

## **WHITHER CARBON TRADING?**

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### **RISING TEMPERATURES**

The future economic, environmental and human costs of climate change will be high. The thrust toward carbon emission reduction is therefore inevitable. The Kyoto Protocol is a global strategic initiative under the UN Framework Convention on Climate Change (UNFCCC) to reduce carbon emissions and mitigate global warming. It came into force in 2005, and binds the developed countries (called Annex I Countries) to a cap and trade system for greenhouse gases (GHG).

As of Jan 09, more than 180 countries have ratified the Protocol. Emission quotas have been agreed by the participating countries, and emission credits can be traded under the compliance period till 2012. The Protocol also allows developed countries to sponsor project-based carbon reduction activities in other countries through Clean Development Mechanism (CDM) and Joint Implementation (JI) to meet their cap compliance targets. The UNFCCC CDM Executive Board (EB) validates all CDM projects to prevent fraud and leakage.

The deals under the current trading scheme will expire in 2012, and a new deal with greater business and regulatory clarity has to be ironed out in Dec 09 in Copenhagen.

### **CUTTING DOWN CARBON**

Under the CDM framework, a developed country can sponsor a project in a developing country in which emission reduction credits would be given to the developed country for its compliance of emission reduction targets. The initiating country shall submit, through a Designated Operational Entity (DOE), eg. SGS, BVQI, KPMG, etc. their emission reduction projects to the EB which is responsible for the approval of methodologies, project registration, and reviews of each project submitted. Carbon credits, called Certified Emission Reduction (CER), are issued for CDM accredited projects. CERs are validated and monitored by independent party. 30% of compliance commitment is expected to be met by CDM. For JI, a developed country can initiate a project in another developed country.

To complement the above emission reduction programs, a carbon trading scheme is also formulated to enable the trading of allowances and derivatives among entities. This trading scheme hopefully will encourage more companies to undertake lower emission projects and cost-reducing innovations to create carbon credits to sell. This market-driven approach places a transparent price on carbon credit, and attracts investors including banks, funds, brokers and traders to jump into the market to improve liquidity. It will also enable the operating entities to understand and estimate the carbon credit prices needed to perform their tasks and manage risks with better predictability.

Carbon trading is in its infancy stage, and is primarily driven by countries' compliance commitment and regulatory requirements. The global carbon market reached US\$126 billion in 2008 according to the World Bank. CER on the secondary market is traded around 9-11 euro in 2008. In spite of the global economic crisis, the growth of volume in carbon market reached 37% in 1Q09 with value at US\$28 billion [Source: Carbon Finance, Apr 09].

The carbon market is projected to grow significantly after the UNFCCC Climate Conference at Copenhagen in Dec 09. A new Copenhagen Protocol is anticipated to seal a new pact on global emission cap and trading scheme for a post-Kyoto framework after 2012.

## LESS CARBON, MORE JOBS

The CDM project cycle broadly covers the following activities:

- Validation & Registration – A project must first be registered by the Project Participant with the Designated National Authorities (DNA). An independent evaluation of a proposed CDM project will be done by an independent Validator who shall be an accredited Designated Operational Entity by the EB. Validation covers development of project baselines on level of emission, assessment of additionality, monitoring of project implementation, quality assurance for the generation of CER, and compliance of regulatory requirement. Once a project has been validated, it can be registered with the EB.
- Verification – A review of the emission reductions of a project shall be conducted and certified by a DOE. The process includes initial and periodic verification of monitoring system and audit records to sustain the claimed carbon emission reduction. The Verifier shall submit a formal request for issuance of CER to the EB.
- Issuance – The EB will issue the credits to the Project Participant after its review of the certification report.

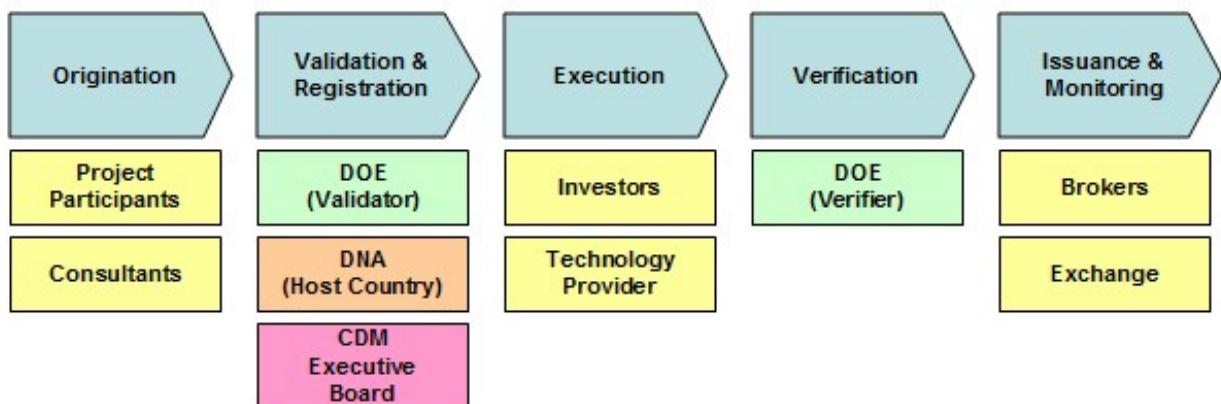


Diagram 1 – Carbon Business Value Chain

Key business entities, excluding regulatory agencies, involved in the carbon eco-system are categorized as follow:

- Project Participant – The originator or owner of a proposed project in which the carbon credit is a source of financing.
- Consultant – Entity that provides advisory services on methodology and project management relating to carbon emission reduction.
- Designated Operational Entity (DOE) - Organisation that offers validation and verification services for CDM projects to ensure compliance of CDM procedures. DOE is independent party accredited by the EB that requires third party's assessment and verification of the emission reduction projects.
- Investor – Financial institution or investment fund that offers carbon project financing. The project sponsor acquires the rights to the carbon credits from individual projects, and the quality of the credits depends on the investor's expertise in carbon business.
- Technology Provider – Business that offers clean technology and energy efficiency services, eg energy audits, to lower the economic costs and address climate change objectives. Technology is a key enabler in energy efficiency efforts.
- Broker/Exchange – Brokerages and exchanges that facilitate trading in carbon credits (and possibly other related products including energy and environmental financial instruments).

## **SINGAPORE IN ACTION**

The Kyoto Protocol was ratified in Jul 2006 in Singapore. IE Singapore emphasized that "Singapore wants a piece of the growing multi billion-dollar pie that is the market for carbon trading. There is scope for Singapore to be the Asian carbon trading hub." [BT - Sep 07]

Several CDM projects have been reported [sources: ST, BT, NEA]:

- Bee Joo Industries that converts plant waste into compost and generates power from heat (registered by UNFCCC CDM Executive Board in Sep 08)
- IUT Global that recycles food waste as compost and an energy source
- Power Seraya's natural gas based combined cycle power plant that switches from fuel oil to natural gas with a new low carbon 800MW co-generation plant
- Kim Hock Corp's biomass energy & wood recycling Plant that recycles scrap metal
- EcoWise's sewage sludge dehydration and incineration project that processes industrial waster using thermal energy and sells 95,000 carbon credits over 4 years to Kansai Electric (Japan)

Government agencies have also launched a suite of green initiatives:

- Global Trade Programme (GTP): Tax holiday offered under the GTP for carbon trading firms by IE Singapore
- CDM Documentation Grant: A co-funding scheme to promote CDM projects in Singapore by NEA

- Energy Efficiency Programme Office (E<sup>2</sup>PO): A committee chaired by NEA comprising members from other government agencies, including IDA, EDB, EMA, etc to develop energy efficiency technologies & capabilities covering green data centers, the use of IT in sustainable manufacturing, logistics and supply chain sectors, buildings and facility management
- Singapore Green Plan 2012 (SGP 2012): A blueprint towards environmental sustainability by the Ministry of Environment & Water Resources (MEWR)
- Singapore National Climate Council (N3C): Chaired by MEWR with representatives from government agencies, industry (e.g. from the Singapore Manufacturers' Federation), academia, etc. It is a platform for policymakers to engage the private and people sectors on climate change issues and policies.

An eco-system must be formed to promote the carbon business in Singapore. Many local and international advisory firms, eg. Asia Carbon Group (ACG), CVDT, TFS Green, etc, have set up shops in Singapore on CDM projects. Clean technology companies, eg. renewable energy equipment, monitoring system for energy consumptions, etc. also play important roles in supporting the green movement.

The plan to set up a new commodity exchange, Singapore Mercantile Exchange (SMX) was announced in Jul 08. SMX aims to facilitate commodities trading in the Asia, and provide a platform for futures and options trading on precious metals, base metals, energy, agricultural commodities, currency and carbon credits. [Source: SMX website]

## **EXCHANGING CARBON**

Carbon trading adopts the financial trading approach to manage and mitigate GHG emissions. A market for reducing emissions is created by giving a monetary value to the carbon credit as a business cost of doing business. The emissions are capped, allocated or auctioned by the regulator using a cap and trade program, and traded among trading parties globally. Carbon credit as a new asset class generates increased demand. Financial institutions, corporate buyers, insurers, brokers and funds have shown greater interest in the global carbon finance market.

According to World Bank, The carbon finance market is expected to grow from US\$10 billion in 2005 to more than US\$120 billion in 2008 [Source: State and Trends of the Carbon Market Report 2009, World Bank]. As at mid 2009, more than 1,700 CDM projects have been registered with the EB, with an annual average CERs of 306 Million, and expected CERs till end of 2012 at 1,620 Million [Source: UNFCCC website].

With CER becoming a tradable commodity, carbon exchanges, eg. Chicago Climate Exchange (CCX), European Climate Exchange (ECX), European Energy Exchange, etc have been set up to offer a carbon financial market. The supply and demand will influence the carbon market movement, and the price is set by the market similar to other commodities. AIM-listed CCX operates a North America-based cap and trade system for greenhouse gases. It also operates and owns Climate Futures Exchange (CCFE) and European Climate

Exchange (ECX) which accounts for more than 80% of the EU ETS (European Union Emissions Trading Scheme) traded volume.

However, enthusiasm for carbon trading has been depressed recently by the global economic crisis and the lack of clarity over post-Kyoto Protocol era after 2012.

## **COUNTRIES JOINING HANDS**

Europe, US, Japan, China and India are the substantial carbon markets. The EU ETS is the largest and most active greenhouse gas emissions trading scheme in the world. In US, many states and cities have their cap and trade systems for various GHG since 1990, eg. California, Chicago and New York. US House passed its major cap-&-trade clean energy bill in Jun 09. The legislation aims to reduce carbon emissions by 17% from 2005 levels by 2020 and by about 80% by 2050. Europe and US account for 78% and 4% of the traded volume of global carbon market in 1Q09. The market is projected to hit US\$408 billion by 2012 [Source: Carbon Finance, Apr 09]. India leads in the registered CDM projects, and China is projected to be the largest CER producer by 2012.

In China, many green initiatives have been announced. In Sep 08, the Tianjin Climate Exchange (TCE) 天津排放权交易所, an operating platform for CDM carbon credits trading, was established jointly by CNPC and Chicago Climate Exchange (CCX). A partnership agreement between China-Beijing Environmental Exchange (CBEEEX) 北京环境交易所 and BlueNext was inked in Jun 09 to operate a CDM service platform. It offers OTC EUA and CER spot transactions for brokers in the global markets to promote investment of CDM projects in China. BlueNext is co-owned by Euronext and a French financial institution (Caisse des Depots), and is a leading EUA spot exchange in Europe.

In Apr 09, four top airlines - Air France/KLM, British Airways, Cathay Pacific, and Virgin Atlantic - proposed to reduce carbon emissions. The global aviation sector accounts for about 2% of global GHG pollution. EU's decision to include aviation in its ETS from 2012 was criticized by airlines which prefer a global approach. [Source: BT - Apr 09]

Major IT companies, including Intel, Dell, etc initiated a Digital Energy Solutions Campaign to promote the adoption of IT solution to reduce carbon emissions. It focuses on using information and communications technology (ICT) as enabler in driving new efficiencies and cost savings for consumers, businesses and governments worldwide. [Source: www.regeneration.org]

## **SPEED HUMPS AHEAD**

The supply of CDM and JI are constrained by regulatory delays and resource constraints in registration and issuance. Firstly, the participating country needs a well established process to manage state-level registry, measurement and third-party verification. A poor enforcement framework will diminish the value of the allowances. This may result in a discount on the emission credit. Secondly, emission reduction projects that are financially

viable due to energy saving or other considerations, or mandated by regulatory or environmental requirements may result in the absence of additionality. Because of the complexity of verification, fraudulent verification and questionable claims of carbon reductions will cast creditability of the carbon market and affect the value of the carbon credits. Lastly, the task of reviewing the sheer volume and complexity of all CDM projects globally by EB alone may lead to lengthy delays and higher project cost.

There are many risk management issues relating to primary CERs, including delivery risk (eg. rejected certification) and technology risk. The recent financial crisis also poses difficulty in project financing. The risk associated with carbon credit delivery is shown through the difference in pricing between the primary market and secondary market – spot market where credits have been issued and traded on established trading platforms.

CER is created by global policy regulations and its market price is thus sensitive to regulatory clarity. It is therefore important for a new pact in Copenhagen be agreed to reduce any political uncertainty and market risk.

## **WHAT'S NEXT**

New approaches are being explored and proposed to augment the current efforts in carbon emission reduction. The EC has proposed a sectoral approach with credit generated from reductions based on agreed benchmark for sectors, eg. utilities and transport. The national allowance allocation is determined based on sectoral emission baseline, best practices, data analysis, target and negotiation of estimated reduction from technology adoption, eg fuel efficiency. However issues for sectoral benchmarking and inter-country quality concern are inherently very complex. Moreover, a single participant's performance alone does not guarantee carbon credits as it operates under the sectoral baseline and government action, leading to concerns on project financing, risk management, and less incentive for private sector participation.

Another latest development is Program of Activities (PoA) or Programmatic CDM. Its objective is to establish an administrative framework for a larger emission reduction project, going through standard CDM methodology and approval, to enable sub-projects to opt-in subsequently.

With the expiry of Kyoto Protocol looming in 2012, the UN and major economies hope to push forward negotiations by Dec 09 to forge a new pact to manage global GHG emissions in Copenhagen. It is critical that a new international policy imperative and framework on climate change be formulated that will drive the future of emission reduction directions, clean technology and carbon finance market in a low-carbon world.

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