BUSINESS ENVIRONMENT COUNCIL 商界環保協會

CCBF Climate Change Business Forum 氣候變化 商界論壇

BEC AND CCBF

RESPONSE TO HONG KONG'S CLIMATE CHANGE STRATEGY AND ACTION AGENDA

EXECUTIVE SUMMARY

BEC and CCBF approached this public consultation in a serious and systematic manner, befitting the importance of the climate change issue. We undertook a multi-stage internal communications process with member companies, employing focus groups, phone interviews, and electronic communications to develop and refine the ideas presented below. Our objective was not simply to respond to the questions posed. Instead, it was to elicit constructive critique and feedback, to inform the path-breaking work ahead of us to build a more sustainable, resilient society.

BEC and CCBF recognize climate change as one of the gravest challenges facing our society and our world. As such, we welcome, and firmly support, the Hong Kong Special Administrative Region (SAR) Government's plan to achieve an absolute reduction in carbon emissions of between 19%-33% by 2020.

We see the Government's proposed plan as a sound foundation upon which to galvanize public consensus and initiate concrete action. Yet ten years is a short time frame for ambitious reductions, and our lack of experience in this area introduces inherent uncertainty about how much reduction each element of the plan can deliver. Thus we advocate a series of interim milestones leading up to 2020, and extended targets thereafter. We also make specific suggestions with regard to each of the four main areas of the Government's plan, and suggest two additional planks related to engaging the population and Government Carbon Leadership.

Greater specificity, and more systemic policy action, in each of these six areas will increase our chance for success in meeting the proscribed goals. They will also increase the speed and efficiency with which Hong Kong transitions to a low carbon economy. The six areas are as follows:

- Transport: The focus should be a comprehensive low-carbon transport plan. A centerpiece would be upgrading all buses which can be retrofitted to meet international standards, and phasing out those that cannot. This action alone would have enormous public health benefits for Hong Kong residents and visitors.

- Electricity Generation: While supporting the Government's proposed evolution of the fuel mix, BEC and CCBF recognize it is critical the plan earn support from both the Central People's Government and the Hong Kong public. Safety is the utmost concern: the Hong Kong SAR Government must demonstrate that the technology used for power generation and transmission facilities are the most advanced and safe available today.

- Buildings: Increasing energy efficiency in existing buildings must be core to any plan. Thus BEC and CCBF would advocate supplementing the Government's plan with a mandatory building energy performance and upgrade system.

- Waste: Incineration and waste-to-energy systems are necessary elements of an overall waste management scheme. They should be optimized by introducing upstream waste reduction, segregation, reuse and recycling programs.

- Engaging the Population: Behavioral change is hard, but necessary, for a low carbon society. We would advocate measures to raise awareness and make low carbon choices more attractive and less costly, and higher-carbon choices less attractive, for Hong Kong consumers.

- Government Carbon Leadership: The Hong Kong SAR Government can exhibit market and moral suasion by setting aggressive carbon reduction targets for government activities, and reporting progress annually.

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1. The Business Environment Council (BEC) and Climate Change Business Forum (CCBF), and our member companies, welcome the Hong Kong Special Administrative Region (SAR) Government's proposal to take decisive action to combat climate change. With this document we aim to express our support for its goals, and suggest ways to ensure that Hong Kong's plan is robust, effective, and incorporated in a manner that is efficient from a business perspective.

Recognizing the reality of climate change (Question 1)

2. Hong Kong has started to experience the effects of climate change. Indeed, the Hong Kong Observatory (HKO) has played an important role in tracking and reporting some of the earliest detected impacts, including temperature increases, higher than normal rainfall, rising sea levels and severe weather events. HKO-identified trends such as increased flooding due to storm surge and sea level rise, mortality from extreme temperatures, and a growing threat of malaria are of concern to the business community. We would like to better understand the risks of these trends in Hong Kong and see adaptive and preventative measures taken.

3. The physical effects seen to date are only part of the story. Absorption of greenhouse gases (GHGs or CO_2 equivalents, referred to as CO_2 in this document) in the oceans and ice sheets manifest themselves over time. According to US climate scientist Jim Hansen, we have witnessed only about half the global warming due to CO_2 already in the air. Thus the carry-on effects of climate change reported by the UN Inter-governmental Panel on Climate Change (IPCC) -- sea level rise, ice sheet collapse, loss of species due to new climactic effects, and potential for ecosystem collapse -- will continue in the coming years even if emissions are successfully reduced.

4. Many of the human activities which produce GHGs, produce pollutants harmful to human health as well. Given the importance of both climate change and air quality to Hong Kong's people, economy, and quality of life, the Government should move rapidly to adopt policies that optimize the outcome in both environmental and human health terms.

5. While a full exploration of the effects of climate change is not appropriate here, BEC and CCBF members recognize the urgency of adapting our economies and our business models to emerging environmental realities. Thus we consider that any full, fact-based discussion of the implications of a climate change plan for Hong Kong should address, at a minimum:

    a) The costs and benefits of the plan with regard to Hong Kong citizens' health; and
    b) The costs and benefits of the plan with regard to the long-term viability of Hong Kong's economy, which is inexorably intertwined with the economy of the Pearl River Delta and southern China.

6. Understanding who is at risk, in what ways and in what timeframe, is critical to getting both the mitigation and adaptation strategies right. Indeed, we believe that this expanded analysis will make the Government's case for action even stronger.

7. There is evidence that the Hong Kong business community is aware of the climate issue and would be supportive of government leadership. A survey commissioned by CCBF in September 2010[1] revealed that Hong Kong business managers recognize both the physical risks and the economic opportunities borne by climate change. In terms of risk, 58% are concerned about disrupted transport and logistics networks, 51%

[1] The survey was conducted by telephone with business managers from 500 SMEs in the manufacturing, trade and service industries. Questions were designed to test general awareness of climate change and energy efficiency issues, future investment plans and recommendations for action from the Hong Kong government.

about disruptions due to pandemics or infectious diseases, and 48% about scarcity of environmental resources. In terms of opportunity, fully 82% believe that energy efficient and low-carbon products or services will be important in the economy as a whole within the next three years. Yet the majority of businesses surveyed (69%) are not yet investing to develop low-carbon products and services, or in environmental protection more generally. They see a need for additional education, skills training, and market incentives to enable Hong Kong businesses to make a timely transition.

8. Transitioning to a low carbon economy will deliver significant efficiencies in the long run. In the near term, however, it will require investment *and* a society-wide, transformational effort to move towards a sustainable, low-carbon economy. Leadership from the top and integrated policy frameworks are essential. BEC and CCBF can offer support and expertise in research, education, and engaging stakeholders in collaborative, goal-driven partnerships, to help facilitate this important transition.

Local support for global action

9. It's worth noting that trade, transport and logistics, and other "B2B" endeavors underlie a significant portion of the Hong Kong economy. The embodied greenhouse gases in the products traded encompass not only those in composite materials, but also those stemming from production process, transport, use and ultimate disposal. To the extent that international companies and developed regions are now moving to account for their supply chain impacts, it is in Hong Kong's interest to build this capability as well.

10. The transport portion in particular is a global issue, requiring global solutions. In this regard we support for the International Civil Aviation Organization's efforts to make international aviation more carbon-efficient. Similarly, we support efforts to incorporate cleaner fuels into international shipping, and welcome the recent voluntary commitment of some of Hong Kong's shipping lines to use cleaner fuel in Hong Kong waters.

11. In his 2008-09 Policy Address, the Chief Executive outlined the parameters of a joint Hong Kong – Guangdong plan for a "green and quality living area," based on the principles of environmental protection and sustainable development[2]. Local companies engaged in research and development, green tech / clean tech and support services have a vital role to play in achieving this vision. We would advocate additional support for this industry segment, consistent with the Hong Kong SAR Government's identification, in 2008, of the environmental industry as one of six key pillars for economic growth in the medium to long term.

12. BEC, like the Hong Kong Science & Technology Park, acts as an aggregator for businesses in these areas and can thus provide a beacon of support and information for this project as it moves forward. Indeed, the Hong Kong Jockey Club Environmental Building, which BEC occupies and manages, is well suited to be a platform for environmental education and showcasing low carbon technologies. BEC would be delighted to partner with the Hong Kong SAR Government to realize this objective.

Engaging the Hong Kong population

13. BEC and CCBF agree with the consultation document when it states, *Low carbon living is a simple concept, but we must all make conscious efforts in order to put it into practice. Here, we are calling for a change in value and culture, as well as actions from every member of the community.* The document's proposals do little to engage the vast majority of Hong Kong's citizens. Yet conscious consumer choice has an important role to play in decreasing the consumption of high-carbon goods and services. We understand the Government is planning to work with the Sustainable Development Committee to engage the broader community on carbon-conscious demand and low-carbon living. We support a proactive approach and would like to see some definitive goals in this area.

[2] 2008-09 Policy Address by Chief Executive, paragraphs 92-93.

14. We would also support measures to raise awareness and make low-carbon choices more attractive and less costly, and higher-carbon choices less attractive, for all. For business, this means the Government enabling a shift from short term profit-taking to longer term investment returns: ultimately, the costs of current and future externalities must be incorporated into business models. For individuals, it means defining more precisely what low carbon living means, and demonstrating how individual choices can lead to high quality, low-impact lifestyles. Consumer education is one key. Another is encouraging businesses to provide information about the carbon intensity of the products and services they offer. These measures should be complemented by systematic efforts to incorporate climate change into school curriculums, as a "bottom up" approach to informing family decision-making.

15. A whole-community approach would contribute not only to achieving carbon targets, but also to engendering a healthier, more cohesive society and garnering broad public support for investments in a low-carbon lifestyle. The Government has a key leadership role to play in prioritizing these investments, and preparing businesses and individuals for higher short-term costs in areas such as energy and transportation.

Goal-setting (Questions 2 & 5)

16. In light of the pressing global need to reduce CO_2 emissions, BEC and CCBF agree that Hong Kong should set an aggressive goal to significantly reduce its carbon footprint. Target setting for 2020 is necessary, but not sufficient. Business needs policy transparency and legal certainty to make the investments required to realize a transition to a low carbon economy. As such, we would advocate incorporating an action plan and interim milestones in the years leading to 2020, and extended targets thereafter (for example, for 2030 and 2050). Equally important will be reporting standards, monitoring and verification mechanisms adopted to keep efforts on track.

17. BEC and CCBF support the Government's overall target of a 50%-60% reduction in carbon intensity from 2005 levels by 2020, in large part because it accords with an absolute CO_2 reduction of 19%-33%. This level of commitment can be compared with those being proffered by other developed cities around the world, as illustrated in the chart below. It should be noted that cities that choose to adopt an earlier (1990) base year for reductions are making a more ambitious commitment.[3]

How Hong Kong Stacks Up[4]			
City	**CO_2 Reduction Pledge**	**From (Base Year)**	**To**
London	60%	1990	2025
New York	30%	2007	2030
Seoul	30%	1990	2030
Chicago	25%	1990	2020
	80%	1990	2050
Copenhagen	20%	2005	2010
	100%	2005	2025
Hong Kong	19%-33%	2005	2020

We would encourage further strengthening the plan by making Hong Kong's commitment mandatory; supporting it with financial or other incentives if necessary to ensure its achievement; and developing a contingency plan if interim monitoring demonstrates we are not on track to meet the 2020 goals.

18. In terms of specific policies, we support carbon reduction actions that deliver a high degree of confidence Hong Kong is actively contributing to the target of maintaining temperature increases below 2 degrees centigrade, and the targets set by the Central People's Government.

[3] Hong Kong adopted 2005 as a base year to be consistent with China.
[4] City targets and plans available on the website of the C40, a group of large cities committed to tackling climate change. See http://www.c40cities.org/.

19. Ten years is a very short time frame to make the adjustments to Hong Kong's energy industry and building stock envisaged, particularly given the time required to introduce and pass legislation through the Legislature,[5] and the need for well-informed public support. Thus BEC and CCBF members believe that the strategy should be expanded to adopt more robust measures. The remainder of this document offers proposals for consideration in pursuit of this goal.

Transport: Cleaner fuel & cleaner vehicles (Question 3)

20. CCBF's study, *Low Carbon Economy for Hong Kong – Sector Regulations Paper* recommended that Hong Kong adopt a comprehensive low-carbon transport plan as part of an overall low-carbon economy policy. The current policy initiative is an excellent opportunity to do so. While a full analysis of this opportunity is beyond the scope of this consultation response, our members have several suggestions that could form part of a larger plan:

21. A holistic sustainable transport plan should put people, rather than vehicles, at its heart. Key components would be additional pedestrian walkways, low emissions zones (as previewed in the Oct 2010 Chief Executive Policy Address), disincentives for private vehicle trips and encouragement of public transit and inter-modal journeys on low-carbon transport vehicles. In congested areas, the Government should consider making all or most road space available to public transit and bikes, and/or introducing congestion charges. Hong Kong might also take advantage of its sophisticated smart-card systems to introduce card-based tracking of low-carbon public transit, with due consideration of Data Privacy Ordnance issues.

> **Seoul**. Seoul City is replacing all its public buses with compressed natural gas buses by the end of 2010. It is expecting to save 20% carbon emissions.

22. The current public bus system has inherent inefficiencies, whose correction could contribute substantially to both human health and economic productivity. Chief among these are rationalizing public transit routes and upgrading buses to cleaner-fuel (electric, hybrid or super-capacitor) vehicles. As the Government controls the bus franchises, it has the responsibility for action. We would support an upgrade of all buses which can be retrofitted to meet international standards, and a staged phase-out of those which cannot. All measures taken in the interim, such as hybrid bus trials, should be designed to maximize their positive effect on both public health and congestion.

23. Hong Kong's extensive rail system is one of its greatest assets in pursuit of a low-carbon city. Investments in this system should prioritize their contribution to this goal. Specifically, the Government should consider introducing a minimum walking distance to rail transport for a percentage of the population living in highly dense areas.

24. Electric and clean-fueled vehicles figure prominently in the Government's low-carbon transport plan, and BEC and CCBF welcome early initiatives taken by the Government, the power companies and others to introduce these vehicles to Hong Kong. Indeed, many BEC and CCBF member companies have already started to deploy electric vehicles (EVs) and hybrids in their commercial fleets. Yet EV's eventual contribution to overall cleaner transport is predicated on certain key conditions. One is the fuel mix: EVs are ultimately as clean as their electricity source. Another is infrastructure. Policies should be put in place to speed the deployment of a sufficiently broad set of charging stations to support the new vehicles. Finally, financial and other incentives should be introduced to support increased market penetration for electric vehicles, hybrids and other clean fuel vehicles.[6]

[5] The average time required to pass environmental legislation in Hong Kong is approximately 9 months, according to work done by Mallesons Stephen Jaques for CCBF, available in *Low Carbon Economy in Hong Kong: Legal Assessment Paper*, 2009, Annex 4.

[6] According to the calculations of one global transport company active in Hong Kong, over 14,000 hybrids or EVs would need to be sold annually in Hong Kong for the next 10 years to attain the 30% clean fuel vehicle sub-goal described in Section 5.13a of the consultation report.

25. BEC and CCBF support alternative energy use in transport generally. Biodiesel offers a promising option. Hong Kong just implemented biodiesel standards and labeling requirements this year. Legislation mandating a blend of 10% biodiesel into the current fuel supply would have several distinct advantages. It requires no new infrastructure; is technically 'proven' in road vehicles in Europe and elsewhere; and is easily available on the international market. More importantly for this discussion, replacing mineral diesel by biodiesel produced from Hong Kong waste reduces CO_2 emissions by 80 - 85%,[7] while at the same time decreasing the volume of waste sent to landfill.

Electricity Generation: De-carbonizing the fuel mix (Question 4)

26. Two-thirds of Hong Kong's CO_2 emissions are attributable to electricity generation. Thus conservation (using less), and de-carbonizing generation (using cleaner fuels), are the two most efficient ways to reduce Hong Kong's carbon emissions. Concrete measures to spur conservation were scarce in the Government's proposal; their addition would add measurably to long-term sustainability in Hong Kong.

27. The Government's climate plan is predicated on the majority of carbon reduction coming from changes to the fuel mix. BEC and CCBF recognize the best way to de-carbonize the fuel mix is to decrease coal and increase less carbon-intensive fuels. Natural gas, with about half the carbon footprint of coal, is proposed to supply about 40% of the fuel mix, nuclear 50%, and the remainder split between renewable (3-4%) and coal. We support this plan, providing it is achievable and undertaken with due consideration for safety, security of supply and affordability. This is particularly important for nuclear power, which extends beyond the control of the Hong Kong SAR Government.

28. In terms of safety. Hong Kong has a long and positive experience with nuclear power. Indeed, nuclear is generating renewed interest around the world, as a source of low-carbon power at relatively stable prices. Yet public concerns about the safety of nuclear generation and construction of additional infrastructure are valid and should be addressed. Moreover, the Government should provide more details as to where the nuclear power plant will be sited, the time frames and investment frameworks for constructing both the plant and transmission facilities, and provisions for safety and emergency response.

29. Security of supply is also essential. It is managed in part through diversity of sources – a portfolio approach. But the consultation document does not address the capacity to substitute one source of fuel for another. Such an analysis would go some way to addressing concerns about the increased supply risk of natural gas vs. coal. Increasing global demand for cleaner fuels, including gas, rises, will lead to supply and price pressure in the marketplace. It would be prudent to expect that these effects will be felt in Hong Kong. Moreover, both the Hong Kong SAR and Central People's Governments have a critical role in ensuring the requisite supplies of gas and nuclear energy in the right volume and timeframe, with appropriate infrastructure development, to reach the desired target by 2020.

30. Affordability is the final criterion. Electricity must be accessible to those who are dependent upon it, but not so inexpensive that it is under-valued, and over-consumed, in the market. Bulk users of electricity in Hong Kong already have access to time-of-use pricing, which rewards those entities which can shift of some portion electricity use to off-peak (nighttime) hours with a lower price. The power companies also have 'inclining block' tariffs for residential customers, who pay more per unit the more units they use, to encourage energy conservation.

31. A key benefit of the proposed fuel mix and the lower CO_2 emissions per kWh is the potential for the electrification of other energy end uses which have a higher CO_2 footprint. As Hong Kong's fuel mix moves to 50% nuclear and 40% gas, electricity end use applications that are already efficient such as heat pumps for water heating, induction cooking and electric vehicles will have even lower CO_2 footprints than their gas, diesel or petrol counterparts.

[7] Based on default values for waste-generated biodiesel vs. mineral diesel, published in the Renewable Energy Directive of the European Union

Natural Gas in Hong Kong: Introduction of natural gas as a partial feedstock with naphtha in town gas production started in Hong Kong in 2006. Since then the use of natural gas for production has climbed steadily, reaching 50% of feedstock in 2008 and increasing to around 60% at the end of 2009.

Buildings: Increasing energy efficiency (Question 6)

32. The Government's plan proposes a portion of carbon reduction, or about 8%, from buildings. As almost 90% of Hong Kong's energy demand emanates from buildings, three key levers - greening building design, using more energy-efficient building equipment, and building performance evaluation and upgrade – are all important means to make meaningful and lasting contributions to lowering Hong Kong's carbon footprint. We would submit the following ideas for consideration and further exploration.

Efficient Appliance rebate in Toronto: Residents in Toronto are eligible for a rebate of $150 for an approved toilet or $125 for a high-efficiency commercial washer.

33. *Building Design*. For new buildings and major retrofits, green building design can substantially lower the carbon lifecycle cost of a building, as well as increase its useable life span. Modular design allows a property to serve multiple functions over time. Passive design incorporates natural ventilation, use of daylight, building shape and orientation, solar gains and shading, etc. Sustainable material use prioritizes recycled or low-carbon materials. Community-centered design incorporates green and open space and uses or anticipates distributed or district-based heating, cooling. The benefits of all of these design strategies accrue through the building life-cycle, and positively affect employment and society. The Government should consider actions to incent and support buildings, and neighborhoods, which are designed with these philosophies.

34. A co-benefit of sustainable building design is decreased construction/demolition waste. Many Hong Kong buildings are over-designed; the extra material translates to more weight and requires buildings to be stronger to carry the heavier load. This trend is exacerbated by the relatively low cost of material and lack of incentive and expertise to use materials efficiently. One tool to reverse this trend would be an embedded carbon calculator, applied to the total materials purchased rather than the net installed quantities. Use of such calculators is growing around the world. Adopting a scheme in Hong Kong – including in the BEAM rating scheme – would deliver the twin benefits of furthering Hong Kong's sustainability goals and developing an expertise that could be sold in international markets.

Tokyo's Commercial Buildings Emissions Trading Scheme. In April 2010, Tokyo instituted a mandatory cap and trade system on commercial, public and industrial facilities, comprising about 40% of commercial and industrial emissions in the city. Participating buildings are required to reduce emissions by 6% in the 2010-2014 period, and 17% in 2015-1019.

35. *Energy-efficient building equipment*. The proposed plan includes increasing the energy efficiency of building-based equipment, but doesn't go into detail. A helpful step would be to require, and assist owners in achieving, high-efficiency chilling. In many cases this would entail replacing current air-cooled chillers with more efficient sea-cooled systems. The scheme to do so should be designed to allow best-common-sense judgment on the type of chiller used, and to assess any adverse impact on the marine environment from additional discharge from sea water cooling. The Government might mandate an upgrade by a date certain and offer financial or other assistance to property owners who move rapidly. Financial tools like subsidies, loans, accelerated depreciation, tax credits or deductions could be used to incent change. It will be important to include multi-owner facilities in this and other schemes.

Big buildings get big efficiency upgrades in NYC. New York's buildings account for 75% of the city's carbon footprint. The city's Greater Greener Buildings Program will require those over 50,000 square feet to upgrade lighting, undergo audits and re-commissioned to new benchmark standards. NY expects the program to save $700 million USD in energy costs annually, create 17,800 construction jobs, and reduce the city's carbon emissions by almost 5%.

36. A complementary strategy would be to review all major equipment/appliances used in buildings and major infrastructure. Inefficient equipment should be phased out of the market. In a similar manner, a review and improvement of external lighting codes could reduce consumption in transport and infrastructure use.

37. *Building performance evaluation & upgrade.* A 2009 Environmental Protection Department program incents building energy-cum-carbon audits, and associated upgrades. The next logical step would be to introduce a mandatory building energy performance evaluation tool; require buildings to meet minimum levels which rise over time; and post each building's result, or scorecard, prominently at the building entrance. A key tactic for making this scheme effective is to publish and notify building owners of the increasing standard over time, well in advance of its coming into force. Commissioning and re-verification should be done under the HK BEAM standard. The Hong Kong SAR Government should also give serious consideration to incentives and structures that drive property managers to collaborate with tenants on building energy conservation. London's *Better Buildings Partnership* is just one example of a major city's coordinated effort to tackle the classic agency problems inherent in the building management-tenant relationship.

Australian NABERS program catalyzes greener neighborhoods. The voluntary NABERS building performance rating system became an important market indicator in Australia, with over 40% of office space rated to date. Buildings undertaking in the program achieved average energy efficiency improvements of 15%, compared to their first rating.[8]

38. A complementary strategy would be to encourage the upgrade of club houses (both retrofits of existing facilities and more sustainably-constructed new facilities).

Cash for efficiency in London. The UK Government provides up to £3500 for energy and heating efficiency improvements in individual households.

39. Hong Kong's building energy codes should be reviewed and upgraded regularly to align with global best practice. This is the only way to ensure that our building stock, and the skill levels of Hong Kong's building professionals, are consistently world class. The Hong Kong Green Building Council is an invaluable resource for monitoring the global market and ensuring that Hong Kong reaches its goals.

Pumping up building energy efficiency in Korea. Non-residential buildings in Seoul, and the rest of Korea, are required to reduce their energy use by 15 percent by 2012, 30 percent by 2017, and 60 percent by 2020. New residences must be zero carbon emissions by 2025.[9]

[8] "Performance-based Rating Systems for Existing Buildings – An International Perspective," Response to the Hong Kong SAR Government's *Climate Change Strategy and Action Agenda* by Energenz Consulting, Oct 2010. It should also be noted that the Australian government has made NABERS ratings compulsory for most buildings over 2000 square meters sold or leased after Nov 1st 2010.

[9] "Popularity of Green, Energy-Efficient Homes Grows in Korea," on KoreaNet, at http://www.korea.net/news.do?mode=detail&thiscode=eng030008&guid=50278.

Waste: Converting waste to energy (Question 6)

40. Hong Kong has a serious waste challenge. Our three strategic landfills are rapidly reaching capacity. Efforts in recycling and landfill gas capture have had a limited success, but waste generation is growing rapidly. Government data for 2009 reveal municipal solid waste being sent to landfill at the level of 8,960 tonnes per day (excluding construction waste). A full 42% is putrescibles[10], which is mainly food waste; 23% is un-recycled paper and 19% is un-recycled plastic. The co-mingling of the different waste streams precludes their separation and use for energy or other purposes; and the excess waste is a producer of methane, a powerful greenhouse gas.

41. Clearly the challenge is to (a) reduce waste generation "upstream," (b) segregate, re-use or recycle whichever components of the waste stream have market value and (c) convert the remainder to energy in a safe and efficient manner. Construction waste should also be addressed (see paragraph 32).

42. *Waste Minimization.* A primary waste reduction strategy employed by other cities is waste charging. Levies can be implemented at the landfill or realized in the purchase of trash bags for specific waste streams. EPD initiated a study on charging for municipal solid waste in December 2008. The results of this study should inform a domestic and commercial/industrial waste charging policy going forward.

Dollars for Disposing in Sydney. Sydney has instituted a substantial waste disposal levy – currently $200 AUS per tonne and rising – to induce personal and market mechanisms to lower generation of waste.

43. *Waste separation*. Once separated, waste streams can move easily into the marketplace, maximizing their value as recycled, reused or converted materials. Proper segregation, therefore, is essential. For example, a requirement to separate wet (food) waste will encourage discharge of excess water, which will facilitate the generation of valuable secondary products such as composts and bio-fuels. Failure to do so, or poor execution, will increase the likelihood of waste-borne pests and disease. Education and supporting systems will be integral for a successful SAR wide separation and processing of waste.

Waste to Energy in Tokyo... Tokyo's 23 wards are home to 23 integrated waste facilities (waste-to-energy and waste incineration). Power generated is consumed locally, and ash from the incinerators is converted and used as construction materials.

44. *Waste to energy*. The final component of a more sustainable waste management system is safe, waste to energy (WEI) incineration. WEI can significantly reduce the bulk of waste requiring disposal at landfill, and co-generate "clean" electricity, contributing meaningfully to reducing the proportion of fossil fuels used in the fuel mix. Hong Kong has significant positive experience with landfill waste-to-energy generation, which it can build upon to acquire additional energy value and strategic expertise.

45. On a cautionary note, balancing waste avoidance, recovery, and recycling strategies with the WEI strategy is important. Waste incineration should focus primarily on non-recyclable or technically unrecoverable recyclables in the waste stream, rather than burning materials that would more typically be recycled. This is a matter of principle, based on the conservation of valuable finite resources wherever possible. It is also consistent with the Central People's Government's policy on the Circular Economy.

...and in Hong Kong. Landfill gas from Shuen Wan and the Northeast New Territories has been captured and used as heating fuel for town gas production since as early as 1999. About 3% of the territory's heating fuel is thus produced; this level could rise to 15% with additional facilities.

[10] Putrescibles are waste that can decompose, and can be useful for making biofuels.

Urban planning: Maximizing airflow, minimizing emissions

46. Creating a livable, low carbon urban landscape is fundamental to becoming a sustainable city. In this regard we fully support the Government's plans to mandate building separation, setback and greenery to enhance air ventilation and create a cooler urban environment. This should be complemented by urban design strategies such as pedestrianisation, reduction of traffic congestion on key corridors, stepping down of building heights towards the harbour and inclusion of strategic breezeway; as well as integrate green walls and green roofs. Indeed, a comprehensive sustainable city strategy would incorporate all these elements, as well as sustainable transport and housing. Taken together, these measures should start to alleviate the urban heat island effect and create a more welcoming urban experience.

47. In urban design as elsewhere, vigilance is needed in monitoring, reporting and refining the overall strategy. Micro-climates should be analyzed at a district level, to identify opportunities to reduce temperatures. In this regard climate-induced changes are exacerbated by urban heat island effect, which can be as much as 4 degrees Celsius[11]. The urban climatic study currently underway should guide concerted actions in each district and microclimate in the city, and help prioritize concerted action.

New York converts Landfill to Park. Freshkills Park is a 2,200-acre former landfill on Staten Island, New York. It is in the process of being converted into parkland, and will serve as a living laboratory for many of the sustainability initiatives that the city is undertaking, including research on land restoration and renewable energy projects.

Adaptation (Question 9)

48. The matrix of adaptation issues in the climate consultation document identifies several critical areas for further study, policy and planning. We note that trends already in play make thoughtful action even more urgent. For example, *Hong Kong 2030 Planning Vision and Strategy*[12] predicts a population increase of 0.7% per annum, which will place additional pressure on infrastructure and energy demand. The increase in warm temperatures from climate change and urbanization will continue to impact cooling loads and thus points to the value of upgrading older mechanical cooling plants.

49. The next step in developing an adaptation strategy should be a fuller identification of the risks, who is affected, potential adaptive actions, timeframes, and responsible parties. BEC and CCBF is open to discussing what role we, as a concerned stakeholder, can play to advance the knowledge-gathering and policy generation process.

50. We see the following as areas of particular urgency:

- *Flooding***.** The scientific community has drawn a strong correlation between climate change and severe weather events. Indeed, Asia has seen a surge in storm frequency and force unprecedented in recorded human history. And while sea level rise is usually measured in centimeters, storm surge can be much greater. The continuing storms that recently hit Thailand, put towns under several meters of water (November 2010). Hong Kong cannot rule out the possibility of a similar event on its soil. We thus urge the Government to develop a comprehensive crisis management plan for serious flooding, akin to that done for pandemics.

- *Food.* Hong Kong operates as a quasi-island city. As such, we are dependent upon ground and air transport networks for a significant portion of our food. We would encourage the Government to

[11] Based on data from a NASA high-resolution thermal image of Hong Kong commissioned by the Hong Kong Polytechnic University and taken by satellite at 22:40 on 4 August 2007. Reported in "The Future's Red Hot for Hong Kong," *South China Morning Post*, 30 September 2007.
[12] Available from the Hong Kong government online at http://www.pland.gov.hk/pland_en/p_study/comp_s/hk2030/eng/finalreport/.

strategically increase stock of perishable and non-perishable food for use in an emergency, and to put in place systems that can distribute such food during or after a natural disaster.

Critical Hong Kong SAR Government Leadership

51. In Hong Kong as in other major metropolitan areas, the Government plays at least four unique roles: creator of laws and standards, protector and defender of public health, keeper of public goods (including both physical goods such as public land and buildings, and less tangible goods such as clean air), and market maker. To truly lead the transition to a more economically resilient and environmentally sustainable city, it must make use of each of these capacities. In particular:

- *Measurement, reporting and disclosure.* The Government should carry out carbon audits on each of its buildings and projects/programs, including major infrastructure projects. Such information should be made available to the public. This would be the first step in engaging the business community in widespread energy / carbon disclosure.

- *Market leadership/Procurement*. In accordance with the above measure, a carbon assessment should be required for all government tenders with substantial potential carbon impact. The outcome should be granted significant weight in the tender award decision. This should contribute greatly to reducing the wastage currently seen in government contracts, which often require high embodied carbon materials, purchase of brand new vehicles, and unnecessary use of resources on construction sites. Industry players would also welcome uniform standards for weighting carbon and other environmental elements in government procurement.

- *Greening government building stock*. The Government could make a significant contribution by (a) upgrading all of its current facilities to Beam Plus Gold standard (and to progressive upgrades of this standard going forward) over the next 10 years; and (b) realizing a 25% reduction in building energy use from 2011-2020. Progress should be reported in the annual carbon audits of all government owned or controlled facilities, suggested above. An integrated carbon calculator, as mentioned in paragraph 33, would help inform carbon-smart building specifications even before permission to build is granted.

Seoul: Seoul has decreed that all new public facilities (including museums, hospitals and child care facilities) must be designed to cut energy consumption 40% over baseline.

- *Hong Kong SAR Government Reduction Target and Sustainability Report:* The best way for the Government to both articulate its commitment to sustainability to market players and others would be to set a carbon reduction target for government activities and issue annual reports. A Hong Kong SAR Government sustainability report would both bolster the goals of the Climate Change Strategy and Action Agenda, and start to meet the objective of setting out Hong Kong's leadership in the region and within China.

- *Education & training* – the Government, perhaps working through trade and industry bodies, should establish ongoing public education for business owners/operators to perform similar environment-cum-carbon audits and upgrades. Incentives should be made available for first movers, and special attention should be granted to ensuring that Hong Kong businesses have sufficient energy expertise to secure their place in the global supply chain going forward.

- *Support local R&D* – Hong Kong is home to many businesses investing in new-energy and new-economy technology. The Government should look for opportunities to help Hong Kong develop home-grown solutions or tools in the transition to a low carbon economy.

Cooperation within the Pearl River Delta (PRD) (Question 7)

52. The recently signed Framework Agreement on Hong Kong / Guangdong Cooperation provides a platform for realizing valuable and tangible cooperation with our neighboring province. This is particularly important for managing cross-border challenges, such as air pollution and dirty diesel traffic, and realizing shared goals, such as the green growth foreseen in the 12th Five Year plan. BEC and CCBF member companies would urge expanded cooperation in the following areas:

- *Reinforced collaboration in energy efficiency in manufacturing plants.* The "Cleaner Production Partnership Programme" has registered some success in lowering the energy bills and carbon emissions of its target factories. These practices have not, however, yet been disseminated in scale. The two governments should collaborate to extend efficiency practices, using a combination of incentives and requirements and leveraging/growing the expanding body of commercial expertise in this area.

- *Coordinated (but not necessarily identical) policies with regard to building energy efficiency ratings and disclosure.* As China and Hong Kong move down the path to greater transparency and higher performance in building energy efficiency, care should be taken to ensure that corporations operating on both sides of the border are able to systematically comply with new requirements. Ratings and disclosure standards should be implemented in the near term on both sides of the border.

- *Measurement, Reporting and Verification:* Both the Hong Kong and the Chinese provincial governments will need institutions and skills to support the measurement and reporting of our respective carbon intensity reduction goals. This is an area where Hong Kong and the PRD can work together to benchmark best global protocols and refine as necessary for our use.

- *Fuel and emissions standards for ships.* This area, specifically identified in the Framework document, will require close cooperation among the two governments and maritime industry participants throughout the region.

- *Allowing commercial aircraft flexible entry into Mainland airspace*. In 2009, improvements to flight paths over the PRD for incoming flights helped Hong Kong based airlines saved significant flying time, and accordingly hundreds of thousands of tons of CO_2. Further savings could be achieved with similar improvements to departure flight paths.

Conclusion

53. BEC and CCBF are committed facilitating Hong Kong's transition to a low-carbon economy. Indeed, we consider the cost of inaction to be unacceptably high. At the same time, we recognize that the ambitious plans proposed will require concentrated effort, time, money and political capital in the short term, to realize objectives identified for 2020. In this regard we would suggest that the Hong Kong SAR Government, at the highest level, create a public-private mechanism to orchestrate Hong Kong's business, the Government and public engagement in climate response going forward. BEC and CCBF would be delighted to put its expertise in both sustainability and stakeholder engagement to work in this pursuit. With concerted collaborative effort, we can establish the necessary market and regulatory incentives, reporting systems, and other public platforms to achieve Hong Kong's sustainability goals.