

CARBON CREDITS—ORIGINATION TO COMMERCIALIZATION

ECO SECURITIES

Carbon trading and the Fertilizer Industry.

IFA Technical Meeting
Ho Chi Minh City
By: B.Thayananthan

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Content

- Climate Change
- The Clean Development Mechanism (CDM)
- Opportunities within the Fertilizer Industry
- EcoSecurities services

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Climate Change: The global community responded to climate changes via the Kyoto protocol

- **The issue at hand:** Anthropogenic (i.e., man-made) climate change is a fact. If and what the implications are and if and how to address them is under dispute.
- **The Kyoto protocol:** Aims to reduce GHG emissions by 2012 and distinguish two types of countries:
 - **Annex I countries:** With binding emission targets for industrialised countries:
 - West and Eastern Europe, Canada, Japan, New Zealand, Russia, Ukraine.
 - **Non-Annex I countries:** With voluntary participation of developing countries:
 - China India, South Africa, Philippines, Uruguay, Brazil, China, etc.

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Climate Change: The Kyoto protocol aims to curb the emissions of six GHG gasses

Gas	Global Warming Potential (GWP)
Carbon dioxide (CO ₂)	1
Methane (CH ₄)	21
Nitrous oxide (N ₂ O)	310
Hydrofluorocarbons (HFC)	11,700
Sulphur hexafluoride (SF ₆)	23,900
Perfluorocarbons (PFC)	9,200

- The impact on Global Warming differs between the gasses. To accommodate for this the protocol includes a Global Warming Potential (GWP) per gas via which the impact can be expressed in CO₂ equivalent.

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Climate Change: The protocol includes three Flexible mechanisms (ET, JI, CDM)

- The flexible mechanisms allow countries to achieve their emission targets cost effectively:
 - **Emissions trading (ET):** Trading of allowances between Annex I governments.
 - **Joint Implementation (JI):** Projects between Annex I countries.
 - **Clean Development Mechanism (CDM):** Projects in Non-Annex I countries with participation of Annex I countries.

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The CDM: The reduced GHGs in a non – Annex I can be sold to a Annex I country

The diagram illustrates the flow of carbon credits and value between an Annex I country (Buyer) and a Non-Annex I country (Seller). On the Buyer side, an 'Emission cap' is shown as a vertical bar with a red top section. Below it, 'Actual emissions' are indicated. On the Seller side, a box states 'A CDM project reduces the GHG emissions in the CDM country' and includes images of a power plant with a red slash through it and a wind turbine. An arrow labeled 'Carbon Credits (CERS)' points from the Seller to the Buyer, and another arrow labeled 'Carbon value (\$)' points from the Seller to the Buyer.

Annex I

Non – Annex I

Carbon Credits (CERS)

Carbon value (\$)

Emission cap

Actual emissions

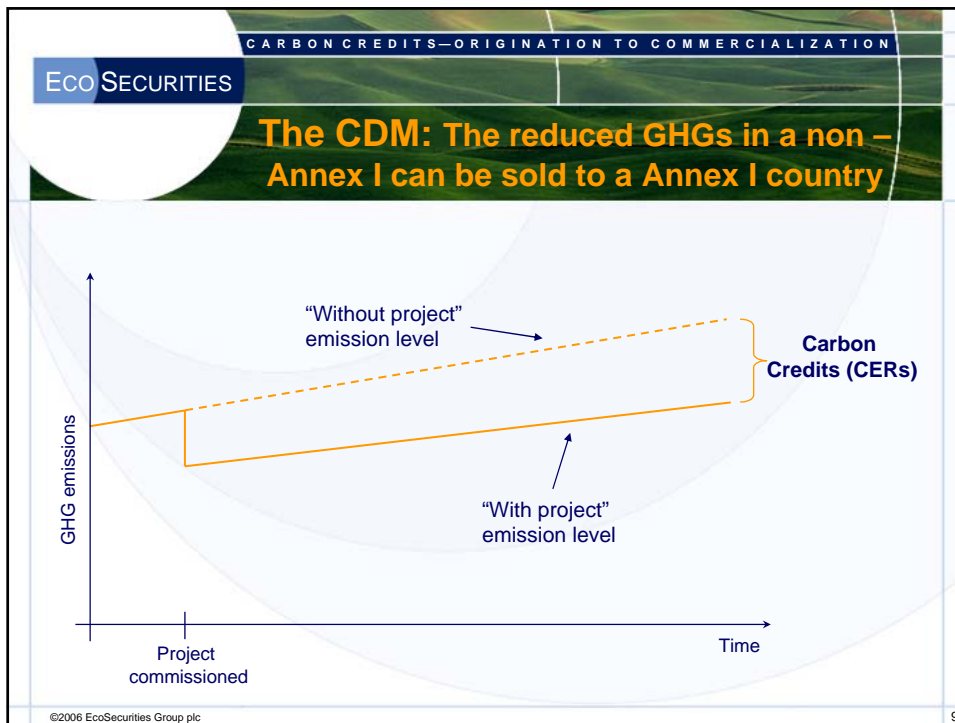
A CDM project reduces the GHG emissions in the CDM country

Buyer

Seller

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CDM Requirement : Additionality Criteria

CDM projects has to satisfy the additionality criteria which means :

“ The emission reductions of the proposed project must be additional to any that would occur in absence of the project.”

Tool for the demonstration and assessment of additionality (ver 03) available in the UNFCCC website and need to be used to demonstrate additionality of proposed project.


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The CDM: Alignment of the project development cycle with CDM activities

- The project development cycle
 

```

graph LR
    A[Concept] --> B[Feasibility analysis]
    B --> C[Financial closure]
    C --> D[Construction]
    D --> E[Operation]
      
```
- The CDM development cycle
 

```

graph LR
    A[Project Idea Note] --> B[Project Design Document]
    B --> C[Project validation]
    C --> D[Project registration]
    D --> E[Project verification and CER issuance]
      
```
- Carbon commercialisation cycle
 

```

graph LR
    A[Develop commercialisation strategy] --> B[Select buyer]
    B --> C[Negotiate terms and conditions]
    C --> D[Sign ERPA]
    D --> E[Monitor contract compliance]
      
```

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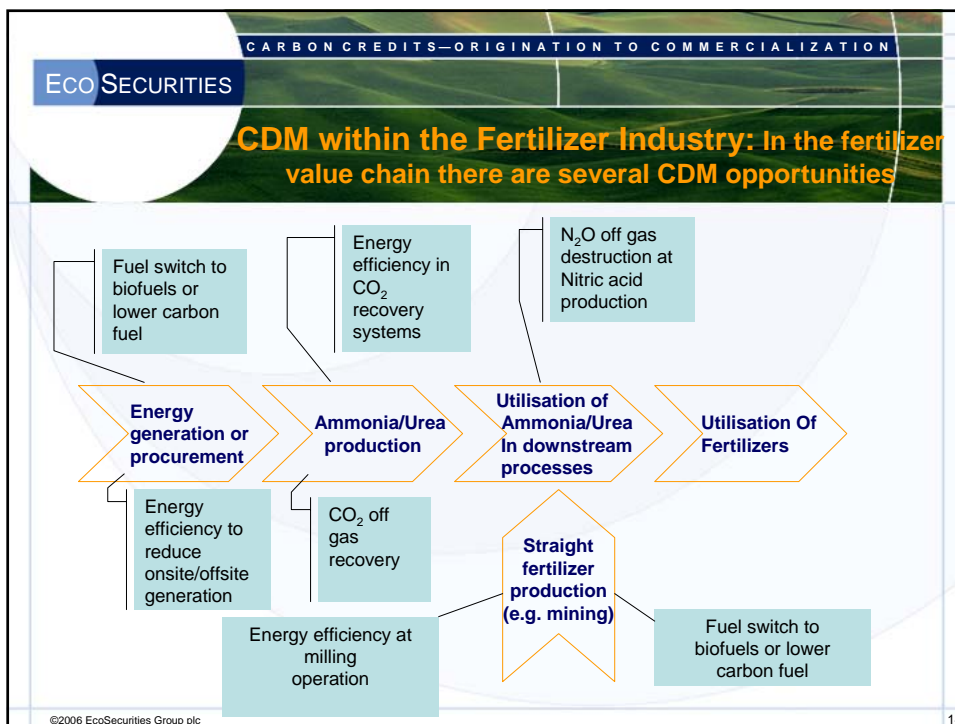
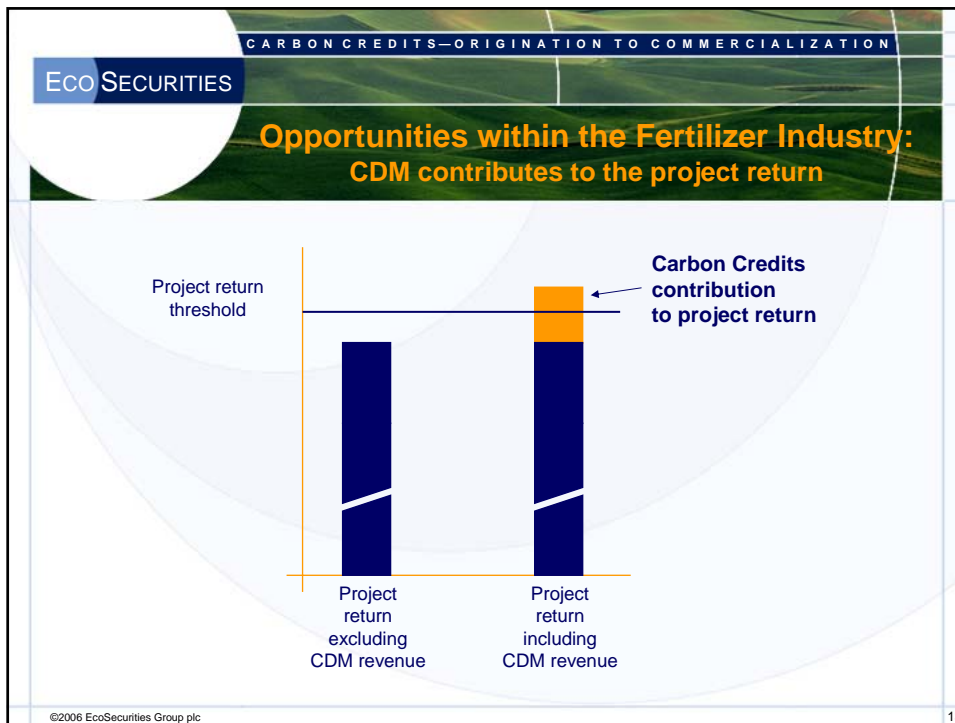
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Related Available Methodologies in The Fertilizer Industry

Approved Methodologies

- ACM 0018 - Steam Optimization Projects in Production Processes (based on energy efficiency project by modification of CO₂ removal system of Ammonia plant to reduce steam consumption).
- AMS II.D - Energy efficiency and fuel switching measures for industrial facilities.
- AM 0028 - Catalytic N₂O destruction in the tail gas of Nitric Acid Plants.
- AM 0034 - Catalytic reduction of N₂O inside the Ammonia burner of Nitric Acid Plants.

Related Available Methodologies in The Fertilizer Industry

Methodologies Under Consideration

- NM O170 - Nitrous Oxide Abatement Project Using Platinum Group Metals Secondary catalyst.
- NM 0176 - Carbon Dioxide Recovery From Flue Gas through installation of a CO₂ recovery plant (CDR).

CDM within the Fertilizer Industry: What's in it for the plant

- N₂O abatement project example:
 - **Current situation:**
 - 10.000 ton of N₂O vented to the atmosphere per year.
 - **Project implementation:**
 - Installation of N₂O abatement technology.
 - Construction time 3 - 12 months (operational July 2007).
 - CDM registration 4 – 5 months (in parallel).
 - **Value to plant:**
 - Emission reductions: 10.000 (tN₂O /y) * 310 (GWP) * 5,5 (credit period till 2012) = **17 million CERs**.

CDM within the Fertilizer Industry: N₂O projects under development

- Although a number of N₂O abatement technology available in the market, technical due diligence need to be carried out to access the suitability for each specific plant.
- EcoSecurities is at different stages of development with the following N₂O abatement projects:
 - Egypt (3)
 - Thailand (1)
 - Malaysia (1)
 - Tunisia (1)
 - South Africa (2)
 - India (2)
 - China (13)

CDM within the Fertilizer Industry: Start of project implementation at Sichuan Golden Elephant Chemical Co., Ltd. China



Signing ceremony



N₂O Reactor

Current Status of N₂O Projects

- ERPA's signed with 13 Chinese Nitric Acid Manufacturers to develop CDM for 25 plants (equivalent to 17.0 million CER's up to 2012)-EcoSecurities currently the largest N₂O CDM project developer in terms of CER portfolio.
- Technology selection process completed engaging various technology suppliers.
- Building up capacity in China to manage these projects (to have their own N₂O team-currently various expertise from UK, Malaysia and China pooled together to manage these projects).
- Monitoring management systems in place to monitor the performance of the data generated as per the monitoring methodology from the UK monitoring team's office.

CDM within the Fertilizer Industry: Urea/Ammonia projects under development

- Development of CDM in Qatar:
 - First CDM project on reduced flaring in the oil & gas industry.
 - Carrying out various CDM portfolio analysis in various industries in Qatar.
 - Currently identifying potential CDM projects for the Urea/Ammonia sector in Qatar.



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EcoSecurities services: Who we are

EcoSecurities is the world's leading originator, developer and trader of carbon credit projects

- NovaGerar Landfill Gas to Energy Project (Brazil) first registered CDM project in the history.
- "La Esperanza Hydroelectric Project" one of the first three projects with issued CERs in the world.
- A publicly-listed company since December 2005 on the London Stock Exchange.
- Voted as the best carbon advisory company six years in a row since 2001 by the readers of Environmental Financing Magazine.

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EcoSecurities services: Our portfolio & Experience

			
Wind farms	Landfills	Small scale hydro	N ₂ O abatement
			
Piggery AD	Biomass	Energy efficiency	Biodiesel

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EcoSecurities services: What we have to offer

- Example, EcoSecurities as N₂O abatement project developer:
 - To invest on an appropriate N₂O abatement system and assure a successful and fast registration of the project under CDM, increasing your revenues and reducing your risks.
 - EcoSecurities will:
 - Finance, install and maintain the N₂O Abatement System.
 - Develop CDM component.
 - Buy the all CERs from the Fertilizer Plant through a Emissions Reduction Purchase Agreement (ERPA).

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EcoSecurities services: the plants benefits

- No capital investment required.
- Constant and additional revenues from the carbon credits.
- Use the best and most suitable technology commercially available for your plant.
- Immediate start of project development (wider window of opportunity).
- Deal only with one partner (speed up process, more revenue).
- Low risks from project development to commercialisation.

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Contacts

B.Thayanathan
Business Development Consultant
Kuala Lumpur, Malaysia
Email: thaya@ecosecurities.com
Tel. +603 22820612
www.EcoSecurities.com