Mine Methane Carbon Credit Opportunities – Fact or Fiction?

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Introduction

- Global warming: The greenhouse effect is now firmly entrenched in the psyche of regulators and consumers around the world. The science is at times convincing, at times debated. In business we work with the environment the regulators and consumers create. This is the starting point today.
- Seven gases are regulated; primarily CO$_2$, N$_2$O, CFC, HFC, PFC, Methane and SF$_6$
- CO$_2$ is the denomenating currency of greenhouse gases. The exchange rate for methane is 25 times (its warming potential compared to the same amount of C0$_2$ – called Global Warming Potential
The Kyoto Protocol

- International Treaty under the United Nations
- Emissions Caps from 2008-2012 for countries that have ratified
- Allows a number of mechanisms for projects to reduce GHG.
- The relevant one today is the CDM or clean development mechanism allows developing countries to receive credit for project activities
Main Emission Trading Markets

- European Union Emissions Trading Scheme
  - Since 2008 Phase II (Kyoto)
  - Post 2012 Phase III (Post Kyoto)
  - Large numbers of CER
- New Zealand ETS
  - Since July 2010
  - Substantial volume of CER used for compliance (not limits)
- Japan (Government Compliance)
  - Large market for AAU, CER, and ERU
- Australia Carbon Tax phased into Emissions Trading
  - Transition to Emissions trading in 2015
  - CER permitted post 2015 up to 50% limit (some 400m CER)
- Linking Markets – a developing idea.
Kyoto and Mine Methane

- Eligible for CDM under conditions
  - Additional
    - Financial barriers
    - Technology barriers
    - Common practice barriers
  - Must pass local Sustainable criteria
    - Flaring alone may not suffice

- An Approved Methodology must exist or be created
Mine Methane – How is it treated

- Objective to reduce Methane emissions
  - Flaring
  - VAM Reactor
  - Electricity
  - Heat
  - Pipeline and Motive Power

Two example methods of mitigation and utilization are:

1. VAM Reactor: oxidizes VAM to produce water, CO₂, & heat
2. Feed drainage methane into a gas turbine to produce electricity
Is it economical – what are the Investment and Risks

- Flaring unit – from 800,000 rand
- Generators – from 4m rand
- VAM treatment
- Compressor systems?
- Pipelines?
- Risks
  - Technology risk
  - Operators risk
  - Methane flow and supply
  - Credit price risk
Barriers for Coal Mining Industry

- Return on Capital Invested
  - Less than 8% IRR
  - Negative return on flaring without credit income
- Availability of Capital
- Cheap current Refitt prices from Eskom
- Target investment IRR over 15%
- Registration Process
Does the CDM Project Option provide and answer?

- THE QUESTIONS

- What is the process?
- What are the costs?
- What are the returns?
- Where are the risks?
- What is the local experience in coal mine methane?
The CDM Process

- Methodology ACM0008
- PIN or project information note
  - Identify technology process
  - Environmental benefits
  - Sustainable development
- PDD project design document
  - Apply methodology
  - Environmental Impact assessment
  - Stakeholder consultation
- Project notification on UN website
- Audit Report
- Letter of Authorisation (local Designated National Authority)
- Submission to and Approval from UN Executive Board
The Internal Process

- Understanding and Acceptance
- Commitment of Funding
- Personnel Understanding
- Project Champion
- Implementation
- Finding data internally
Case Study

• South African based
• Mid sized miner
• Innovative
• Benefits
  • Environmental profile
  • Energy security
  • Information for stakeholders
What are the Lessons to Learn?

THE PROCESS

- Board needs to back the Project
- Internal Champion and point of contact
- Using a local African auditor essential

THE RETURNS

- IRR even at low CER prices can be up to 20%
What are the Lessons to Learn?

THE PRACTICAL ISSUES

- Identification of what is below ground
- Where is the gas
- What is the geological structure
- Where is the water
- Logistics must be factored in and achievable
- Project must fit with the mine systems.
Geological Analysis

A detailed underground analysis is essential.

- Issues
  - Where to drill
  - Identifying methane, coal seams, water, salinity.
  - Other environmental concerns
  - Stakeholder concerns
- Technology
  - Seismic
  - Electro seismic [AQT Seismic]
- Our Experience of Electro Seismic
Publications and Resources

- Carbon Monitor
- Program of Activities Mine Methane in Africa
- This paper will be on our website after the presentation with detailed cover of the points highlighted.

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