THE CURRENT CDM AND ITS ALTERNATIVE FOR TACKLING GHG EMISSIONS IN TRANSPORT SECTOR FOR POST-KYOTO PROTOCOL

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1. Introduction

This paper describes the current situation of Clean Development Mechanism (CDM) and its shortcoming in perspective of transport sector. Then, we introduce a new initiative namely 'sectoral approaches' which hopefully could refine the CDM and be alternative for tackling greenhouse gas (GHG) emissions beyond the Kyoto Protocol. The definitions and types of sectoral approaches are reviewed and then a conceptual framework of sectoral approach for transport sector is proposed.

2. The Current Situation of CDM and Its Shortcoming in Transport Sector

The Clean Development Mechanism (CDM) is only one among three flexible mechanisms under the 1997 Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) that allows non-Annex I parties (i.e., developing countries) to participate in the global climate mitigation effort. The mechanism has a twofold objective; one is to help Annex I parties (i.e., industrialized countries) to meet part of their emission reduction targets in cost effective way and at the same time, assist developing countries in achieving sustainable development.

Due to the CDM has been designed for developed countries to get certified emission reductions (CER) or 'emission credit' from financing clean technology projects in developing countries that are currently outside of the Kyoto 'emission cap', thus the CDM Executive Board (EB) has set the procedure to accredit 'CER' from CDM projects very strictly and conservatively. Consequently, the development of CDM project is costly and very take time, particularly for sustainable transport projects like mass transit system that needs a huge investment. Therefore, transport projects are not so attractive for project developer and investor, led to only few transport projects have been registered under the current CDM.

Currently, more than 3,500 projects are in the CDM pipeline; at validation or registration stage. There are 1,128 registered CDM projects with expected CERs until the end of 2012 more than 1.29 GtCO2 (as of 21 July 2008). However, there are only 7 transport projects are currently in the pipeline, with only two projects have been registered (as highlighted in Table 1). Transport sector is sharing only 0.2% of CDM registered projects and only 0.1% in term of expected CERs from registered CDM projects until the end of 2012. It shows that the current CDM has shortcoming against the development of environmentally sound transport projects.

Therefore, it is crucially needed to reform the current CDM or find an alternative to tackle a rapid growing of emissions in transport sector. This paper proposes one of ideas namely 'sectoral approaches' to be alternative for curbing GHG emissions in transport for post-2012 climate mitigation regime.

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Table 1: Transportation CDM projects in the pipeline (as of 11 June 2008)

Project title	Methodology	Emission reduction ($ktCO_2$/year)	Crediting period	Host country	Credit buyer	Status
BRT Bogotá, Colombia: TransMilenio Phase II to IV	AM0031	247	7	Colombia	Netherlands	Registered (no. 0672)
MIO Cali, Colombia	AM0031	256	7	Colombia	Netherlands	At Validation
MEGABUS, Pereira, Colombia	AM0031	33	7	Colombia	Netherlands	At Validation
BRT System in Seoul	AM0031	120	7	South Korea	n/a	At Validation
Installation of Low Green House Gases (GHG) emitting rolling stock cars in metro system	AMS-III.C.	41	10	India	Japan	Registered (no. 1351)
Shift to low greenhouse gas emitting vehicles for materials transport to and from Doom Dooma plant of HLL.	AMS-III.C.	6.5	10	India	n/a	At Validation
Envirofit Tricycle-taxi Retrofit Program	AMS-III.C.	8	10	Philippines	n/a	At Validation

(Source: Derived from UNEP Risø Centre, http://www.cdmpipeline.org/)

3. Definitions and Types of Sectoral Approaches

There has been increasing interest in 'sectoral approach' to tackle greenhouse gas (GHG) emissions in middle term of international climate negotiation, after the first commitment period of the Kyoto protocol in 2012. With this approach, it hopefully could include the biggest emitting countries, e.g., United State and China, into the second commitment. However, there are different ideas and definitions of sectoral approach which are currently discussed for industrial sectors, e.g., cement, steel, and aluminum. The concept of sectoral approaches is not new. The original 'sectoral approach' is defined in the Convention as a method option for developed countries to meet target by improving energy efficiency technology. The term of sectoral approaches means different things to different people. There is no clarity on what sectoral approaches can or should mean (Egenhofer and Fujiwara, 2008). The earlier sectoral approach concepts aim to refine the current CDM under the Kyoto protocol (e.g., Samaniego and Figueres, 2002; Bodansky et al, 2004; Cosbey et al, 2005; Figueres et al, 2005; Bosi and Ellis, 2005). Other concepts of sectoral approaches are currently proposing for post-2012 international climate agreements (e.g., Baron et al, 2007; Konishi, 2008). This section describes two mentioned types of sectoral approaches.

(1) Sectoral CDM or S-CDM

Principally, a sectoral CDM (S-CDM) should be able to complement rather than replace the current CDM. However, there are different ideas to operate S-CDM. Samaniago and Figueres (2002) first introduced the term and suggested a government-driven mechanism that would enable Non-Annex I Parties to develop national or local policy initiatives that discernibly lower GHG emissions in a particular sector. By contrast, Cosbey et al (2005) labeled this approach as 'policy-based' and defined the 'sectoral CDM' as a mechanism driven by private actors to combine similar projects within a country or local region along the lines of a sector. While Bodansky et al (2004) discussed a 'programmatic crediting mechanism' that might encompass both public and private actors. This term is taken up by Figueres et al (2005) who defined programmatic project activities as a multitude of actions that occur as the result of a deliberate programme, which can either be a voluntary or mandatory government measure or a private sector initiative and is coordinated by one enacting agent. Consequently, the CDM Executive Board (EB) has allowed project participants to develop a set of projects, so-called 'Programmatic CDM' or 'pCDM' which actually evolved from the idea of 'sectoral' or 'policy based' CDM that would encourage developing to implement regional, sectoral, sub-sectoral and cross-sectoral projects, which would be the results of specific sustainable development policies, measuring the attained reductions, and selling those on the international emission reduction market (Bakker et al, 2007). Such aggregation of projects could also reduce transaction costs and maximize domestic opportunities for cost-effective reductions. In the medium term, a sectoral CDM may also be a way for Southern countries to gradually move towards emission limitation commitments in the framework of the climate regime. It would stimulate the establishment of the necessary technical capacity and infrastructure such as detailed emission inventories and projections, and let governments gain experience with large-scale climate protection policies (Sterk, 2008). It is very interesting that how the CDM will be further reformed, as Figure 1 shows the options of scaling up the CDM.

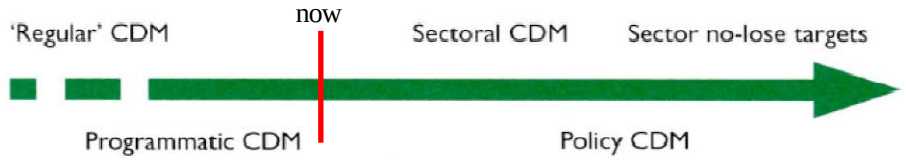

Figure 1: Options of scaling up the CDM
(Source: Adapted from Sterk, 2008)

(2) Sectoral Approach for Post-2012 Climate Mitigation Regime

Recently, there are several proposals and ideas of sectoral approaches aimed to propose for the post-2012 climate mitigation regime. Sectoral approaches were putted on the table at COP13 in Bali, Indonesia at the end of 2007 and discussed again in Bangkok Climate Change Talk in April 2008. Also at the 2nd Climate Change Talk in Bonn, Germany in June 2008, many sessions were held to discuss about sectoral approaches. In addition, Japanese Government has own sectoral approach that its basic idea is to set midterm national targets for each major emitting country (including China and India) by calculating emission reduction potential in each sector, such as power-generation, transport, and others with certain indicators. At the G8 Submit in Hokkaido in July 2008, the Group of Eight stated that the sectoral approach proposed by Japan is recognized as useful tools for achieving national emission reduction goals. Sectoral approaches for post-2012 climate mitigation regime try to allocate emission reduction target for major industry sectors. Sectoral approaches may help to identify emissions on a sector-by-sector basis, building confidence that policies and measures can be put in place to reduce emission. They can also help identify national or global commitments through the aggregation of sectoral data (Egenhofer and Fujiwara, 2008)

4. Proposed Framework of A Sectoral Approach for Transport Sector

This sectoral approach framework is developed basing on assumptions that transport sector is really needed to curb emission reductions, particularly in developing countries where GHG emissions are rapidly growing. The emission reduction target in transport sector should be assigned to each country. The countries must meet the commitment both for national and transport sectoral targets (see Figure 2). For the midterm negotiation (2012-2030), the shadow target of transport sector (i.e., the developing countries have commitment to be supported by developed countries to reduce emission as target assigned - double counting) may be introduced to major emitters in developing world, such as China and India. For the long-term, they should be included in the sectoral emission target commitment as shown in Table 2. The 'shadow target' means that developing countries have to help developed countries by hosting clean development projects and policies, the emission reduction earned from such activities can sell to partner and also counted as themselves. By this approach, Annex 1 parties, developed countries could help developing countries easier to reduce emissions in transport sector by financing to develop clean projects and policies, e.g., mass transit system, and transferring clean technology, such as zero-carbon fuel, low emission vehicle standard.

	Annex I Countries						Non-Annex I Countries				
	US	Canada	EU	Russia	Japan	Australia	China	India	Brazil	South Africa	Mexico
Power generation											
Industry and Manufacturing											
Transportation - Land transport - Shipping - Global aviation											
Building and Commerce											
Others											

Sectoral Target

National Targets

Figure 2: Conceptual framework of a sectoral approach for transport sector

Table 2: Proposed participation of countries to transport sectoral agreement

Commitment Periods	Developed Countries		Developing Countries	
	Annex B Countries	Rest of Developed Countries	Major Emitting Countries	Rest of Developing Countries
2008 - 2012	○	×	–	–
2012 - 2020	○	○	△	–
2020 - 2030	○	○	△	△
2030 - 2050	○	○	○	△
2050 - forever	○	○	○	○

(Remark: ○ Binding target, △ Shadow target, × Not ratified, – No target)

5. Discussion and Conclusion Remark

Although, there are some difficulties of transport sector regarding principals of emission reductions such as additionality, baseline and monitoring methodology, however, it should be given a priority or special treat. As developed countries have emitted GHG emissions very much more than developing countries so far, developed world should show their leader to combat climate change. There are some issues that should be considered also. For example, many transport projects in developing countries have been developed earlier than should be happened, due to global warming awareness. Therefore, such projects should be accounted as additionality as well. Another issue is as transport sector shares about 25% of global CO_2 emissions, the emission reductions in this sector as it sharing also should be concerned. This idea can be applied easily for carbon offset scheme, i.e., the money which is donated from transport users should be very much offset for transport sector such as incentive for developing mass transit system or low-carbon vehicles.

6. Further Research

This research study will further develop more shape of a sectoral approach in order to fit for reducing emissions in transport sector and analyze the proposed approach by using an integrated assessment model (IAM) to know the impacts of the proposed approach and consequent decision making of countries towards the post-2012 climate mitigation agreement. Other patterns of participation should be evaluated to find the suitable one. The potential and cost of emission reductions in transport sector in each country will be also studied which would be useful information for curbing GHG emissions from transport sector.

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