Mining and climate change mitigation via the Clean Development Mechanism (CDM)

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CDM under the Kyoto Protocol – Objectives and achievements

• Only global mechanism with a global mandate
• However, current very low Certified Emission Reductions (CERs) price
  $= €0.50 per CER (i.e. tonne CO₂ removed from atmosphere)

Objectives:
• Contribute to sustainable development
• Reduce greenhouse gas emissions, mitigation of climate change impacts

Achievements:
Total registered CDM projects: 6993 (1 July 2013)
Total CERs (Certified Emission Reductions) issued: 1.353 Billion CERs
Total projects in pipeline: 7473
Approved methodologies: 201 (including 89 large scale methodologies)

Additional Benefit:
Contribution of 2% CERs value towards UNFCCC ‘Adaptation Fund’
(Sources: UNFCCC, UNEP Riso Centre)
CDM and Mining – Opportunities and methodologies

CDM opportunities in relation to mining:
• reduction of greenhouse gas emissions from management of coal mine methane
• reduction of greenhouse gas emissions from management of coal bed methane, ventilation air methane

Approved CDM methodologies:
• ACM0008 - Consolidated methodology for coal bed methane, coal mine methane and ventilation air methane capture and use for power (electrical or motive) and heat and/or destruction through flaring or flameless oxidation – 164 projects (1 July 2013)
• AM0064: Methodology for methane capture and utilisation or destruction in underground, hard rock, precious and base metal mines (other than coal mines) 1 project (1 July 2013)

CDM and Mining Projects – Sustainable development requirements and practices

Sustainable Development Requirements under the CDM Modalities & Procedures:
• sustainable development
• sustainable development in Project Design Document
• Statement of contributing sustainable development in the Letter of Approval

Current practices in China:
• Letter of Approval issued by the National Development and Reform Commission
• Environmental Impact Assessment (EIA) by Third Party & EIA shall be approved by relevant Government Agency
• Local and global stakeholder consultation
Overview of Mining Projects under CDM – In China and other countries

Total CDM projects registered in China at time of data collection (Oct-Nov 2012):
Globally = 4726
China = 2363

Total CDM project activities in mining registered:
Registered globally = 59
Registered China = 59

Total number of CDM project activities in mining initiated:
Globally = 167
China = 160

Mining under CDM in other countries:
Registered = 0
Validation process =
- India: 1
- Indonesia: 2
- Mexico: 1
- South Africa: 2
- Philippines: 1

(UNFCCC data as of 11 October 2012)
Assessment of the Sustainable Development Agenda in CDM Projects Involving Mining

- A purposive sample of 30 selected registered CDM project activities in mining in China
- Comparison group of 7 CDM project activities in mining under validation in other countries
- Desktop assessment of PDDs (Project Design Documents), Letters of Approval (LoAs), Validation reports and EIAs (available via http://cdm.unfccc.int)
- Development of a Sustainable Development Matrix – key indicators:
  - Environmental – air, land, water, conservation
  - Social – health, welfare, education, employment
  - Economic – technology transfer, growth, balance of payments

GHG Emission Reductions - 30 selected Chinese CDM mining projects

Total GHG emissions reduction of: 12,249,861 CO₂ equivalent
Development of a Sustainable Development Matrix – Key indicators

Sustainable Development

- Environment
  - Air
  - Land
  - Water
  - Conservation
- Social
  - Health
  - Welfare/Safety
  - Learning
  - Employment
- Economic
  - Growth
  - Energy
  - Balance of payments

Sustainable Development Indicators Specified in Chinese Projects

- Environment
- Social
- Economic

- Air
- Land
- Water
- Conservation
- Health
- Welfare/Safety
- Learning
- Employment
- Growth
- Energy
- Balance of payments

UNSW
Results – Mapping of sustainable development agenda

Weak to strong sustainable development indications for Chinese CDM projects:

- **Safety improvements** due to removal of methane
- **Air quality improvements** – cessation of flaring of methane to atmosphere
- **Electricity generation** via use of methane – for local use and also surplus fed into North China Power Grid
- **Employment** for locals – 15 to 35 jobs average, 187 (operational) and 400 (construction) jobs cited for two projects
- Provision of **hot water and heating** for mine workers living quarters or local bath house
- **Technology transfer** – energy from ventilation air methane using oxidation technologies (methane concentrations 0.2 – 1.2%)
- Chinese Government **Sustainable Development Levy** on CER sales of 2% for further ‘climate relevant activities’ and for ‘insurance’ if a foreign CERs’ buyer has not been found by the time a CDM project is submitted for approval ie emissions reduction transferred to national emission reduction accounting
Future Directions – A New Market Mechanism?

Indications of potential:

• EU Emission Trading System (ETS) – into Phase III (2013-2020)
• China – introducing local ETS in several provinces
• India – ETS in 2014
• Japan – Tokyo has had a metropolitan trading scheme since 2010 and Japan is developing a Bilateral Carbon Offset Mechanism (BCOM) with partner countries
• South Korea – developing ETS, effective from 2015, with first initiative already in operation.
• Thailand, Indonesia and Vietnam – with support of the World Bank’s Partnership for Market Readiness (PMR) initiative all are working to establish market based mechanisms
• USA: California Cap-&-Trade, RGGI (Regional GHG Initiative) NE US & East Canada
• Australia: Launched the Carbon Price Mechanism July 2011. Legislation in place. Agreed to link to EU ETS commencing July 2015 and fully by 2018
• New Zealand: Operates domestic ETS which includes a range of sectors, and considering possible linking with Australia
• Others are in various stages of ETS development – Mexico, Brazil, Chile, Costa Rica
Conclusions re CDM mining projects assessed

This study shows:
- Most mining CDM projects to date have been in China.
- CDM projects in mining in China to date have very similar sustainable development attributes.
- CDM projects in the mining sector are more successful in creating additional employment in comparison to CDM projects in other sectors of industry.
- All Chinese CDM projects contribute to two levies: an in-country Special Government Levy (2% of CER sales for coal mine methane projects) and additionally to the UNFCCC Adaptation Fund via the 2% levy on CERs.
- With the new Chinese domestic emissions trading pilot scheme being implemented in seven cities and provinces, there could be a market for CER trading, where Chinese CERs will offset Chinese emissions.
- Not all potential areas of sustainable development have been addressed in the projects.
- Sustainable development benefits are only briefly discussed in the project CDM documentation (PDD, LoA and Validation document), which is surprising and arguably inadequate given the CDM sustainable development requirements.