Media Workshop

CERTIFIED EMISSION REDUCTION FUTURES

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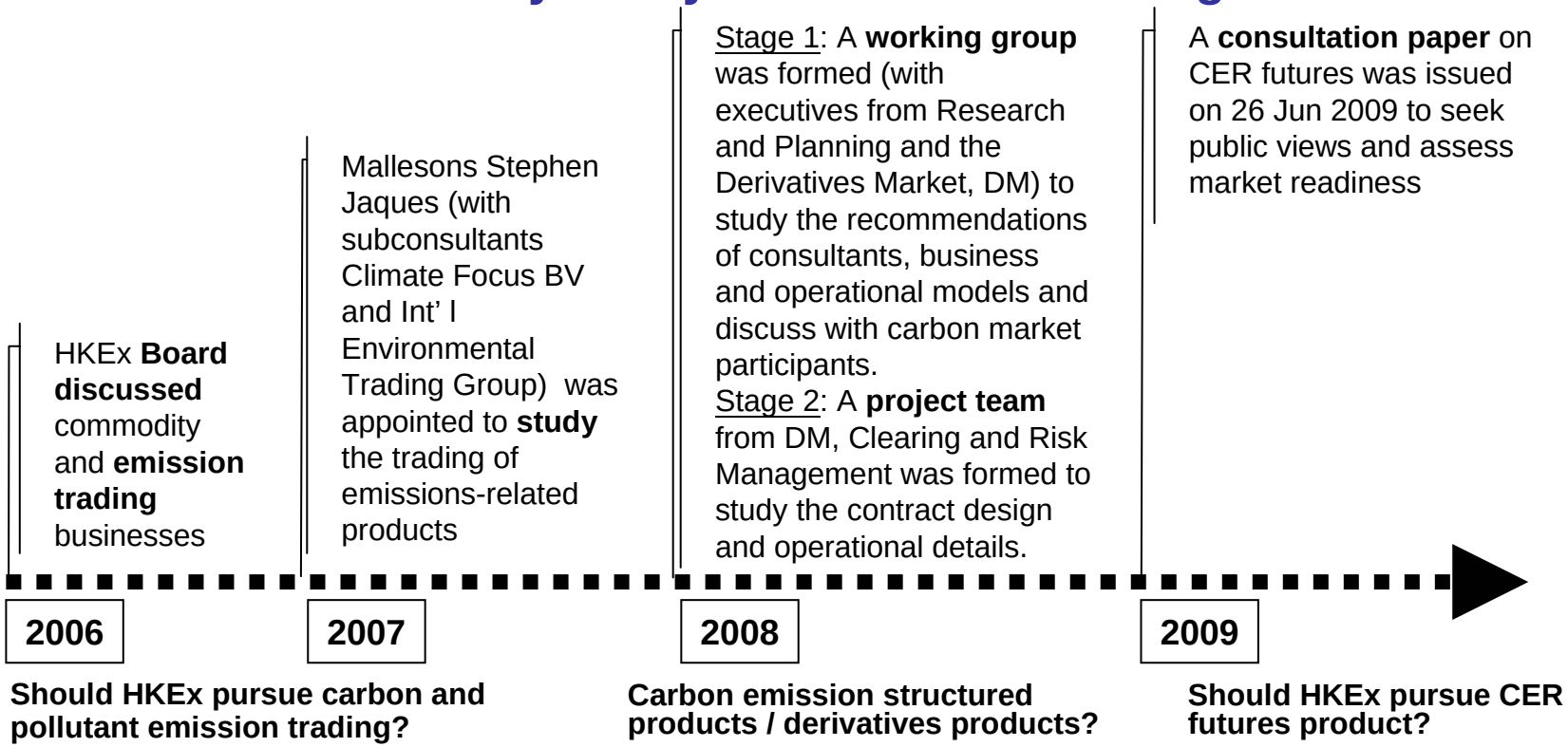
Overview

1. Background
2. Kyoto Protocol
3. Development of Carbon Emission Trading Market
4. Value Proposition of CER Futures
5. Potential Contract Design of CER Futures
6. Recap

Background

Time Line of Feasibility Study on Emission Trading Business



Background

Consultation – Part I: Discussions

- **Carbon Market Participants**
  - 8 European carbon trading firms
  - 4 local major corporations with large energy output, consumption or environmental concerns
  - 2 carbon market participants with a Japanese background
- **Intermediaries**
  - 12 active carbon market players in European carbon exchanges, who are also associated companies of HKFE Participants (9 are international banks and 3 are international brokers)
  - 3 active OTC brokers which have affiliates in Hong Kong
  - HKEx's Derivatives Market Consultative Panel and Clearing Consultative Panel
- **Carbon Market Service Providers**
  - 9 overseas exchanges specialized in carbon emission trading
  - 3 advisory and expert groups
  - 3 financial institutions offering carbon settlement and custodian services
  - 1 CDM service provider
- **Environmental Concerned Entities**
  - 8 concerned entities

Background

Consultation – Part II : Consultation Paper

- Objectives: Seek views and comments from the public and a wide scope of market participants on:

  1) the feasibility of developing a carbon emission trading platform in Hong Kong; and

  2) the product concept of CER futures

  Key issues include:
  - HKEx's role in relation to carbon emission trading
  - The business need for a carbon emission trading platform in HK
  - Market Participants' readiness for carbon emission trading
  - the appropriate pace of development of a carbon emission trading platform

- Target respondents: financial intermediaries, investors, CDM project participants, academics, and public policy makers.

Workshop

Objective

Provide more background on carbon emission trading to help media understand the rationale, mechanism and market environment regarding carbon emission trading.

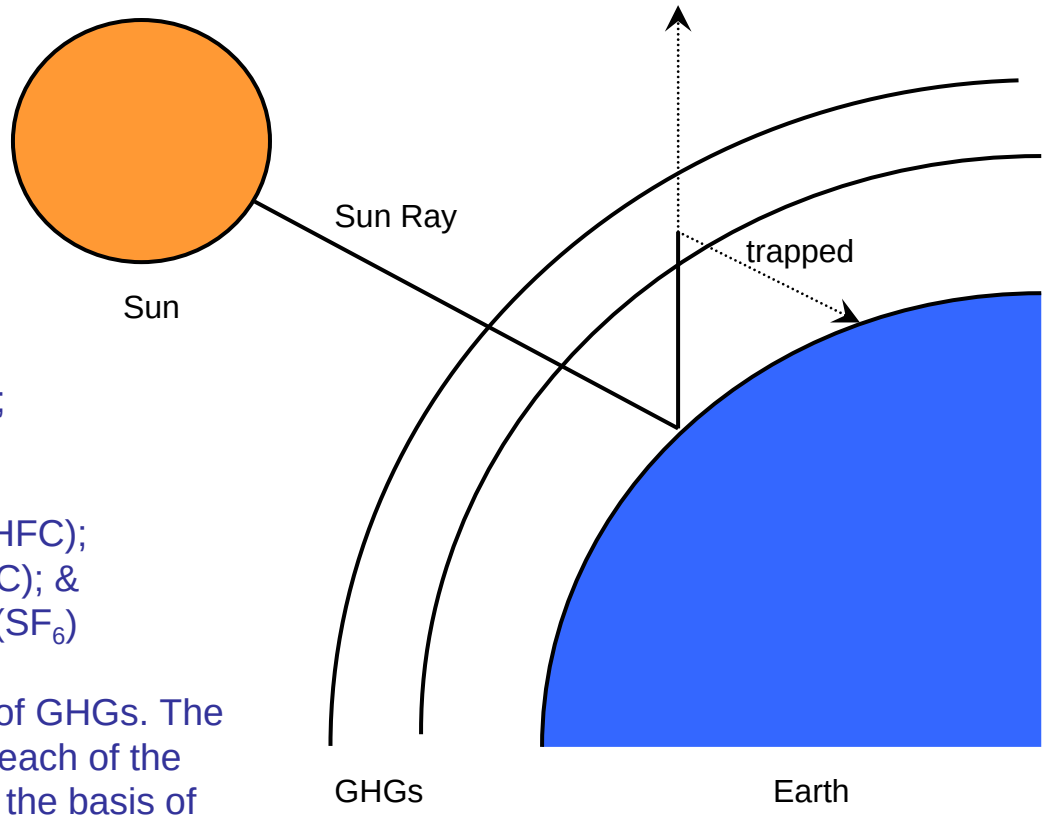
Kyoto Protocol

Cause of Global Warming

- **Greenhouse Effect**: Greenhouse gases (GHGs) trap heat in the atmosphere

GHGs include:

1. Carbon dioxide (CO_2);
2. Methane (CH_4);
3. Nitrous oxide (N_2O);
4. Hydrofluorocarbons (HFC);
5. Perfluorocarbons (PFC); &
6. Sulphur hexafluoride (SF_6)



- CO2 is the key component of GHGs. The global warming potential of each of the six GHGs are measured on the basis of the “carbon dioxide equivalent” or CO2e.

Kyoto Protocol (Cont'd)

- **United Nations Framework Convention on Climate Change (UNFCCC)**
  - International treaty produced at the United Nations Conference on Environment and Development held in 1992.
  - Aimed at reducing emissions of GHGs.
- **Kyoto Protocol (KP)**
  - Adopted by the UNFCCC parties in Kyoto, Japan, in 1997.
  - Designed to give concrete commitments in the UNFCCC.
  - Came into force in February 2005 when the countries responsible for more than 55% of the world's total GHG emissions had ratified the KP.
  - Sets legally binding targets and timetables for cutting GHG emissions.

Kyoto Protocol (Cont'd)

Sectors/source categories

Energy

Fuel combustion
- Energy industries
- Manufacturing industries and construction
- Transport
- Other sectors
- Other

Fugitive emissions from fuels
- Solid fuels
- Oil and natural gas
- Other

Industrial processes
- Mineral products
- Chemical industry
- Metal production
- Other production
- Production of halocarbons and sulphur hexafluoride
- Consumption of halocarbons and sulphur hexafluoride
- Other

Solvent and other product use

Agriculture
- Enteric fermentation
- Manure management
- Rice cultivation
- Agricultural soils
- Prescribed burning of savannas
- Field burning of agricultural residues
- Other

Waste
- Solid waste disposal on land
- Wastewater handling
- Waste incineration
- Other

Kyoto Protocol (Cont'd)

Common but Differentiated Responsibilities under the KP

- Developed countries should take up a higher commitment in reducing GHG emissions relative to developing countries.
- **Annex I Parties**: Developed countries which agreed to take the lead in adopting national measures to control or reduce GHG emissions.
  - Their targets range from -8 per cent to +10 per cent of the countries' individual 1990 emissions levels (EU was treated as one party)
  - Targets add up to a total cut in GHG emissions of at least 5% against the baseline of 1990.
  - Must be met within a five-year time frame between 2008 and 2012.
- **Non-Annex I Parties:** Developing countries which ratified the KP but did not commit to quantified GHG emission targets.

Kyoto Protocol (Cont'd)

- **KP adopted a market-based solution to global warming**
  - Two market-based approaches for reduction of GHG emissions:
    - Cap and Trade
    - Baseline and Credit
- **Why market-based solutions are preferred**
  - Control absolute emission amounts at the aggregate level, but allow flexibility at individual level
  - Prices / costs of emitting GHGs are determined by the market, not regulators or politicians
  - Flexible in reaction to the changing economic environment

Kyoto Protocol (Cont'd)

- **Cap and trade**
  - Allocates emissions allowances to regulated participants
  - Emission allowances allocation is determined by:
    - historical emissions; and
    - emission reduction targets
  - Participants which reduce their emissions free up emission allowances for sale to buyers who need them.
- **Baseline and credit**
  - Allows participants to obtain emission credits by reducing emissions below a baseline.
  - Specific baseline is derived from:
    - historical emissions or
    - performance standard that specifies the permitted ratio of emissions to output
  - Participants can sell credits to other participants which need carbon emission offset.

Kyoto Protocol (Cont'd)

- **Provides three flexible mechanisms to help countries to meet their emission reduction targets:**

(i) Emissions Trading – Cap and Trade

- Annex I Parties may acquire Emission Reduction Units (ERUs) from other Annex I Parties and use them to meet their emissions reduction targets.

(ii) Clean Development Mechanism (CDM) – Baseline and Credit

- Annex I Parties can use project-based emission reduction **credits** called Certified Emission Reductions (CERs) from projects undertaken in Non-Annex I Parties to meet their emissions reduction targets.
- Mechanism attracts participation from private sector to reduce GHG emissions through use of clean technologies in developing countries.

(iii) Joint Implementation (JI) – Baseline and Credit

- JI is similar to CDM except that the emission reduction **credits** come from projects undertaken in other Annex I Parties.

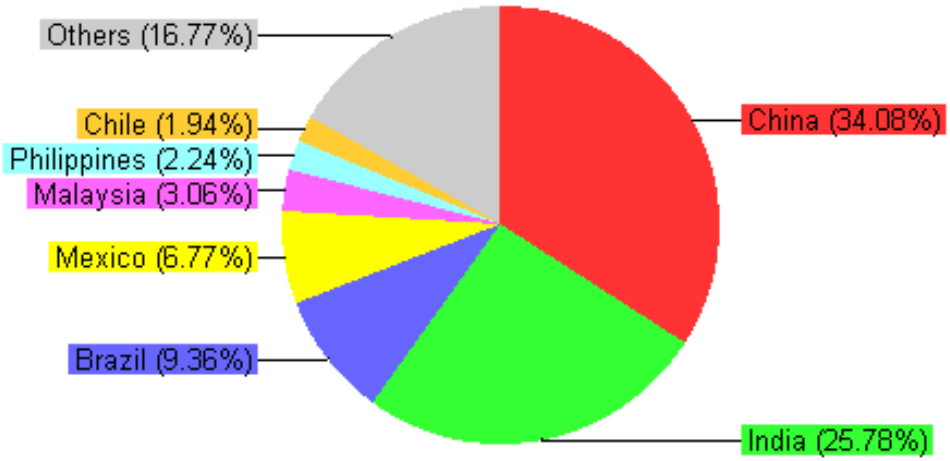
Clean Development Mechanism

Overview

- Provides incentives for the private sector to invest in clean technology in developing countries which have ratified the Kyoto Protocol.
- Launched in November 2001; first project was registered by the UNFCCC in November 2004; the CDM Executive Board (EB) issued the first carbon emission credit in October 2005.
- Annex I Parties can use emission reduction credits, CERs, from CDM projects in Non-Annex 1 Parties to meet their emissions reduction targets.
- To ensure CDM projects meet the UNFCCC requirements and emission reductions actually take place, the CDM EB regulates and supervises CDM projects, including the procedures for the accreditation of third party verifiers and their verification processes.
- The CDM EB authorises a number of technical service providers known as accredited designated operational entities (DOEs) to verify CDM projects and to ensure that projects actually reduce emissions of GHGs according to the project plan.

Clean Development Mechanism (Cont'd)

Registered Project Activities by Host Party



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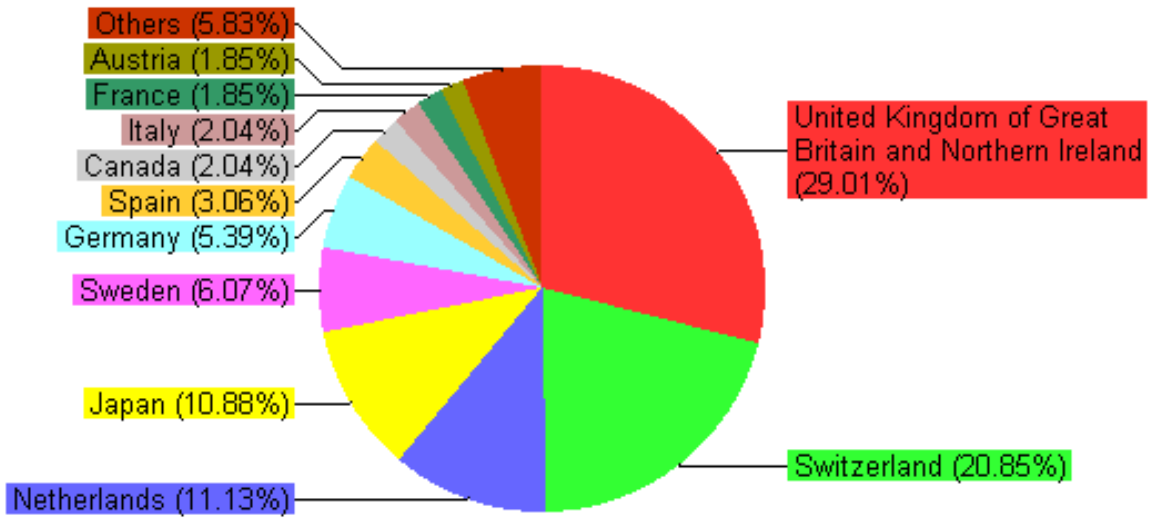
- **1,699** registered projects (**1,620 MtCO2-e** potentially by 2012)
- **1,155** projects with CERs issued, generated **311 MtCO2-e**
- **168** approved methodologies

Development of Carbon Emission Markets

Registered Projects by Annex I and Non- Annex I Investor Parties



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Development of Carbon Emission Markets (Cont'd)

Annex I Parties

- **EU:** Has the most active carbon emission trading due to its compliance market under the KP and its own initiative in reduction of GHG emissions (see appendix for more information).
- **US:** Did not ratify the KP but its lawmakers are working on legislation. Has a small carbon emission trading market which operates on a voluntary basis.
- **Japan:** Japanese entities participate in CDM projects and purchase CERs from Non-Annex I Parties. Japan is the second major compliance buyer of CERs after the EU. Japan's Environment Ministry has indicated it is working on a cap and trade system similar to the EU Emission Trading System; timing of launch is not known.
- **Australia:** Has committed to limit its GHG emissions in 2008-2012 to 108% of its carbon emissions in 1990 and aims to reduce its GHG emissions by 60% of 2000 levels by 2050. It plans to introduce a cap and trade system called the Carbon Pollution Reduction Scheme; target implementation date is 2011.

Development of Carbon Emission Markets (Cont'd)

Non-Annex I Parties

- Non-Annex I Parties in Asia, in particular China, India, Indonesia and South Korea, are relatively active in CDM projects and supply of CERs.
- At present, the carbon market in Non-Annex I Parties is an OTC market, mainly focused on CERs.
- European and Japanese companies or intermediaries participate in CDM projects by providing project finance and expertise.
- Europeans and Japanese also agree with CDM project owners to make forward purchases of CERs on a bilateral basis.
- In turn, they sell CERs to their home market users for the offsetting of emissions reduction requirements.

Development of Carbon Emission Markets (Cont'd)

- **Mainland China**
  - Has been world leader in CDM projects and CER supply in recent years
  - 84% market share in terms of 2008 transacted volume vs 73% market share in 2007.
  - CDM project owners are required to have forward CER sale agreements in place with foreign entities before their projects are approved to be eligible for CERs.
  - No secondary CER trading market in Mainland China.
  - The Beijing Environment Exchange, Shanghai Environment and Energy Exchange and Tianjin Climate Exchange, which were all formed in 2008, have various plans to trade pollutant credits.

- **Hong Kong**
  - Hong Kong-based CDM projects are eligible to apply for issuance of CERs under the oversight of the National Development and Reform Commission (NDRC).
  - Some Hong Kong listed companies are investing in CDM projects in Mainland China and South East Asia.
  - Some intermediaries are using Hong Kong to access the Mainland for CER origination.

Development of Carbon Emission Markets (Cont'd)

Carbon emission markets are growing at impressive rates

Global Carbon Emissions Trading: 2005 to 2008 (US$ million)

Market	2005	2006	2007	2008
	US$ million	US$ million	US$ million	US$ million
EU ETS	7,908	24,436	49,065	91,910
CDM	2,638	6,249	12,884	32,796
Joint Implementation	68	141	499	294
Voluntary transactions	n.a.	146	263	397
Other schemes	250	263	296	949
Total:	10,864	31,235	63,007	126,346
Annual Growth (%)	-	+187.5%	+101.7%	+100.5%

(Source: World Bank)

Development of Carbon Emission Markets (Cont'd)

- Carbon emissions markets' growth prospects depend on:
  - Negotiations on Post Kyoto Protocol (i.e. after 2012) arrangements (tighter emission cap commitments?)
  - New Annex I Party signatories
  - Expansion of industry coverage to shipping and airlines.
- Developments in the US could result in a dramatic increase in worldwide demand for carbon emission credits.

Development of Carbon Emission Markets (Cont'd)

Carbon Emission Derivatives Markets

- Earliest markets in OTC and exchange-traded carbon emission credits took off in Europe in 2003 and early 2005 respectively, with trading in EUAs under the EU ETS.
- Earliest exchange-traded CER derivatives were launched in mid-2007 in Europe.
- **At the end of 2008, there were eight major derivatives exchanges offering carbon emission futures and/or options trading.**
- Four European carbon exchanges and two US exchanges trade CER futures.
- **In Asia, CER futures are traded at two Indian commodity exchanges.**
- **Last year, CER futures trading represented 19.4 % of total carbon contract trading** (**603,431 CER futures contracts** - 1000 metric tons-equivalent per contract – were traded).

Year	Average Daily Volume in EUA		Average Daily Volume in CER	
	Spot (contracts)	Futures / Forwards (contracts)	Spot (contracts)	Futures / Forwards (contracts)
2007	93	4,193	N/A	96
2008	975	8,380	57	2,357

Value proposition of CER Futures

Current Market Practice

- CERs are sold to foreign investors on a bilateral basis (OTC)
- CERs are commonly sold at discount to market prices from trading in Europe
- Intermediaries take up project, counterparty and market risks of CERs
- CER market is not transparent and project owners lack bargaining power

Value proposition of CER Futures on HKEx

- Offer a platform for **managing market risk** of CERs.
- Exchange trades provide more **transparency** than OTC market transactions.
- **Reduce overall counterparty risk** via clearing house guarantee
- Offer a CER trading platform during **Asian time zone** for international investors.

Limitations and Constraints to be Considered

Based on Market Opinions Received

- Market Practice:
  - CERs are only issued to CDM project owners which have forward sale agreements.
  - Most of the CER supplies are already engaged via OTC market.
  - European corporations and brokers use secondary CER spot and futures markets in Europe to meet their trading needs and manage their risk exposures.

- Readiness of Trading Community in Hong Kong
  - No carbon emission trading desks in Hong Kong
  - A few firms have sales staff in Asia including Hong Kong, Singapore and Australia who mainly work on CER origination in the primary market.

Potential Contract Design of CER Futures

Contract term	Details	Remarks
Underlying instrument	Certified Emission Reduction Units (CERs) issued under Kyoto Protocol. Each CER represents an entitlement for one metric tonne of carbon dioxide (CO2) emission	A common standard of emission trading
Contract multiplier	1,000 units of CERs	
Trading / Settlement currency	Euro or USD	Euro is current market convention
Quotation method	Price per unit of CER	International standard of quotation
Trading hours	8:30 am to 5:00 pm (Asian time zone)	Follow HK inter-bank trading hours
Contract months	December contract months up to 2012 (CE of HKFE may determine additional contract months)	Only December contract month is actively traded in European exchanges as compliance requirement in EU is once a year only. EU ETS' annual compliance deadline is 30 April.

Potential Contract Design of CER Futures (Cont'd)

Contract term	Details	Remarks
Settlement method	Physical settlement	Most end users demand delivery of CERs to satisfy compliance need and yet to find a widely recognized fixing price for CERs
Delivery standard	CER units issued pursuant to Article 12 of the Kyoto Protocol with the exception of allowances generated by hydroelectric projects with a generating capacity exceeding 20MW, activities relating to land use, land-use change and forestry (LULUCF) and nuclear facilities	The European Commission imposed directive in 2004 restricting member states from using CERs generated from certain type of projects, which might have negative impact to environment, including hydroelectric projects, LULUCF projects and nuclear projects. The proposed delivery standard will ensure that EU countries could use the CERs delivered upon settlement
Delivery method	Delivery of CERs between the delivering and receiving participants' directly and guaranteed by HKEx	Other alternatives include: i. Via HKCC's holding account in an overseas national registry; or ii. Via an agent appointed by HKEx to handle delivery between buyers and sellers. The choice of delivery method would depend on market demand and cost and complexity.

Consultation Questions

Consultation Questions

- Should CERs be the core carbon emission product to pursue?
- In what way can Hong Kong add value to the business process of the CER market and attract carbon emission trading participants to the HK marketplace?
- What are the success factors for HK to develop a commercially viable CER trading platform? Does Hong Kong possess the success factors?
- Do HK investing communities have sufficient knowledge in carbon emission trading and are they ready to participate in trading CERs products?
- How is the business interest and readiness of financial intermediaries for carbon emission trading business?
- Any other issues regarding the introduction of CER futures that HKEx oughts to consider?
- Any other comments in relation to the overall development of emissions or pollutants trading markets in HK?

Consultation Paper

- This consultation paper is available on HKEx website at www.hkex.com.hk.
- HKEx invites comments from any interested parties on the introduction of CER futures set out in this consultation paper.
- Submission deadline: on or before 31 August 2009
- For enquiry about submitting response, please call (852) 2840-3844.

Risks of Trading Futures

Futures trading involves a high degree of risk. Losses from futures trading can exceed your initial margin funds. You may be required to pay additional margin funds on short notice. Failure to do so may result in your position being liquidated and you being liable for any resulting deficit. You must therefore understand the risks of trading in futures and should assess whether they are right for you. Investors are encouraged to consult their brokers or financial advisers on their suitability for futures trading in light of their financial positions and investment objectives before trading.

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Appendix:
EU Emission Trading Scheme

- European Union Emission Trading Scheme
  - Under the KP, the European Union (EU) has a collective emission reduction target of 8% below the 1990 levels, which is redistributed among EU member states.
  - Based on the emission reduction targets, EU countries allocate emission allowances to large CO2 emitters within their territories and emitters are required to monitor and report their CO2 emissions on an annual basis.
  - By the end of the compliance year, emitters are required to surrender an amount of emission allowances to the government equivalent to their CO2 emissions in that year.
  - Emitters may surrender the emission allowances allocated by the governments, or may purchase them from others. If the emitter has more allowances than it needs, it may sell them to anybody.

Appendix:
EU Emission Trading Scheme (Cont'd)

- In January 2005, the EU ETS commenced operation to facilitate trading of emission allowances.
- The emission allowances being traded are called European Union Allowances (EUAs), representing emission of 1 metric ton of carbon dioxide equivalent each.
- The Community Independent Transaction Log (CITL) under the EU ETS registers and facilitates the trading and transfer of carbon emission credits among participants' holding accounts under different national carbon registries of EU countries.
- The CITL is linked to the International Transaction Log (ITL) of the UNFCCC.

- **Post 2012**
  - EU is committed to GHG emission reduction post 2012 and the European Council has endorsed an initiative in March 2007:
    - to further reduce EU's GHG emissions by 20% in 2020 compared to 1990 levels and
    - by 30% provided other developed countries commit themselves to comparable reduction targets.
  - EU member states are undertaking legislative process on this initiative.