to make up for the loss for its own use. The Consultation Document does not deal with whether if Hong Kong and Guangdong's total carbon emissions were taken together, by Hong Kong taking more nuclear power, what would be the total emissions reduction. The issue of the net benefit of both sides should be addressed, especially in view of the opportunities for energy efficiency open to both sides.

Even though 23% of Hong Kong's power supply comes from nuclear sources on the mainland, the Hong Kong public still needs to be better informed about nuclear power, especially with regard to management, safety and waste disposal. The Government should consider what opportunity it will provide for the public to understand these aspects better.

BOX 1: WHAT DO HONG KONG PEOPLE THINK ABOUT NUCLEAR POWER?*

A Civic Exchange survey shows five key findings about the public's attitudes towards nuclear power:

- 1. Relatively low level of concern about accidents**—A majority of Hong Kong people have low levels of concern about a nuclear accident (53% with little or no concern, compared with 33% with some or a great deal of concern).
- 2. More concerned about climate change**—There is more concern about climate change than nuclear accidents (41% more concerned about climate change, compared with 34% more concerned about nuclear accidents).
- 3. Current fuel mix widely misunderstood**—Most people (90%) do not know how much of Hong Kong's electricity comes from nuclear power (40% are unwilling to guess at all).
- 4. Equal support for and against expanded nuclear power**—Support for and against increasing the use of nuclear power by Hong Kong is evenly weighted (41% each).
- 5. Concerns with expansion**—The major concerns of those who do not support expanding Hong Kong's nuclear power base were transparency; the competence of engineers and management; nuclear accidents; and dangers to future generations.

The results show a paradoxical challenge for the Government in implementing the fuel mix proposal. On the one hand, most people are ignorant about the current proportion of nuclear used in Hong Kong's fuel mix, most are not overly concerned about nuclear accidents, and most think climate change is a greater concern. But on the other hand, it cannot be taken for granted that the Hong Kong public support an expansion of nuclear power supply. The results indicate that the Government will need to effectively communicate the benefits of its fuel mix proposal, help the public to understand nuclear power, as well as address public concerns on the issues of information transparency, management and safety protocols.

* For more detail see Civic Exchange (2010) "Expanding Hong Kong's Nuclear Power Base – A Public Opinion Survey in November 2010" <http://www.civic-exchange.org/wp/wp-content/uploads/2010/12/101217NuclearSurvey.pdf>

2. MAXIMISING BUILDING ENERGY EFFICIENCY

The Consultation Document and Consultancy Study are much under-weighted in what can be done with new and existing buildings in Hong Kong. This is puzzling when this sector is ripe for achieving higher energy performance because the stakeholders are ready for tougher regulation now.¹²

(a) Setting Goals And Targets For Building Energy Efficiency

While being “mindful that the proposed target should be realistic and attainable”¹³, setting a “realistic and attainable” target should not be the dominant consideration. Such an approach is a recipe for complacency. It lowers expectations in relation to the task of making the reductions that are *needed*. The ultimate goal is reducing actual emissions to a level that avoids dangerous climate change.

The graph below shows Sydney’s current emissions (light blue bar, far left hand side), the business-as-usual scenario to 2030 (next bar, darker blue) and its emissions reductions target to 2030 (black bar, far right hand side). In between, the chart shows the expected contributions of various initiatives towards the 2030 target. If Sydney’s approach had been dominated by making its targets “realistic and attainable” we would not see the 17% deficit. But the chart does not shy away from the fact that the initiatives listed cannot meet the target. Undertaking this sort of analysis alerts us to possible inadequacies in goal-setting. Meeting an *attainable* target is not the goal. Meeting a meaningful target that makes a difference is the goal.¹⁴

The proposed Hong Kong target will essentially be met through change of the fuel mix but the proposal for improving energy efficiency of buildings can be much improved. With a meaningful target set for the building sector, Hong Kong should be able to exceed the proposed target.

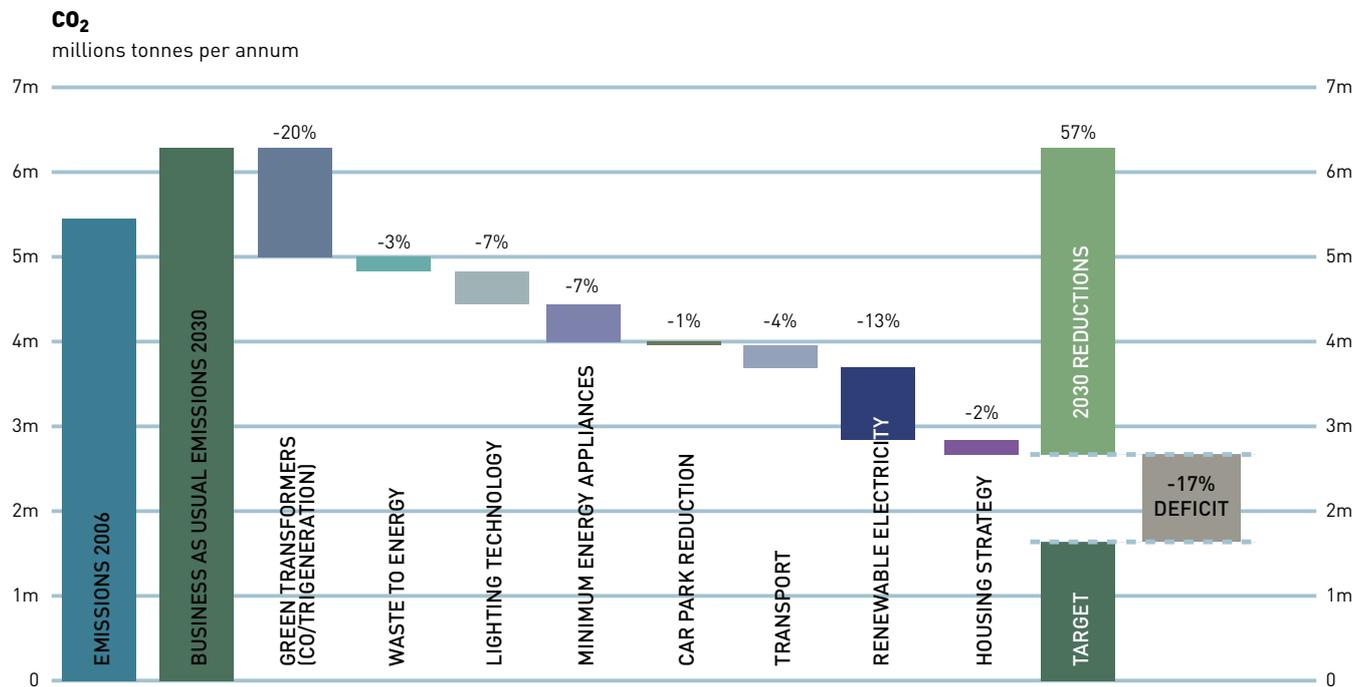


Figure 1: Sydney’s estimates of how it will meet its carbon emissions target.¹⁵

12 As could be seen from the C40 Hong Kong Workshop, 5 & 6 November 2010.

13 Consultation Document, paragraph 4.12

14 Source: Presentation by Chris Derksema, Sustainability Director, City of Sydney to the C40 Hong Kong Workshop, 6 Nov 2010.

15 Ibid.

(b) Assessing The Value Of The Strategy & Action Agenda

While a lot of work has been done in undertaking the Consultancy Study, there are additional materials that would enhance the ability of the Hong Kong public to respond effectively to the Consultation Document.

Firstly, it is not readily apparent how the proposed emissions reductions will be made. There is no graphic, such as the Sydney example above, showing the relative contributions of the measures proposed in the Consultation Document to the 19%-33% target. Throughout the document, percentage savings are highlighted but the public are not given any means of assessing the relative merits of the intervention. For example, “by 2020 major electrical equipments in all new commercial buildings will be up to 50% more energy efficient as compared with 2005 building stock”.¹⁶ This sounds like progress but it is impossible to determine from the Consultation Document whether the difference this measure makes is important or trivial. That is not to say that encouraging small improvements is unwarranted—a lot of small improvements can create a cumulatively large impact—but an estimate of the relative importance of the impact is necessary for the public to determine whether the effort and cost of the intervention is well-placed.

Secondly, there is no means for the public to analyse costs and benefits of the proposed or alternative options. For instance, most emissions reductions in the Consultation Document appear to come from a switch to more nuclear energy. But how are the costs and benefits of this option weighed against, for example, a greater emphasis on building energy efficiency? Energy efficiency is still *the least cost* method of reducing carbon emissions. It is always cheaper to *save* a unit of energy or tonne of carbon than any other intervention, a point also made in Sydney’s presentation (see below). Therefore, it is not possible to say whether the Government has got its priorities right or even how much emphasis it is really putting, or should put, on building energy efficiency.

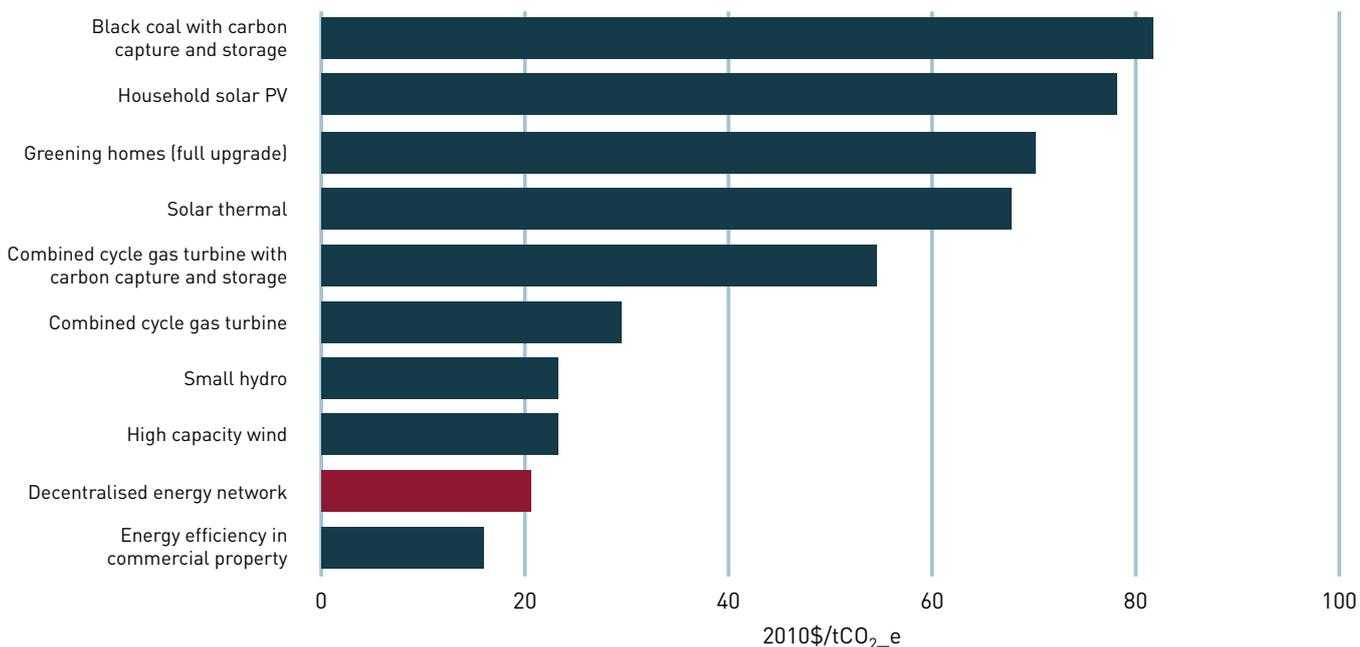


Figure 2: Costs (2010 AUD\$) of meeting reduction targets in Sydney for various interventions¹⁷

¹⁶ Consultation Document, paragraph 5.8(a)

¹⁷ Source: Presentation by Chris Derksema, Sustainability Director, City of Sydney to the C40 Hong Kong Workshop, 6 Nov 2010

(c) Existing Buildings As A Priority

There is little attempt in the Consultation Document to distinguish new build from existing buildings. While designing energy efficiency into a new building is eminently easier than retrofitting an existing building, the fact remains that new build's contribution to emissions is small compared with existing buildings. The overwhelming majority of emissions that buildings will contribute between now and 2020 will come from existing buildings. Therefore the priority focus of the Consultation Document should be *existing* buildings. However, there is a dearth of policy proposals for existing buildings.

Compare this with the planning process in New York City. Existing buildings were identified as the key issue: "... in 2030, over 90% of our buildings will still be buildings we already have today... So we have to concentrate on the existing buildings".¹⁸ Having reached this conclusion, developing initiatives for existing buildings has become a top priority for its policymakers. As a developed economy, Hong Kong would have a similar profile. The vast majority of buildings in existence in 2020 already exist now.

The Government estimates there are about 40,000 buildings in Hong Kong consuming 90% of the electricity, with commercial buildings consuming the largest amount at 65%, with shopping malls and restaurants being among the biggest consumers. Thus, reducing electricity consumption and improving energy efficiency in the building sector must be a very major part of government policy. To do so, the Government must work on both the supply side (through design guidelines, codes, fuel switching, renewable energy sources etc.) and demand side (energy efficiency, building performance-based rating system etc.) of the equation because they play different roles. Industry-led guidelines and codes, such as BEAM and LEED, are important at the design stage and rating systems, such as NABERS, monitor on-going building performance. The Consultation Document does not spell the supply and demand sides out clearly and the Government should do this so the public can see if both sides of the equation are being sufficiently worked on.

(d) Taking The Lead

Improving the energy efficiency of buildings is a key plank of what the Government aims to do. It is essential to set baseline standards for energy use to achieve high energy efficiency and to have a range of measurements that define in physical terms how efficient a building is (e.g. kWh per sq m).¹⁹ Therefore it is vital for Hong Kong to understand the energy performance of buildings and the Government plays the most critical part in this as it has the power to regulate. Building costs and the potential energy savings in energy and carbon emission are measurable and the Government must release detailed information under its control for all public buildings, including sub-vented schools and public hospitals, and also require the private building sector to provide the information. Pushing transparency has the greatest impact in building knowledge, professionalism and capacity within society.

Looking beyond the Government's own building stock, many industry associations and experts agree that identifying the value of energy labelling is an important market-led tool to create a virtuous cycle for improving energy performance. Multinational corporations increasingly require their offices to be located in the best-rated buildings, and as this demand expands to a wider section of the tenant community this will help to create demand for better-performing buildings. A labelling system that works on the same lines as electric appliance labelling will provide prospective tenants with the key information to make this decision. As a first step towards this objective, it is encouraging to note that the Government now links granting of GFA concessions to adoption of BEAM Plus, which requires that the operational energy usage (rather than the designed usage), must be publicly disclosed.

18 Presentation by Robert LiMandri, Commissioner Buildings Department, New York City to the C40 Hong Kong Workshop, 5 Nov 2010

19 Energy efficiency applies to a range of contexts, including efficient energy use, energy conversion efficiency, fuel efficiency, lighting efficiency, mechanical efficiency, volumetric efficiency and thermal efficiency.

While the Government has various initiatives and schemes that relate to buildings,²⁰ it lacks an overall vision and plan on how to transform building performance up to 2020 and beyond to 2030. For example, there is no plan for all government buildings or a good portion of them (existing ones and new buildings) to become climate neutral by a certain date, or that from a certain year, only climate-neutral buildings will be constructed in Hong Kong.

For new construction, it is insufficient to focus on compliance with energy codes. Emphasis should also be placed on enhancing the processes by which a new building is procured. An integrated design approach, including detailed energy modelling as a design tool, enhanced construction quality through a commissioning process that starts at the design stage through to post-occupancy, are key processes currently reinforced in overseas codes. The reality is that Information Technology and “intelligent” technology provides no guarantee that building energy efficiency will improve. Rather, technology which is understood and used by operators and users provides for a more efficient building.

Disappointingly, the proposed agenda for maximizing energy efficiency stated in paragraph 5.8 uses the 2005 voluntary code as the baseline rather than the Building Energy Efficiency Bill, which was under discussion in the Legislative Council at the time the Consultation Document was published. Now that the Bill has been passed in November 2010, the Government should at least use the Building Energy Efficiency Ordinance (BEEO) as the base for the immediate years ahead, and propose a plan out to 2020 for progressive tightening of standards, and expansion of the types and areas of buildings that are covered.

The Housing Department has achieved the standard provided in the Ordinance since 2002, which shows the standard can be achieved and the Ordinance could have been set tighter. The new law is there to push the private sector to improve performance since government housing already achieves BEEO standards. Indeed, the lack of regulation was what delayed private sector improvement.

This highlights the importance of the public sector and statutory organizations with a buildings purview, such as the Housing Authority and Urban Renewal Authority, whose objectives extend beyond simply maximizing value for shareholders. Their objectives encompass public goods and as such these organizations are in a uniquely valuable position to conduct trials and experiments in the public interest, and provide the lead for the whole of Hong Kong including the private sector.

(e) Response To Specific Recommendations For Buildings

The public sector should now improve its performance beyond the BEEO and government policy should go beyond what is being proposed in paragraph 5.8 of the Consultation Document. In response to the specific measures proposed:

Paragraph 5.8—The achievement suggested in paragraph 5.8(a) lacks ambition. The proposal that Hong Kong’s building stock will become 50% more energy efficient than in 2005 is extremely misleading. The pre-2005 building energy code is rather lax compared to codes used elsewhere (for example, see the table below for a comparison of allowable power densities for illumination). Thus, an improvement over the next decade based on the old voluntary code is going to represent a total improvement from 2010 of only a few percent (maximum 7.6%), which is not a significant contribution to carbon reductions.

The BEEO has its own limitations. As it mostly applies to new buildings, it will only affect 1%-2% of the building stock every year, as this is the percentage that is added to the total building stock annually. The Consultation Document has not addressed other ways to enable existing buildings to achieve higher energy efficiency, in particular, from re-commissioning and retrofitting buildings:

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20 The range of schemes include (i) turning the voluntary building energy code into law – which occurred when the Building Energy Efficiency Ordinance was passed into law in November 2010; (ii) the Carbon Audit campaign (July 2008), following the release of guidelines; (iii) Buildings Energy Efficiency Funding Scheme (April 2009), which provides matching subsidies to private building owners to conduct energy-cum-carbon audits and energy efficiency improvement projects; (iii) Green Performance Framework (April 2009) for new and old government buildings to conduct carbon audits, improve energy saving etc.; (iv) Mandatory Energy Efficiency Labelling since 2009 covering air conditioners, refrigerating appliances, fluorescent lamps, which will be extended to cover washing machines and dehumidifiers by 2011.

	HK BEC standard	USA	Australia	Singapore	India	China
Corridor	12	5.4	6	10	5.4	---
Entrance Lobby	17	14	15	10	14	---
Banquet Room/ Function Room	18	14	8	--	14	--

Table 1: Comparison of maximum allowable illumination power densities (W/m²)

(i) Re-commissioning buildings: This is the least cost, lowest carbon, highest gain option for existing buildings built within the last 10 years or so. As the relatively newer buildings are designed to perform at a certain standard, re-commissioning them (i.e. tuning-up) would at least allow the buildings to perform to its designed capability. This requires building owners and managers to assess whether the building they own or manage is performing according to the design capacity and if not, what are the technical and management changes needed for them to achieve their designed performance level. Based on evidence from US, UK, Australia, and Hong Kong many of the city’s newer buildings can achieve 10%-15% improvement through re-commissioning.

(ii) Retrofitting buildings: While re-commissioning of buildings explores opportunities for low-cost operation and maintenance (O&M) improvements, energy audits (which the Government is encouraging through its partially subsidized Carbon Audit scheme²¹) focus on investigating equipment replacement or retrofit opportunities. The Consultation Document does not discuss the carbon reduction potentials.

BOX2: COMMISSIONING AND RE-COMMISSIONING OF BUILDINGS

Commissioning of a building is a quality-oriented process for achieving, verifying, and documenting that the performance of facilities, systems, and assemblies meets defined objectives and criteria. Commissioning is an inclusive process covering planning, delivery, and verification, as well as managing risks to critical functions performed in, or by, facilities. Commissioning ensures building quality using peer review and in-field or on-site verification. Commissioning also accomplishes higher energy efficiency, environmental health, and occupant safety and improves indoor air quality by making sure the building components are working correctly and that the plans are implemented with the greatest efficiency. Commissioning is a quality assurance-based process that delivers preventive and predictive maintenance plans, tailored operating manuals and training procedures for all users to follow. Essentially, the commissioning process formalizes review and integration of all project expectations during planning, design, construction, and occupancy phases by inspection and functional performance testing, and oversight of operator training and record documentation.

Buildings frequently undergo operational and occupancy changes. These changes, together with limited resources for preventive maintenance, challenge the ability of a building’s heating, ventilating and air-conditioning (HVAC) equipment and other mechanical and electrical systems to perform at optimal levels. Such changes contribute to a decrease in a building’s performance and can lead to higher energy costs and other problems. With minimal expense (no capital investment), it is possible to bring a building to its optimal operational level through re-commissioning.

Re-commissioning is a systematic process applied to existing buildings to identify and implement operational and maintenance improvements, and to ensure continued performance over time. It assures system functionality and optimizes how equipment and systems operate, as well as how systems function together. Although re-commissioning may include recommendations for capital improvements, its primary focus is on building operation. Re-commissioning is not a substitute for major repair work; in fact, repairing major problems must be done prior to re-commissioning.

21 The Carbon Audit scheme created in 2008 encourages users and managers of buildings to use the Government’s carbon audit guidelines to assess the carbon emissions from their buildings, to explore room for improvement and to develop emission reduction measures to reduce operating expenses through improving energy efficiency and waste reduction.

Paragraph 5.8(b) states that district cooling or water-cooled air conditioning are expected to provide 50% performance improvement for 20% of Hong Kong's commercial buildings by 2020 compared with using regular air conditioners. No data was provided and what "regular air conditioners" means is unclear. We suspect the emissions reduction calculations were made with older systems. If so, it would be inappropriate, indeed misleading, because it should be based on newer technologies.

With regard to the Box on District cooling for Kai Tak, we question its appropriateness because it is unlikely that developments there would in fact use "traditional air-cooled air-conditioning system", which would make the "35%" higher energy efficiency a spurious figure.

We have two questions:

- (i) Would government and public sector procurement and risk management assessment be updated in the near term so that they can select the most energy efficient equipment for projects?
- (ii) What is the net gain in energy savings since water will have to be pumped through the system and the pumping will also require energy?

Paragraph 5.8(c) highlights tightening the overall thermal transfer value (OTTV) standards, which only applies to private commercial building envelope and is less significant in large bulky buildings. It is unclear how the "up to 50%" gain was calculated.

We have two questions:

- (i) What is the gain for buildings with reflective glass curtain walls?
- (ii) If no net gains can be demonstrated, should government and public buildings refrain from using reflective glass curtain walls?

Paragraph 5.8(d) refers to "good housekeeping, information technology products and intelligent building environmental management systems" and that 25% of existing commercial buildings can be 15% more energy efficient compared to 2005. This is a very low ambition of 3.75% on Hong Kong's entire commercial building stock.

The most effective good housekeeping tool is in fact re-commissioning for newer buildings and the Consultation Document should have been explicit about this. As for the use of information technology and intelligent building systems, they no doubt have a role to play but the emphasis should have been put on re-commissioning of buildings.

No specific policy is outlined for how the Government will facilitate the "proper process of detecting and remedying deficiencies of energy systems". To help align benefits of saving energy between landlord and tenant, New York City has mandated that over the next 15 years, separate meters or sub-meters must be installed for tenants with 930 square meters or more, and affected tenants must be provided with a statement of monthly electricity usage.²²

Paragraph 5.9 discusses external lighting of buildings but avoids discussing the enormous wastage of using lights as building cosmetics, such as through the "Symphony of Lights" and the lack of regulation of advertising on buildings. Whilst a building owner seeks to highlight the features of their building after daylight, legislation should be enacted to reduce light pollution (upward directed light) late at night; e.g. after 11 pm.

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22 Robert LiMandri, Commissioner Buildings Department, New York City to the C40 Hong Kong Workshop, 5 Nov 2010

BOX 3: KEY MESSAGES FROM THE BUILDINGS STREAM OF THE C40 HONG KONG WORKSHOP

The Government was the major funder and a key stakeholder in the design, implementation and follow-up work of the C40 Hong Kong Workshop (5 & 6 November 2010), so it is useful to reflect on some of the key messages coming from the stream of discussions dedicated to buildings issues:

- **Political will is key**—Low-carbon urban development in China relies not only on technical innovation but also on political willingness, and not only from national governments but also at the local level. Compared with low-carbon technologies in industry, low-carbon urban development relies more on innovations of local government.ⁱ This was echoed by Sydney, which emphasised that barriers to low carbon building are not technical, but regulatory, mindset, and vested interests.ⁱⁱ
- **Promote the benefits**—New York emphasised that the tasks for city governments are to communicate its vision; encourage dialogue in industry; create a positive image of sustainability benefits; and provide training and incentives for implementation.ⁱⁱⁱ
- **Retrofitting: Hong Kong can do it**—The C40 Hong Kong Workshop highlighted examples in Hong Kong where existing buildings have been successfully and cost-effectively retrofitted with environmental benefits. China Resources highlighted a number of important messages in relation to its Wan Chai premises. Retrofitting was a cost-effective alternative to demolition and re-building (which would have cost HK\$10,000/m² more than retrofitting). Retrofitting enabled the company to retain its current tenants throughout the process. China Resources highlighted the value of the Government's *Development Opportunities Office* in facilitating the process.^{iv} In Europe, there is a mindset evolution occurring where the new paradigm will focus on conversion instead of new construction.^v
- **Working with what you have**—In the line with the comments above about the importance of commissioning and re-commissioning, the Airport Authority highlighted examples from its experience with operating its HVAC systems that the challenge is not always a matter of installing new equipment but rather making the equipment already installed work more efficiently.^{vi}
- **Hard and soft tools**—Berlin highlighted the necessity of combining both obligatory and voluntary standards by making use of a combination of laws and ordinances, awareness campaigns, and monitoring and evaluation.^{vii}
- **Catalysing private sector investment**—Copenhagen, Melbourne and Tokyo all provided examples of city governments leveraging city funds to attract external funds.^{viii}
- **Data as a tool for better policy**—The Housing Authority presented the benefit of its scrupulous data gathering, showing how it has been able to use its monitoring of energy parameters to change and fine-tune policy relating to lifts and lighting for significant gains.^{ix}

i Prof. Tang Zilai Chief Planner, Urban Best Practice Area, Shanghai Expo 2010, Professor and Head, Department of Urban Planning, Tongji University, Shanghai.

ii Chris Derksema, Sustainability Director, City of Sydney

iii Robert LiMandri, Commissioner Buildings Department, New York City

iv Amber Marie Beard, Project Architect, China Resources Property Limited

v Prof. Marco Imperadori, Rector's Deputy Far East, Politencico di Milano, Milan

vi Martin Putnam, Corporate Environmental Manager, Airport Authority Hong Kong

vii Hilmar v. Lojewski, City of Berlin

viii Claus Juhl, Director, City of Copenhagen; Krista Milne, City of Melbourne; and Kenji Suzuki, Director, International Cooperation Section, Urban and Global Environment Division, Bureau of Environment, Tokyo Metropolitan Government

ix Ada Fung, Deputy Director (Construction), Housing Authority, Hong Kong SAR Government

3. GREENING ROAD TRANSPORT

(a) Transport In The Livable, Sustainable City

Taking up the twin goals of livability and sustainability highlighted at the C40 Hong Kong Workshop,²³ the arguments are:

- **People-oriented and low carbon**—In the *livable* city, transport is people-oriented rather than vehicle-oriented. People-oriented transport planning gives precedence to people in terms of space and ease of movement. In the *sustainable city*, transport is low carbon, as well as low in other polluting emissions (particulates, NO_x, SO₂, etc.) People-oriented, low carbon transport principles tend to favour walking, cycling and mass transit. Studies from elsewhere show that these modes are the best in terms of moving large numbers of commuters and are cost effective (see Figure 3 and Box 4).
- **Hong Kong: city of pedestrians**—90% of commutes are made by public transport (one of the highest proportions in the world). As a consequence, most people at some point in their commute are pedestrians, as public transport rarely picks up and drops a Hong Kong commuter directly from house to workplace.
- **People-oriented?** The combination of high public transport use and low car ownership (about 83 vehicles per 1,000 inhabitants) could be building blocks for a people-oriented approach to transport planning in Hong Kong that incorporates adequate space for pedestrians and bicycles. But this is not the case in Hong Kong. Planning precedence is given to vehicles, pedestrians are marginalized, and bicycles (as a commuting choice) are rare except in some areas of the New Territories. Almost as much land is dedicated to roads (3.5%) as residences (4%). Many of these issues are outside the purview of the Environmental Protection Department, which means truly sustainable urban transport requires *integration* of planning efforts amongst the various responsible government agencies that must include Transport and Housing Bureau.

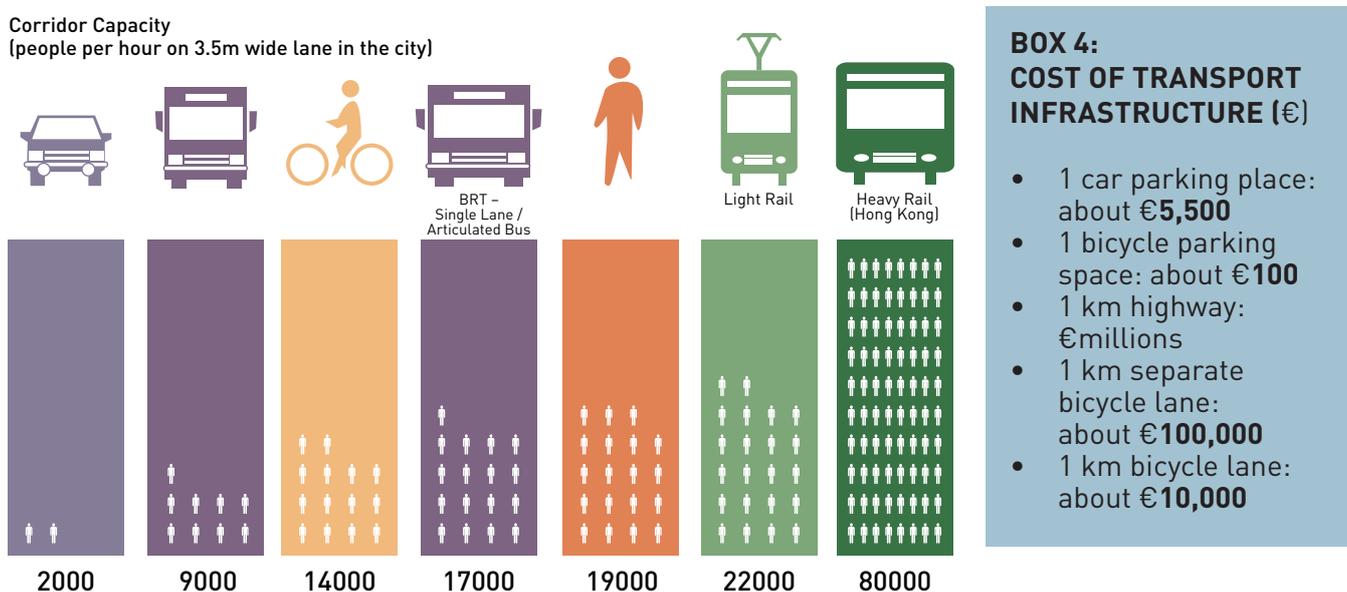


Figure 3: Corridor Capacity (people per hour on 3.5 m wide lane in the city)²⁴

²³ Prof. Tang Zilai, Chief Planner of the Urban Best Practice Area at the Shanghai Expo 2010, speaking at the C40 Workshop in Hong Kong, 5-6 November 2010.

²⁴ Source for both Figure 3 and Box 4: Manfred Breithaupt, Senior Transport Advisor, GTZ, presentation to "The Air We Breathe II—Dialogue on Road Transportation", conference 28 November 2009. (The figure uses data from Botma & Papendrecht, TU Delft 1991 and Mr Beithaupt's own data).

(b) Response To Specific Recommendations For Transport

Turning then to the Consultation Document, how does it propose to enhance transportation in the interests of livability and sustainability?

The proposed transport measures would be better placed in the context of an overarching and integrated SLCD framework. This would give the public the rationale for choosing a particular measure and for giving some measures more weight than others. The Consultation Document does contain the right rhetoric, but it is scattered throughout the document in an ad hoc manner without a concrete and coherent plan for action.

For example, paragraph 5.5 rightly states that the priority for low carbon transport in Hong Kong is “efficient and environment-friendly *public* transportation systems” (emphasis added). But this is not followed-up with any concrete initiatives in paragraph 5.12.²⁵ Despite walking and cycling being the most people-oriented and low carbon forms, they rate low in terms of actual proposals—Why not make them the highlight of the strategy and action agenda?

In paragraph 5.15,²⁶ the Government appears to abrogate its responsibility to take the lead on these issues. Even the most environmentally focused member of the general public can only use the facilities that result from government’s urban planning process. It is no use blaming the public for not walking enough if the urban planning process does not create a pedestrian friendly cityscape. The priorities listed in this paragraph (i.e. walk, then public transport, then a low carbon private vehicle) can be realized only if the Government takes the lead.

The comparison that opens the analysis of transport emissions in paragraphs 5.10 and 5.11 is not a useful one.²⁷ The percentage of Hong Kong’s transport related emissions cannot be compared with other cities because the percentage depends on the contribution of *non-transport sectors*. If Hong Kong’s building sector was much more “carbon-efficient” and made a lower contribution to total emissions than it currently does, then all other things remaining the same, Hong Kong’s transport percentage would be larger. This is independent of mass transportation and car ownership. All that can be said of the Hong Kong, London, Tokyo, and New York figures is that they are in the same ball park (18-25% of total emissions).

Why is the percentage of City X’s transport emissions higher than Hong Kong’s? We cannot tell from the Consultation Document. It might be because City X has a less efficient transport sector or it might be because City X’s *building sector is very much more efficient than Hong Kong’s*. This is shown in the calculations in Table 2. Tokyo’s per capita transport emissions are about the same as Hong Kong’s, despite the percentage of transport emissions (as a proportion of total emissions) being 25 percent compared with Hong Kong’s 18. What is remarkable about the figures in the table is, not that Hong Kong’s per capita transport emissions are lower than most other cities, but rather, why aren’t they much lower, given the high mass transportation share and low car ownership?

Instead of comparing cities, a more insightful analysis would be to identify the emissions profile and modal shares of different modes of Hong Kong’s transport and compare them. In other words, what is the tonnage of emissions for say the MTR per total passenger miles, compared with buses? This would enable Hong Kong to identify its carbon-intensive modes and concentrate on making them more efficient.

25 Consultation Document, paragraph 5.12: “The Government will continue to invest in the mass transportation systems and improve public transport to maintain a low carbon contribution from this sector. Furthermore, access to public transportation will be stepped up, and pedestrian areas and covered walkways, etc. will be set up to reduce transport needs.”

26 Consultation Document, paragraph 5.15: “Greening road transport cannot solely be a government initiative. We have to look to the general public to join in this green effort by leading a low carbon living style. We encourage people to walk as far as practicable, and if not, to take public transport. If a private car is needed, we suggest that an environment-friendly, zero or low carbon emitting one be considered.”

27 Consultation Document, paragraph 5.11

	Hong Kong	Tokyo	London	New York
Data year	2006	2007	2008	2007
Total annual transport CO ₂ e (t)	7,480,000	13,870,000	8,776,919	13,869,479
Population	6,864,346	12,790,000	7,668,330	8,246,310
Per capita transport CO₂e (t/capita)	1.09	1.08	1.14	1.68
Percentage of total CO₂e	18%	25%	21%	22%

Table 2: Comparison of GHG emissions in the Transport Sector²⁸

To imply that low car ownership equals low emissions is also a stretch of logic. It depends on the vehicles; if all of City X's cars were powered by zero-carbon electricity, it would produce less GHG emissions than Hong Kong regardless of whether it had more cars per 1,000 inhabitants. Tokyo for instance has more stringent carbon emission standards than Hong Kong, so the level of car ownership cannot tell us anything quantitative about emissions. What we can say about Hong Kong's rate of car ownership is that it is a good starting base for building a low carbon city if those vehicles utilize low carbon technologies. All of this is to say, Hong Kong should be wary of complacency and there is much room for improvement.

(c) Electric Vehicles

The push in the Consultation Document to shift the profile of vehicles from internal combustion to electric engines, hybrids, and other low carbon technologies²⁹ is commendable, with a few qualifications and observations drawn from the recent C40 Hong Kong Workshop:

- GHG emissions from electric mobility are of course directly related to the fuel mix that generates supply. EVs can only be as environmentally friendly as the electricity that powers them.
- In a city with scarce land resources and where vehicles infrastructure takes up a significant proportion of useable land, EV policy should not aim to increase total car numbers. More cars—whether EVs or internal combustion engines—require more roads, parking lots and other impedimenta at odds with the notion of a livable, people-oriented urban environment.
- EVs need to be seen as one of a number of tools for implementing a climate action plan.³⁰ EV policy can complement other emissions-reducing initiatives that make conventional transport more efficient, such as route rationalization, dedicated bus lanes, congestion charges, electronic road pricing, and car free days.
- No breakdown is given in the Consultation Document or the Consultancy Study of GHG emissions of the different modes within the transport sector,³¹ but if these broadly follow the emissions profile for other major pollutants, then the most important segments of the transport sector for improvement are older diesel trucks and buses. Therefore, replacing old diesel buses and trucks with new ones that incorporate improved technologies will be even more important than shifting the private car segment to EV. In Seoul's case, the city proactively supported research and development initiatives that resulted in the design and delivery of an electric bus to suit Seoul's requirements. The city now aims to replace at least half of its buses with electric models by 2020.³²

28 Data Sources: Hong Kong: www.epd.gov.hk/epd/english/climate_change/files/2_CC_Tech_Appendix_A_Eng.pdf www.censtatd.gov.hk/hong_kong_statistics/statistical_tables/index.jsp?tableID=135&ID=&subjectID=1

Tokyo: www.kankyo.metro.tokyo.jp/en/data/; www.metro.tokyo.jp/ENGLISH/PROFILE/overview03.htm

London: <http://data.london.gov.uk/datastore/package/leggi-2008>; <http://data.london.gov.uk/datastore/package/office-national-statistics-ons-population-estimates-borough>

New York City: www.nyc.gov/html/planyc2030/downloads/pdf/inventory_nyc_ghg_emissions_2008_-_feb09update_web.pdf; www.nyc.gov/html/dcp/pdf/census/nyc_boros_acs_05_06_07_profile_demo.pdf

29 Consultation Document, paragraph 5.13(a).

30 This point was emphasized by Seoul, Portland and London by Hun-Jai Jung, Director of Climate Change & Air Quality Division, City of Seoul; James Mast, EV Project Manager, City of Portland; and Mark Evers, Director—Commissioner's Delivery Unit, Transport for London.

31 Environmental Resources Management (2010) "A Study of Climate Change in Hong Kong—Feasibility Study", Technical Appendix A—GHG Emissions Inventory. www.epd.gov.hk/epd/english/climate_change/files/2_CC_Tech_Appendix_A_Eng.pdf

32 Hun-Jai Jung, Director of Climate Change & Air Quality Division, City of Seoul.

- EV policy (like all policy) should be based on up-to-date data and research. London has developed one of the most comprehensive EV policies of any C40 city, based around sophisticated market segmentation, social analysis of its population, identification of likely EV-friendly boroughs, and categorization of typical car journeys.³³
- City governments can play an important role in facilitating finance for both EVs and for their charging infrastructure by establishing “rules of the game” and removing regulatory obstacles; ensuring free and open markets; providing incentives for installation of chargers; and targeting public funding to address barriers to accelerate adoption of EVs.³⁴
- The issue of standards for charging equipment was an important concern at the C40 Hong Kong Workshop.³⁵ One of the potential consequences of poor standardization is that charging facilities are installed but cannot be used because they are not compatible with the market trend in EV technologies. This leads to waste and vehicle owners losing confidence in EVs. Currently, there are a number of government agencies that have specific responsibilities regarding the installation of EV charging infrastructure,³⁶ but no clear co-ordination on the standards for the charging facilities and who should oversee compliance.
- EV technology is a disruptive technology.³⁷ It can be expected to face challenges from established technologies and will require a change of behaviour from motorists. To engender public confidence in EVs as the preferred motoring choice will require careful policy co-ordination. This is especially important in Hong Kong where EVs are a relatively new type of vehicle at the moment. Currently, there are less than 70 EVs in Hong Kong, and many of these are owned by the Government or the power utilities, which have no need of public charging facilities installed by developers. The public will take up EVs with confidence only if the necessary hard and soft infrastructures (i.e. charging facilities, as well as favourable EV policies) are developed to support them.
- Other important challenges for cities to consider include public education on the benefits of EVs, getting the right balance of quick and slow charging facilities, and the safe management of spent batteries.³⁸

4. TURNING WASTE TO ENERGY

To say that “solid waste management has been an issue of concern”³⁹ is a gross understatement. There is a waste crisis in Hong Kong because of the longstanding policy failure to reduce waste. The recent attempt over the Government’s proposal to take 5 acres of land from the Clear Water Bay Country Park illustrates the urgency of the problem and the controversial nature of the proposed solution.

The Consultation Document notes the current treatment of waste accounts for about 5% of Hong Kong GHG, most of which is methane, and recommends constructing waste-to-energy facilities and using landfill gas as energy source. Paragraph 5.22 states that the Government plans to develop the waste-to-energy facilities in phases by “adopting advanced incineration”.

While we do not wish to give any impression that we are against incineration technology, our concern is Hong Kong’s enormous waste problem cannot be dealt with by mostly focusing on the supply-side (i.e. using up country park land and burning waste) because the demand-side is critical in the long-term (i.e. changing the behaviour of many sectors, including households, to reduce waste). In light of the continuing controversy over expanding landfills and the challenge of where to site incinerators, the Government will not be able to use climate change to side-step the need to come up with a co-ordinated waste reduction and disposal policy where goals, targets, timelines and resources are clearly stated.

33 Mark Evers, Director—Commissioner’s Delivery Unit, Transport for London

34 Colin Read, Vice-President, Corporate Development, EC0tality; and Mark Evers, Director—Commissioner’s Delivery Unit, Transport for London

35 Dr Peter Van den Bossche, Secretary, IEC; Hiroyuki Aoki, Senior Manager, International Affairs, Mobility Technology Group, R&D Center, Tokyo Electric Power Company (TEPCO); Laura Spanjian, City of Houston; Carolin Reichert, Head of E-Mobility, RWE, Germany

36 E.g. EMSD publishes guidelines for charging facilities; Planning Department develops the planning guidelines that stipulate the percentage of parking spaces that must have charging facilities in newly developed carparks; and Buildings Department publishes practice notes for enabling facilities in buildings.

37 Prof. CC Chan, President, World EV Association & EV Association of Asia Pacific

38 CM Mak, Head of Electric Mobility Development, CLP Power Hong Kong Ltd; Prof. Christopher Cherry, Department of Civil & Environmental Engineering, University of Tennessee

39 Consultation Document, paragraph 5.20.

Section V: Part 2—Adaptation to Climate Change

The Consultation Document points out that there are a number of areas where a substantial amount of research needs to be done to plug significant knowledge gaps in understanding Hong Kong’s vulnerability to climate change.⁴⁰ But there is no timetable or plan for undertaking the required research. This should be addressed as a matter of urgency because good policy must be underpinned by solid research. Such research—and its eventual translation into policy—takes considerable time, so every year that this research is delayed amplifies the delay to implementation of better policy. This submission makes comment on three of the vulnerable areas highlighted in the Consultation Document:⁴¹

- (a) Biodiversity and nature conservation;
- (b) Water resources; and
- (c) Built environment and infrastructure, with specific reference to flood risks.

(a) Biodiversity and nature conservation—Adequate provision for adaptation

The key requirement for biodiversity conservation is to ensure connectivity between the Country Parks both within Hong Kong and with suitable habitat across the border. This will require a review to facilitate linkage, either by designating sites to secure that linkage, or by protecting existing features that provide wildlife corridors such as natural watercourses, fung shui woodland and parks. As an example of a promising development to build on, we note that chapter six of the Framework Agreement on Hong Kong Guangdong Co-operation makes provision for an ecological corridor between Robin’s Nest and Wutong Shan in Shenzhen, which ensures Hong Kong’s terrestrial biodiversity is directly linked to appropriate habitat in southern China.⁴²

(b) Water Resources—Review water security and management

In light of the warnings from the Hong Kong Observatory of increasingly unpredictable rainfall in the Pearl River Basin, from which Hong Kong derives all its water, a complete review of the way water is collected, distributed, and priced should be carried out before serious problems start to emerge. In its 2009 report on water security and management in the Pearl River Basin and Hong Kong,⁴³ Civic Exchange noted the need to anticipate climate change impacts by preparing a climate change vulnerability and adaptation assessment for water resources, as well overhauling Hong Kong’s water policy:

“In the case of Hong Kong specifically, water needs to become a specific policy concern for the HKSAR Government. It needs to see its water supply within the context of south China, and it needs to ensure it has a place within the Pearl River Water Resource Commission and other relevant bodies. Within Hong Kong itself, apart from upgrading and repairing water mains, it needs to invest in water gathering and storage, as well as practice water reclamation for reuse and reduce sewage treatment for a start—in fact, these are low-hanging fruit. The HKSAR Government should form a special task force to review water-related issues and practices so as to ensure long-term sustainability.”

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40 Consultation Document, paragraph 5.63(d)

41 Consultation Document, paragraph 5.64

42 Environment Bureau (May 2010) www.legco.gov.hk/yr09-10/english/panels/ea/papers/ea0524cb1-1923-5-e.pdf, accessed: Legislative Council website 4 Aug 2010.

43 Sadhwani, D., Chau, J., Loh, C., Kilburn, M. & Lawson, A. (December 2009) Civic Exchange, *Liquid Assets: Water Scarcity and Management in the Pearl River Basin and Hong Kong*, <http://www.civic-exchange.org/eng/upload/files/091204LiquidAssets.pdf>.

(c) Built environment and infrastructure—A better flood management plan is needed

Hong Kong is one of the most important port and financial centres in Asia, and residents rely on coastal areas for employment, living and commerce. Hong Kong is blessed with extensive coastal and estuarine zones, as well as sanctuaries for biodiversity such as wetlands, rocky shorelines and cliffs. The coastal areas of Hong Kong and the Pearl River Delta will continue to see both economic development and environmental pressures. There is a need for an integrated shoreline management plan that takes into account climate change, flood risk, development options, and principles of intergenerational equity.

The Consultancy Study refers to floods and flooding almost twenty times and highlights recent flood events in Hong Kong, such as the flash flood that caused a serious landslide on the Lantau Highway in 2008 and two coastal flood events in Tai O in 2008 and 2009. However, there are no concrete initiatives to deal with flooding in the Consultation Document.

We make THREE recommendations:

(i) Establish an integrated coastal flood management plan

In Hong Kong, there is no single institution responsible for dealing with coastal flooding.⁴⁴ The Hong Kong Observatory predicts the frequency and intensity of coastal flooding will increase and low-lying areas along the coastline in Hong Kong will be at risk from storm surges and sea-level rise. An integrated shoreline management plan (SMP) is essential to mitigate the flood risk with relevant adaptation options.⁴⁵ The SMPs should also include an action plan that prioritizes work needed to manage coastal processes into the future, and plots where that work should happen. This in turn will form the basis for planning and implementing specific flood and erosion risk management schemes, monitoring of coastal erosion, and further research on adaptation and options to manage the coastline.

(ii) Integrate planning with flood risk appraisal

Since 1989, the DSD has done a good job to mitigate flood risk in urban and rural areas in Hong Kong by using world-leading technologies in drainage engineering and post-flood protection measures, albeit at heavy cost to the biodiversity of our lowland rivers and streams. The flooding problem in the northern New Territories has reduced significantly in the recent years.

BOX 5

An example of an SMP that attempts to integrate climate change adaptation measures and flood mitigation options into land-use planning is in the Humber Estuary in England. Firstly, local development authority (LDAs) identifies the land-use pattern and flood receptors (i.e. residents, flora and fauna in the flood zone) along a coastal region. Secondly, the LDAs may choose hard-engineering, soft engineering or no-change options to enhance coastal flood management after completing a full flood risk appraisal to understand the social, economic and ecological constraints and benefits.*

* Environment Agency (2008) The Humber Flood Risk Management Strategy: Planning for rising tide. Environment Agency, Leeds, United Kingdom.

44 The Civic Engineering & Development Department (CEDD) deals with sea reclamation and sea wall maintenance under the Ports Work Division. Meanwhile, the Drainage Services Department (DSD) is responsible for the inland flood management, and its Drainage Master Plan (DMP) has not included a coastal flood management strategy.

45 In the UK, an SMP involves a large-scale assessment of the risks associated with coastal processes and aims to reduce these risks to people, infrastructure, historic heritage and natural resources. Coastal processes include tidal patterns, wave motion (height and direction), and the movement of beach and seabed materials. As a result, an SMP provides a "road map" for decision makers to understand the present situation and future needs in the relative coastal regions. An SMP will identify the most sustainable approaches to managing the flood risks to the coast in the short time (0-20 years), medium term (20-50years) and long term (50-100 years). See Environment Agency (2010) Shoreline Management Plans (SMPs) See at <http://www.environment-agency.gov.uk/research/planning/104939.aspx> (Access on 9 Dec 2010).

However, as the flood risk increases, the capacity to appraise the risk must be integrated into planning strategy, to properly assess development plans and building projects in flood-risk areas (e.g. low-lying flood plain, and coastal flood plain). The Planning Department and Environmental Protection Department should co-operate in the development of a future flood management strategy, so that the relevant assessments and criteria are incorporated into a development proposal.⁴⁶

(iii) Make flood risk information publicly available

The Consultancy Study lists updating the flood risk maps as one of the adaptation options for key vulnerable sectors in Hong Kong.⁴⁷ More than this, the flood risk map should be available to the public. In the UK, after the major flood events of 2007, the Environment Agency provides free public access to flood risk maps in England and Wales.⁴⁸ This enables the public to access real time flood risk conditions, flood warning areas, floodplain locations and flood infrastructure to enable them to prepare for flooding or mitigate the expected flood risk in their locality.

In Hong Kong, the DSD monitors flood risk in all DMP zones, but flood risk mapping remains confidential. It is important for the Hong Kong public to access the flood risk information to prepare for flooding in the future. In referring to current systems that could be used to adapt to the physical impacts of climate change, the Consultancy Study lists advice to building owners and owners' corporations to purchase *Property-All-Risks Insurance* covering losses or damages to the common properties of the building due to flooding. However, it is unlikely that private insurers are willing to provide adequate insurance if flood risk information is not available. If the Government wants to offload the financial burden inherent in flood risk, then it is important to release flood risk mapping to the public and investors.

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46 Chan F., Loh C., McDonald, A., Mitchell G. and Adekola O. (2010) *Rich Delta, Costly Flooding*. Civic Exchange www.civic-exchange.org/wp/wp-content/uploads/2010/11/101130CostlyFlooding.pdf

47 Page 60, www.epd.gov.hk/epd/english/climate_change/consult.html.

48 Environment Agency (2010) Flood maps, www.environment-agency.gov.uk/homeandleisure/37837.aspx.

CONCLUDING REMARKS AND A SUGGESTED WAY FORWARD

Although it is one of the major sources of GHG emissions, there is no mention of land use change in the Consultation Document. Given the welcome commitment to positioning Hong Kong and the Pearl River Delta as the greenest region of China, the presumption for continuous urban development in the EIA Ordinance, land policy and the town planning process should come under fresh scrutiny, and should be reviewed as a matter of priority.

We need new tools to promote sustainable low carbon development.

One approach would be to require net GHG emissions to be assessed in any planning application, EIA study or sustainability assessment for any development project. This should also be mandatory for all government planning at the district, regional, territory, and PRD level. Looking beyond land use, this could also be used to assess the sustainability of all new policy initiatives, an approach that is being widely adopted overseas. This assessment should include:

- **Baseline review** of the rate of emission or sequestration, and the embodied or naturally sequestered carbon associated with a proposed site, project or policy;
- **Embodied and expected emissions** of any future development, during both the construction and operational phase, and associated infrastructure such as transport networks and waste disposal; and
- **Net savings** achieved by adopting processes, materials or technologies that improve upon the “business as usual” case. These savings should meet or exceed the Government’s proposed carbon reduction targets.

Application

In relation to site selection, such an assessment would determine the carbon capture and storage value of natural (especially forests and wetlands) and farmed habitats, thereby creating a powerful new incentive to preserve our countryside and biodiversity, but also to encourage use of existing brownfield and urban sites, which would have a lower net increase in carbon value for development.

Within the urban landscape a carbon assessment recognizing the value of embodied carbon would encourage developers to give greater consideration to retrofit over demolition and reconstruction, to low carbon sourcing and building practices, and provide a way to amplify the non-financial benefits of enhanced urban livability features such as pedestrian zones, provision of district ventilation corridors, and other tools for promoting energy efficiency and reducing the urban heat island effect.

Conversely, the true costs of unsustainable practices, such as expansion of road networks, landfill development and inefficient new and existing buildings would be more accurately represented, and could therefore be more accurately accounted for in evaluating the suitability of any proposed development, plan or policy.

The requirement to conduct such audits to fulfill statutory requirements for development could also:

- Create a transparent, legally binding framework for reporting of carbon impacts;
- Serve as an important foundation stone for establishing a “technical memorandum” for conducting sustainability assessments and strategic environmental assessments; and
- Encourage the development of carbon impact assessment as a professional and technical discipline which is consistent with promoting green consulting as one of the six pillar industries proposed in the Chief Executive’s 2009 Policy Address.



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