



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

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CDM under the Kyoto Protocol – Objectives and achievements

CDM

- 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**

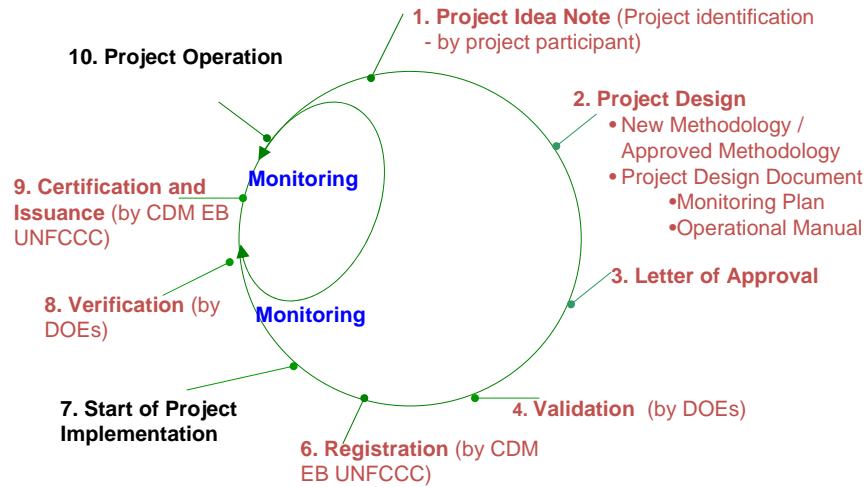
Current practices in China:

- 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**





CDM under the Kyoto Protocol – Project Cycle



Steps 1 to 9 costs \$\$\$\$\$!



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)



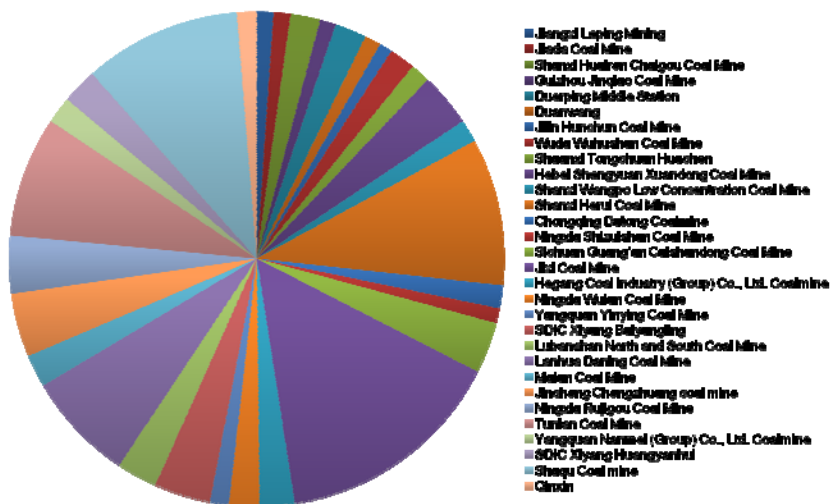


Assessment of the Sustainable Development Agenda in CDM Projects Involving Mining

- 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



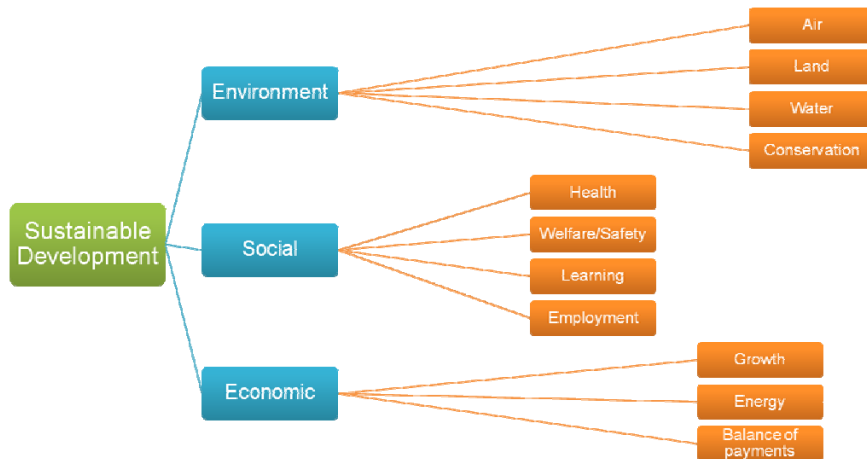
Total GHG emissions reduction of:
12,249,861 CO₂ equivalent



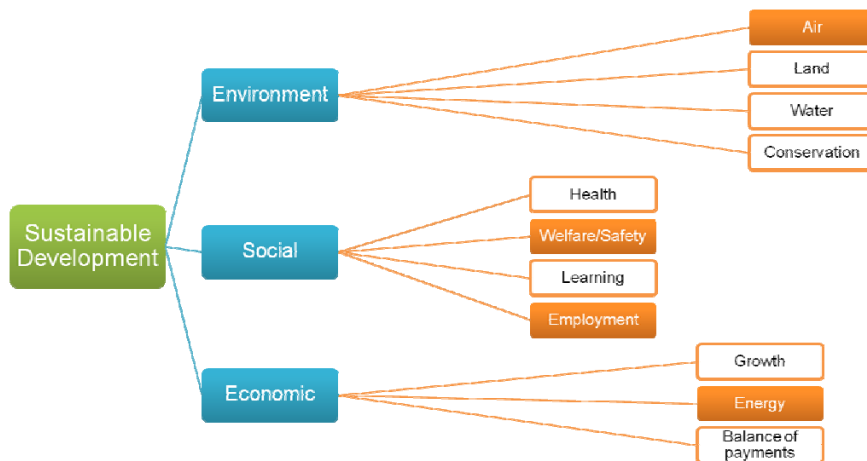




Development of a Sustainable Development Matrix – Key indicators



Sustainable Development Indicators Specified in Chinese Projects





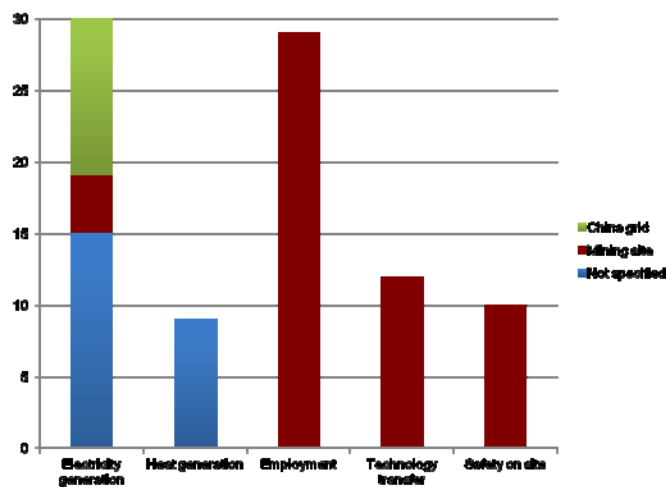
Results – Mapping of sustainable development agenda

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



Occurrence Sustainable Development Key Indicators for 30 selected Chinese CDM mining projects





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



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Conclusions re CDM mining projects assessed

This study shows:

- o **Most mining CDM projects to date have been in China.**
- o CDM projects in mining in China to date have **very similar sustainable development attributes.**
- o CDM projects in the mining sector are more successful in **creating additional employment** in comparison to CDM projects in other sectors of industry
- o 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.
- o 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.**
- o **Not all potential areas of sustainable development have been addressed** in the projects.
- o 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.



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