Pricing Carbon and CDM Project Investment Analysis

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## Agenda – Pricing carbon

1. **Preamble**
2. CERs as a commodity
3. Risks Associated with CERs
4. Carbon Markets Pricing Trends - Factors Influencing Prices
5. Carbon Contracts and ERPAs
6. About Standard Bank/Stanbic
Standard Bank in Carbon Finance

- One of the first banks in the world to enter the carbon market (since 2002)
- Operate in both primary and secondary markets, with key focus on CDM:
  - Direct financing of individual CDM projects
  - Trading all compliance units
  - Structured CDM transactions
- Standard Bank is one of the most advanced banks in trading primary CERs
- Our structured transaction business has won multiple awards, including Carbon Finance Deal of the Year 2009
- Strong integration with other bank products, for example, corporate lending, trade finance, microfinance
- We are making a substantial commitment to the development of African carbon markets
  - Local carbon staff in Lagos and Johannesburg
  - Establishment of ACAD
  - Trading and structured transactions are completed from London
- 2009: Deals injecting approx. $700 million into abatement
<table>
<thead>
<tr>
<th>Preamble: Causes and Solutions</th>
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<tbody>
<tr>
<td><strong>Why has the Clean Development Mechanism and resulting carbon credits been slow to implement in Africa?</strong></td>
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<tr>
<td>Lack of Knowledge – Generally amongst FIs project Owners, Govt</td>
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<td>Restricted availability of finance (Lack of FI knowledge and understanding....)</td>
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<tr>
<td>Price of Certified Emission Reductions (CERs)? Unknown</td>
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<td>Tax rules uncertainty</td>
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<td><strong>The Recent improvements – creating solutions ‘THE OPPORTUNITY NOW’</strong></td>
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<tr>
<td>Increased demand for African CERs generates stronger pricing</td>
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<td>Increase in funding for capacity building and improved knowledge</td>
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<td>Clarity on tax issues, government policy</td>
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<td>Increase in funding availability for early stage CDM projects</td>
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Carbon Credits are Like any Commodity – Price is Set by Demand and Supply Forces

- Sale of power and reactive power under PPA
- Sale of carbon credits under ERPA
- Incorporation of Carbon Credits into Normal Finance Instruments
  - Securitising carbon credit contracts in USD and EUR
  - Project Finance
  - Structured Trade Finance
  - Corporate Finance
  - Etc.

Energy Project

Utility

Compliance Buyer
What Risks are there in a Carbon Project?

- Construction
- Performance
- Credit
- Country
- Market
  - Carbon
  - Other
- CDM
  - Registration
  - Baseline
  - Performance/volume
  - Verification
  - Delay
  - Eligibility (Art.17)
  - Methodology
Focusing on the CDM Risks

- Registration: Whether the project will be registered
- Baseline: What emissions are being displaced by the project?
- Performance/volume: Will the project perform? What volume of CERs will it produce (versus PDD)
- Verification: Will it be done? Properly? On time? What volume? Will the verifier find any problems?
- Delay: Will registration, verification or issuance be delayed? Why? What impact?
- Eligibility: Will the country remain qualified for carbon trading under the Kyoto Protocol (eg Bulgaria)?
- Methodology: Will the methodology change? Eg., HFC23
- Market risk: Is the developer selling guaranteed volume or un-guaranteed volume?
- Pre-2013/Post-2012
CDM and the Parallel Project Cycle

![CDM and the Parallel Project Cycle Diagram](image_url)
Risks Associated with Carbon Credit Projects

- Carbon reduction assessment
- Construction
- Carbon transaction
- Issue of credits

Feasibility and financing:
- Political risk
- Counterparty credit risk

Validation and registration:
- Resources and supplies delivery risk

Commissioning:
- Natural hazards
- Business interruption

Conventional project cycle:
- Technology risk
- Eligibility and approval
- Delay in start up

Validation and reporting:
- Carbon related project cycle
- Project risks
- Carbon risks
Financing needs of a project and Price

- The riskier a project, the more equity is required compared to debt – Lower Price offered
- The earlier stage or riskier - Lower Price offered
- Same old Financial Institution Practice ‘Low Risk better price’ and vice versa
Factors Affecting Market Prices
Next 12 Months 2010 and Beyond

- Size of the recovery and developments for the post 2012 environment, post COP 16.
- If there is no agreement for post 2012 and Europe adopts a lower target 2013 - 2020 then prices will fall as there will be less demand. Political factors

- UNFCCC bottlenecks/approval innovations

- DOE suspensions/delays

- GDP and therefore manufacturing etc will be the main driver behind prices, a quick pick up in GDP will lead to a quick pick up in carbon prices.

- In the EU more manufacturing – more power required – more emissions – more requirement to purchase offsets.

- There will remain a premium for African/LDC CERs even in the short – medium term due to demand still outstripping supply.

- New sources of supply from LDCs and Africa; i.e. Re/Afforestation, Biofuels, Programmatic approach???
There are different types of CER trades

- **Spot trade:**
  - Wait until issuance and then sell
  - Highest price but exposed to price movement risk until issuance
  - Documentation: Spot ERPA or ISDA confirmation

- **Forward:**
  - Sell now for future delivery and payment
  - Avoids price risk but no up-front finance
  - Discounted price compared to spot but buyer takes price risk
  - Documentation: ERPA

- **Futures**
  - Enter a derivative contract for a fixed future price
  - Hedges price risk but penalties for non-delivery and need sophisticated trading arrangements
  - Documentation: ISDA
Primary to Secondary Carbon Pricing

This creates the possibility that a PDD stage project sold in early 2008 would have gained a higher price than a registered project in early 2009.

Project owners are therefore unknowingly exposed to the price of carbon from the very earliest stages of their project.
Clean Development Mechanism: Timelines and Volume Risk

Methodology

Project Design -> Validation -> Registration -> Monitoring

- 6-12 months
- Independent verifier
- By CDM Executive Board

Verification

- Ongoing

Issuance

- By CDM Executive Board

Volume 2011-2012 (milion tCO2)
Clean Development Mechanism: Timelines and Volume Risk

Methodology

Project Design  Validation  Registration

- 6-12 months
- 3-12 months

Monitoring
- Ongoing

Verification
- Independent verifier

Issuance
- By CDM Executive Board

Distribution
- Mean
- 90 Percentile
- 10 Percentile

Volume 2011-2012 (million tCO2)
Clean Development Mechanism: Timelines and Volume Risk

Methodology

- Project Design
- Validation
- Registration
- Monitoring
- Verification
- Issuance

6-12 months

- 3-1 months

- Ongoing
- Independent verifier
- By CDM Executive Board

Volume 2010-2011 (million tCO2)
Clean Development Mechanism: Timelines and Volume Risk

**Methodology**

- Project Design
- Validation
- Registration
- Monitoring
- Verification
- Issuance

- 6-12 months
- 3-12 months

- Ongoing
- Independent verifier
- By CDM Executive Board

![Graph showing volume risk distribution for 2010-2011 (million tCO2)]
Summary of CDM Volumetric Risk
## Contracts for Buying Carbon credits from a Project

- Standard Bank have one of the most active trading desks in the carbon markets.
- Due to our high level of experience in markets and sophisticated valuation tools we can accurately price primary project risk and offer competitive price on primary carbon projects.

### Carbon Contracts

- Advance Payment Agreements - APA
- Letter of Intent
- ISDAs
- ERPAs

### Alternative pricing tools under ERPA agreements

- Fixed price over the term of ERPA – both pre and post 2012.
- Floating price over the period (On every delivery the current market price – less % is paid)
- Floating price with a floor and cap (limiting downside – showing possible financing a minimum income)
- Guaranteed delivery of a portion of the volume (this has a potential downside for the project owner)
- Ability of SB to prepay and cover CDM costs
Standard Bank Group

- A global emerging markets bank, headquartered in South Africa
- In terms of total assets, Standard Bank is the largest bank domiciled in Africa
- Full-service bank covering:
  - Personal & Business Banking
  - Corporate & Investment Banking
  - Investment Management & Life Insurance

- Leading financial services provider in South Africa – one of the fastest growing emerging market banking sectors. Growing market share across all sectors and a consistent track record of increasing profitability and franchise value
- The largest bank in Africa with presence in 17 countries
- Global reach on the ground in 16 countries outside Africa with distribution capabilities in the world’s leading financial centres – New York, London and Hong Kong
- Signed strategic partnership with the Industrial and Commercial Bank of China Limited (ICBC), one of the largest banks in the world by market capitalisation

- Total assets approximately US$181 billion (December 2009)
- Market capitalisation of approximately US$22 billion (December 2009)
- Present in 33 countries around the world
- Employs over 50,000 people (including Liberty Life)
Standard Bank Group

Locations
- Operates in 33 countries worldwide
- 17 African countries
- 16 countries outside Africa

Universal banking capabilities

Expanding global footprint

Presence in 33 countries
Focus on emerging markets
Universal banking model
CIB driving growth internationally
Unrivalled Presence in Africa

Over 150 years of experience in Africa
Largest bank in Africa
- Over 40,000 employees in Africa
- Headquartered in Johannesburg
Growth on the continent is a key strategic focus area
Investment banking presence across the region and in key markets strengthened by recent acquisitions:
- IBTC Chartered Bank, Nigeria
- CFC Bank, Kenya

Unrivalled knowledge of sub-Saharan Africa
On-the-ground presence in 17 countries

- Angola
- Botswana
- DRC
- Ghana
- Kenya
- Lesotho
- Malawi
- Mauritius
- Mozambique
- Namibia
- Nigeria
- South Africa
- Swaziland
- Tanzania
- Uganda
- Zambia
- Zimbabwe
Awards

2005 - 2008
- Best bank for payments and collections in Africa
  - Global Finance
  - Standard Bank

2008
- Best Trade Finance Bank in sub-Saharan Africa
  - GTR
  - Standard Bank

2007
- Emerging Markets Bank of the Year
  - GTR
  - Standard Bank

2006 – 2007, 2009
- Best overall bank for cash management in Africa
  - GTR
  - Standard Bank

- Best debt research house in South Africa
  - Shine Awards
  - Standard Bank

2008
- Emerging Markets Best Trade Award
- Camco Structured Distribution
  - GTR
  - Standard Bank

2008
- Carbon Credits
- Best Trade Award
- Camco Structured Distribution
  - GTR
  - Standard Bank

2008
- Africa Bank of the Year
  - The Banker
  - Standard Bank

2008
- Leading Trade Services Bank in sub-Saharan Africa
  - GTR
  - Standard Bank
## Credit ratings

<table>
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<th></th>
<th>Short-term</th>
<th>Long-term</th>
<th>Outlook</th>
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<tr>
<td><strong>Standard Bank of South Africa</strong></td>
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<td>Fitch Ratings (March 2009)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Foreign Currency Issuer Default Rating</td>
<td>F2</td>
<td>BBB+</td>
<td>Stable</td>
</tr>
<tr>
<td>- Local Currency Issuer Default Rating</td>
<td></td>
<td>BBB+</td>
<td>Stable</td>
</tr>
<tr>
<td>- National</td>
<td>F1+(zaf)</td>
<td>AA(zaf)</td>
<td>Stable</td>
</tr>
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<td><strong>Moody’s Investors Services (December 2008)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Bank Deposit ratings</td>
<td>P-2</td>
<td>Baa1</td>
<td>Stable</td>
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<tr>
<td><strong>Standard International Holdings</strong></td>
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<td>- Issuer rating</td>
<td></td>
<td>Baa1</td>
<td>Negative</td>
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<td><strong>Standard Bank Plc</strong></td>
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<td>- Bank deposits</td>
<td>P-2</td>
<td>A3</td>
<td>Negative</td>
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