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journal homepage: www.elsevier.com/locate/rser

Sustainable development outcomes of coal mine methane clean development mechanism Projects in China



Noim Uddin*, Mascha Blommerde, Ros Taplin, David Laurence

The Australian Centre for Sustainable Mining Practices (ACSMP), School of Mining Engineering, The University of New South Wales, Sydney, NSW 2052, Australia

ARTICLE INFO

Article history:

Received 23 August 2014

Received in revised form

8 December 2014

Accepted 4 January 2015

Available online 30 January 2015

Keywords:

Clean development mechanism

Mining

Coal mine methane

Greenhouse gas

Certified emission reduction

Sustainable development

ABSTRACT

Since the establishment of the Clean Development Mechanism (CDM) under Article 12 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) there has been ongoing discussion about its potential and actual effectiveness in assisting in reductions in global greenhouse gas emissions. Projects implemented in non-Annex 1 countries have had the aim to mitigate emissions of greenhouse gases and also to contribute to sustainable development. In China, a significant number of CDM projects have been implemented across a range of sectors of the economy. Although various evaluations have been made of Chinese CDM projects, one industrial sector that has received little attention has been mining. In particular, the sustainable development outcomes of Chinese CDM projects associated with methane capture and utilisation from coal mines have not been evaluated. This research has involved review and assessment of 30 Chinese coal mine methane CDM projects. The evaluation approach involved content analysis of coal mine methane CDM project documents in relation to quantitative reductions of greenhouse gas emissions and indicators of contributions to sustainable development. The sustainability indicators found to be most prevalent were safety, energy use, technology transfer and employment. Also a comparison of outcomes was made with six coal mine projects initiated under the CDM in other developing countries. Overall, it was found that only brief accounts of sustainable development goals are given in CDM documents for coal mine methane project activities and that these are arguably insufficient in detail. Although varying types of sustainability initiatives were identified, many potential areas were not. These findings have implications for the future success of CDM projects in the coal mining sector, the proposed new market mechanism under UNFCCC and similar projects being implemented under mechanisms outside the UNFCCC.

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* Corresponding author. Tel.: +61 418 200 513.

E-mail address: noim.uddin@gmail.com (N. Uddin).

1. Introduction

The Clean Development Mechanism (CDM) has emerged as the major vehicle for international trade in carbon-related instruments [1]. CDM is one of the three flexible mechanisms (CDM, Joint Implementation and International Emission Trading) under the Kyoto Protocol (Article 12) to the United Nations Framework Convention on Climate Change (UNFCCC). CDM allows emission-reduction projects in non-Annex 1 countries (countries that do not have binding emission reduction targets under the Kyoto Protocol) to provide certified emission reduction (CER) credits for partners in Annex 1 countries (countries with binding emission reduction targets under the Kyoto Protocol), each equivalent to reduction of one tonne of CO₂, which is measurable and verifiable in accordance with the approved greenhouse gas (GHG) baseline and monitoring methodology and contributes to sustainable development in non-Annex I countries [2]. CERs can be traded and sold, and used by Annex 1 countries to meet a part of their emission reduction targets under the Kyoto Protocol. The CDM is designed to give Annex I countries some flexibility in how they meet their emission reduction limitation targets. It was established in 1998 and first implemented in 2000, and has become ‘...an institutionalised global trading mechanism and practice’ [3].

This paper reviews sustainable development contributions of CDM projects involving coal mine methane utilization in China. Also a comparison is made with six similar projects initiated under the CDM in other developing countries. Research aims were to investigate how coal mine methane projects under the CDM are contributing to sustainable development and how their contribution to sustainable development is thus reported. Additionally, assessments were made of whether information has been sufficiently documented in CDM

project documents and reporting (e.g. in the Project Design Document, Validation Report and Letter of Approval) with regard to sustainable development contributions by coal mine methane projects.

The paper starts with an introduction to CDM’s institutional and governance framework, CDM and GHG emissions trends from the global mining industry and the situation in China. Sustainable development aspects in the context of CDM are then discussed. This provides background for the research methods and then discussion of the research results. The final section of the paper presents conclusions and recommendations for future research.

2. CDM's institutional and governance framework

The two principal objectives of CDM projects are: assisting Annex I countries in meeting their GHG emissions reduction targets cost-effectively and promotion of sustainable development in non-Annex I countries according to Article 12(2) of the Kyoto Protocol. In order to ensure achieving both objectives by CDM, the UNFCCC Secretariat administers the CDM with the aim of interaction with all stakeholders involved in CDM project activity and in a transparent manner. Each tonne of CO₂ equivalent reduced in a developing country from a registered project, after fulfilling all the requirements for certification as one CER at the UNFCCC Registry, is tradable on the carbon market.

The CDM project cycle consists of the stages of project design, project validation, registration, monitoring, verification, certification and issuance of CERs according to CDM Modalities and Procedures (see Fig. 1). At the 7th UNFCCC Conference of Parties (COP7), the Marrakech Accords were achieved to pave the way for

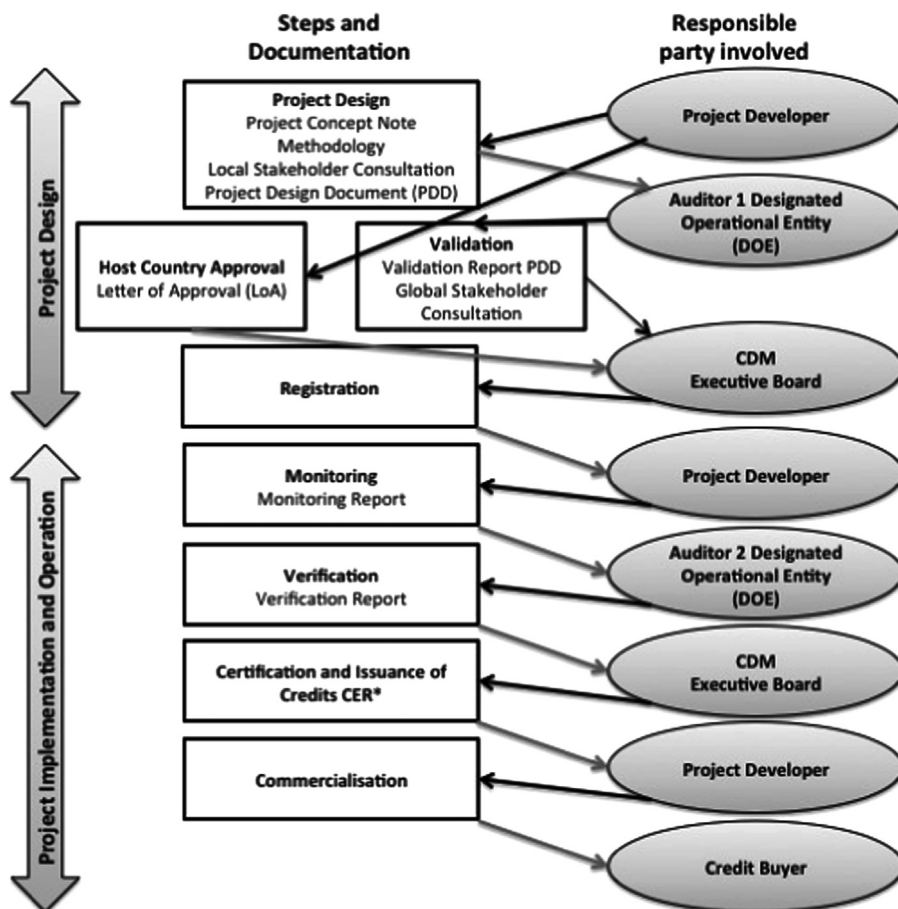


Fig. 1. The CDM project cycle modified from CORE [10]. *CER – Certified Emission Reduction unit.

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