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BUSINESS ENVIRONMENT COUNCIL 商界環保協會

CCBF Climate Change Business Forum 氣候變化 商界論壇

香港科技大學 THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

INSTITUTE FOR THE ENVIRONMENT 環境研究所

PARIS & MARRAKESH:
Where is Action on Climate Change Going?
13 December 2016

Summary Report

Prepared by event moderators:
Robert Gibson and Maya de Souza

Download report:
http://envr.ust.hk/files/201612_PostCOP22.pdf

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BACKGROUND

The Conference of the Parties (COP) of the U.N. Framework Convention on Climate Change (UNFCCC) reached the Paris Agreement on greenhouse gas emission mitigation, adaptation and finance in December 2015. This agreement was rapidly ratified and came into effect on 4th November. On 7-18 November, the COP met in Marrakesh, Morocco to work on its implementation.

On 13 December 2016 Civic Exchange, Business Environment Council and HK University of Science and Technology's Division for the Environment held a seminar to discuss progress action on climate change.

EVENT PROGRAM

9:00 am	Welcome remarks by **Maura Wong**, Civic Exchange CEO
Panel 1 – The Big Picture: Science, the U.N., Finance and Trump (Moderated by **J. Robert Gibson** of HKUST and Civic Exchange)	
9:05 am	**Esther Blythe** of the British Consulate: An overview of UN and other action on climate change. **Hannah Routh** of PwC: How China topped the 2015 Low Carbon Economy Index and is leading the world in green finance **Jonathan Drew** of HSBC: Raising finance for climate infrastructure, climate mitigation and adaptation.
9:55 am	Coffee Break
Panel 2 – Action by business: The Role of Technological Innovation, a Carbon Price and Sectoral Carbon Off-setting Schemes in Delivering Carbon Reductions (Moderated by **Maya de Souza** of Business Environment Council (BEC))	
10:10 am	**Jeanne Ng** of CLP • China's National Emissions Trading Scheme. • Decarbonising energy supply. • The 'We Mean Business' coalition. **Mark Watson** of Swire: • ICAO's Carbon Offsetting Scheme (CORSIA) • IMO's action on shipping's carbon footprint **Raymond Fong** of HKPC: Carbon Trading
11:00 am	Closing remarks by **Eric Chong**, Chairman of BEC Climate Change Business Forum Advisory Group

Video records could be downloaded from Civic Exchange website: http://www.civic-exchange.org/en/events/Paris-and-Marrakesh-Where-is-the-action-on-climate-change-going_125

EVENT SUMMARY

Opening Remarks

Maura Wong, CEO of Civic Exchange:

- The Paris Agreement commits countries to limit the increase in the global average temperature to well below 2 degree Celsius above pre-industrial level. It has a 'pledge and review' system. Each country sets its 'Nationally Determined Contribution' (NDC) to emissions reduction. Every five years there will be a 'facilitated dialogue' at which the total impact of these NDCs is compared with the reduction needed to meet the climate target and countries will be reconsidering their commitments so as to close the gap. The first dialogue will take place in December 2018. They will happen every 5 years thereafter.

- There are worries that Donald Trump will weaken US action to combat climate change but the momentum for action among other countries is strong. Whatever Donald Trump's administration does, trends which are likely to sustain action to reduce CO_2 emissions include:

    - Low natural gas prices making it competitive with coal – particularly in the USA.
    - The reduction in the cost of generating electricity from solar and wind.
    - Air pollution providing a powerful incentive for China, India and other countries to reduce the use of coal.

  But which countries will take over the leadership role which China, the US and France have played in the last two years?

- Beside government action, corporate action to improve energy efficiency and low-carbon technology is ever more important.

Panel 1: The Big Picture

Moderator's Introduction:
By **J. Robert Gibson**, Adjunct Professor of Hong Kong University of Science & Technology,
Fellow of Civic Exchange

- Key points from the scientific study of climate change[i]:
  - CO_2 in the atmosphere leads to more radiation entering Earth than leaves it.
  - 93% of this energy imbalance goes to warm oceans. As they warm they expand raising sea level.
  - Another 3% melts ice. When ice on land melts and goes into the sea it also raises sea level.
  - In 2015 average sea levels were 7cm higher than the 1990 to 1999 average. The rate at which sea levels are rising is increasing. The increase will continue for centuries and should be considered in land use planning.
  - The 4% of the energy imbalance that goes into warming the land and air has resulted in increase in measured temperatures. Year since 2000 include 15 of the 16 hottest years since 1850.
- So climate change is very real. The UN body (IPCC) set up to summarize scientific understanding of climate change has been tasked to produce the following reports by the following dates[ii]:
  - 2018: A report on how to keep temperature increase to only 1.5°C
  - 2019: Reports to clarify areas of uncertainty:
    - Oceans and the cryosphere
    - Land use (Desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems.)
  - 2019: Refinement of the 2006 guidelines on National GHG inventories
  - 2022/2023: Sixth Assessment Report (AR6). This is a comprehensive assessment of the impact of climate change the previous report was released in 2013/14 in preparation for negotiating the Paris Agreement.

[i] Evidence of climate change: www.metoffice.gov.uk/binaries/content/assets/mohippo/pdf/climate/cop22/theme_5-indicators-of-change.pdf

[ii] The IPCC's work plan: www.ipcc-nggip.iges.or.jp/presentation/1611_5_Way_Forward.pdf

An overview of UN and other action on climate change

Presentation by **Esther Blythe** (Deputy British Consul General)

- Climate change is a major risk to global prosperity and security. It is not an issue which any country can tackle on its own so diplomacy needs to bring countries together to work out solutions. Getting an agreement is very difficult for many reasons including:
    - Developed countries concern that their commitments to action on climate change will impact their international competitiveness.
    - Less-developed countries concern about fairness and equity including how commitments they make on climate change may impact their ability to develop.
- Government agreement on climate change is important as business and investors need a clear signal if they are to invest in a global transition to a low carbon economy. The Paris Agreement provided this with 195 countries agreeing:
    - To take action to reduce emissions to keep temperature increases well below 2 ^{o}C and to 1.5 ^{o}C if possible. Also, to work to a long term goal of net zero emissions in the second half of this century.
    - To adopt a framework for raising the global 'ambition' to take action in the future. There will be 'stocktakes' on progress on mitigation, adaptation and finance flows every five years.
- Marrakesh was originally expected to be technical meeting on implementing the Paris Agreement. With global political developments in 2016 Marrakesh became important opportunity for governments to reaffirming their commitment to action. This was done with a number of countries, including the UK, ratifying the Paris Agreement during the Marrakesh meeting. We now have 116 countries ratifying in less than a year which is exceptionally fast for an international treaty.
- The Marrakesh meeting started negotiating the 'Rule Book' for implementing the Paris Agreement. This is complex and expected to take until 2018. While progress was made not all the details are publicly visible as negotiators take the position that '*nothing is agreed until everything is agreed*'.
- **The UK's position:** The UK has a very long-term approach to climate policy based on its 2008 Climate Change Act which commits to an 80% reduction carbon emissions by 2050 compared to 1990. This is implemented through setting carbon budgets. The latest carbon budget for a reduction of 57% by 2032 was approved after the UK's referendum on leaving the EU. Leaving the EU will not affect the UK's action on climate change or participation in the Paris Agreement.
- Other actions at Marrakesh:
    - **Mission Innovation** to double clean energy R&D over five years was reaffirmed with more countries joining and clarification of challenges which

the R&D should be directed at. The most relevant for Hong Kong is probably Smart Grids[iii].

- **The NDC Partnership**[iv] was launched to enhance cooperation on knowledge sharing and capacity building
- **The Climate Vulnerable Forum**[v]: A group of 48 vulnerable nations calling for 1.5°C and committing to 100% RE by 2050

❖ **Finance:** Finance is crucial to implementing the Paris Agreements.

- Developed countries have committed to mobilizing at least US$100 billion per year by 2020. The UK and Australian governments published a roadmap for getting there[vi].
- The UK is committed to increasing its contribution to climate finance by at least 50% to at least US$5.8 billion between 2016 and 2021.
- This public finance is insufficient for the task so 'green finance' from the private sector is essential. The City of London is keen to seize this is opportunity. It has a Green Finance Initiative[vii], a Climate Bonds Initiative and a Green Investment Bank.

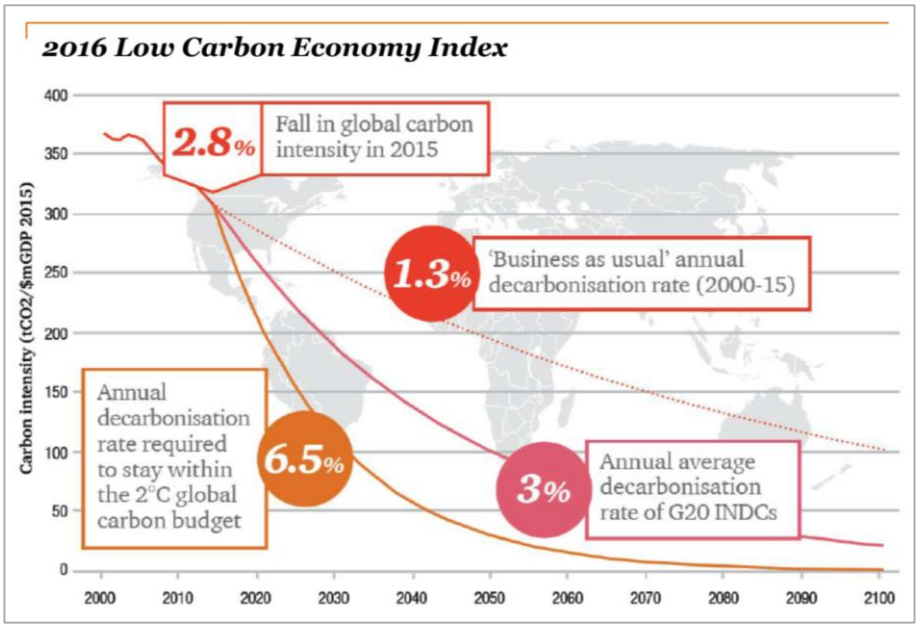
❖ **Business:** The move to a low carbon economy is estimated to require US$90 trillion of investment over the next 15 years in energy systems, land use and urban infrastructure. This provides numerous opportunities for business.

❖ **Momentum:** The increasing momentum of the international intergovernmental progress on climate means we can start to see a future in which the climate change negotiations become less important as economic forces beyond the immediate control of governments take over. Businesses will be influenced by the opportunities open to them and the risk of not getting out ahead of the transition to a low carbon economy. Decision making will move from diplomats to business leaders and city mayors. But the Paris Agreement and government signals are important in paving the way for that.

[iii] Mission Innovation's – also see footnote xi
[iv] The NDC Partnership: www.ndcpartnership.org
[v] The Climate Vulnerable Forum: www.thecvf.org
[vi] Roadmap for US$100b www.gov.uk/government/publications/climate-finance-roadmap-to-us100-billion
[vii] The Green Finance Initiative: http://greenfinanceinitiative.org

How China is leading the world in green finance

Presentation by **Hannah Routh**
(Sustainability & Climate Change Consulting Leader Hong Kong/China PwC)



- This graph is from PwC's annual 'Low Carbon Economy index' report on the rate the G20 economies are decarbonizing. It shows the overall total for the G20 reduced by 2.8% in 2015. This is a significant increase in the rate of reduction from 1.3% average for 2000 to 2015 but a long way short of the 6% rate needed to keep temperature increases below 2°C. China had the highest rate of decarbonization at 6.8% with the UK at second at 6.0%. China's reduction is driven by lower coal use (a 1.5% absolute reduction per the IEA) and its economy starting to move from heavy industry to services[viii].

- China was President of the G20 in 2016 and made Green Finance a focal issue of the G20 meeting this year. It has increased its environment protection funding commitment from RMB2 trillion to RMB3 to 4 trillion. Of this about 60% is for clean energy and energy efficiency. It expects 85% of the money to come from the private sector. In Hong Kong the Green Finance Working Group of the Financial Services Development Council is looking at how Hong Kong can play a role in raising this money.

- What impact may Trump's election have? If Trump causes the US to continue with business as usual rather than meeting its Paris Agreement emission reduction

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[viii] Papers on the gap between current emissions trajectories and the 2°C: requirement:

PwC: Low carbon economy index:
http://www.pwc.co.uk/services/sustainability-climate-change/insights/low-carbon-economy-index.html

UNEP: The Emissions Gap Report:
http://uneplive.unep.org/media/docs/theme/13/Emissions_Gap_Report_2016.pdf

The IEA World Energy Outlook 2016:
http://www.iea.org/newsroom/news/2016/november/world-energy-outlook-2016.html

commitment, then the global rate of decabonization drops from 3% to 2.8%. This is a relatively small impact but how will the US's position will affect other countries efforts on decarbonization and how it will affect the flow of climate finance?
For additional comments on the possible impact of Trump see Endnote 6.

Raising finance for climate infrastructure, climate mitigation and adaptation

Presentation by **Jonathan Drew**
(Managing Director, Infrastructure Real Estate Group, Global Banking; HSBC)

- Jonathan Drew noted:

  - Two years ago when HSBC asked him to oversee its business of managing and lead arranging green bonds he looked at the climate science and realized that not much more than a decade of 'business as usual' would bring us to a point where there can be no return to a 2^{o}C world. This is deeply concerning.
  - Keeping temperature increases to 2^{o}C requires fundamental change in Food production, Energy systems, Transport systems, Manufacturing/Consumption and Urban environments.
  - In February 2016, G20 major economies committed to exploring ways to raise the USD 90 trillion of investments required over the next 15 years to achieve global sustainable development and climate objectives

- He then presented slides[ix] on:

  - Attribution of carbon emissions and action to raise 'green finance' to fund low carbon development.
  - The UN's Green Climate Fund which has been set up to channel money from developed countries to support climate change mitigation (reducing emissions) and adaptation in less developed countries. Its process includes:
    1. Accrediting entities which it considers suitable for receiving funding for projects. (HSBC is one of three international commercial banks which it has been accredited).
    2. Requiring Accredited Entities to get a 'No Objection' letter for each funding application from the 'National Designated Authority' of the country where the project would take place.
  - The US$100 billion a year which developed countries have undertaken to mobilize is very small compared to the US$90 trillion of investments estimated to be required over the next 15 years to achieve global sustainable development and climate objectives. It is key, therefore, for

[ix] See Jonathan Drew's slides is posted on p.10 – p.12.

this public money to leverage private money. Part of doing this is developing 'Green Bond Principles' to identify which investments are 'green'. These principles cover:

1. **Identify use of proceeds**: There is a list of eligible uses. Examples include renewable energy and biodiversity conservation.
2. **Develop process for project evaluation**: This includes criteria for measuring the impact of the use of proceeds.
3. **Determine strategy for management of proceeds**: Tracking the use of proceeds to confirm they are used for the declared purpose.
4. **Develop reporting strategy and commitments**: Reports which confirm proceeds have been used for agreed purposes.

- So, per these principles, Green Bonds differ from other Bonds on (a) what the money raised can be used for; (b) the governance of the management and reporting of the money. This does not make them lower cost finance other than to an extent that the information provided may cause investors to see them as lower risk. So why do investors and borrowers use green bonds? Answers include:

    1. Investors either seeing the bonds as lower risk and/or helping them follow their SRI principles.
    2. Borrowers demonstrating their corporate responsibility. Also looking for investor diversification which may, in time, improve fund availability and reduce their cost of finance.

- The Green Bond market really only got going in 2013. It has grown very rapidly in 2016 but is still only US$150 billion of the total US$100 trillion of bonds outstanding (ie 0.15%). China has accounted for 35% to 40% of green bonds issued in 2016. In Hong Kong LINK and MTR have issued Green Bonds.

- The Green Bond market is expected to continue to grow rapidly but its current small base size suggests that more government action, including putting a price on carbon emissions, is needed for the funding required to hold temperature increase to 2^{o}C.

For more information on Green Finance see Endnote 7.

Climate Finance – Mitigation and Adaptation

Speaker: Jonathan Drew, Managing Director, Infrastructure Real Estate Group, Global Banking
Date: 13 December 2016

HSBC
Global Banking and Markets

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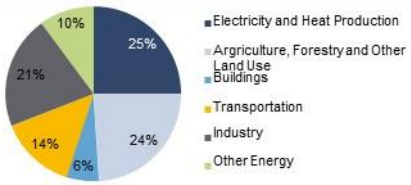
Achieving 2° C

For Society - fundamental change from current model:

- Food production
- Energy systems
- Transport systems
- Manufacturing and consumption
- Urban environment

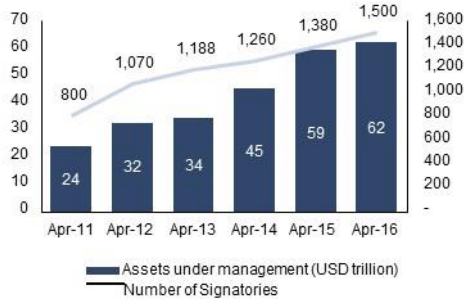
ipcc

Global Greenhouse Gas Emissions by Economic Sector[1]



- In February 2016, G20 major economies committed to exploring ways to raise the USD 90 trillion of investments required over the next 15 years to achieve global sustainable development and climate objectives
- The International Energy Agency (IEA) estimate that USD 53 trillion cumulative investment required in energy supply and energy efficiency up to 2035 in order to keep the world within a 2° C path
- Public sector including development banks will continue to play a key role – adaptation projects, mobilisation of private capital – USD 100 billion Goal
- Private sector interest is strong - The United Nations Principles for Responsible Investment (UNPRI) signatories now stands at more than USD 62 trillion (USD 45trillion in 2014) – other key initiatives include Montreal Carbon Pledge, Portfolio Decarbonisation Coalition, Low Carbon Registry – development of Green Bonds

Growth of Responsible Investment[2]



G20 2016 CHINA 2016年二十国集团中国峰会
iea International Energy Agency Secure • Sustainable • Together
PRI Principles for Responsible Investment
The Green Bond Principles

Source:
1. IPCC, 2014, based on global emissions from 2010
2. HSBC Research

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Green Climate Fund (GCF)
Overview

What is the Green Climate Fund (GCF)?

- The fund was formally established during the **2010 United Nations Climate Change Conference** in Cancun and is a fund within the UNFCCC framework (the United nations Framework Convention on Climate Change) and is intended to be the centerpiece of Long Term Financing under the **UNFCCC**
- GCF is governed by a Board of 24 members representing both developing and developed countries and run by a Secretariat
- Entities that wish to work with the GCF and become Accredited Entities (AEs) need to pass through a detailed accreditation assessment via an independent panel that looks at fiduciary management, capabilities, credentials and business, risk and sustainability policies etc.

GCF architecture

How does the GCF work?

- In allocating its resources, the Fund aims for a 50:50 balance between mitigation (e.g. reducing emissions through low emission energy or transport projects, sustainable management of forests) and adaptation (e.g. infrastructure that is resilient to climate change) over time
- The Fund also aims to allocate a minimum of 50% of the adaptation allocation for particularly vulnerable countries, including least developed countries (LDCs), small island developing states (SIDS) and African states
- Access to the GCF is through Accredited Entities (AE's) – which can be national, regional, international and intermediaries – ***HSBC is one of only 3 International Commercial Banks to be approved as AE's by the GCF***
- The AE's are accredited to be able to take on certain fiduciary functions, size of project/activity within a programme, and environmental risk category. *HSBC can seek GCF funding for projects with a total cost beyond USD250m (the highest category), can co-lend with the GCF or on-lend GCF funds and access GCF guarantees or equity investments (all up to a maximum 80/20, GCF/HSBC split) and can propose projects up to "A" category - that have potential significant adverse environmental and/or social impact risks*

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Green Climate Fund (GCF)
Application Process and Investment Criteria

GCF Proposal Approval Process

- The GCF process is as described below – to move from the Proposal Submission stage to the Analysis and Recommendation Stage requires Environmental Impact Assessment and Social Impact Assessment reports for the GCF Secretariat to analyse.
- The GCF also need a No-Objection Letter from the relevant country NDA (Nationally Designated Authority). HSBC can ask for this or the GCF can request it but if not received within 30 days of the GCF's request the GCF may suspend the Funding proposal or ask for it to be submitted again

Application Assessment - The Fund's Six Investment Criteria

- Public and private sector projects/programmes undertaken using the Fund's resources will be evaluated against the Fund's 6 investment criteria. The proposal needs to score very well in 5 of the 6 categories below and well in the sixth. The GCF Secretariat undertakes the credit/pricing/structure review with HSBC and use an independent body the GCF Technical Advisory Panel (TAP) to assess the technological and environmental/social benefits the project will bring.

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Green Bond Principles (GBP)
Four Key Pillars

Four Pillars of the Green Bond Principles

1. Identify use of proceeds

- Determine Eligible Sectors / Project Categories
  - Renewable energy
  - Energy efficiency (including Efficient Buildings)
  - Pollution prevention and control
  - Sustainable management of living natural resources
  - Terrestrial and aquatic biodiversity conservation
  - Clean transportation
  - Sustainable water management
  - Climate change
  - Eco-efficient products, production technologies and processes
- Identify specific projects – existing and pipeline
- Estimation of share of new financing vs. re-financing

2. Develop process for project evaluation and selection

- Determine Evaluation and selection process
- Define Eligible Sectors eligibility criteria – some issuers define criteria upfront, other issuers ensure a strong internal governance process to review each project as it is identified
- Define governance structure
- Define sustainability objectives
- Determine exclusions, if any
- The GBP recommend that an issuer's process for project evaluation and selection be supplemented by an external review

3. Determine strategy for management of proceeds

- Determine method for allocation of funds from net bond proceeds
- Ring-fenced special accounts = tracking method; OR
- Allocating funds to green projects = earmarking method
- Consider volume and timing of allocations to projects
- Consider temporary investment structures and the 'adjusted' balance, rather than the 'unallocated' balance as it is understood that some projects repay early, or get sold and so unallocated balances can go up as well as down

4. Develop reporting strategy and commitments

- Issuers should make, and keep, readily available up to date information on the use of proceeds to be renewed annually until full allocation, and as necessary thereafter in the event of new developments
- Consider Project or Portfolio level reporting
  - Include description of Eligible Sectors funded and amounts allocated
  - Include a list of the projects to which proceeds have been allocated, as well as a brief description of the projects and the amounts allocated, and their expected impact where possible
- Communicate ….via reports, newsletters, website update etc
- Independent assurance on annual report
- Impact reporting considerations?

Source: ICMA

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Green Bond Market Update 2016 YTD
Building momentum through Q3 to surpass 2015 full year issuance volumes

2016 YTD issuance volume has already surpassed 2015 FY total new issuance

Green Bond issuance YTD is sitting c.USD67bn at end of October 2016, comprising from c. 200 transactions

36% FIG, 32% corporate and 31.5% SSA respectively

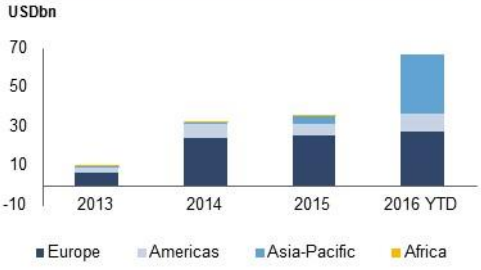
98% issuance from USD, EUR, CNY, SEK, CAD, GBP and AUD combined

Remaining 2% currencies include: JPY, INR, BRL, ZAR, TRY, IDR and NZD

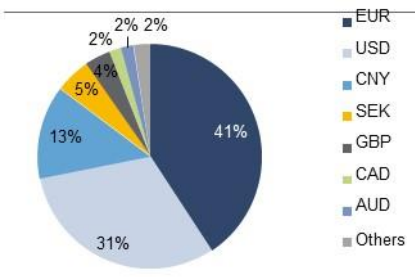
Issuances from 24 countries including: China, US, Sweden, France, Luxembourg, Australia, Netherlands, Japan, UK, Germany, Finland, Spain, India, Hong Kong, Mexico, Philippines, South Korea, Venezuela etc

Issuance Progression by Sector

Issuance Progression by Region

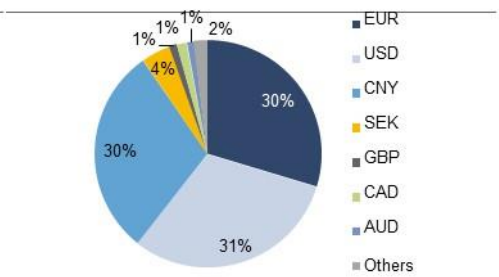


2007-2016YTD Issuance Currencies



41% EUR, 31% USD, 13% CNY, 5% SEK

2016 YTD Issuance Currencies



31% USD, 30% EUR, 30% CNY, 4% SEK

Source: Dealogic, as of 28 Oct 2016

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Panel 1 Discussion:

Question 1: What should governments do to boost Green Bonds from their current 0.15% of bonds issued to, say, 20% or 30%?

Details: The Green Bond market seems similar to the Voluntary Carbon Offset Markets. Those markets established a methodology and definitions but generated little volume. Their importance was in paving the way for Governments to regulate for substantial systems. For example, the EU ETS and China's planned National ETS.

Some ideas on ways governments could make Green Bonds more attractive: Lower rates of tax on interest on Green Bonds. Special requirements for Green Bonds in bank capital adequacy rules. Borrowers required to have a certain percentage of their funding meet Green Bond criteria or pay higher tax.

Responses: Governments can and should be considering financial incentives for Green Bonds. China is closest to doing this. It has given guidance to borrowers encouraging green bonds. It also seems its regulators are quicker to approve Green Bonds than other bonds.

Co-operation between financial centers leads to more internationally tradable products and hence lower costs. The City of London is keen to partner with Hong Kong in this area.

Aside from what Governments can do on Green Bonds, their action to reduce fossil fuel subsidies is very important.

Question 2: Doesn't adopting SRI constraints reduce the flexibility of managers to maximize returns?

Response: Yes, there are extra costs of meeting 'Green Bond' or 'SRI' constraints. The cost must be weighed against the benefit of a different risk profile.

Question 3: How do you measure impact of bonds being 'green'? Who polices the information?

Response: There is a big drive to improve measurement of impact. S&P has acquired Trucost and is developing a green bond assessment rating which includes impact assessment. This will make it easier to provide assurance that a bond is meeting 'green' criteria. Care must be taken on the balance between the adding costs to green bonds and the incentives for issuing them.

Question 4: Will HSBC consider fossil fuel divestment?

Response: HSBC has set this out in its published lending policy.

Question 5: How can Hong Kong become an exemplar of a green livable city?

Response: Hong Kong is likely to take on commitments in line with China's overall action on decarbonization. A key issue, which Hong Kong shares with the UK, is how to improve the building stock?

The Green Finance Working Group under the Financial Services Development Council published a paper making eight recommendations on 'Hong Kong as a Regional Green Finance Hub[x]' in May 2016.

China faces multiple challenges in implementing its green initiatives. Hong Kong can help on these challenges.

Question 6: What risks are there to meeting the carbon reduction targets? Displacing carbon intensive industries from a country which strong decarbonization policies to one without is one example.

Response: The biggest risk is that we do not take action fast enough.

Question 7: How much of China's 6.8% reduction is due to to economy starting to shift from heavy industry to services?

Response: A significant amount but we do not have the numbers here.

[x] Financial Services Development Council (2016): *Hong Kong as a Regional Green Finance Hub. (*FSDC Paper No.23), http://www.fsdc.org.hk/sites/default/files/Green%20Finance%20Report-English.pdf

Panel 2: Action by business – The Role of Technological Innovation, a Carbon Price and Sectoral Carbon Off-setting Schemes in Delivering Carbon Reductions

Moderator's introduction:
By **Maya de Souza**, Business Environment Council

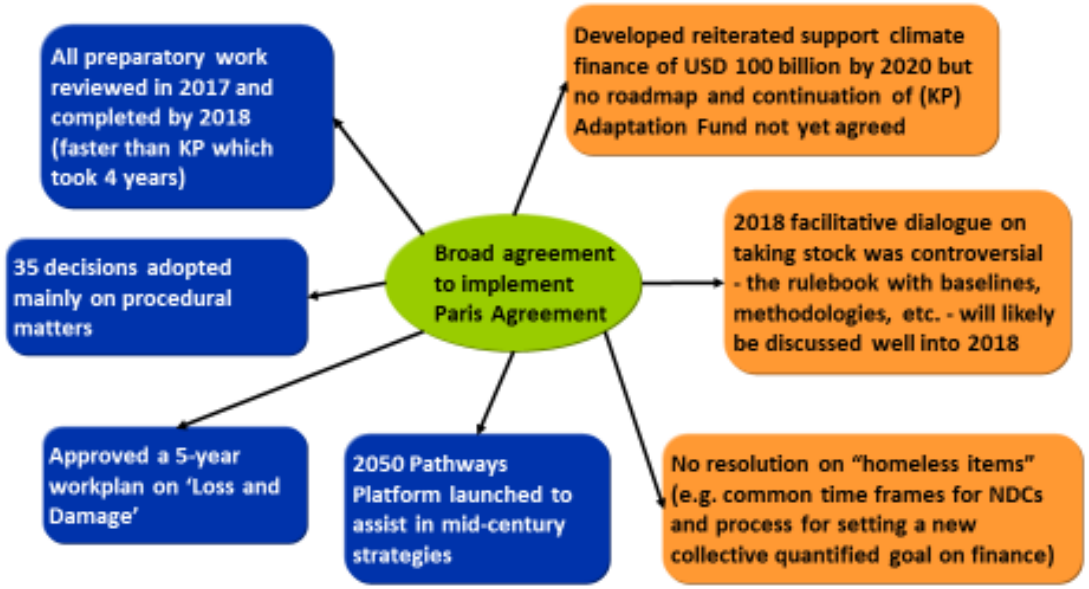
- Paris Agreement is distinctive in the focus given to non-state actors like businesses and cities. It is recognized that their contribution was critical for the Agreement to be effective.
- This session will cover actions of business in support of the agreement – Jeanne Ng CLP provides an overview, Mark Watson, Swire presents on aviation and shipping; and, Raymond Fong, HKPC covers putting a price on carbon emissions.

Commentary by Jeanne Ng

(Director of Sustainability, CLP)

- The good news on taking forward the Paris Agreement
    - The 2°C scenario is getting increasing recognition, for example in the recommendations of the G20 Financial Stability Taskforce on Climate-related Disclosures.
    - It helps to send clear signals to business, signaling opportunities.
    - Marrakesh's work on procedures for implementing the Paris Agreement is running much faster than work done after Kyoto. Expect major aspects of procedure to be agreed by 2018.
    - 2050 Pathways Platform launched[i]. Canada (80% reduction 2005 to 2050), Germany (80-85% reduction), Mexico (50% reduction) and USA (80% reduction) have published 2050 plans, going beyond the NDCs that relate to 2030. Once again this gives businesses greater certainty on the longer term, and is very different from post-Copenhagen
    - NDCs reflect plans already in place, so despite US elections, expect that these will be met, but it may affect how much and fast the commitments will be ratcheted down.
- Where there is less progress:
    - Finance: There is continued support for US $100bn but little additional detail forthcoming, or clarity as to finance after 2020.

COP22 – a procedural COP



Side-events in the blue zone…

Energy Day at COP22
SE4All & IRENA

High-level Climate Champions Launch 2050 Pathways Platform

Mexico: 50% reduction below 2000 levels by 2050
US: 80% reduction below 2005 levels by 2050
Canada: 80% reduction below 2005 levels by 2050
Germany: 80-95% reduction below 1990 levels by 2050

- **Mission Innovation**[xi] and the Breakthrough Energy Coalition.
    - For the power sector, CCS very important but research and development is moving very slowly.
    - the Breakthrough Energy Coalition is supporting investment in innovative technologies

- **China's National Emissions Trading Scheme.** This will be launched next year. China has studied existing schemes extensively and learned from its seven pilot schemes.
    - IETA's has made 5 recommendations relating to trading schemes[xii]:
        - Setting an appropriate cap
        - Avoiding overlapping policies
        - Compliance and reporting schemes.
        - Avoidance of carbon leakage
        - Multiple trading products
    - Emissions trading is one of a number of policies China plans to use to reducing carbon emissions, not the flagship policy. It is important that the set of policies are coordinated so they work well together.
    - An example of another policy is China starting to allow electricity to be traded, enabling buyers such as signatories to RE100 to purchase clean energy with Power Purchase Agreements. It is not yet clear how this will interact with carbon trading.

- Decarbonizing energy supply. The rate of adopting RE will vary by region depending on resources. HK, for example, has limited hydro, wind and solar resources. Social equity issues also arise. The USA may feel that India should move to RE if it wishes to have similar amounts of energy to the USA, but India may not choose to do so because of the extra costs involved in particular if the US is unwilling to do the same.

- The '**We Mean Business**' coalition[xiii] has led to many companies developing targets.

[xi] **Mission Innovation's** seven challenges are: The seven key Innovation Challenges:

1. Smart Grids
2. Off-Grid Access to Electricity
3. Carbon Capture
4. Sustainable Biofuels
5. Converting Sunlight to create storable solar fuels
6. Clean Energy Materials
7. Affordable Heating and Cooling of Buildings

23 Countries have committed to double R&D on energy to US$30b by 2020/21: http://mission-innovation.net/wp-content/uploads/2016/11/MI-COP22-Press-Release-14-November-2016.pdf

[xii] IETA on China's National Emissions Trading Scheme: http://www.ieta.org/resources/China/Chinas_National_ETS_Implications_for_Carbon_Markets_and_Trade_ICTSD_March2016_Jeff_Swartz.pdf

- CLP has its Climate Vision 2050, with: a long term carbon intensity reduction target of 75% reduction by 2050, a 30% reduction in carbon intensity by 2030, and a 20% RE target by 2020. It is on track to meet the short term targets.
    - CLP in HK has a good story regarding intensity with the emissions factor having fallen to 0.54kgCO_2/kWh, whilst CLP globally is at 0.81kgCO_2/kWh.
    - Issued its first green bond of US$90mill in India, where traditional financing is expensive and RE has impact.
    - Developed a 3-step process for Net Zero Carbon business, with CLP providing services for each step:
        - Reduce energy use
        - Substitute carbon intensive with lower carbon intensive energy,
        - Offset remaining emissions – CLP Carbon credits will shortly be available.

- Other actions by business:
    - **Sustainable energy for All**[xiv]: recognition of social equity issues, and need to give some countries access
    - **RE100**[xv]: commitment by some companies to 100% RE.
    - **EP100**[xvi]: doubling energy efficiency by 2030.

[xiii] **We Mean Business:** 471 companies with over $8 trillion in market capitalization making 1000+ commitments to climate action founded on Science Based Targets. www.wemeanbusinesscoalition.org

[xiv] **Sustainable energy for All:** www.se4all.org

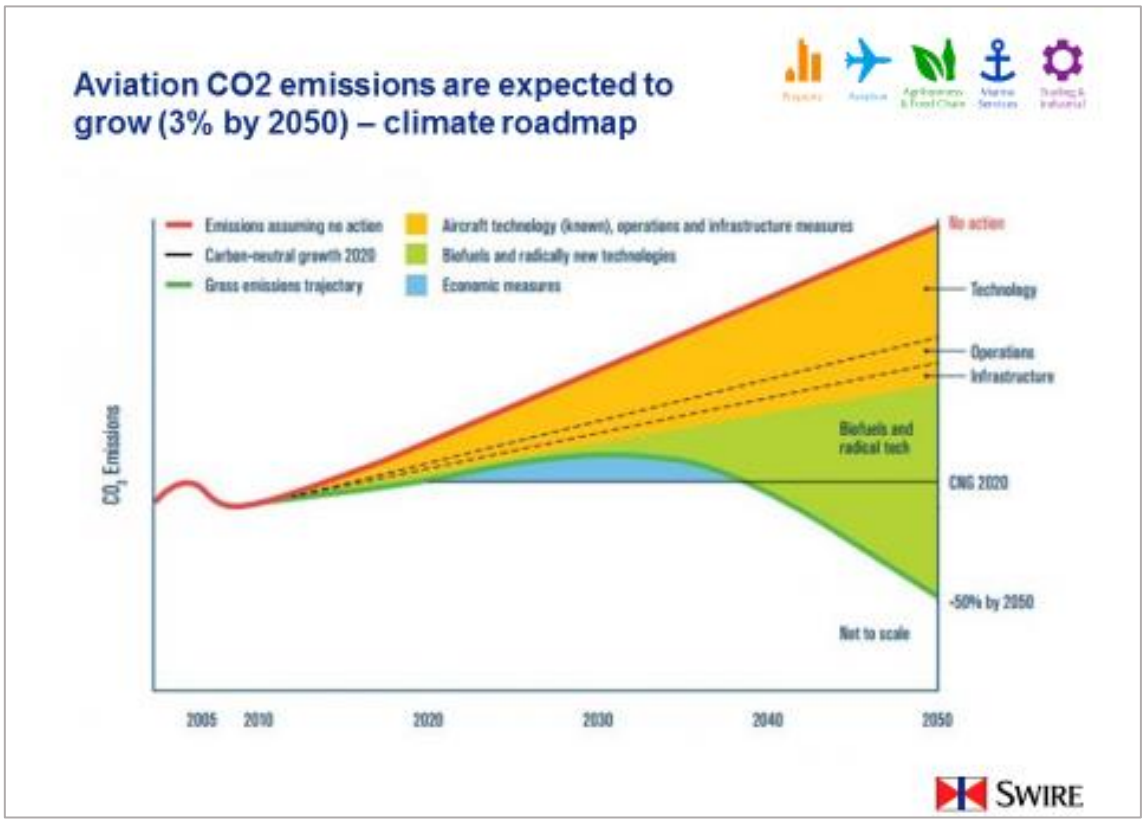
[xv] **RE100**: http://there100.org

[xvi] **EP100**: www.theclimategroup.org/project/ep100

Commentary by **Mark Watson**

(Head of Sustainable Development at John Swire & Sons (HK))

- ICAO's Carbon Offsetting Scheme (CORSIA):
  - The Aviation sector faces the challenge of how it can obtain a license to grow in the face of its contribution to climate change. Aviation's share of global GHG emissions will rise if grows in an unconstrained way. It has therefore set itself three goals:
    - 1.5% average increase in fuel efficiency year on year;
    - Stabilize net CO_2 emissions from the sector at 2020 levels through carbon neutral growth beyond this, and,
    - reduce CO_2 emissions by 50% 2050 over 2005 levels
  - It has a four pillar approach for achieving these objectives: (I) Improvements to aircraft technology. (II) Improvements to operations: how planes are flown, operations and infrastructure. (III) Use of sustainable biofuels and other low carbon fuels; and (IV) Use of economic measures: buying offsets for any reductions which cannot be achieved through the first three pillars. – See diagram on next page.



- Mark noted:
  - ICAO's CORSIA scheme addresses the second target – stabilizing emissions at 2020 levels. It avoids distortions to markets such as those that would have been created by regional schemes such as the previously proposed extension of the EUETS to international flights.

- CORSIA involves an off-set scheme with credits to be purchased in the open market (potentially UNFCCC CDM, REDD +), with a voluntary phase-in approach.
- 65 countries signed up so far, accounting for 80% of post 2020 growth.

❖ Shipping sector: IMO's action on shipping's carbon footprint

- Though shipping is highly energy efficient as a mode of transport over long distances, it now accounts for 3% of global CO_2 emissions, and predicted to increase significantly by 2050, with some estimates suggesting a rise of at least 17 percent
- Industry targets agreed via the International Chamber of Shipping:
    - Targets for energy efficiency: new ships to be 20% more efficient by 2020, and 50% reduction in CO_2 per tonne/km by 2050 vs 2007 baseline.
- IMO October 2016 MARPOL meeting agreed:
    - Roadmap for reducing emissions.
    - Global CO_2 data collection system by 2018.
    - To examine marked-based measure. Support for a carbon levy in the industry.

❖ For reference information see Endnote 9

Commentary by **Raymond Fong**

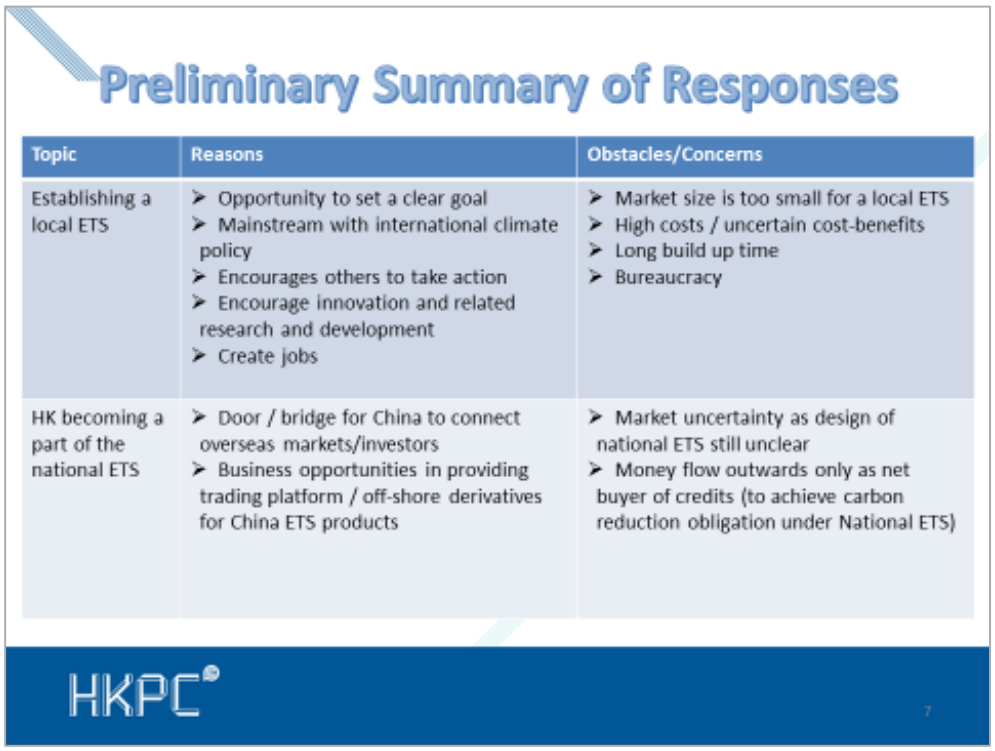
(General Director, Hong Kong Productivity Council)

❖ HKPC has been commissioned to considered the case for HK to establish its own cap and trade scheme, taking on board policy changes in China including China Certified Emission Reduction projects ("CCER"). There are 501 of these which have brought\ 41.58 Mt C02 reduction p.a.

❖ The questions asked are as follows:

- Is there a case for Hong Kong to develop a local ETS?
- Is there a case for Hong Kong to become a part of the National ETS?
- Whether there are certain market skills that Hong Kong has that could be useful to the Mainland ETS?
- If nothing is done, what are the risks?

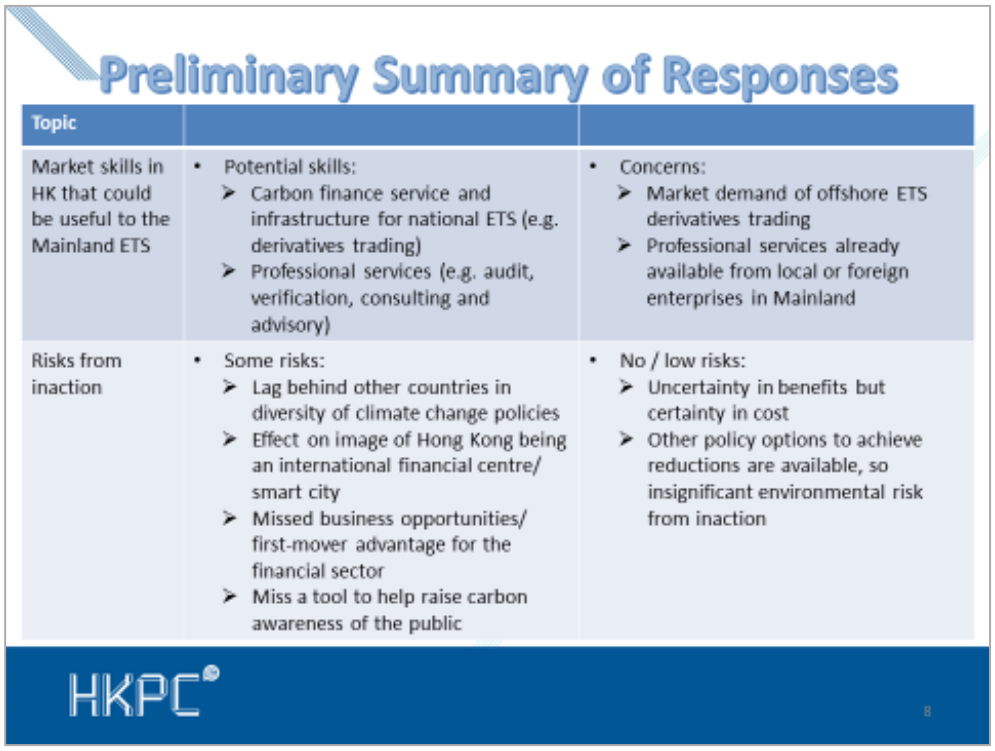
❖ The study involved engaging industry, NGOs and experts. A broad summary of the responses is as follows:



Preliminary Summary of Responses

Topic	Reasons	Obstacles/Concerns
Establishing a local ETS	➢ Opportunity to set a clear goal ➢ Mainstream with international climate policy ➢ Encourages others to take action ➢ Encourage innovation and related research and development ➢ Create jobs	➢ Market size is too small for a local ETS ➢ High costs / uncertain cost-benefits ➢ Long build up time ➢ Bureaucracy
HK becoming a part of the national ETS	➢ Door / bridge for China to connect overseas markets/investors ➢ Business opportunities in providing trading platform / off-shore derivatives for China ETS products	➢ Market uncertainty as design of national ETS still unclear ➢ Money flow outwards only as net buyer of credits (to achieve carbon reduction obligation under National ETS)

HKPC



Preliminary Summary of Responses

Topic		
Market skills in HK that could be useful to the Mainland ETS	• Potential skills: ➢ Carbon finance service and infrastructure for national ETS (e.g. derivatives trading) ➢ Professional services (e.g. audit, verification, consulting and advisory)	• Concerns: ➢ Market demand of offshore ETS derivatives trading ➢ Professional services already available from local or foreign enterprises in Mainland
Risks from inaction	• Some risks: ➢ Lag behind other countries in diversity of climate change policies ➢ Effect on image of Hong Kong being an international financial centre/ smart city ➢ Missed business opportunities/ first-mover advantage for the financial sector ➢ Miss a tool to help raise carbon awareness of the public	• No / low risks: ➢ Uncertainty in benefits but certainty in cost ➢ Other policy options to achieve reductions are available, so insignificant environmental risk from inaction

HKPC

❖ In summary the responses received show a recognition of HK's expertise in the field, as well as of potential business opportunities, job creation and for driving innovation. These views are combined with a concern that issues are posed by the small size of the HK market and the administrative costs involved of such a scheme and that there are other policy measures that could have the same desired effect.

Panel 2 Discussion

Question 1: Might the strategy Switzerland has used for putting a price on carbon emissions be a good example for Hong Kong to follow? – For more information see Endnote 10.

Response:

Jeanne Ng: The HK Government is using the Scheme of Control to dictate the fuel mix which electricity generators use. Why do we need a carbon trading scheme in addition?

Mark Watson: When Swire last looked at this it felt a carbon trading scheme was not appropriate for Hong Kong. One of the concerns is money raised by ETSs will go into general revenue rather than being hypothecated for carbon reduction. But recognized that there may be other ways of putting a price on carbon as in Switzerland, which may allow for hypothecation.

Question 2: When will electricity purchasers in HK be able to buy low carbon electricity?

Response: We don't have RE on HK Grid at present. It would be necessary to interconnect with China's grid.

Question 3: What action is being taken to reduce emissions from aviation?

Response: The aviation industry has been working on improved technology and operations for many years and will continue to do this. More fuel efficient aircraft have made a substantial difference. Action on the ground is also important.

Question 4: CORSIA is great but it takes a long time. What price does it expect to pay for carbon credits?

Response: CORSIA is a start and will buy a significant quantity of credits. The aviation industry is working to get high quality offsets from a wide variety of sources.

Question 5: Why not do a demand side ETS focused on buildings and transport?

Response:

Jeanne Ng. There is some merit in this. We don't like to see the electricity we produce wasted.

Raymond Fong: A focus group from the Real Estate industry was initially against an ETS but, after discussion, saw merit in a demand-side version such as that in operation in Tokyo.

Closing Remarks

Maya de Souza, Senior Manager - Policy Research at Business Environment Council

Maya closed the meeting on behalf of Eric Chong, Chair of BEC's Climate Change Business Forum Advisory Group, who had been unable to attend. She summed up and drew out some conclusions from the event:

- The momentum is continuing post-Paris as the speakers have explained. Government from UK to China are taking action.
- There are some risks in terms of the depth and speed of future governmental action, which make it even more important for business to take action. We are already seeing businesses shouldering this responsibility with break-through on a sectoral level e.g., aviation.
- Areas discussed today that require more work to make things happen include climate finance.

BEC's Low Carbon HK project is about helping businesses in Hong Kong set carbon reduction targets consistent with the over-arching commitment of the Paris Agreement. In recognition of the importance of Mission Innovation, BEC is also amongst other things holding a seminar on 10 January 2017 to discuss innovation in the field of clean energy generation.

SPEAKERS & MODERATORS (in alphabetic order):

Ms. Esther Blythe is the Deputy Head of Mission at the British Consulate-General Hong Kong, where she also heads the Economic Diplomacy Team, working to strengthen the UK-Hong Kong economic relationship. Esther was Deputy Head of Mission in the British Embassy Bucharest (2010-2014) and was Britain's Acting Ambassador in Romania in 2014. Before that, she held two roles in the Foreign and Commonwealth Office (FCO) in London: coordinating the work of UK embassies around the world on climate change, and working on UK policy in the United Nations, G8 and European Union on counter-terrorism. Esther graduated in English Language and Literature from New College, Oxford University.

Mr. Eric Chong, President and CEO of Siemens Hong Kong, is leading the company's overall efforts to provide sustainable solutions in the fields of energy, healthcare, buildings, power distribution and industry for Hong Kong and Macao. As a senior executive for more than 20 years, Eric has worked at various countries in Asia, including 10 years in China. He is a member of BEC's Board of Directors and serves as the Chair of Climate Change Business Forum, an advisory group under BEC. He is also member of the HKTDC Electronics / Electrical Appliances Industries Advisory Committee.

Mr. Jonathan Drew is a Managing Director in the Infrastructure and Real Estate Group at HSBC. Jonathan started his banking career more than 20 years ago in London. He worked in Latin America and raised capital for large scale projects in the Middle East. Since 1997, he has been based in Hong Kong, witnessing first-hand the rapid growth of Asia, notably China. During this time, he has been involved in a wide range of sectors, including financing for projects that produce and deliver energy (renewable and non-renewable) and transport people and resources from source to point of consumption. He also works on infrastructure projects in social and education sectors with a focus on resource efficiency and sustainability. Jonathan graduated with an MA in Economics from Cambridge University and is also qualified as a Chartered Accountant.

Mr. Raymond Fong is the General Manager of the Environmental Management Division of the Hong Kong Productivity Council (HKPC). He has ample experience in air pollution control, energy efficiency, cleaner production as well as environmental management studies. On top of leading a wide range of environmental and energy related projects and studies for the government, public, industrial and commercial sectors, Raymond has been a co-opt member of the Hong Kong Government's Energy Efficiency & Conservation Subcommittee since 2008 to offer expert advice on energy policy formulation.

Mr. J. Robert Gibson is an Adjunct Professor at Hong Kong University of Science & Technology and a Fellow of Civic Exchange. He focuses on mechanisms for making capitalism more sustainable and facilitating action by business to mitigate greenhouse gas emissions and adapt to climate change. He worked for the Swire Group up to 2010 including being the Director Sustainable Development for John Swire & Sons (HK) from 2007 to 2010.

Dr. Jeanne Ng is responsible for CLP Group's sustainability matters, including sustainability-related strategy, reporting and communications. She holds a BSc in Toxicology from the University of Toronto and a PhD in Environmental Management from the University of Hong Kong. She is currently a Board member of a number of organisations including the Julie Ann Wrigley Global Institute of Sustainability at Arizona State University, the International Emissions Trading Association (IETA) and the Hong Kong Institute of Qualified Environmental Professionals (HKIQEP).

Ms. Hannah Routh is a climate change and green finance specialist with 20 years of experience in the field. She leads the Sustainability and Climate Change consulting practice for PwC China. Recently Hannah has advised the Financial Services Development Council and the Business 20 (B20) on green finance issues. Before joining PwC in 2011, Hannah ran the China office of a London-listed climate policy and carbon trading advisory company for five years, prior to which she worked in London and Swaziland on sustainable energy projects.

Ms. Maya de Souza heads Business Environment Council's Policy Research Team, leading BEC's work on developing recommendations for government policy across priority policy areas; she works through BEC's Advisory Groups on Climate Change, Energy and Transport. Maya has worked for 10 years in environmental policy and sustainability. Before joining BEC, Maya worked for the UK's Department for Environment, Food and Rural Affairs leading a number of policy teams.

Dr. Mark Watson, Head of Sustainable Development at John Swire & Sons (HK), was previously Head of Environmental Affairs at Cathay Pacific, where he led the airline's efforts in securing a global climate deal on aviation emissions at the U.N.'s International Civil Aviation Organization (ICAO). Mark has worked in the sustainable development arena for more than 20 years in China, Africa, the Caribbean and Europe.

Ms. Maura Wong joined Civic Exchange in 2016. With deep-rooted interests in the environment and public policy, Maura brings extensive business as well as non-profit experience to her role leading Civic Exchange. Since 2010 she has worked towards a more sustainable environment in China through making private equity investment in the renewable energy as well as environment sector. Before that, she co-ran one of the largest Asian buyout funds at the time, JP Morgan Partners Asia, as a Founding Partner and head of Greater China. She holds a Bachelor of Arts degree in International & Public Affairs from Princeton University and a Master of Business Administration degree from Harvard Business School.

ENDNOTES:

1. Montreal Protocol extension to cover HFCs

The Climate and Clean Air Coalition to reduce short lived climate pollutants estimated that if no measures are taken it is estimated that HFCs will amount to 9-19% of total CO_2 emissions by 2050. www.ccacoalition.org/en/initiatives/hfc

On October 15, 2016, with the United States' leadership, 197 countries adopted an amendment to phase down HFCs under the Montreal Protocol in Kigali, Rwanda. Under the amendment, countries committed to cut the production and consumption of HFCs by more than 80 percent over the next 30 years. The ambitious phase down schedule will avoid more than 80 billion metric tons of carbon dioxide equivalent emissions by 2050—avoiding up to 0.5° Celsius warming by the end of the century—while continuing to protect the ozone layer. Under the amendment, developed countries will reduce HFC consumption beginning in 2019. Most developing countries will freeze consumption in 2024, with a small number of developing countries with unique circumstances freezing consumption in 2028. The plan also provides financing to certain countries, to help them transition to climate-friendly alternatives. Key elements of the Kigali Amendment include:

- Innovative and flexible structure;
- Ambitious phasedown schedule;
- Incentive for early action;
- Broad participation;
- Enforcement and accountability; and
- Multiple opportunities to increase ambition.

www.epa.gov/ozone-layer-protection/recent-international-developments-under-montreal-protocol

2. Initiatives for developing 2050 carbon neutrality strategies

- ❖ The Deep Decarbonization Pathways Project: http://deepdecarbonization.org
- ❖ Country Mid-Century Climate Strategies: Canada, Germany, Mexico and USA tabling substantial plans for 2050 with the objective of meeting the Paris Agreement's carbon neutrality in the second half of the Century
- ❖ 2050 Pathways program: 22 Countries, 15 Cities, 17 Sub-national jurisdictions (Under 2 MOU) and 196 companies (as part of We Mean Business).
- ❖ 2050 Pathways platform: http://newsroom.unfccc.int/media/791675/2050-pathway-announcement-finalclean-3.pdf

- ❖ The under 2 MOU: A club of subnational governments covering 165 jurisdictions 1.08b people and 35% of global GDP committing to reduce emissions to 2 tons per capita or 80 to 95% below 1990 levels by 2050 http://under2mou.org/coalition/

3. The Munich Climate Insurance Initiative for addressing climate adaptation and resilience

Insurance helps adaptation to climate change and hence climate resilience in three ways:

- Promotes risk assessment and provides data for risk pricing and management including Government investment in infrastructure.
- Raises money for adaptation and resilience.
- Provides prompt funding for recovering from extreme weather events.

The Munich Climate Insurance Initiative www.climate-insurance.org/home

- Policy research and advocacy supported by large reinsurers.
- Pilot programs with German Government support.

4. The Global Landscapes Forum

The Global Landscapes Forum announced at COP22 that it will be based in Bonn with substantial funding from Germany. (www.landscapes.org/state-secretary-jochen-flasbarth-closing-keynote-glf-2016-marrakech)

It will support accelerated action independent of the UNFCC. For example, the UNEP's Global Peatlands Initiative.
(http://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/unep_peatland_release_en.pdf)

5. The Global Fuel Economy Initiative (GFEI) supports 40+ countries to reduce cost and CO_2 through improved vehicle fuel economy. (www.globalfueleconomy.org)

6. How might Trump impact action on Climate Change?

- ❖ Withdrawing from the UN process: There are three ways in which Trump might withdraw from the Paris Agreement.
    - Withdrawing from the Paris Agreement itself. He could do this without Congressional approval. The earliest effective date would be 4 Nov 2020 (Can give 1 year's notice three 3 years after its entry into force).
    - Withdraws from UNFCCC can be done at 1 year's notice. Normal to get Congressional approval but, in practice, Presidential withdrawal unlikely to be overruled by courts.
    - Break the terms of the Paris Agreement and UNFCCC. This would violate international law. There could be court challenges in the US and implications for the US's relations with other countries on other issues.
- ❖ Cutting back on US action on decarbonization:
    - The Clean Power Plan (for electricity generation). Trump may roll this back but gas and RE are making coal uncompetitive. And RE provides jobs. Also a 30+ year investment view impacts building a new coal fired power station.
    - Car Fuel Efficiency standards. US Auto manufactures have written to Trump's transition team on car fuel efficiency standards but fuel efficiency saves people money. And states such as California will fight.
- ❖ Main concerns re US action:
    - Carbon mitigation: We need to ratchet up action to cut CO_2 emissions. The US failing to do this could lead to other countries going slowly. The US not meeting the commitments it has made could lead to other countries backsliding.
    - Funding: Trump can make it more difficult to raise the money needed for action.
    - Leadership: The US has shown great leadership in the last two years.
        - Ratification of the Paris Agreement.
        - Significantly reduced CO_2 emissions (Clean Power Plan and Car fuel efficiency)
        - Published its 'Mid Century Strategy for Deep Decarbonization.'
        - Led 197 countries to amend the Montreal Protocol to cover HFCs.
    - Where will future leadership come from? China / EU / a group of vulnerable countries?

7. Climate Finance reference material

- **Developed countries commitment to mobilize US$100b/year**. Lack of progress on this was the biggest disappointment at COP22.
- **The Green Finance Initiative including Green bonds** http://greenfinanceinitiative.org/wp-content/uploads/2016/11/Globalising-green-finance_AA3.pdf
- **NDCi**: An initiative to accelerate private finance for NDCs. http://ndci.global

8. Country Mid-Century Climate Strategies:

Canada, Germany, Mexico and USA tabling substantial plans for 2050 with the objective of meeting the Paris Agreement's carbon neutrality in the second half of the Century. The overall **2050 Pathways program** has 22 Countries, 15 Cities, 17 Sub-national jurisdictions

9. ICAO and IMO covering international bunkers:

- ICAO's Carbon Offsetting Scheme for International Aviation (CORSIA) www.icao.int/environmental-protection/Pages/market-based-measures.aspx
- IMO Marine Environment Protection Committee 24-28 October 2016 decisions: www.imo.org/en/MediaCentre/MeetingSummaries/MEPC/Pages/MEPC-70th-session.aspx

10. Carbon pricing and ETS options for Hong Kong

- Reasons for putting a price on GHG emissions:
  - A carbon price drives and guides decision making on decarbonization. For example, it reduces the payback period for investing to save carbon emissions.
  - A carbon price is fair: Polluters pay.
- Easy ways for HK to put a price on carbon emissions
  - Put a shadow price on carbon when evaluating infrastructure decisions. This helps 'futureproof' these decisions.

- A revenue neutral switch from property tax (Rates) to tax on energy use. For public acceptance:
    - Explain the benefits. (Save energy = Save tax.)
    - Start with Commercial Property
    - Start with a low rate and gradually increase.
    - Make progressive for residential
    - Consider special treatment for carbon intensive businesses with international competition.

❖ Reasons for HK setting up an Emissions Trading Scheme (ETS) and later linking it with China's ETS:

- An ETS lets the market find the lowest cost abatement options but HK would have few participants. By linking to China's ETS can:
    - Reduce the cost of cutting emissions
    - Increase market liquidity
    - Make the carbon price more stable
    - Harmonize carbon prices (level playing field)
    - Support global cooperation on climate change.
- Also HK can earn its income from:
    - Providing engineering & financial services for activity related to China's ETS.
    - Hong Kong Exchanges and Clearing Limited (HKEx) trading China ETS credits.

❖ Hong Kong should consider Switzerland's example

Switzerland is small compared to the EU with which it is closely linked. Just as HK is small compared to Mainland China with which it is closely linked. Switzerland has a three step plan:

- It started with a Carbon Levy in 2007 which funded building energy efficiency improvements and benefits for citizens.
- Then, in 2009 it introduced an ETS which Firms with substantial emissions could use instead of paying Carbon Levy.
- It has ongoing negotiations to link the Swiss and EU ETSs when conditions are 'right'

The views expressed in this summary report are those of the speakers and moderators, and do not necessarily represent the opinions of the event organizers.

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Report layout : Michelle Wong