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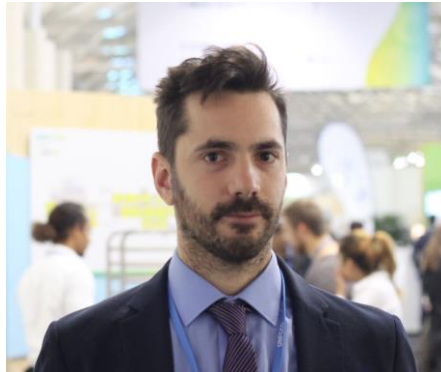
KOREA CARBON FORUM
2018 대한민국 탄소포럼

Trends & Outlook of the Asia Carbon Market

 President : Stefano De Clara | IETA



President **Stefano De Clara**
international Director
IETA



- > 現 IETA, International Policy Director
- > 現 IETA, Business Partnership for Market Readiness (B-PMR)
- > 前 IETA, EU ETS and UNFCCC negotiations

Trends & Outlook of the Asia Carbon Market

The Part 2, 1 seminar of the Korea Carbon Forum 2018 is co-organized by **KRIC** and **IETA**, the sessions main keyword will be "Trends and prospects of the Asian Carbon Market".

The first topic will look over on Asian carbon market's trend and development recently with details. Then we will check about the trend of Korea Carbon Market. Also we'll find out the private sector view on the Asian Carbon Market development.

- 👤 Topic #1 : Trends & Prospects of the Asian Carbon Market (Jackson Ewing | Duke)
- 👤 Topic #2 : Carbon Market in Northeast Asia (Suh Yong Chung | Korea University)
- 👤 Topic #3 : China's CO₂ Market (Yee Jen Chan | Shell)



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Trends & Prospects of the Asian Carbon Market

🔊 Jackson Ewing Senior Fellow | Duke Nicholas Institute

- 現 Senior Fellow, The Nicholas Institute for Environmental Policy Solutions
- 現 Associate Professor, Duke University

Trends and Challenges in East Asian Carbon Pricing

Jackson Ewing, Ph.D.

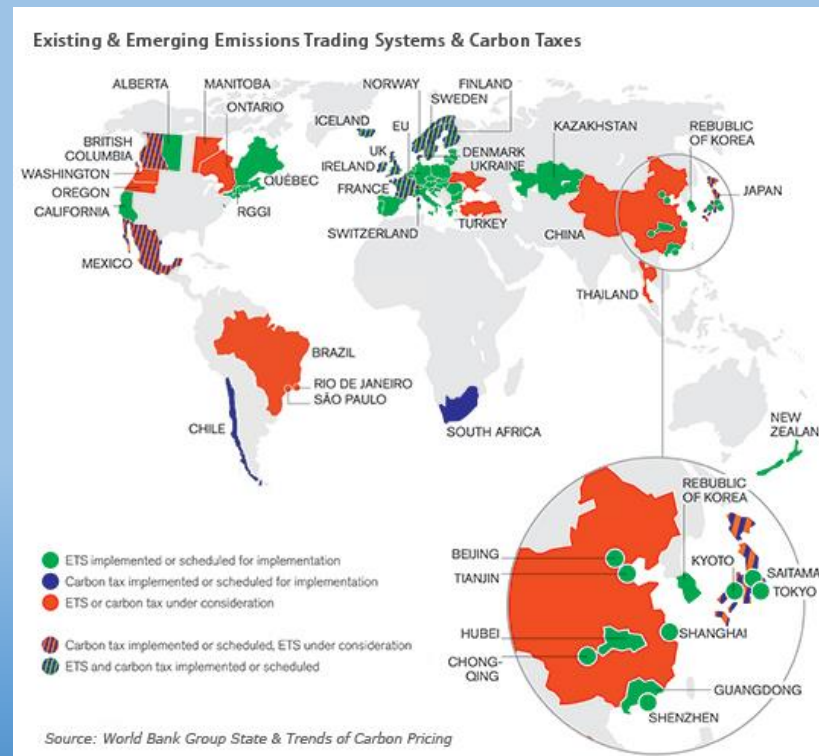
Duke University, Nicholas Institute for Environmental Policy Solutions and
Sanford School of Public Policy; Asia Society Policy Institute

Korea Carbon Forum, Pyeongchang, 11 October 2018

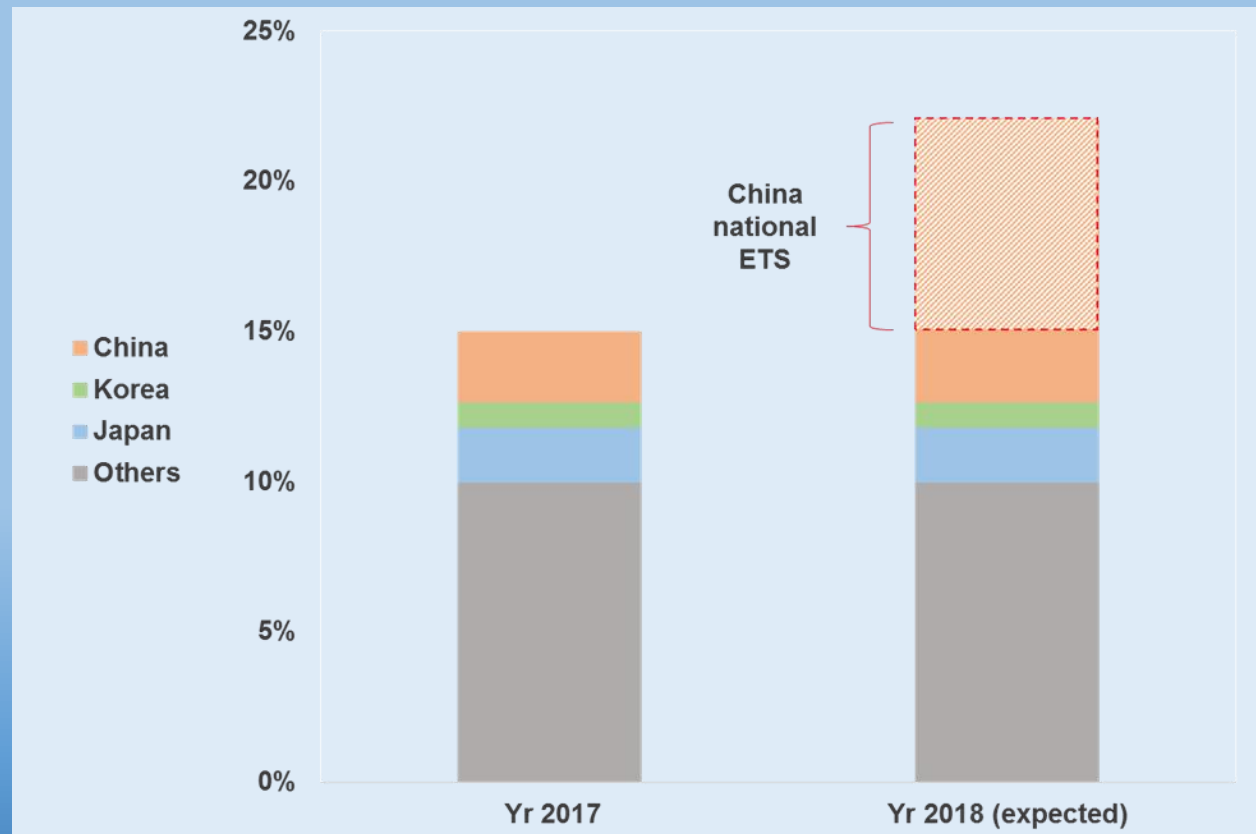
jackson.ewing@duke.edu



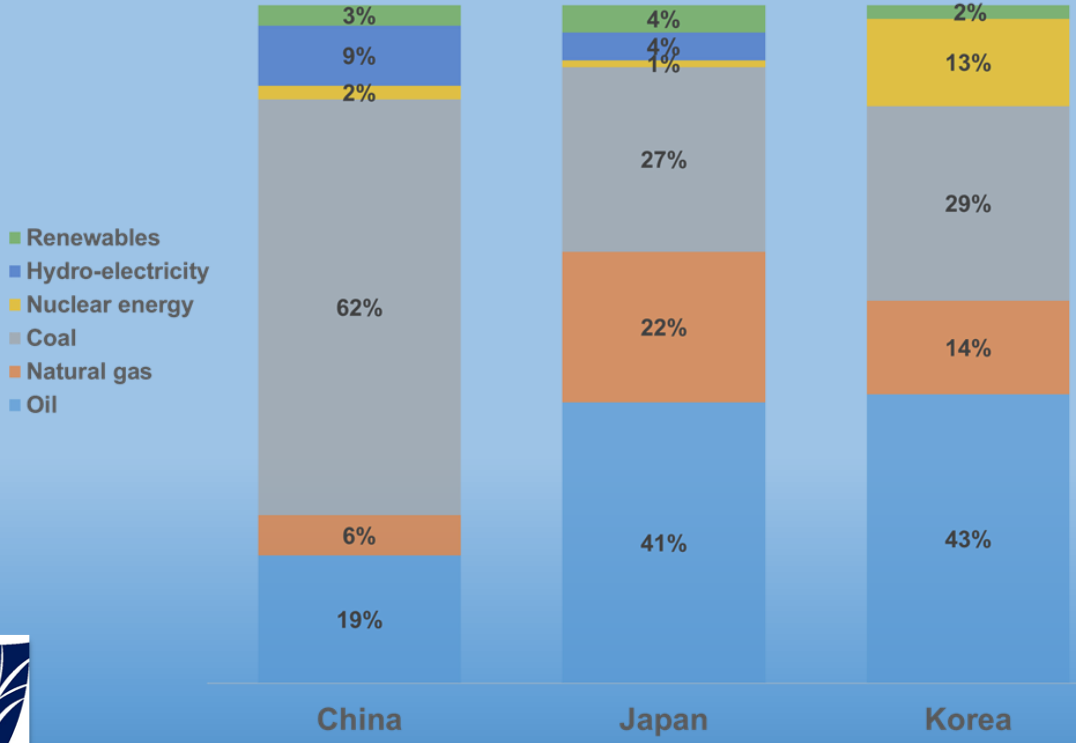
Broadening and Deepening carbon pricing



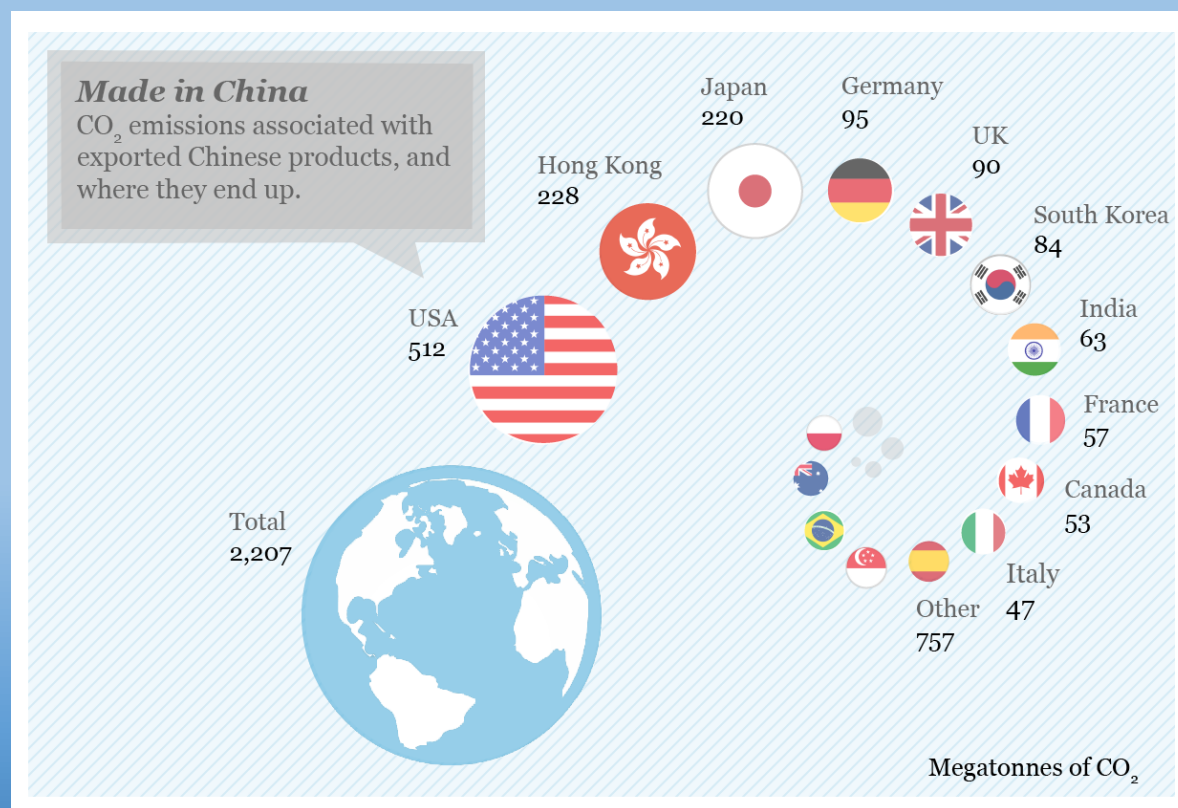
Northeast Asia to lead?



Steep climb ahead



Leakage, Trade, and Competitiveness



Regional and International Challenges



Pathways to Cooperation

NDC Targets



CHINA

- Peak carbon emissions around 2030
- Reduce carbon intensity of 60 to 65% from the 2005 level by 2030
- Increase the share of non-fossil-fuels in primary energy consumption to 20% by 2030
- Expand forested land



JAPAN

- GHG emissions reduction of 26% by FY 2030 compared to FY 2013 (25.4% reduction compared to FY 2005)



ROK

- GHG emissions reduction by 37% from BAU by 2030 – includes the use of carbon credits from international market mechanisms



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Carbon Market in Northeast Asia : A Korean Perspective

🔊 **Suh-Yong Chung** Professor | Korea University

- 現 Professor, Korea University



Carbon Market in Northeast Asia: A Korean Perspective

2018. 10. 11./ Pyeongchang
Korea Carbon Forum 2018

Suh-Yong Chung
Korea University



Introduction

After the Paris Agreement entered into force in 2016 expectations for cooperation in East Asia have been growing:

- Cooperation on development and implementation of low carbon development plans
- The establishment of a regional carbon market
- Important role of market mechanisms for the implementation of NDCs





Importance of Article 6

□ Article 6...

- Promotes cooperation among nations in order to raise ambition for NDCs through Internationally Transferred Mitigation Outcomes (ITMOs)
- Sets the Stage for increased usage of Market Mechanisms



Traditional obstacles to Northeast Asian Cooperation

4

- China's reluctance to be bound to Multilateralism
 - Security issues on Korean Peninsular
 - Historical tensions in the region
-
- **However...** Paris Agreement will provide new opportunities



Carbon market to promote regional public goods

Carbon Market should be considered not only as the final objective but as a means of realizing common regional interests including:

- Cooperation on regional low carbon economy
- Facilitate transition to large-scale projects (transportation networks, forest management)
- Renewable energy super grid



Dual benefits of regional carbon market

Facilitates the
implementation of domestic
climate change policies

Encourages cooperation
among regional states and
stakeholders



China



- Experiences from Seven pilot **ETSs**
 - Movement towards national ETS - creating the largest carbon market worldwide
- Progress made in Monitoring, Reporting, and Verification (MRV)
- Working on alignment with other national climate change policies



Japan



- Has already developed market-based mechanisms
 - Voluntary Emissions Trading System (**JVSTS**)
 - Advanced technologies promotion Subsidy Scheme with Emissions Reduction Targets (**ASSET**)
 - **J-Credit** System

- Strong domestic capacity for MRV

- **JCM** used at the international level



Republic of Korea



- Most complete form of carbon market at the national level
 - National ETS programme
 - Covers large part of total emissions

- Market mechanisms to achieve NDC

- Planned participant in global carbon markets



Developing Regional Carbon Market based on Article 6.2 of the Paris Agreement





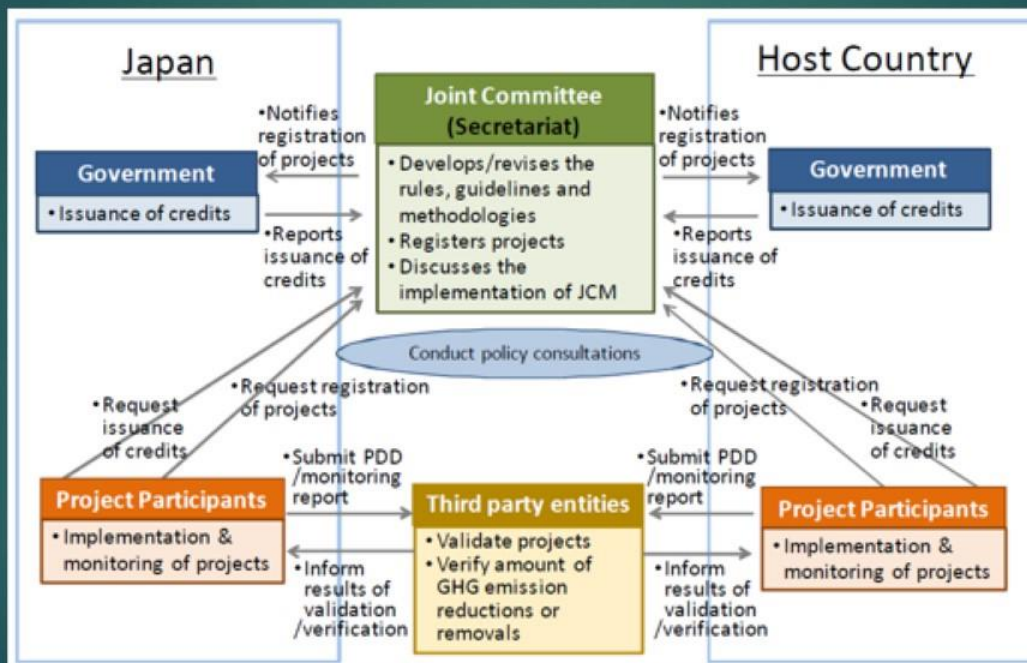
Joint Crediting Mechanism ?

- Already developed - Tried and tested
- Multilateral / Bilateral possibility

- Requires agreement on sharing mitigation outcomes
- Double Counting
- Impact of regional security and historical issues



Joint Crediting Mechanism





Or... Creation of a new mechanism?

Creation under [article 6.2](#)

□ Technical Elements

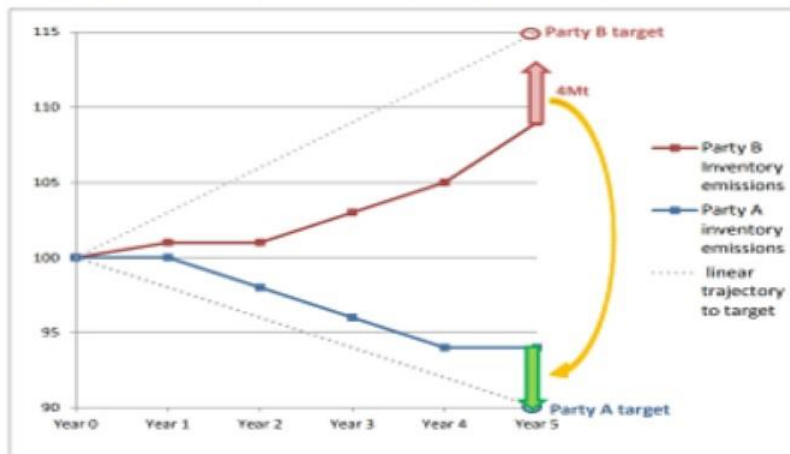
- Rules on environmental integrity
- Double counting
- Corresponding Adjustment
- Standardization in MRV
- Guidelines on sharing mitigation outcomes



Article 6.2: Transferring ITMOs

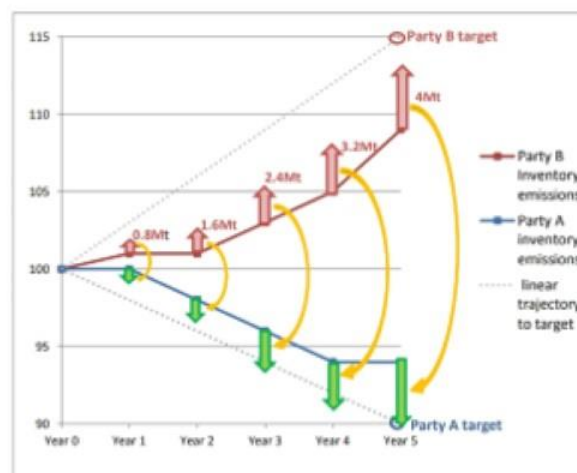
Example A

This example is the same as the first considered in Session 1: a government-to-government trade of 4Mt of NDC "surplus" from Party B to Party A in Year 5. Looking in the target year [Year 5] only, Party A appears to meet its target exactly, and Party B over-achieves its target by 2Mt. The red and green arrows in the figure represent the adjustments made by Party A and Party B.



Example B

In this example units from a crediting system in Party B are traded. The Party A government purchases and uses units from the Party B crediting system on an annual basis, starting in Year 1 at 0.8Mt and scaling up linearly to reach 4Mt transferred and used in Year 5.



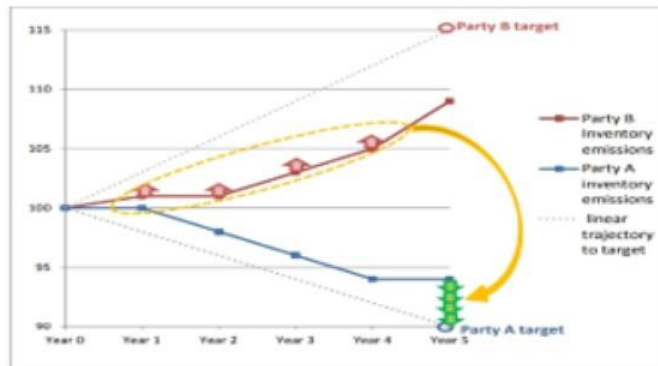


Example C

Party A has an emission trading system (ETS) covering its whole economy. Units from Party B's crediting system are purchased by companies in Party A's ETS.

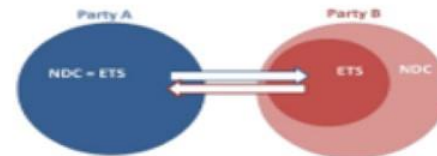


Party B transfers 3Mt each year from its crediting system to Party A companies from Year 1 to Year 4. There are no transfers in Year 5. Party A companies use all the 4Mt of units in Year 5.



Example D

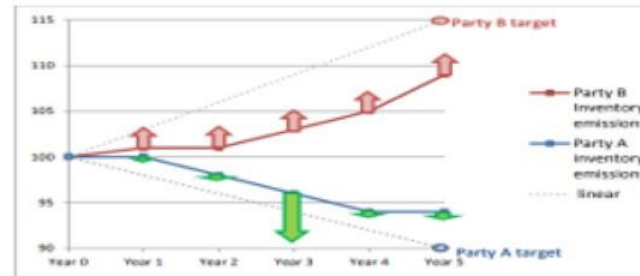
Party A and Party B have linked ETS systems, trading allowances that are used for compliance across both ETSs.



- Party B's ETS covers around half of its emissions, and has annual compliance obligations.
- Party A's ETS covers its whole economy, and has 3-year compliance cycles. Party A companies are only required to retire allowances for a portion of their emissions in the first two years of each compliance period, then must submit remaining allowances in the 3rd year. In this example Year 3 is an ETS compliance year (Year 6 would be the next one).

There is a net transfer of 2Mt each year from Party B's ETS to Party A's ETS (shown in red).

After the adjustment shown in Year 5, Party A's ITMD-adjusted emissions are above its target level. This is because Year 5 is not an ETS compliance year (and therefore fewer units are used). If Year 5 of the NDC cycle did fall on an ETS compliance year, Party A would instead appear to overachieve its NDC due to the additional units retired in that year.





Or Linking ETSs?

- Regional linkage difficult due to differences in structure and scope
- However, Korea's nation-wide ETS can be a good model for the region



Thank you!
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China's CO₂ market

🔊 Yee Jen Chan Head of Chinese Carbon Trading | Shell

- 現 Head of Chinese Carbon Trading
- 現 Senior Trader

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•The companies in which Royal Dutch Shell plc directly and indirectly owns investments are separate legal entities. In this presentation "Shell", "Shell group" and "Royal Dutch Shell" are sometimes used for convenience where references are made to Royal Dutch Shell plc and its subsidiaries in general. Likewise, the words "we", "us" and "our" are also used to refer to subsidiaries in general or to those who work for them. These expressions are also used where no useful purpose is served by identifying the particular company or companies. "Subsidiaries", "Shell subsidiaries" and "Shell companies" as used in this presentation refer to companies over which Royal Dutch Shell plc either directly or indirectly has control. Entities and unincorporated arrangements over which Shell has joint control are generally referred to as "joint ventures" and "joint operations" respectively. Entities over which Shell has significant influence but neither control nor joint control are referred to as "associates". The term "Shell interest" is used for convenience to indicate the direct and/or indirect ownership interest held by Shell in a venture, partnership or company, after exclusion of all third-party interest.

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About Shell in 2016

92,000

Average number of people we employed

\$21 billion

Cash flow from operating activities

30 million customers

Served every day through 43,000 Shell-branded retail stations

30.9 million tonnes per annum

LNG liquefaction volumes

2%

Our share of the world's oil production

70+

Number of countries in which we operated



50%

Share of our production that was natural gas

1%

Our share of global supply of energy

3.7 million

Our production of crude oil and natural gas, in barrels of oil equivalent a day

57.1 million

Tonnes of LNG we sold

\$1.0 billion

spent on R&D

\$102 million

Spent on voluntary social investment worldwide



1 million tonnes

Amount of CO₂ captured by Quest CCS facility in 2016

September 2018

Towards a lower-carbon future

Shell is working to meet the energy challenge in many different ways



Continued investment in oil and gas to meet growing demand



Bringing cleaner-burning natural gas to a wider market



Managing the greenhouse gas emissions from our own operations



Building a profitable New Energies business



Industry leader in carbon capture and storage



Advocating government-led carbon-pricing mechanisms

September 2018

Shell Environmental Products Trading

Compliance Position Management

- Manage CO₂ compliance for the Royal Dutch Shell Group covering ~50 installations across the Globe

1

Customer Business

- Trading in Europe, California, Northeast US, NZ, China
- Comprehensive offering from spot trades to complex structured deals

2

Proprietary Trading

- First ever trade of EUAs in 2003
- Significant market presence & liquidity provider globally

3

Shell Energy (China) Limited

- Company Registered in 2014 in Shanghai
- Support compliance of our JV in Guangdong
- One of the first companies to buy Allowances in the pilot markets

4



Number 1

Market position globally for CO₂ trading

250

Number of counterparties across the Globe

3 billion

Tonnes of CO₂ traded last year

6

Number of trading hubs we operate from

47% / 53%

Ratio of females to males in the global team



September 2018

Our Experience in China

Business Priorities

- Shell Energy China (SEC) is the first foreign company to participate in emissions trading in China
- Liquidity provider; winner of 2017 'Most Contribution' award from Guangdong Exchange, nominated for 'Most Innovative Product' by Shanghai Exchange
- Support new market instruments; Forward Trading on Shanghai Clearing House
- Participation in development of the Forestry sector in China

Voluntary market

- Partnership with Didi to encourage public participation in emissions reduction projects
- Work with domestic companies to meet Environmental/reduction of CO₂ targets



September 2018

China's Pilot Carbon Markets

	Beijing	Tianjin	Shanghai	Chongqing	Guangdong	Hubei	Shenzhen
Commencement Date	28 November 2013	26 December 2013	26 November 2013	19 June 2014	19 December 2013	2 April 2014	18 June 2013
Enrolled sectors	Include Power, Heating, Chemicals, Manufacturing, other tertiary industries, Buildings	Include Power, Steel, Petrochemicals, Chemicals	Include Power, Steel, Building Materials, Chemicals, Airlines, Paper, other tertiary industries, Buildings	Include Power, Steel, Building Materials, Chemicals	Include Power, Steel, Building Materials, Chemicals, Airlines	Include Power, Steel, Building Materials, Chemicals, Manufacturing	Include Power, Manufacturing, Buildings
Threshold	> 5,000 tonnes of CO ₂	> 20,000 tonnes of CO ₂	> 20,000 tonnes of CO ₂ (For industrial sector) > 10,000 tonnes of CO ₂ (For non-industrial)	> 20,000 tonnes of CO ₂	>20,000 tonnes of CO ₂	> 10,000 tonnes of standard coal equivalent	>3,000 tonnes of CO ₂ (For industrial sector) >1,000 tonnes of CO ₂ (For non-industrial)
Number of entities	950+	110+	290+	240+	240+	340+	800+
Market Cap	50m	160m	160m	100m	420m	260m	40m
Auction	No	No	Ad-hoc	No	Yes	Ad-hoc	No
CCER Restrictions	5% of allocation	10% of emissions	1% of allocation	8% of emissions	10% of emissions	10% of allocation	10% of emissions

September 2018

National ETS

- National ETS is expected to commence compliance year with surrender in 2020 with Power being the first sector to be enrolled
- When the ETS matures, it is estimated to enroll 8,000 – 10,000 companies
- Enrolled sectors: Power, Steel, Cement, Chemical, Aviation, Aluminum, etc
- China will eventually have the world’s largest ETS, covering approximately 3 – 4 billion tonnes of emissions annually. The emissions coverage is expected to double in the second phase of the ETS when more sectors are enrolled.

Emissions coverage	Spot market	Futures market
3 – 4 billion tonnes / year	1.2 – 8 billion yuan / year (equivalent to 0.18 – 1.20 billion USD / year)	60 – 400 billion yuan / year when it commences (equivalent to 9 – 60 billion USD / year)

Source: NDRC presentations

September 2018

Characteristics of China's CO₂ market

Liquidity

- Liquidity in the pilots is concentrated in the last 3 months prior to compliance deadline
- Larger volumes of trades are done off-screen

Regulations

- Constant evolving regulations; presents opportunities
- Limited fundamental data

Carbon Derivatives

- Currently only spot market in the pilots; the same to be expected in the early stages of the National ETS
- Lack of investment and hedging tools

Counterparty

- Most active players in the market are relatively new and small
- The need for reliable counterparty especially for longer-term trades





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DISCUSSION

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