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BUSINESS ENVIRONMENT COUNCIL 商界環保協會

CCBF

Post-COP23 Hong Kong Forum

- *What progress has been made two years since the Paris Agreement?*
- *How is it helping deliver a low-carbon, climate-resilient global economy?*

An Update on the UN's Climate Change Conference in Bonn

6 December 2017

Event summary report

Published March 2018

Prepared by J Robert Gibson, Maya de Souza, Joyce Lau and Michelle Wong

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EVENT BACKGROUND

On 6 December 2017, eight representatives from Hong Kong's business, academia, NGO and diplomatic communities spoke about addressing the important challenge of global climate change at the HKUST Business School Central. The free public forum drew a full room of 100 attendees.

The Hong Kong forum came on the heels of the UN's Climate Change Conference, the 23rd Conference of the Parties (COP23) in Bonn, Germany, under Fiji's leadership. Two of the speakers in Hong Kong – Adj. Prof. J Robert Gibson of HKUST and Dr. Jeanne Ng from CLP – had recently returned after attending the proceedings in Bonn.

The 2015 Paris Agreement has been signed by all 197 Parties to the UN Convention on Climate Change and ratified by 174 of them.[1] It came into effect on 4 November 2016 and applies from 2020. Only the USA has announced its intention to withdraw.

It is a high-level framework with constructive ambiguity on some issues. This year's COP23 was held from 6-17 November 2017 to continue the task of deconstructing the ambiguities to provide a clear rulebook for its implementation. The formal rulebook negotiations were supported by many side-events and new papers on important issues.

At the Hong Kong forum, speakers and audience members discussed these key questions:

- Has the Paris Agreement survived the "Trump challenge"?
- What progress has been made on writing the Paris rulebook?
- What is the gap between commitments to reduce carbon emissions and what science says is needed, and how do we bridge that gap?
- What are the updates in preparing for the 2018 Global Stock-take? This will consider the Intergovernmental Panel on Climate Change (IPCC) forthcoming report on how the temperature increase might be held to 1.5°C.
- What can be done to decarbonize electricity production, increase energy efficiency in property and decarbonize transportation?
- How do you finance the investment needed to create a low-carbon, climate-resilient economy?
- How can the insurance industry help improve resilience?
- How will Hong Kong's be affected?

For further details, see The UN's summary of announcements made at COP23.[2]

[1] "Paris Agreement – Status of Ratification," UN Climate Change website, http://unfccc.int/paris_agreement/items/9444.php (accessed 7 February 2018)

[2] "Bonn Climate Change Conference Becomes Launch Pad for Higher Ambition," United Nations Climate Change website, 18 November 2017, https://cop23.unfccc.int/news/bonn-climate-conference-becomes-launch-pad-for-higher-ambition

EVENT PROGRAM

8:30 AM	Reception with coffee/tea		
9:00 AM	Welcome remarks	Ms. Winnie Cheung	Video
9:05 AM	**Session 1 - Overview of progress on the Paris Agreement** Moderator: Prof. Robert Gibson		
	A European View	Ms. Andrea Leung	Video
	The view from Beijing	Dr. Chai Qimin*	Video
	COP23 and Decarbonisation of Energy Supply	Dr. Jeanne Ng	Video
	Panel discussion/ Q&A session		Video
10:15 AM	Coffee break		
10:35 AM	**Session 2 - Action by business:** **Technological Innovation, Carbon Price and Finance** Moderator: Ms. Maya de Souza		Video
	Business Action: Achieving Climate Neutrality by 2050	Mr. Eric Chong	Video
	Financing action on climate change	Mr. Jonathan Drew	Video
	Using insurance to improve resilience and support adaptation	Mrs. Alexandra Boakes Tracy	Video
	Panel discussion/ Q&A session/ Closing remarks		Video
12:00 AM	Meeting ends		

* *While Dr. Chai could not attend this event due to visa issue, his slides and materials were presented by Mr. Robert Gibson*

This report, plus other materials from the Post-COP23 forum in Hong Kong, can be viewed and downloaded here: http://www.envr.ust.hk/COP23HK.html

SPEAKERS AND MODERATORS **(in alphabetic order)**

Dr. Chai Qimin is Director of International Cooperation Department in National Center for Climate Change Strategy and International Cooperation (NCSC), National Development and Reform Commission (NDRC), and adjunct professor of Research Centre for Contemporary Management (RCCM) in Tsinghua University and Guizhou Institute of Technology. He serves as the delegate of Chinese Government Delegation of UN Climate Negotiations, and adviser of local governments for Low Carbon City and Emission Trading Scheme Pilots. He has degrees in Engineering, Management and Finance previously worked at Tsinghua University on energy, environment and economy modelling development for the Integrated Assessment Model for Global Change (IAMC).

Ms. Winnie CW Cheung, CEO of Civic Exchange, has decades of experience in executive leadership and public policy-making, in addition to a strong interest in well-being and sustainability issues. Ms Cheung was formerly Chief Executive of the Hong Kong Institute of Certified Public Accountants and, in that capacity, acted as an adviser to government, legislators and decision-makers in finance and capital market reform, and as a pioneer in corporate governance and sustainability development in Hong Kong. Ms Cheung is a Chartered Accountant and possesses a Bachelor's Degree in Economics from the University of Manchester and a Master's Degree in Social Science in Counselling from the University of Hong Kong.

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 the 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.

Prof. 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.

Ms. Andrea Leung is Senior Policy Adviser, Science and Climate Change at the British Consulate-General Hong Kong. She has 20 years of experience on climate change and environmental policy issues. She works with relevant stakeholders in Hong Kong and the UK Government on strategies and programs for climate change, science and innovation. Prior to joining the Consulate she worked for the Hong Kong Productivity Council, Hyder Consulting and AXIS Environmental Consultants. She holds a Master degree in Environmental Science and Management from the University of Manchester and Bachelor degree in Biochemistry from the Chinese University of Hong Kong.

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 was involved in developing Hong Kong's first greenhouse gas emissions inventory and is currently a Board member of a number of organizations including the International Emissions Trading Association (IETA) and the Hong Kong Institute of Qualified Environmental Professionals (HKIQEP).

Ms. Maya de Souza heads Business Environment Council's Policy Research Team. She leads BEC's work on developing recommendations for government policy across priority policy areas, and working with businesses on collaborative projects 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 different policy teams. Maya has a multi-disciplinary background with a Masters in Law and a first degree in Philosophy, Politics and Economics.

Mrs. Alexandra Boakes Tracy is President of Hoi Ping Ventures in Hong Kong, which she founded to provide research and consulting on sustainable and low carbon investment in Asian emerging markets. She is a member of the Listing Committee of the Hong Kong Stock Exchange, an Active Private Sector Observer to the United Nations Green Climate Fund, and a Director of the Climate Markets & Investment Association. She is also an Advisor to the Hong Kong University of Science & Technology's Asian Family Business Research Centre and to the NDCI.org climate commitment community. Mrs. Tracy speaks and writes regularly on sustainable finance, development and infrastructure issues. She has an MBA from Harvard Business School and Master's Degrees from Yale University and Cambridge University.

EVENT SUMMARY

Opening Remarks

Ms. Winnie Cheung, CEO of Civic Exchange

Ms. Cheung addressed the possibility of the global population facing major water scarcity, heat waves, and a reduction in cropland by 2100, if more efforts are not made to combat climate change. "You may think that 2100 is a long way away. But if you think of the future, all of our children and grandchildren may live to see that day – and experience that hardship and pain that we should leave them," Ms. Cheung said.

She continued that "conventional abatement technology will not be sufficient to keep temperature rise to 2°C – it is a big mountain to climb. Investment in innovation and smart technology is also necessary. This is the biggest challenge to humankind in the generations to come."

Key points from Ms. Cheung:

- The aim of the Paris Agreement and the COP talks is to protect the world from dangerous warming, which is causing sea level rises, plus risk and vulnerability to human life. It is an issue affecting everyone on this planet.
- There have been urgent warnings from scientists of the gap between the reductions required to avoid dangerous climate change, and the path our civilization is currently on.

  For example, per The US Fourth National Climate Assessment[3]

  1. Atmospheric CO_2 now exceeds 400 ppm (parts per million). The last time it was at this level was three million years ago, when temperatures and sea levels were much higher.
  2. The average global temperature increased 1°C between 1901 and 2016.
  3. Sea levels have increased 20cm since 1900 and are forecast to increase by between a further 30cm to 1.2m with 2.4m possible by 2100.

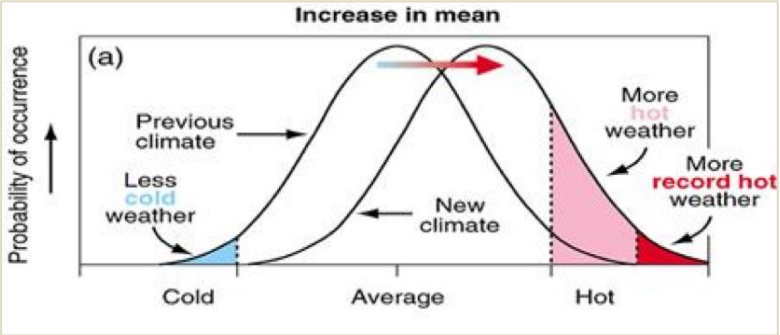
  The great variation in forecast of sea level rise this century (30cm to 2.4m per the November 2017 US State of the Climate report)[4] is due to uncertainty on how rapidly the Greenland and West Antarctic Ice Sheets will melt. What is much easier to estimate is the eventual melting, and hence sea level rise for different equilibrium temperature increases. Taking both the results of climate modeling and the geological record of sea level for different CO_2 and temperature levels.
- A 2016 paper in Nature estimates the CO_2 emissions likely to cause a 2°C increase in temperature will eventually, perhaps over 10,000 years, increase sea level by about 29 meters[5].
- There has been substantial loss of snowpack reducing summer water availability. Extreme

[3] US Global Change Research Program, *The US Fourth National Climate Assessment*, November 2017, www.globalchange.gov/browse/reports/climate-science-special-report-fourth-national-climate-assessment-nca4-volume-i

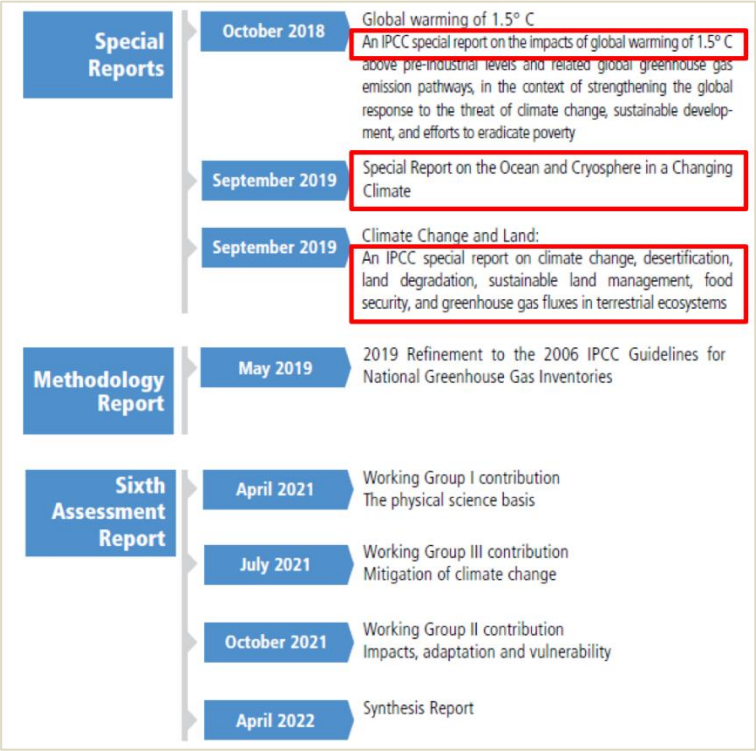
[4] US Global Change Research Program, *The US Fourth National Climate Assessment*, November 2017

[5] Clark, P.U., et al, (2016), "Consequences of Twenty-first-century Policy for Multi-millennial Climate and Sea-level Change," *Nature,* www.nature.com/articles/nclimate2923

weather events are increasing. These include heavy rain, droughts, heatwaves and forest fires.

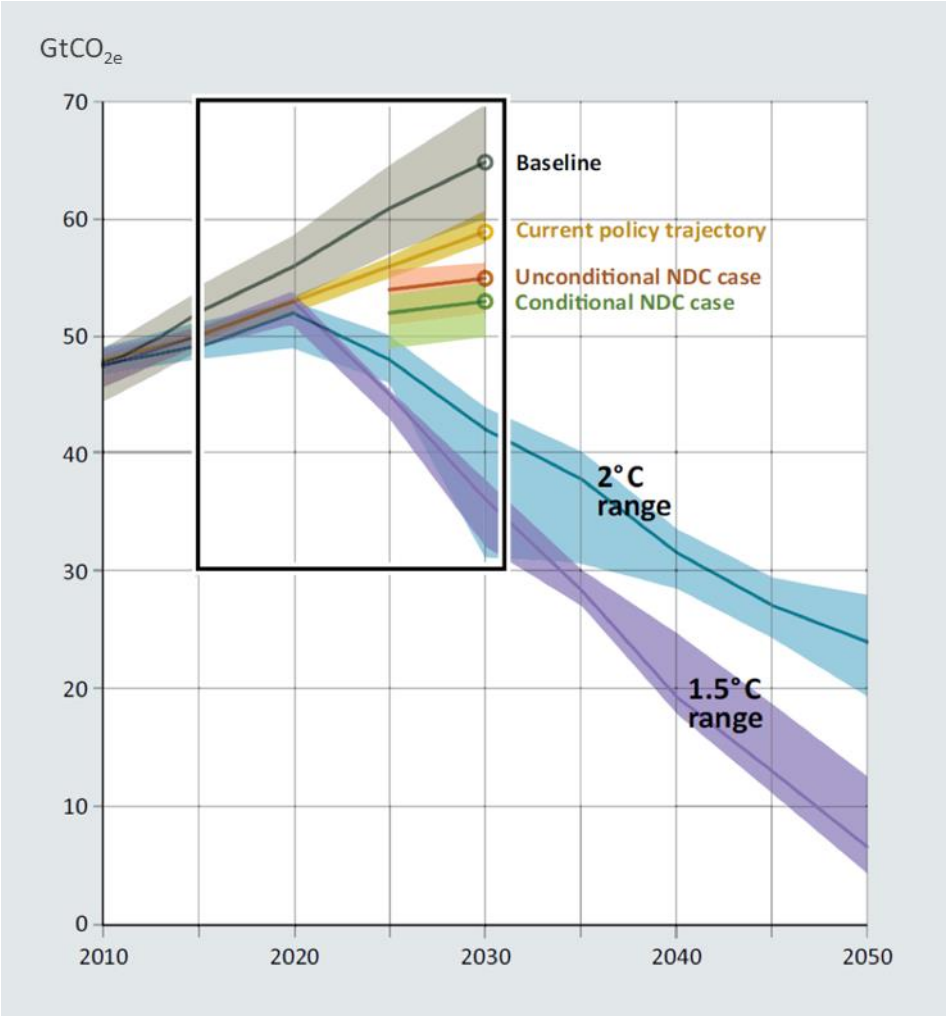


- The distribution of hot and cold periods around average temperature helps explain why a small increase in average temperature has a substantial effect on extreme weather.
- According to the Grantham Institute of Climate Change[6], if no change is made to the current trend in CO_2 emissions, then by 2100:
  1. 2 billion people will face water scarcity.
  2. Nearly everyone will experience extreme heatwaves.
  3. Air conditioning demand will double.
  4. 60% of cropland will be less suitable for agriculture.
- The IPCC plans three special reports in the next two years.



[6] Grantham Institute of Climate Change, "The INDCs and Climate Impacts" infographic, AVOID 2 website, http://www.avoid.uk.net/indcs/ (accessed January 2018)

- UN Environment Program Emissions Gap Report[7] compares future CO_2 emissions under a range of policy options with the reductions required to keep temperature increase to either 2°C or 1.5°C. It finds the reductions pledged by countries in their Nationally Determined Contributions (NDC) are insufficient. A further 13.5GtCO2e decrease is needed by 2030 for a better than 66% chance of keeping temperature increase to 2°C by 2100. For the same chance of keeping to 1.5°C 2100 the 13.5GtCO2e reduction becomes 19GtCO2e.



[7] UN Environment Programme, *The Emissions Gap Report 2017*, http://wedocs.unep.org/handle/20.500.11822/22070

Session 1: Overview of Progress on the Paris Agreement

Prof. J Robert Gibson moderated this panel, which included a "European view" presented by Ms. Andrea Leung of the British Consulate-General Hong Kong, as well as a "Chinese view" submitted by Dr. Chai Qimin, Director of the International Cooperation Department, NSCD, National Development and Reform Commission (NDRC) in Beijing. In addition, Dr. Jeanne Ng of CLP Group discussed decarbonising the global electricity supply.

"A European View"

Presentation by Ms. Andrea Leung,
Senior Policy Adviser, Science and Climate Change, British Consulate-General Hong Kong

Ms. Leung began her talk by asking the audience if they felt that "the Paris Agreement had passed the Trump test" – meaning, will international talks survive President Trump's announcement that the US would withdraw from it? A show of hands demonstrated that most people thought the answer was "yes"! No country has followed the United States in announcing an intention to withdraw from the Paris Agreement, while many other countries strengthened to their resolve to make it work.

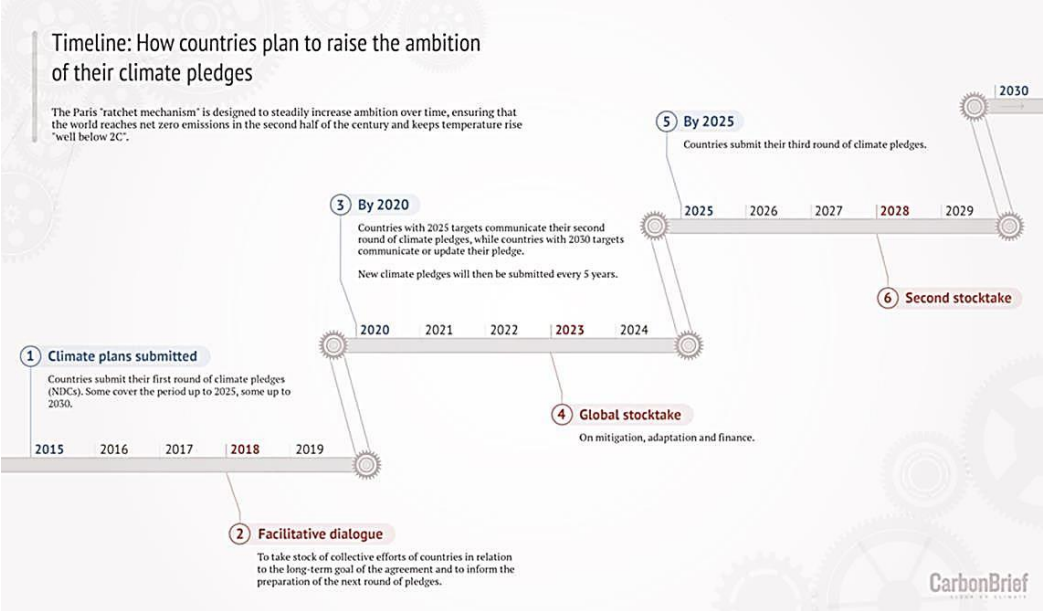
Key points from Ms. Leung:

- In Bonn it was as though there were two US delegations.

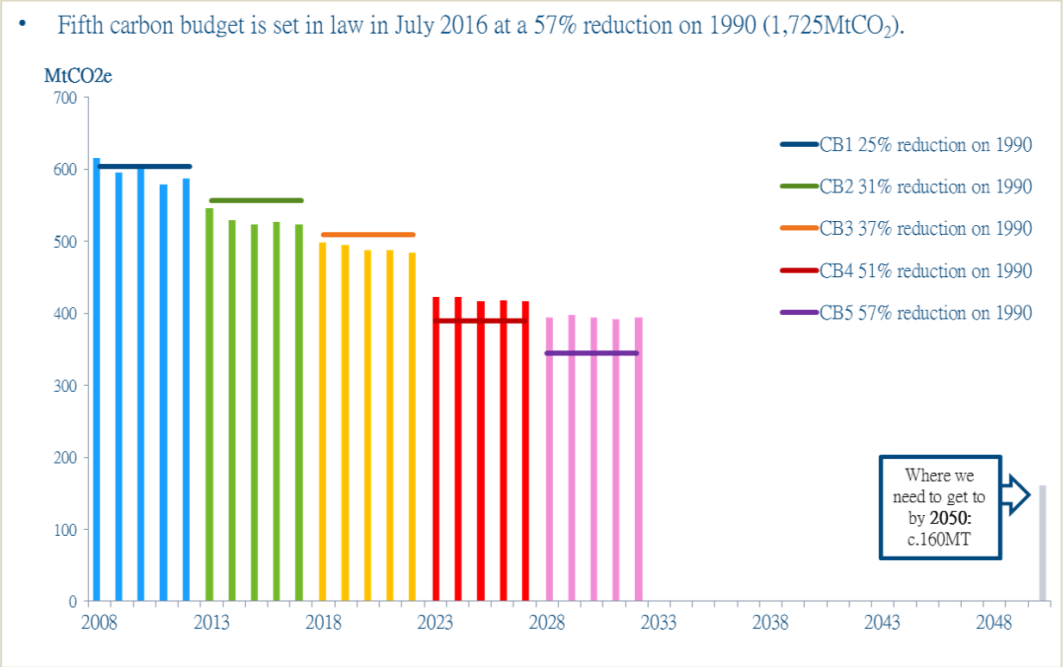
    1. The official US delegation, many of whose members were veterans of previous COPs, were in negotiating rooms sticking to a carefully constructed mandate and had less muscle than before. They were engaged and were constructive on areas of shared interest, such as ensuring that countries are transparent in reporting on their efforts. They also co-chaired a working group with China on Nationally Determined Contributions with reportedly high success. However, there was no "US Centre" at the COP and the only official side event was a White House-led promotion of fossil fuels and nuclear energy which attracted a storm of protest.
    2. The other US delegation was the "We Are Still In" initiative with a large pavilion just outside the main venue. It was highly visible at side-events with presentations from Governor Jerry Brown of California, Governor Kate Brown of Oregon, Governor Jay Inslee of Washington State, Governor Terry McAuliffe of Virginia, former Mayor Michael Bloomberg of New York City and former Governor Arnold Schwarzenegger of California.

- The Paris Agreement contains a framework for countries setting NDCs and a five-year ratchet mechanism to increase ambition. The parties to the Agreement have set themselves until COP24 in December 2018 to work out the 'Rulebook' for implementing the agreement.
- As the head of the UK delegation, Archie Young, has said, "Some people described Paris Agreement as constructive ambiguity. We now have the task of deconstructing that ambiguity and turning it into an agreement which is fit for implementation."

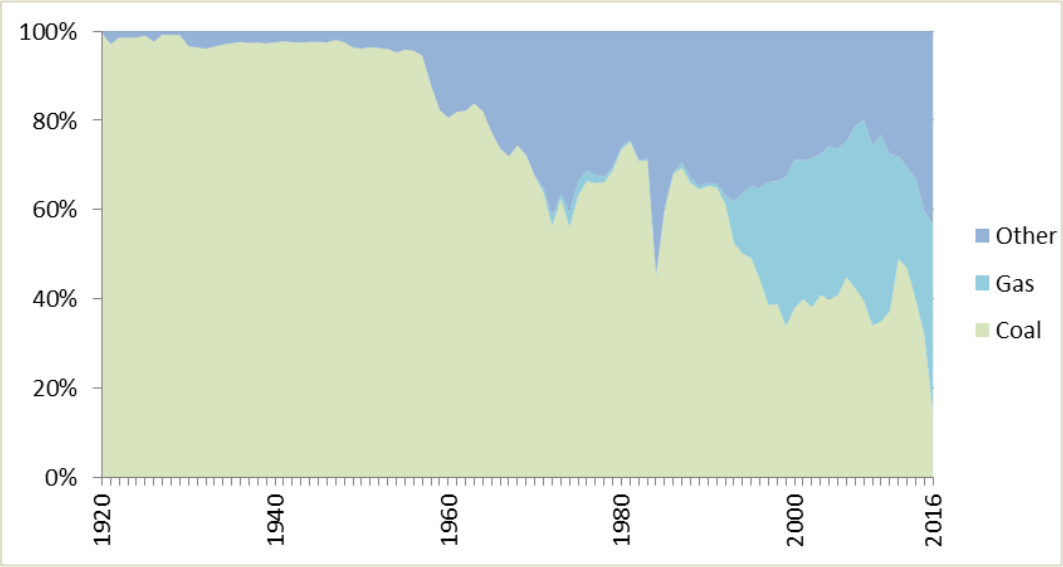
- By the end of COP23, the Rulebook comprised 266 pages of informal documents covering areas such as mitigation, transparency and finance. Much remains to be done to turn this into a final document at COP24.
- One of the keys to the Paris Agreement is the review process with a “ratchet mechanism”, to increase ambition over time using a 5-year cycle:



- Key to the review process will be the Talanoa Dialogue, through which all countries will revise their ambition, considering inputs from both state and non-state stakeholders.
- "Talanoa” is a traditional word used in Fiji and the Pacific to reflect a process of inclusive, participatory and transparent dialogue. In Fijian tradition, the Talanoa Dialogue is a form of story sharing aimed at building empathy and trust leading to decisions for the collective good. It is crucial that it delivers the political momentum necessary to increasing global ambition.
- Emphasizing that the dialogue should be constructive, non-confrontational, and solutions-oriented, Fiji outlined a year-long process including a preparatory phase and a political phase at COP 24. Countries will essentially ask themselves three questions:
    1. Where are we?
    2. Where do we want to go?
    3. How do we get there?
- This phase will include inputs from civil society, local as well as national or global events, and non-state players on the ambition gap and options for narrowing it. Input will be provided through an online platform.
- A key input will be the upcoming special report from the IPCC on the impacts of warming exceeding 1.5°C and emissions pathways to avoid it.
- Regarding the UK’s position, Ms. Leung noted that COP23 met its key objectives of progressing the Rulebook and upholding the integrity of the UN process. Further, the UK is taking strong action itself with its carbon budgets leading to an 80% in emissions reductions by 2050 from its 1990 level.



- The UK-has partnered with Canada to found the Powering Past Coal Alliance of countries, which are moving to stop unabated use of coal for electricity generation. Twenty-eight countries signed up to this initiative by the end of COP23. The UK's own progress can be seen from this chart. Coal use has reduced from 40% in 2012 to 2% in 2017.



- Per PwC's Low Carbon Economy Index, the UK has decarbonized at an average of 7.7% which is significantly faster than the average for G20 nations.[8]
- At the same time the UK's Clean Growth Strategy with innovation at its heart is generating low carbon economic growth and financing opportunities.

[8] "The Low Carbon Economy Index 2017", PwC UK, https://www.pwc.co.uk/services/sustainability-climate-change/insights/low-carbon-economy-index.html, (accessed 7 February 2018)

"Global Climate Governance and Progress under the Paris Agreement"

Views from Dr. Chai Qimin, Director, International Cooperation Department, NSCD, National Development and Reform Commission (NDRC); Professor, Research Centre for Contemporary Management, Tsinghua University. Presented by Prof. J Robert Gibson

Dr. Chai was unable to attend the Hong Kong event, but kindly provided the presentation which he had prepared for the forum.

Dr. Chai's key points:

- The Paris Agreement is fair, reasonable, comprehensive, balanced, ambitious, effective and legally binding. Its predecessor, the Kyoto Protocol, covered a minority of the world's countries.
- The Paris Agreement has been signed by all 197 Parties to the Convention and ratified by 174 Parties accounting for 87.67% of global emissions (69.78% without the USA)[9].

The key outcomes from COP23 were:

- Working towards completing the Rulebook for the Paris Agreement by COP24 in December 2018.
- The Talanoa dialogue for resolving issues and raising ambition.
- Renewed emphasis on action prior to 2020 including commitments under the second period of the Kyoto Protocol.
- There are three gaps which make achieving the objectives of the Paris Agreement difficult:

  1. *Mitigating CO2 emissions*

     Per the UN's Emissions Gap Report, we need a further 13.5Gt CO2e reduction from levels in 2030 NDCs. The US withdrawal may increase this gap by 1.25 to 2.0Gt.

  2. *Climate finance*

     It is not clear how the commitment to mobilize US$100 billion/year by 2020 will be met. The Green Climate Fund has not received US$3.5 billion (including US$2.0 billion from the U.S.) of the $10.3 billion pledged.

  3. *Governance*

     Decision-making under the 1992 UN Framework Convention on Climate Change was originally mainly led by the US and EU focusing on "ambitions first," with Common But Differentiated Responsibility – let's call this "Global Climate Governance 1.0." Following the failure to come to an agreement in Copenhagen in 2009, the US and EU worked closely with China leading to the 2015 Paris Agreement with a "participation first," "bottom-up" approach—let's call this "Global Climate Governance 2.0." With the U.S. disengaging and taking a "national interest first" approach, how will the countries of the world develop a "Global Climate Governance 3.0"?

[9] The number of Parties ratifying the Paris Agreement has increased from 170 to 174 since 6 December 2017. See, "Paris Agreement – Status of Ratification," UN Climate Change website, http://unfccc.int/paris_agreement/items/9444.php (accessed 7 February 2018)

- Chinese leaders have noted climate change in several recent speeches:

    1. In January 2017, prior to President Trump's announcement that the US would withdraw, President Xi Jinping spoke strongly of the importance of the Paris Agreement and China's commitment to it.
    2. In February 2017, Chinese Foreign Minister Wang Yi also spoke of the importance of the Paris Agreement while stating "China has no intention to lead anyone, nor does it intend to replace anyone."
    3. In October 2017, at the 19th CPC National Congress, President Xi stated. "China will take a driving seat in international cooperation to respond to climate change, China has become an important participant, contributor and torchbearer in the global endeavour for a sustainable civilisation."

Dr. Chai noted that China's Nationally Determined Contribution commitment for 2030 includes:

- Peak CO_2 emissions around 2030 and make best efforts to peak early.
- Reduce CO_2 per unit of GDP by 60% to 65% from the 2005 level (4% pa).
- Increase non-fossil fuels in primary energy consumption to around 20%. This commitment includes the following investment up to 2030:

    1. Nuclear: 14 reactors a year to give a total of 220 with 200GW capacity.
    2. Solar: 1,100 solar farms per year to give 17,000 with 300GW capacity
    3. Wind: 1,000 turbines a year to give 22,000 with 400GW capacity.
    4. Increase the forest stock volume by around 4.5 billion m^3 on the 2005 level.
    5. A National Emission Trading System (NETS) is planned to start in 2017 covering key industry sectors such as iron and steel, power generation, chemicals, building materials, paper-making, and nonferrous metals[10].
    6. ¥1,600 billion green investment p.a. by 2030.
    7. ¥20 billion China South-South Climate Cooperation Fund to support developing countries to combat climate change.

With these commitments come the following co-benefits:

- 80% reduction in air pollution (SO_2, NO_X, $PM_{2.5}$)
- Green Jobs – 3 million added p.a. by 2030 with the total added between 2005 and 2030 expected to be 63 million.

[10] Post-forum note: On 19 Dec 2017, the NDRC announced that China's State Council has approved a National Carbon Trading Scheme for China's Power and Heat sectors covering 1,700 companies with over 3 billion tonnes of CO_2 emissions annually – about 1/3 of China's emissions. Trading will be based in Shanghai. Details including timelines for roll-out, will be advised in a National Development and Reform Commission official policy paper in the coming weeks. Analysts believe it will take at least a year to put in place mechanisms. There are plans to later expand the scheme to cover manufacturing and industrial sectors.

Dr. Chai noted the following take-away policy implications:

- The "Global Climate Governance 3.0" era without the US will show some new and complex features, and will inevitably lead to the continuing widening of mitigation, finance and leadership gaps.
- The international community has high expectation of China's leadership in global climate governance, but alteration of the global leadership overnight is unrealistic, while the lack of political momentum is likely to exist for years.
- We should communicate in a positive and constructive way, not the opposite. For example, as a big developing country, China worries about the economic impacts of ambitious climate policies, but the decision-makers are interested in new growth points, new employment and air pollution control, so we offered the numbers on potential investments, employment, co-benefits on air quality and health. That really makes sense, as we answered their concerns, which facilitates the decision-making.
- It is important to value the domestic debate and consensus on climate policy and action; to have a positive philosophy on both progress and gaps; to learn by doing; and to share the benefits via international cooperation, not just blaming.

Commentary by Moderator Prof. J Robert Gibson

The contribution by Dr. Chai suggests that the Chinese leadership is becoming more willing to contribute to global leadership. If China takes a leadership position how will this effect Hong Kong's position?

Secretary for the Environment Wong Kam-sing, who had presented Hong Kong's "Climate Action Plan 2030+"[11] at COP23 in Bonn, noted that Hong Kong was committed to reduce the carbon intensity by 2030 compared to 2005 by 65% to 70%.

This will mainly be achieved by shifting electricity generation from coal to gas. Action is also being taken to improve energy efficiency, promote low carbon consumption, reduce carbon emissions from transport, and generate perhaps 3% of Hong Kong's electricity from wind, solar and waste-to-energy sources.

Hong Kong is investing to adapt to climate change, in particular to withstand heavy rainstorms. As with China, co-benefits including reduced air pollution are important.

[11] Environment Bureau, *Climate Action Plan 2030+,* January 2017, Hong Kong: HKSAR Government, www.enb.gov.hk/sites/default/files/pdf/ClimateActionPlanEng.pdf

"COP23 and Decarbonisation of Energy Supply"

Presentation by Dr. Jeanne Ng, Director - Group Sustainability, CLP Power Hong Kong Limited

Dr Jeanne Ng said CLP had attended COP23 to learn, work and speak. She believed that businesses and communities, governments and the scientific community need to work together to deliver on a low-carbon future. In her view, COP is good for business; science provides the compass; and transparency is the key to COP's success.

Key points from Dr. Ng:

- Technologies are not progressing as fast as we need for the 2°C scenario. Key clean technologies include renewables; carbon capture and storage (CCS); power generation efficiency and fuel switching; end-use fuel switching; end-use efficiency; and nuclear.
- According to the IEA World Energy Investment 2017[12], there was a decline in overall global energy investment in 2016 despite an increase in energy efficiency investment.
- With energy transition as one of the focuses at COP23, it was important to take energy security, job transition and energy prices into consideration.
- Carbon reduction, CCS, natural sinks and carbon offsetting are all important. The conversation also moved more towards transport from energy. Environmental challenges were seen to be evoking social issues.
- Adaptation and resilience issues were widely discussed at COP23.
- China was seen as a leader behind the scene.
- When it comes to climate actions, there has been a shift from nations to states and cities.
- More business coalitions emerged to accelerate climate actions and more companies committed to renewables. Many panels discussed green investment at COP23.
- In the Asia-Pacific region, the Nationally Determined Contributions are expected to be met while the progress also depends on financing. Long-term policies and regulations are needed to incentivize businesses to invest in low-carbon opportunities.

[12] International Energy Agency. (2017). *World Energy Investment 2017*. http://www.iea.org/bookshop/759-World_Energy_Investment_2017; http://www.iea.org/publications/wei2017/.

Panel 1 Discussion

Prof. Gibson (Moderator)

- What is needed to accelerate the global move to low-carbon electricity? IEA data[13] suggested that the investment level of research, development and deployment in low-carbon energy so far was not yet sufficient to meet the Mission Innovation commitment made by 22 countries and the European Union at COP21 in Paris. This was a pledge to double clean energy research and development investment over five years.
- On the positive side, this summer's auction price for UK offshore wind was half that of a year ago.
- Progress is also slow on Carbon Capture and Storage (CCS). Hong Kong has a competitive advantage here. We have two reasons to be interested in CCS in the long term. First it enables keeping some gas-fired generating capacity in Hong Kong and thus adds to the resilience of our electricity supply. Second Hong Kong has a geographical advantage as it is close to large offshore saline aquifers in Mainland Chinese waters, which are suitable for CO_2 storage.

- So how can we move faster on getting the low-carbon electricity generation which we need?

Dr. Ng (Panellist)

- The breakdown of negotiations at Copenhagen led to a slowdown in clean energy investment. However, once the detailed measurement, reporting and verification mechanism of the climate goals under the Paris Agreement are in place, we expect to see acceleration in investment.
- Battery storage could facilitate the deployment of renewables.
- The power sector may have financial concerns in acquiring CCS technology from the oil and gas industry. There is uncertainty on the progress in terms of how fast CCS can come into place.

Ms. Leung (Panellist)

- Having the right policy framework and support for industry will cause change. The UK's move away from coal is a good example.
- The UK's Clean Growth Strategy emphases innovation with a GBP £2.5 billion investment.

[13] "IEA World Energy Investment Report," International Energy Agency website, 11 July 2017, https://www.iea.org/publications/wei2017/

Q&A with the Audience

Q. Prashant Vase, WWF: The Talanoa process is a transparent and inclusive one. In Hong Kong we have great opportunities to develop large-scale reservoir-based PV panels, off-shore wind and energy efficiency; but discussions on these and, for example feed-in tariffs and the new building energy efficiency standards – the overall thermal transfer value – are currently being held behind closed doors. The formulation of Hong Kong's renewable energy and energy efficiency policy and regulations would benefit from an open dialogue with stakeholders. Shouldn't Hong Kong have its own Talanoa dialogue?

A. Prof. Gibson: Should Hong Kong have its own Talanoa dialogue? Yes! Let's lobby for that. We are not into making the Government's life difficult. We are into working with them to get ideas on the table to see what is possible.

A. Dr. Ng: We are considering the feed-in tariff. Both the Government and businesses need to learn by doing to deliver more renewable energy.

Q. Pamela Mar, Li & Fung: Jeanne [Ng] mentioned that Asia's transition to low-carbon electricity generation is slow due to a lack of investment. What is needed to accelerate this investment? Is it a price signal? Is it policy needing to make the market more attractive? There is plenty of money and it will go where there are [adequate] investment returns.

A. Dr. Ng: The price signal [for decarbonising electricity supply] does not exist in some Asian countries. There also need to be carrots and incentives to make renewable energy cost-competitive with fossil fuels. Innovative financial tools may also help bring down the cost to make the business case for renewables.

Q. Robert Milnes, PwC: The UK has successfully used Challenge Funds to accelerate low-carbon city development. Could Hong Kong do this? Would Challenge Funds work in China given the structure of China's market?

A. Ms. Leung: Development of more renewable energy and having a Challenge Fund are both applicable in Hong Kong, but we need more science-based evidence to persuade the Government to set the necessary policies. This is what happened in the UK – government and scientists did the research and modelling, discussion in the Parliament, policy impact assessment and public consultation then took place. Raising public awareness of the issue will energise our LegCo members to push the Government for action.

A. Prof. Gibson: Should Hong Kong have Challenge Funds? Yes. (See post-forum note on UK funds)[14].

A. Dr. Ng: China is trying to reform its electricity market. We need to see how the rules pan out.

[14] The UK's low carbon challenge funds are normally run by its Office for Low Emission Vehicles (OLEV) which sits between DfT and BEIS UK Challenge Fund. See, www.gov.uk/government/news/40-million-to-drive-green-car-revolution-across-uk-cities

Q. Mr. Drew, HSBC: How much might the global community ratchet down its carbon commitments in 2020 at COP26?

A. Prof. Gibson: What is going to happen on raising ambition? One of the former Prime Ministers of New Zealand said: "In the end politicians follow. They don't lead." What she was talking about is need for public opinion in the right place for politicians to make changes. We need to help get public opinion wanting more action on climate change.

Next year the IPCC's 1.5°C report will advise Governments what they need to do to keep the increase to 1.5°C. It is likely to be so difficult that they will have to abandon 1.5°C but hopefully in doing so they will take action to make 2°C possible.

Finally, to quote Rudi Dornbusch "In economics, things take longer to happen than you think they will, and then they happen faster than you thought they could."[15] So yes it may take a long time to get the change we need, but once it happens things can move very quickly.

Panel 2 – Action by Business: Technological Innovation, Carbon Price & Finance

Ms. Maya de Souza introduced this session, which had three speakers: Mr. Eric Chong explained Siemens' journey to a zero-carbon future, Mr. Jonathan Drew outlined HSBC's work on how to finance this transition, and Mrs. Alexandra Tracy of Hoi Ping Ventures spoke on the role of the insurance section in supporting this transition.

"Mapping the Journey to a Carbon-free Future"

Presentation by Mr. Eric Chong, President & CEO, Siemens Hong Kong & Taiwan

Mr. Chong explained Siemens' journey towards a zero-carbon future, and explained why action on climate change action is so important for the company. "Our kids and grandchildren will have to live with the effects. As some people say, we are living on borrowed time," he said.

"Climate change – it's mainstream"

At past COPs, many participants came from a sustainability background; but at COP23, there was much greater participation from business people.

- Energy transitions can be challenging for nations

Germany has its "Energiewende" (meaning "Energy Transition") plan, with a goal to have 80% renewables by 2050, while today's figure is only 30%. It also aims to reduce carbon emissions by 90%.

However, there may be issues with maintaining stability of the electricity network with high levels of renewable energy. Fortunately, there is the technology to deal with this.

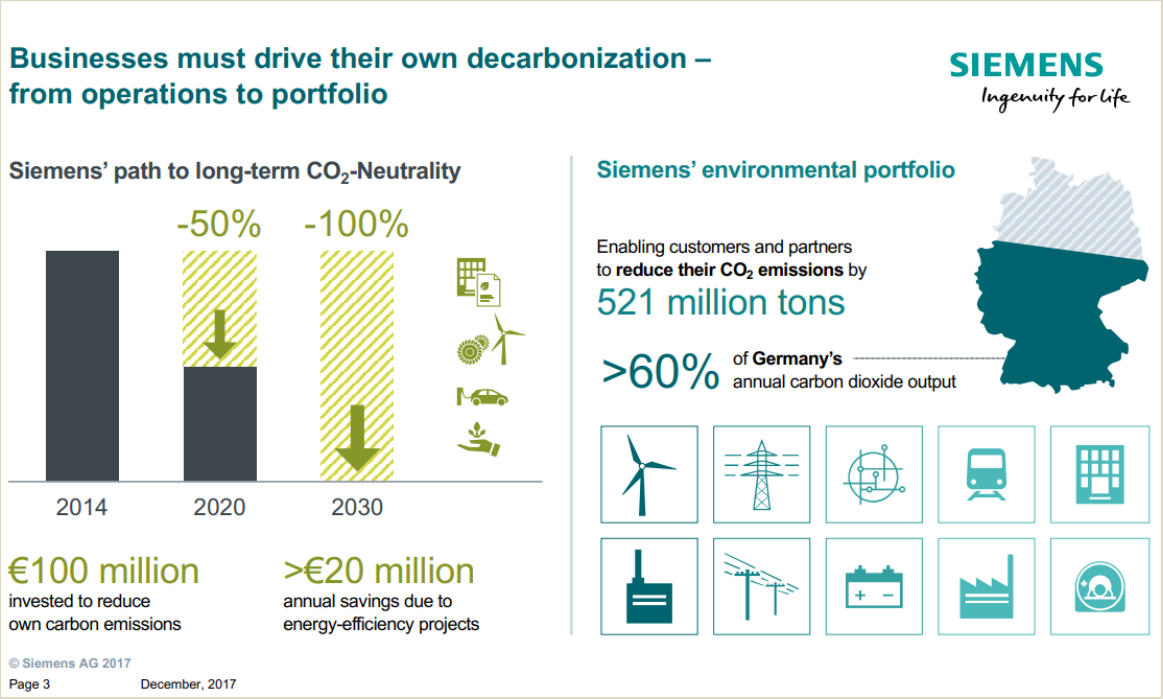
There have also been unintended consequences of Energiewende. For example, it lowered coal

[15] Rudy Dornbusch quotation: www.goodreads.com/author/quotes/57762.Rudiger_Dornbusch

costs; so, although the percentage of renewable energy has risen, the level of carbon emissions has not fallen, relatively speaking.

- Technology is developing, with a few new buzzwords being used. “Sector coupling” refers to how power generation is linked to other industries like transport or heating. “Power to X” refers to using excess renewable energy with the benefit of storage systems which in the past was done through hydro pump storage but now exploring other options, e.g. the use of hydrogen fuel cells.

Mr. Chong stated that “What’s good for the planet is also good for the company” and that there is also a “good business case” for caring about the environment. “When we look at how and what energy we use, we become more competitive,” he added.



Siemen’s actions:

- Siemen’s goal is to be carbon-neutral by 2030. They have a plan to do this and are working on it in three parts: do it themselves, support customers, and support action by cities.
- They are beginning with their properties. €100 million was invested into Siemens properties, which would result in €20 million in annual savings due to energy-efficient projects. A 5-year payback period which is pretty good. It’s “low-hanging fruit” – good for the planet and good for the company.
- Looked into sources of energy and managed to reduce costs including through a switch to renewable energy.
- Siemens fleets are being converted to electric vehicles. Meanwhile, employees are being encouraged to use greener vehicles privately. To get reimbursement for travel expenses they need to meet certain emissions targets, and it is not difficult to buy low emission vehicles.
- Also help customers to go low carbon – wind power, trains, electrification. Aim to enable customers and partners to reduce emissions by 521 million tones. That is over 60% of Germany’s annual carbon emissions.
- As to cities, Mr. Chong used London 2030 as a case study. Explained the key components of their program: electrification, automation and digitalization (EAD). The city is planning self-

driving Tube trains, car-sharing, e-trading and blockchain (for sharing solar power systems on a local level as in NYC), Distributed Energy Systems (DES) which include power and heat (90% carbon reductions), sustainable buildings, green fuels and e-bus fleets. Explained the Siemens "Mindsphere" virtual platform for managing systems on a city level.

- Final comments: we start with invention, then we get innovation in action, and then diffusion. The last is most important.
- We need to get the message out of this room, and then we will have a chance to safeguard the planet.

"Financing Action on Climate Change"

Presentation by Jonathan Drew, Managing Director in Infrastructure and Real Estate Group, HSBC

Mr Drew covered three topics:

- Green Bonds
- Investor sentiment towards ESG investment
- Action by commercial banks particularly on disclosure

Overall, he took a positive view about the increase in interest in products like green bonds, as well as actions taken by companies to reduce environmental impacts.

As to Green Bond/Social Bond issuance:

- For the year to date in 2017, the issuance volume in the Green, Social & Sustainable bond market has overtaken 2016.[16]
- Asia has an important role to play – 30% of issuance of GSS Bonds are from Asia.
- Expecting to see the first Asian Sovereign Green Bond this year.
- HSBC issues first SDG bond – social bonds closely linked to green bonds.

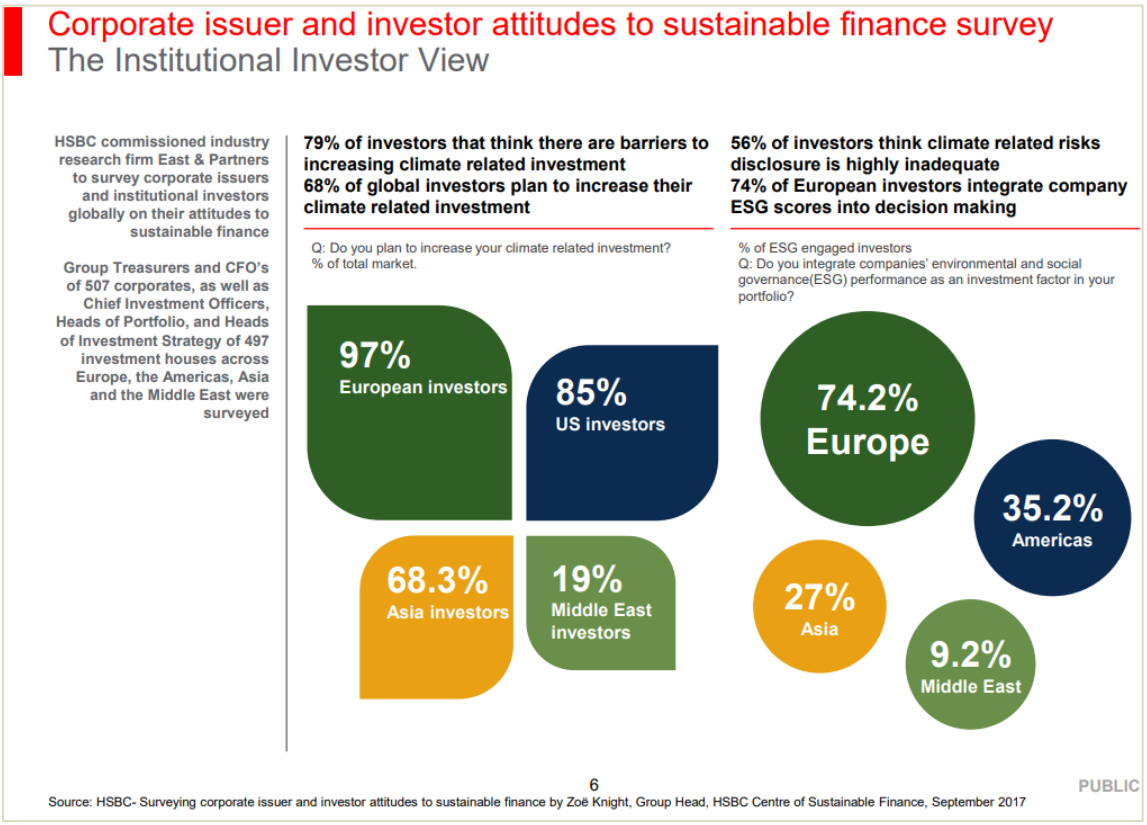
As to trading in Green Bonds:

- Secondary trading in Green Bonds has begun, which reflects a premium on green bonds, though not the case for primary issuance. Issuer does not pay more but does not have to pay less either.
- Global FI investors have an increasing interest towards green bonds, and HSBC research suggests there value in green bonds for investors.[17] Up to 35% of investors factor it into decision-making, although Asian investors are slightly less interested.
- 97% of European investors and 68% of Asian investors plan to buy more "green".
- Corporate issuers – 68% - say they will increase their climate-related investment.[18]

[16] HSBC, "Green, Social, Sustainability Bonds," database based on Dealogic, CBI, Bloomberg, as of 1 December 2017

[17] HSBC Research, *Global Green Bonds – Value or Vanity?,* 5 September 2017

[18] Knight, Z., *Surveying Corporate Issuer and Investor Attitudes to Sustainable Finance,* September 2017. Note: Zoe Knight is Group Head, HSBC Centre of Sustainable Finance.



- 53% of companies have a strategy to reduce environmental impact of the organisation. Of these, Asia has the most significant increase year on year, from 18.1% to 42.5%.[19]
- 88.6% of global FI investors now have focus on sustainable paper vs 80.1% in early 2017.[20]
- Better reporting important to enable this trend to continue.

HSBC's commitments to support the transition to a low-carbon economy include:

- Providing USD $100 billion of sustainable financing and investment by 2025.
- Sourcing all electricity from renewable sources by 2030. Though in Hong Kong, the aim is only 90% by 2025, and we still have to work with power sector here to achieve this.
- Reducing exposure to thermal coal.
- Adopting recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).
- Leading and shaping the debate about sustainable finance and investment, including on standards and metrics including supporting carbon pricing.
- Jonathan Drew gave a brief overview of the TCFD's recommendations as well as why it was set up. Explained the categorization of risk provided by the TCFD as well as the scope including banks, asset managers. The problem with it is that reports are very high level.
- He noted its importance is in a new approach to manage taking into account future issues – and this is why scenario analysis is so important.

[19] Ibid
[20] HSBC and S&P Global Ratings, *Asia Fixed Income Survey IV Go-To Market Recommendations,* September 2017

Concluded: There is lots of capital out there and strong motivation to invest money in the right way. HSBC is committed to play its role as an intermediary and bring large amounts of capital to society.

"Insurance and the Climate Challenge"

Presentation by Mrs. Alexandra Tracy, President, Hoi Ping Ventures

Mrs. Tracy felt that "the insurance industry does face significant challenges, but also has some very exciting opportunities." She listed four main challenges for insurance and climate change.

- "Business as usual" thinking in the industry. For example, should insurers reconsider extending coverage to fossil fuel and heavy manufacturing companies, which are among their largest customers? Some major insurers like Zurich Re, AXA and Swiss Re are already reducing coverage for dirty industries and fossil fuels.
- Many insurance companies are signatories to UNPRI or Climatewise and developing industry standards, including on disclosure. Mrs. Tracy cited an example in California, where all licensed insurers must disclose investments in power facilities using 50% or more fossil fuels.
- A growing focus on climate resilience. This requires innovation and partnership. For example, traditional actuarial models, which are based on past events, might not be able to measure the effects of unprecedented climate change. Generally their models don't look very far into the future.
- Investment portfolios, and the move to decarbonization. What should be their policies?

In the field of insurance for adaptation and resilience, there are new opportunities, products and services. "Well-designed climate risk insurance can make immense contributions to the development agenda and alleviate poverty. In addition to reacting to disaster, it can help communities prepare for disaster."

Mrs. Tracy offered four examples of insurance for adaptation and resilience:

- Parametric insurance pays out when there is a "trigger," such as poor weather, but hopefully before there is concrete damage. This way, customers can afford to make investments to prevent, say, a building from falling, instead of just receiving a payout after the building has already fallen down. An example of this is One Storm Philippines.
- Pooling can be an efficient solution for larger or regional scale coverage for natural disasters like hurricanes and earthquakes. Case study: the Caribbean Catastrophe Risk Insurance Facility, supported by Munich Climate Insurance Initiative, the World Bank and governments. Currently the commercial market will not cover this. It pays out automatically when weather hits a trigger, and is much more efficient in terms of making payments, e.g. $55 million in two weeks for the 2017 hurricanes.
- Microinsurance could be of help to farming communities, but some past products have not worked due to high administrative costs and unaffordable premiums for low-income customers. Case study: HARITA in Northern Ethiopia, supported by the Rockefeller Foundation and Swiss Re, allowed customers to pay for insurance via their own labor on community resilience projects. Again, payouts were automatically triggered.

- Big data is very important for preparing for disasters. The Green Climate Fund just approved finance for climate information system in Malawi. The idea of "data philanthropy" has arisen because much data in the world is private and held by companies. "Big data has an enormous impact on climate resilience – and not just in insurance. For example, big data for lighting detection could lead to better disaster alerts."

Mrs. Tracy discussed three main themes of insurance at COP23.

- "The industry cannot ignore the anti-fossil fuel momentum." This is relevant to their investments and insurance coverage.
- Future implications for loss and damage. There are some places in the world where the effects of climate change cannot be mitigated realistically – for example, in some poor or island communities. While there is the sentiment that the global community should help, the question is "who will finance what?" and there is no clear idea as to how to do this. One idea is to form an International Insurance Pool.
- Public private initiatives – and philanthropic ones – are important. Case study: The InsuResilience global partnership was set up by both G-20 nations and more vulnerable nations.

Panel 2 Discussion

Q. Ms. de Souza: How far can the finance industry drive change? Do we need more policy initiatives to encourage corporates to develop projects which finance, then support?

A. Mr. Drew: Finance has a role to play. It's important for intermediaries like us [HSBC], to bring cost-efficient capital. Finance alone cannot turn an unattractive financial proposition to an attractive one. What financial markets need to address are inefficiencies, and pricing risk properly. This may be a market failure that needs to be addressed, and those working on finance may need to change their game. All of the actors in this human endeavour have their roles to play – corporates, finance, governments and people - no party will do it alone.

A. Mrs. Tracy: Regulations clearly play a role; but at the same time, we need to facilitate and encourage activity to meet those regulations. Especially in low carbon energy and infrastructure, there are quite significant market failures in terms of information, awareness and capacity. A lot of institutions in this part of the world are not investing or lending because they are not aware of the opportunities, or see them as excessively risky. They don't have the experience or skill to analyse the risk. We need to support this including learning by doing.

A. Mr. Chong: Regulations and institutional frameworks help reduce uncertainty in the future. We need incentives – carrot and stick type approaches are both necessary. Once it gets going hopefully it will be self-generating. We also need to note that different places have different contexts with some being top down and some bottom up. These differences are reflected for example, in the level of taxation, where in some countries high taxes can lead to high avoidance.

Q. Paul Poon, CLP (previously MD, CLP Power HK Ltd): Germany increased renewables to 30%. But the carbon content increased as it ran coal-fired power stations more, so didn't fully use gas

power stations. It also closed its own nuclear, but bought it from France and Belgium. How might this play out in China? It doesn't work. If anything, their carbon content has increased.

A. Mr. Chong: Germans were behind the idea, but it's proving to be a difficult task, with some unintended consequences. Carbon credits are so cheap that it may be cheaper to just buy them and run the coal plant rather than use the gas facility. Energiewende is a good learning example for all of us. Germany moved fast – maybe too fast. Now it's looking to fix these problems, including perhaps by raising the carbon price.

Q. Ms. Leung: How can Hong Kong take a bigger role in the climate change agenda? After 10 years, the Government has made some commitments on green bonds, but there are other aspects.

A. Mrs. Tracy: Hong Kong has an enormous opportunity to take the lead as a regional centre for green finance by establishing a Green Investment Bank. This would be a new kind of financial institution capitalised with government funds, with a mission to catalyse private investment for low carbon energy and infrastructure. It's been done successfully overseas. In Asia, we have this enormous gap in funding for infrastructure. Hong Kong's financial industry strengths and successful capital markets, combined with a strategic focus on green investment, would make a significant contribution to addressing this issue.

Closing Remarks

Ms. Maya de Souza, Business Environment Council

- We're not on track for 1.5°C, or even 2°C. We're on track for 3.5°C, which is severe climate change, and it is important that the Talanoa Dialogue helps close this gap. The inclusive approach involving different sectors is encouraging.
- Although the Paris Agreement formally comes into effect in 2020, early action is very important, because it is the total amount of carbon emissions that we need to reduce and early action will make this easier.
- The four key sectors – energy, business, finance and insurance – are doing a lot, but they need to do more. Meanwhile, we must remember that there are other sectors – like farming and forestry – to be considered.
- Change is happening as we have heard today – technology business action, investor action - but we are at a critical stage – 3 gaps:
    - Reducing emissions as far and as fast as we need to – to keep within carbon budget. Technology dissemination & policy critical.
    - Finance – raising finance for the low carbon infrastructure that is needed
    - Leadership – it looks as if this has in part shifted to this part of the world and businesses here will have to step up further to help achieve change.
- It is important that we take these messages out of this room.

ABOUT THE ORGANIZERS

The Institute for the Environment (IENV), The Hong Kong University of Science and Technology

The IENV is an innovative, multidisciplinary research organization which brings exciting opportunities for fresh discoveries and a dynamic force for change in an area of critical importance for Hong Kong's future development. IENV focuses on a number of key environmental areas - air, water, solids/land, marine, and economy and society - to boost sustainable development and improve people's lives. HKUST was ranked the top Asian institution in The Times Higher Education Young University Rankings in 2017. www.envr.ust.hk

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Business Environment Council (BEC)

BEC is a charitable membership organisation, established by the business sector in Hong Kong. Since its establishment in 1992, BEC has been at the forefront of promoting environmental excellence by advocating the uptake of clean technologies and practices which reduce waste, conserve resources, prevent pollution and improve corporate environmental and social responsibility. BEC offers sustainable solutions and professional services covering advisory, research, assessment, training and award programmes for government, business and the community, thus enabling environmental protection and contributing to the transition to a low-carbon economy. bec.org.hk

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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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