



BEC ENVIROSERIES CONFERENCE - 19 MAY 2016

A LOW CARBON AND RESILIENT HONG KONG: TRANSFORMING
AWARENESS INTO ACTIONS

REPORT



A LOW CARBON AND RESILIENT HONG KONG: TRANSFORMING AWARENESS INTO ACTION

KEY MESSAGES FOR BUSINESS

Providing Leadership: business is well-placed to play a leadership role in Hong Kong, and to work with Government to enhance the policy framework.

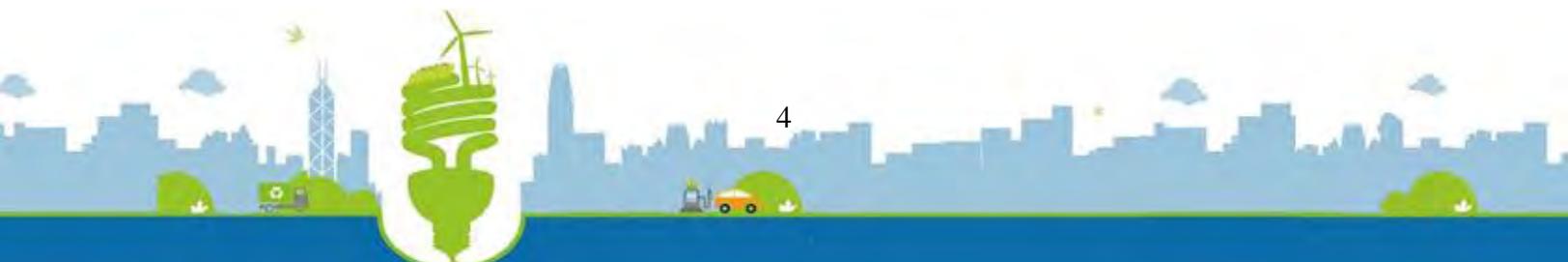
Planning for the Medium and Long Term: success will depend on setting longer term targets, backed up by plans, that accord with what the Paris Agreement and the science shows us should be our ultimate goals.

Taking Timely Action: early action towards reducing annual GHG emissions is important as it is the level of greenhouse gases in the atmosphere over the next 20 – 30 years which will make a critical difference.

Seizing Opportunities: the transition to a low carbon economy creates opportunities for businesses to benefit from growing demand for low carbon products, services and buildings

Securing a Resilient Society: action needs to be taken to adapt and be resilient, and some of this action will also help mitigate carbon emissions.

These are the key themes that BEC would like to highlight, drawing on the conference presentations and panel discussions, plus the benefit of its own knowledge and research.



This is a report produced by the Business Environment Council Limited based on presentations and panel discussion at its “Low Carbon and Resilient Hong Kong: Transforming Awareness into Action” EnviroSeries Conference in May 2016. BEC holds its EnviroSeries Conference twice each year. These are flagship events that seek to stimulate discussion and provide thought-leadership to Hong Kong by bringing together leaders in the field from government, business, academia and NGOs.

The report does not seek to be a precise account of the proceedings so much as to draw out the thinking and ideas that emerged. It uses the structure of the 4 Themes used by the Hong Kong SAR Government to communicate its future intentions: Targets, Timelines, Transparency, and Together. Though we seek to ensure that the report broadly reflects the views of our speakers it does not seek to summarise each speaker’s contribution.

Research carried out by BEC to help inform the work of BEC’s Climate Change Business Forum Advisory Group (BEC CCBF AG), has been used to develop the key messages. Going forward BEC CCBF AG is working to support businesses to set carbon reduction targets that take on board the science that shows what is needed for the world to keep below 2°C above pre-industrial level temperatures.

CHAIR'S FOREWORD

It is with pleasure that we publish this report on our EnviroSeries Conference May 2016, on the fundamentally important issue of supporting a transition to a low carbon and resilient Hong Kong.

The conference was organized to help harness the commitment of Hong Kong's business leaders to take action locally to help achieve the ambitions of the groundbreaking Paris Agreement. BEC signed up to the Paris Pledge to show our support to the ambitions of the Paris Agreement and to commit to help effect this transition in an orderly way.

We were pleased to facilitate a sharing of views and information between Government, business, academia and NGOs, and to show our support for the Hong Kong SAR Government's efforts to ensure that Hong Kong as part of China puts in place targets and timelines to help achieve the ambitions of the Paris Agreement.

Our EnviroSeries Conference is part of BEC's programme of working with business towards a low carbon HK. BEC's Climate Change Business Forum will be working with members on a sectoral level to support them in developing targets and voluntary commitments.

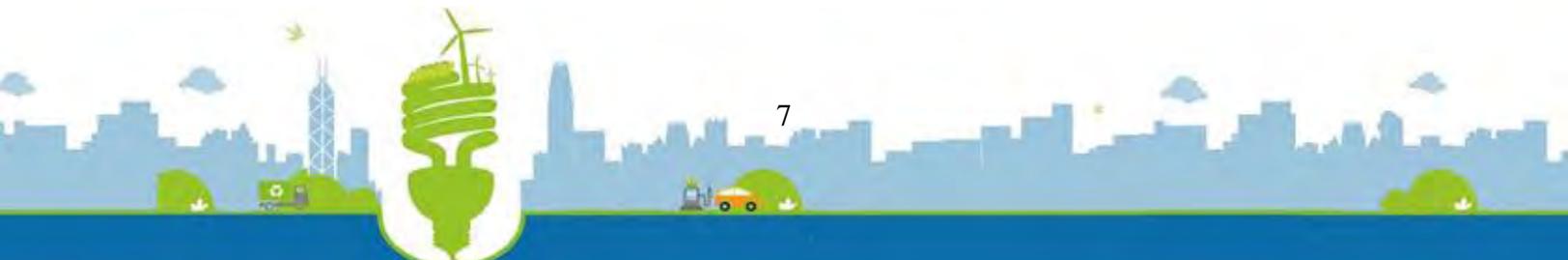
I am pleased that the conference helped bring out the important building blocks to success in tackling this world-threatening problem – from targets and timelines as well as working together in a joined up manner and transparency in what we do. It is hard to do justice to all the contributions of our many speakers, but I hope you will find this report on the proceedings insightful, illuminating, and at times thought-provoking.

Through this conference, we hope we have made a contribution to supporting action towards an orderly transition to a low carbon economy and a more sustainable society. To me, this is vitally important for the well-being of future generations, which is so closely connected with the resilience, liveability and efficiency of Hong Kong.

Mr. Richard Lancaster, Chairman of Business Environment Council Ltd

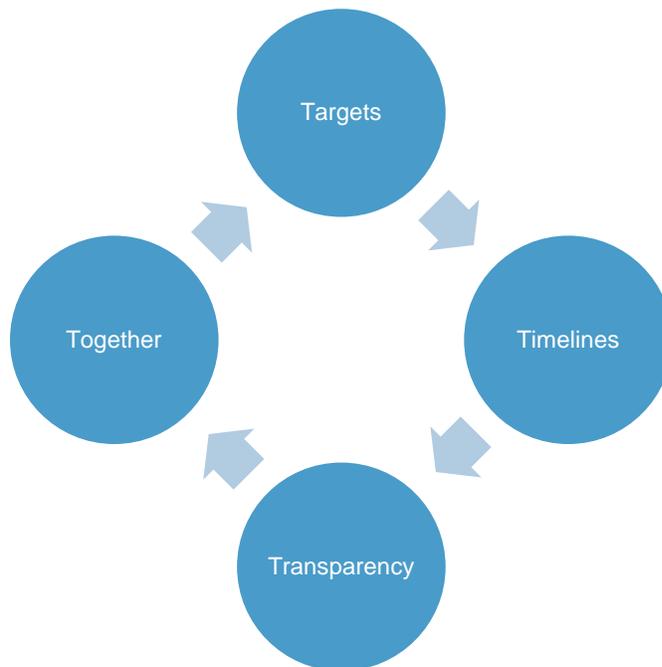
CONTENTS

- I. Introduction
- II. Background
- III. Business playing a leadership role
- IV. Current State of Play – Government Policy, ambitions, and current level of emissions and trends
- V. Targets – supply side and demand side
 - (a) Supply side
 - (b) Demand-side
- VI. Timelines
- VII. Transparency
- VIII. Together
 - (a) Business playing a leadership role
 - (b) Government Direction and Policy Framework
 - (c) Innovation



I. INTRODUCTION

1. Through this EnviroSeries Conference, BEC facilitated a dialogue between business, the HKSAR Government (“The Government”), academia and NGOs about concrete action, plans and policy required for HK to transition to a low carbon economy. The question asked was “what needs to be done for Hong Kong to be in line with goals of the Paris Agreement”. The dialogue focused on the potential for business to play a leadership role in achieving this.
2. The conference was an initial step in BEC's Low Carbon Hong Kong: Science-based Targets project, a flagship project of BEC Climate Change Business Forum Advisory Group (“Climate Change Business Forum AG”). The project aim is to work with business to support them on a sectoral level to set targets to reduce their longer term carbon emissions.
3. Though developed independently of the Government, this approach closely reflects the Government's approach post- COP 21 and the signing of the Paris Agreement on Climate Change (“the Paris Agreement”), with a focus on the 4 Principles of Targets, Timelines, Transparency and Together.



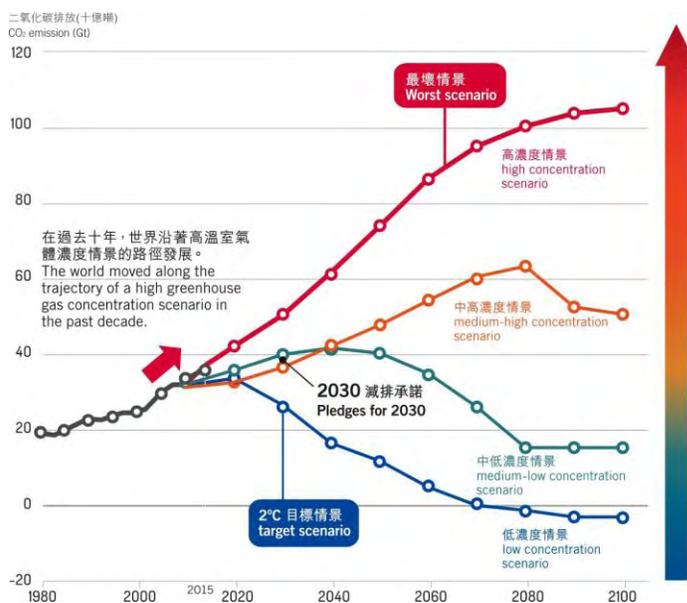
4. This Report begins as the conference did with explaining the Paris Agreement and state of play in Hong Kong. It continues by developing the overarching theme of the day of leadership by business, going on from there to use the information and views from the conference combined with BEC's own research and analysis to articulate the Government's four themes from a business perspective. 5 key messages are also drawn out for businesses to consider and to stimulate further debate and discussion.

II. BACKGROUND

- The conference consensus was that the Paris Agreement was a “Global Game Changer”, seeking to ensure carbon neutrality or “net zero emissions” by 2050-2100. It mandates countries to peak their emissions as soon as possible, report every 5 years and carry out a stock-take every 5 years¹. Countries also commit to meet their Intended National Defined Contributions.
- Though it was considered at the Conference that the Paris Agreement is a major step forward, it was recognized by speakers and panelists that given the overall objective, doing no more than meet Intended National Defined Contributions would not be sufficient. It would mean a temperature rise of close to 3C by the end of the century, as reflected in Diagram 1².

Diagram 1: The Target Scenario: reflecting IPCC 5th Assessment Report³

Where are we heading?



Given the COP21 pledges, a rise of 3 °C (above pre-industrial levels) by end of century is likely

¹ <http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>

² CM Shun, Director of HKO.

³ From slides of CM Shun, HKO, which reflects https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_SPM_FINAL.pdf

- Our expert speaker said that temperatures over the last few years, the highest in 2015 with the highest before that being in 2014, appear to be evidence of change being underway. 2016 looks as if it will be hotter still. The causes it was suggested are generally regarded as being a combination of El Niño and climate change.

Diagram 2: Increasing Risks of Coastal Flooding⁴



⁴ From the slides of Mr CM Shun, HKO

III. OVERARCHING THEME: BUSINESS PLAYING A LEADERSHIP ROLE

8. The case for business playing a leadership role in “operationalizing the Paris Agreement” was made, on the grounds that moving from the trajectory of RCP 8.5 to the safe trajectory of RCP 2.6 (see diagram 1) requires transformational change. Business has shown it’s willing in the number of commitments, from Caring for Climate to Science-based Targets, made by businesses across the world. The question now is the role that businesses in Hong Kong are ready and willing to play.
9. Three reasons were given for playing this leadership role:
 - The benefits to people and planet
 - Good for business: in fact change brings opportunity and as Paul Polman, Unilever says “achieving a zero emissions economy is the greatest opportunity of the century”.
 - Business has the resource to make things happen.
10. In Hong Kong, through BEC’s Climate Change Business Forum AG in particular, business has already done much to support change including producing reports and guidance on driving towards a low carbon economy. However, speakers and panelists agreed that what is now needed is, in parallel to developing awareness and knowledge in the business sector and wider community, to move to implementation. Ideas that emerged included businesses setting targets related to the goals of the Paris Agreement, continued advances in sustainable urban development building on good progress to date, and an enhanced policy framework.

IV. HK – CURRENT STATE OF PLAY: CARBON EMISSIONS AND POLICY FRAMEWORK

11. The Under Secretary for the Environment set out the Government's position including a reduction of the carbon intensity of Hong Kong's economy by 50-60% by 2020 from 2005, and action under the Energy Saving Plan 2015. Next steps are to develop a 2030 target and, at the moment, work is underway by all Departments and Bureaux to identify actions to reduce emissions. The new Inter-departmental Ministerial Committee will support this process.

Note: the Government has now announced its plan to put in place a new Climate Action Plan by end 2016/early 2017.

12. In terms of next steps, the Under Secretary referred to major mitigation efforts which cities across the world seek to accomplish. Hong Kong has already taken major steps on several, and is continuing to develop policy and practice in these areas in order to:

- Ensure a fuel switch and introduce renewable energy (where possible)
- Promote energy efficient buildings
- Reduce emissions from transport
- Reduce waste and turn waste-to-energy

She highlighted the potential from innovation from installation of renewable energy in reservoirs and Universities to urban forestry, whilst recognizing the limitations.

13. Adaptation and resilience were also emphasized by speakers. Loss of ice from Greenland, with 287 billion tonnes/year lost between 2002-2014, and from Antarctica parts of which are at a point of no return will lead to sea level rise⁵. Extreme sea level related events of 1-in-50 year likelihood today are likely become annual events

⁵ This may contribute a further 1.2 m rise in mean sea level. Coastal flood risk from storm surge will increase.

by the end of the century in all scenarios. Projections are for more hot days, fewer cold days, more extreme rainfall, and more severe typhoons⁶.

14. The Observatory's work in public education and outreach activities was highlighted. This includes its forecast service and warnings of extreme weather; promoting public awareness of disaster prevention; and supporting adaptation through climate projections and information services for stakeholders.

⁶ BEC's Climate Resilience Roadmap for Business sets out these risks from a business perspective and recommends actions to reduce this risk
https://bec.org.hk/files/images/Resource_Centre/Publications/BEC_Hong_Kong_Climate_Resilience_Roadmap_for_Business_report.pdf

V. SETTING TARGETS AND MONITORING PERFORMANCE

15. The questions for Hong Kong which emerged from the presentations and panels are: what more needs to be done to be in line with the ambition of the Paris Agreement; and what does this mean on a sectoral level? Speakers highlighted the groundwork done already with a carbon intensity reduction targets for 2020 of 50-60%, which Hong Kong expects to meet through a changing fuel mix from coal to gas, building standards, and an excellent public transport system⁷.
16. Underlying the discussion was a recognition of Hong Kong's particular circumstances – its post-industrial service economy which means that much of its emissions relate to commercial buildings and homes as well as transport rather than manufacturing. It also has limited land resources for renewable energy and a substantial proportion of its emissions are tied up in consumption rather than being direct (scope 1 and 2⁸) emissions.
17. The successes and level of ambition in other post-industrial countries is encouraging. In much of Europe absolute emissions have fallen significantly as has the intensity of the grid⁹. Europe's ambition is to reduce absolute emissions by 40% from 1990 levels by 2030¹⁰, and by 80-95% by 2050, with some cities setting targets to reduce emissions by 80-90% earlier than this, by 2030.
18. The alignment between lower carbon emissions and better air quality was noted as a means of driving change. By continuing to tackle air pollution, primarily caused by transportation and power generation, Hong Kong may also be able to reduce its carbon emissions.
19. Since the Agreement, there has been a greater focus on science-based targets with a coalition of NGOs developing methodologies and an approach for validation. CLP took the step of setting a target along these lines a few years ago. Others such as

⁷ Hong Kong Climate Change Report 2015, <http://www.enb.gov.hk/sites/default/files/pdf/ClimateChangeEng.pdf>

⁸ <http://www.ghgprotocol.org/calculation-tools/faq>

⁹ <https://www.iea.org/publications/freepublications/publication/CO2EmissionsTrends.pdf> (eg. UK 2016 0.41, 2007 0.47 <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>)

¹⁰ http://ec.europa.eu/clima/policies/strategies/2030/index_en.htm

Cathay Pacific have developed a target which is now being submitted for validation. Hong Kong Airport Authority is also working on a target.

20. However, in BEC's view it is not only targets on the part of businesses that are needed but in addition, plans to ensure these targets are met, and monitoring and governance systems in place to support this.

Supply Side – setting an ambitious target: what's in place and what are the next steps?

Key Messages from Speakers

- **Progress has been made in recent years to reduce the carbon intensity of the grid: 43% reduction between 1990 – 2015, mainly through the introduction of nuclear, gas and more efficient coal power stations.**
- **For the medium term, opportunities are offered by a shift to natural gas with energy companies committed to improvements by 2020, but security of supply requires investment in a terminal.**
- **For the longer term, in Hong Kong, reducing the intensity of the grid appears to be a choice between nuclear and renewables. It is difficult to introduce renewables here at scale but there are opportunities to import more nuclear power from Guangdong Province and to import Renewable Energy. At today's costs, improvement in the fuel mix is likely to increase fuel costs in Hong Kong.**

21. There has been considerable success in Hong Kong in reducing the intensity of the grid over the past 25 years, as explained by the electricity companies. CLP for example achieved a 43% reduction in carbon intensity of their share of supply from 1990 to 2015¹¹ in part through nuclear, but also through a shift from coal to gas fired power stations. The carbon intensity figure for electricity in Hong Kong is now around 0.6 kg CO₂/kWh. Though energy demand has gone up by about 80%, the overall increase in carbon emissions has been contained at 4%.

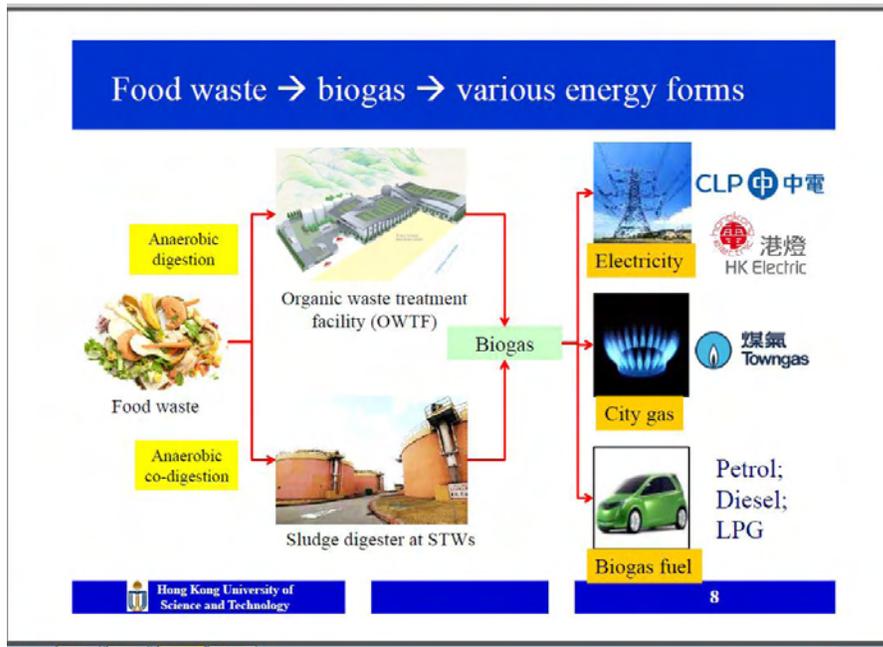
¹¹ CLP Sustainability Report 2015, https://www.clpgroup.com/en/Sustainability-site/Report%20Archive%20%20Year%20Document/SR_Full_2015_en.pdf

22. The key question that emerged from the discussion is development of a plan for delivery on a longer term science-based target. Power company plans to date are currently focused on 2020: a transition from around 53% coal, 23% nuclear and 22% gas to 50% gas, 25% nuclear and 25% coal by 2020. However, for 2030 and 2050, a transition away from gas to a lower carbon solution – renewable energy or nuclear - will be needed. The electricity companies take the view that additional nuclear as well as renewable energy from China have a part to play in the longer term fuel mix and that local renewable energy is extremely unlikely to be a means of replacing a substantial proportion of fossil fuel generation. What arrangements are best put in place to enable and incentivize growth in this space? Do we need state-funded R & D or the right incentives to enable renewable energy to be provided at an acceptable cost? These are questions on which there is no clear answer and which BEC considers needs further exploration.
23. In terms of setting targets, CLP has set a 2050 science-based target: a 75% reduction in the carbon intensity of its generation across Asia¹². The plans by which to achieve this remain in development. The speakers brought out the financial cost of achieving the necessary shift in the fuel mix, explaining the higher costs of natural gas as well as to renewable energy may have an impact on tariffs.
24. For the moment, electricity companies plan a short term transition to gas whilst also making the most of local renewable energy facilities including waste to energy, and considering nuclear for the longer term.
25. The challenge in meeting these short and longer term targets is ensuring value for money and energy security.
26. Both electricity companies stressed the importance of having multiple sources of gas for energy security reasons. Building a new gas terminal will make this much easier, though this will come at a cost. It was recognized that in the longer run its value may be much reduced, although by then it should already have delivered the aim of better gas prices for Hong Kong by enabling gas to be purchased competitively from global markets.

¹² CLP Sustainability Report 2015, https://www.clpgroup.com/en/Sustainability-site/Report%20Archive%20%20Year%20Document/SR_Full_2015_en.pdf

27. As to renewable energy CLP is making it easier to connect to the grid, and recognizes that net metering or a feed-in-tariff would encourage this. HKE have piloted renewable facilities, it has over 60 customers connected to the grid and its own solar array. Both are concerned about the limited contribution local renewables make to overall electricity supply considering the small amount of roof space per household and limited land. However, one panelist put forward the view a 30% renewable energy target would be feasible if demand were to be reduced sufficiently. This would be a challenge considering that at present renewable energy makes up less than 1% of the fuel mix. If this were to increase to say 3% then a 30% target would only be met if demand were to fall by 90%. The scope for marine-based renewable energy and imports from the Mainland, were not considered in any depth at this conference
28. As to the potential from Waste-to-Energy, the case for a holistic waste and energy policy approach, considering that Hong Kong produces large quantities of food waste – approximately 3600t per day – was put to the Conference. The potential for the use of biogas in vehicles was highlighted (see Diagram 3) by one speaker, but the complexity of waste to energy was drawn out by another speaker, who emphasised factors such as the importance of the quality of the feedstock and spending enough time pre-procurement to ensure all the components are in place to make the system work.

Diagram 3: Options for Use of Food Waste, Prof Irene Lo



29. In terms of the contribution to the fuel mix, the Conference heard the view that with the right waste to energy infrastructure in place, about 2-3% of Hong Kong's energy needs could be met. Its value in carbon reduction terms would depend on what it displaced – coal, diesel or gas. Taken together with the benefits from reducing the need for landfills which takes up valuable landscape, this could be regarded as of significant benefit. To make this work, it was suggested, top down policy measures from banning landfill of food waste as well as a feed-in tariff for the energy produced may be needed.

Note: The HKSAR Government introduced a policy in 2014 to manage food waste, including producing biogas from a series of organic waste treatment facilities¹³.

Demand-side Management

Key Messages from Speakers

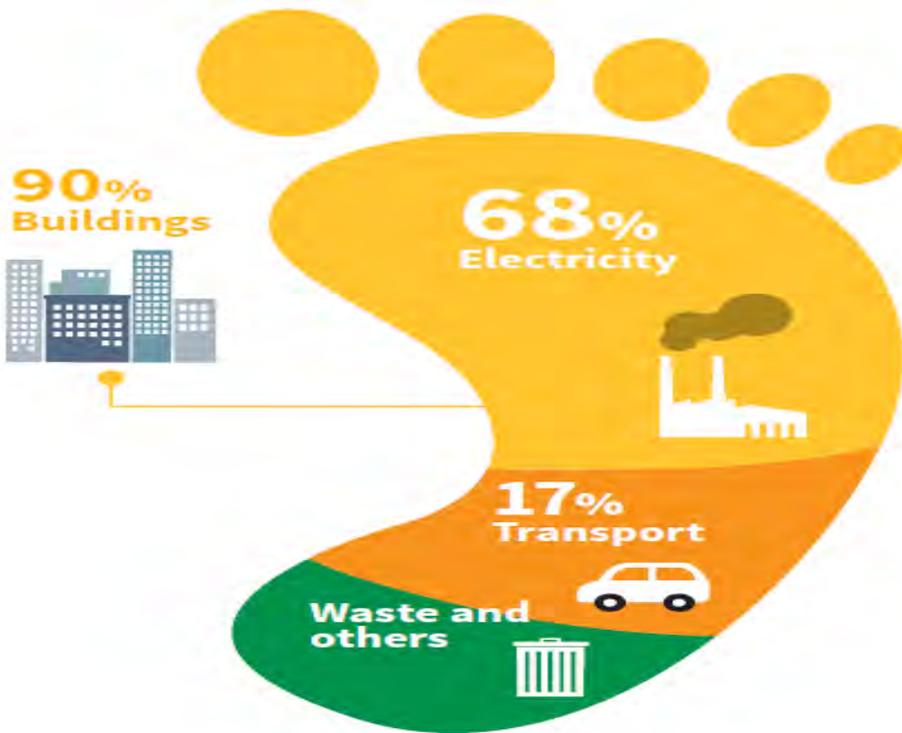
- **Focus on buildings: addressing demand requires increasing the energy efficiency of buildings, as 60% of carbon emissions and 90% of electricity**

¹³ <http://www.enb.gov.hk/en/files/FoodWastePolicyEng.pdf>

used come from buildings, which can to some extent at least be done without an increase in overall costs.

- **Work together to set clear targets:** There are a number of targets. Hong Kong 3030 is about a 30% reduction in carbon emissions, the Government's short term target is a 2020 carbon intensity reduction target of 50-60%, and 2025 target which relates to energy intensity. The Government's plan to set a 2030 target is welcome, but business will need to think even beyond this considering the lifespan of buildings and infrastructure.
 - **Make use of effective technologies with short pay-back periods:** available and some businesses have made major reductions, but limited information available on impact of different approaches and technologies.
 - **Focus on excellent urban planning:** enables multiple objectives to be achieved from carbon mitigation to adaptation.
 - **Prioritise good architectural design.**
30. The Conference heard that commercial buildings, residential buildings and transport are the biggest emitters. 68% of emissions are from electricity, and 90% of electricity is used in buildings. The conference learnt that in fact just 42,000 buildings are the source of 61% of Hong Kong's carbon emissions.

Diagram 4: HK Climate Change Report 2015, Environment Bureau



31. Considering the proportion of Hong Kong’s carbon emissions that come from cooling and lighting our buildings, 90% of electricity use and 61% of GHG emissions, the Conference examined what can be done in respect of buildings. The view put forward by a key proponent of Hong Kong 3030, is that the world’s emissions need to fall by 40-70% by 2050. It was suggested that on “a common but differentiated responsibility approach”, Hong Kong may be expected to be at the top-end, making emission reductions of around 80% by 2050 in line with C40 cities¹⁴.
32. So what’s underway, what’s planned in Hong Kong? The Government’s Energy Saving Plan is the main tool. This includes a commitment to reduce the **energy intensity** of the economy by 40% from 2005 levels by 2025.

¹⁴ HKGBC, <https://www.hkgbc.org.hk/hk3030/eng/Introduction.aspx>

Diagram 5: Energy Saving Plan ENB (2015)

Energy Saving Plan for Hong Kong's Built Environment 2015 ~2025+



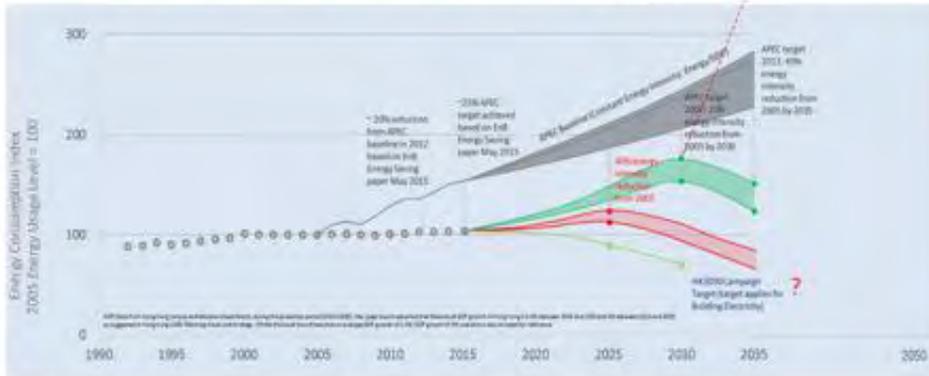
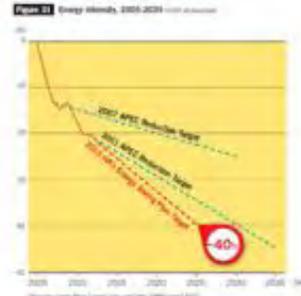
33. This is the formal Government target for buildings, different from that in Hong Kong's 3030 plan: an absolute reduction of energy use from buildings by 30% from 2005 to 2030. In terms of a plan of action, HK 3030 has put together a set of measures and possible reductions. Understanding the costs and payback periods of those measures needs some further work.

Diagram 6: Dr Raymond Yau – Comparison HK 3030 and Government Targets

Energy Saving Target

"This document aims to stimulate and provoke wider community deliberation and debate. We wish to assess the extent to which the relevant stakeholders and the community are ready for the Government to adopt more aggressive policies and measures in energy saving."

More aggressive target: greater reduction using absolute target?

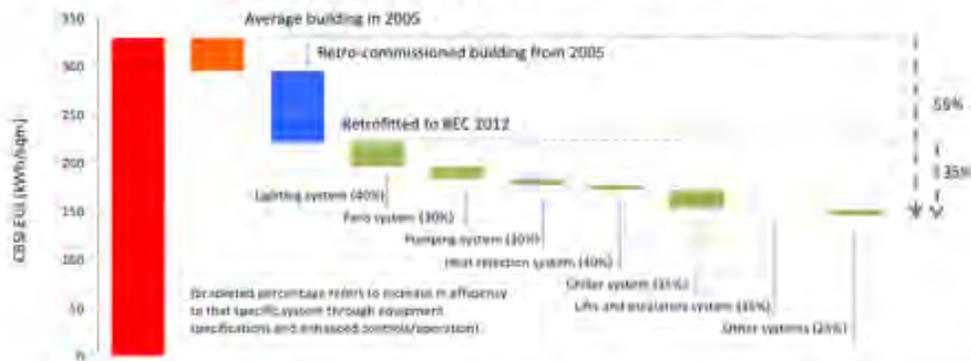


Source: Arup

The conference presentations indicated that businesses may gain from greater clarity in terms of targets.

Diagram 7: Raymond Yau (Source: HKGBC Market Drivers for Transformation of Green Buildings in Hong Kong 2015)

Existing Building Retrofit



- While the exact path to extensive upgrade of existing building stock is yet to be determined, we can select a particular scenario to illustrate the magnitude of the task
 - Re-commission 30% of existing buildings – with the target of reducing CBSI/Landlord consumption by 10%.
 - Re-commission and Retrofit 70% of existing buildings – with the target of reducing CBSI/Landlord consumption by 35% compared to 2012 codes (55% enhancement from 2005)

Source: HKGBC Market Drivers for Transformation of Green Buildings in Hong Kong 2015

34. Case studies were presented to show that good returns can currently be made on investments in technology, such as those shown above. The payback periods are often good. The Holiday Inn Express is a key example with energy savings of 58% in comparison with a standard building¹⁵.

Diagram 8: Presentation by Ir Antonio Chan – REC Engineering



35. The case was put for targets in line with the Paris Agreement being possible and technology being available. Siemens has made ambitious plans to become carbon neutral by 2030. Hong Kong companies like Link Real Estate Investment Trust (“Link REIT”) have set ambitious carbon reduction targets, and stress the importance of companies coming together to set targets and take action to have impact.

36. The potential from even better urban planning, good architectural design, and adapting behavior was put forward, with potential to design new buildings to require

¹⁵ Compared with EMSD benchmark for hotels.

only 30% of energy ordinarily used. Buildings like the Bullitt Centre, Seattle show what can be done, seemingly helped along by a supportive cap and trade system. Reducing energy usage is not only about technology and design – a speaker put forward the “adaptive principles” on behaviour for consideration, for existing buildings too.

Diagram 9: Mr Wilson Yik - Adaptation to temperature change – How do we do it?
(Source: Prof Susan Roaf, Heriot – Watt University, UK)

Adaptive Principles

1. **From Active to Passive:** Only heat/ cool buildings when absolutely necessary - naturally ventilate them for as much of the year as possible. Why use machines at all if you don't need to?
2. **Heat / Cool the people not the building:** A strong move is back to using Personal Environmental Technologies (PETs) – like small heaters or fans to provide local comfort.
3. **Adaptive Behaviors are a key part of the comfort equation:** Enable people to adjust themselves and their buildings to achieve comfort – including curtains, shades and the ability for people to move around.
4. **From still to breezy air movement:** Early work in comfort defines air movement as a bad thing. In fact breezes can be harnessed to enhance comfort and people really do like 'fresh air'.
5. **From Neutrality to Delight:** Stop thinking that the only way to provide comfort is to put people in a uniformly warm/ cool room soup. Re-learn how to make people sense 'thermal delight' - A cosy fire in winter or a cool breeze triggers sensual pleasure, enhance happiness & well-being.
6. **Design Climate Refuges into buildings:** Every home should have a cool/ cosy corner so that people can stay warm/ cool during extreme weather. You just need one room to be safe during such periods.
7. **Time and Place are key - Harvest comfort from the micro-climates in and around buildings:** Every place will have its own micro-climate that, once understood, can be used to provide more or less comfortable locations for different activities over a year.

(Reference: F. M. Humphreys and S. Roaf (2012). *Adaptive Thermal Comfort: Principles and Practice*, Taylor and Francis)



37. As to good urban planning for climate resilience and reducing demand-side emissions, the proposition put to the conference was that there are 6 key components of climate related urban-infrastructure: energy mix, energy efficiency, mobility, resilience, urban greening and livability. The benefits of high density and low emission public transportation of which Hong Kong is an excellent example were highlighted. Improvements not only in passenger transport but also freight and non-motorised transport like cycling and walking, which Hong Kong was yet to fully take on board are also important. Urban greening and resilience in particular to flooding were highlighted, including the multiple benefits of blue-green drainage infrastructure, an approach which the Drainage Service Department is now adopting.

Diagram 10: Sustainable Urban Design and Mobility – Thomas Tang, AECOM

Mobility

Efficiency of existing transport networks, and land overhauls designed to make cities less reliant on cars

- Houston's light rail expansion - 5 new rail lines - connects each major activity center in the city.
- Portland's East Side has an extensive streetcar system since 2012 connecting major areas of the city.
- Moscow is making its buses and freight systems more fuel efficient.

Other actions on transport involve creating infrastructure for non-motorized transport.

- Paris estimates non-motorized transport infrastructure will save the city up to 600,000 tonnes CO₂e.
- Rio de Janeiro estimates its GHG reduction potential for transportation has a total anticipated lifetime reduction of over 500,000 tonnes CO₂e.
- Seattle completed its master plan for both cycling and walking in 2012.



AECOM

38. The complexities that arise from compact efficient cities were highlighted such as a risk of reducing liveability through a very compact city. People show a preference for open spaces and lower density, and less dense cities may also allow more air movement, enabling natural ventilation to be used. Some useful research in this respect including CUHK's Urban Heat Map¹⁶ can help with good urban planning in Hong Kong.
39. This complexity creates a need for harder thinking - innovative and creative design, and making more of the potential from technology, including a "smart city" approach which enhances the interaction between people and infrastructure. Improving and creating useable open spaces, renaturing spaces, taking cars off the road and making streets safe can also help reduce emissions and increase liveability within a compact city. A systematic and methodical approach to adopting technologies and practices, "doing the maths", as emphasized by a panelist, can help us achieve the change that is needed.

¹⁶ <http://heatisland2009.lbl.gov/docs/221640-ng-doc.pdf>

VI. SETTING TIMELINES

40. The general view from the morning's panel discussion was the importance of acting swiftly. It was considered that there is no longer time to raise awareness levels before taking action. There was some challenge to this: the difficulty of business moving forward without the backing of the population was raised. The broad consensus was that both will now need to take place in tandem.
41. Setting timelines will help us track progress. As to whether the focus should be on the short term, medium term or long term, the insights that emerged were the importance of building a pathway to long term change. Speakers suggested that the targets and timelines need to be with reference to the goals of the Paris Agreement. One speaker stressed that it is the generation currently in charge that have the power to make meaningful change. It will be too late for those that are now children to do so.

“We are the last generation that can take steps to avoid the worst impacts of climate change. Future generations will judge us harshly if we fail to uphold our moral and historical responsibility.” from Mr. BAN Ki-moon, the secretary general of United Nations, at DAVOS 2015

42. The importance of swift action is also supported by BEC's analysis – the quicker we act the easier it should be to keep within the 2C; as it's not the level of emissions in 2050 that matters so much as the amount of reductions over the next 35 or so years.

VII. TRANSPARENCY: SHARING INFORMATION AS TO USE OF TECHNOLOGIES, PRACTICES, ENERGY

43. The discussion covered this area – why is transparency important and what are the barriers? It was agreed that transparency is fundamental as it enables progress to be tracked and monitored but sharing of information as to the consequences of use of certain measures or standards helped support action across the territory.
44. Though Hong Kong has made some progress in terms of transparency for example through Building Energy Audits, the view was that more could be done.
45. Panelists suggested sharing of energy audit data as well as the data from the Government's efforts at reducing its own emissions to improve transparency, supporting benchmarking and peer pressure induced change. Potential to extend this arises from data held by the Government through its Carbon Repository as well as the data from energy audits provided to EMSD. HKGBC is developing a platform for data sharing.

Note: the Government puts Energy Audit data on line and it is to be found in entrances to buildings. However, BEC's enquiries suggest that though this is a good foundation for transparency, the robustness of data and the limited information as to different buildings means that enhancements to make this data easier to use are needed.

VIII. TOGETHER

Key Messages from Speakers

- **It is timely for business to explore with Government the issue of putting a price on carbon, considering action in China and elsewhere as a means of encouraging a shift to a low carbon economy, supporting investment in appropriate infrastructure.**
- **A carbon charge may be more appropriate in the Hong Kong context than carbon trading. A local cap & trade scheme as in Washington State, USA and Tokyo merit consideration, and feed-in tariffs also provide a means for putting a price on carbon.**
- **Government has a vital role in good urban planning.**
- **Government can support use of the technologies available, addressing the barriers to their application,**

46. Speakers and panelists from the Government and business shared the view that both had a role to play, and also brought out the importance of the NGO community in helping achieve results. Views that emerged on respective roles as well as on what working “together” means in practice are set out below.

Business: Setting Targets and Timelines

47. Several speakers and panelists stressed the importance of business developing targets and timelines, and working together within the business community to do so. The point was made that a business on its own was a drop in the ocean but together businesses could make a substantial difference.

Government: A Long Term Vision and the Right Policy Framework

48. The importance of a clear long term vision on the part of the Government was recognized.

49. The main issues to emerge as to policies were:

(a) Regulatory/Market Measures

50. Regarding the regulatory system, a carbon price was discussed as China is bringing in carbon trading in 2017. This is now a proximate issue that needs to be looked at. It was discussed that business can help find a workable policy solution which at least achieves the same objectives even if a different policy instrument.

51. One of the speakers put the case that in Hong Kong carbon trading may not be worth the administrative costs, and a carbon charge may be better. A tiered charge creating an increasing tariff reflecting the amount of consumption as with water, may be a good solution. Getting the price right would be important. BEC notes that this would partially mirror the current practice of CLP in terms of an escalating bulk tariff, though this only applies to domestic users and relates to energy not carbon.
52. Another speaker put forward the idea of a local cap and trade system citing the example of Washington State, USA. A buildings level trading approach has been introduced in Seattle. The cap and trade system in Tokyo, which BEC has explored, also merits consideration.
53. Two other speakers stressed the importance of a feed-in tariff to support renewable energy. Figures were put forward to show how with feed-in tariffs, renewable energy facilities were getting off the ground from Shenzhen to Taiwan. This may impact on energy prices, having a similar impact to a carbon price.
54. Considering Hong Kong's huge production of waste, some speakers suggested that a feed-in tariff in combination, with effective waste charges and regulations to ensure a feedstock, would support more effective management of waste as well as increasing the supply of clean locally produced energy.
55. The gist of the conference discussion was that consideration by business of a fair and effective way of addressing the carbon externality is important. It will support good investment choices. BEC is aware of the consequences of a carbon price in terms of fuel costs and competitiveness and is exploring alternative policy solutions such as building standards and financial incentives for energy efficiency through its Energy Advisory Group. In conclusion, though the conference and BEC's wider engagement of its members does not suggest a consensus in Hong Kong on how to internalize carbon costs, it does show a recognition that the policy framework needs to be enhanced to strengthen the incentives towards demand-side management.

(b) Urban Development & Planning

56. The 6 key components of a low carbon and climate resilient urban plan: the energy mix, efficiency, resilience, mobility, urban greening, liveability, offer a useful framework for climate change-informed urban planning. The speaker on this topic

highlighted the huge potential for innovative design and use of smart new technologies, as well as the importance of considering low technology solutions - taking vehicles off the road in favour of walking and cycling.

57. Government will always be at the centre of good urban planning, the speaker suggested. However, it is important for it to work with business and NGOs in doing so, because of the potential for innovation including the use of smart technologies and learning from experience from around the world. Many of the consultant engineering companies in Hong Kong have this wider regional and global experience.

Government & Business: Innovation

58. BEC's previous EnviroSeries Conference (November 2015) drew out the potential from innovation for example on infrastructure like transport to district cooling. Government leadership combined with the right mindset by business can spur this on. The Drainage Services Department has shown how this department has innovated in respect of better flood resilience and carbon reduction, now combining management of storm water with watering parks and gardens and improving the public amenity through construction of blue-green drainage infrastructure approach. The wider regional experience from places like Malaysia and Singapore were also brought to the attention of the conference.

59. Technologies are available for substantial reductions in energy in the buildings sector, as explained in relation to the Holiday Inn, but the panel acknowledged that as yet widespread action to this degree of ambition is not common place.

NGOs: Constructive Engagement

60. The importance of NGOs engaging constructively in discussions and helping communicate the reasons why actions that may have upfront costs to the community was put by one of the speakers.

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2/F, 77 Tat Chee Avenue, Kowloon Tong, Hong Kong

Tel: (852) 2784 3900 Fax: (852) 2784 6699

<http://www.bec.org.hk>

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