

# The Clean Development Mechanism and local sustainability

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## 1. Introduction

When the Clean Development Mechanism (CDM) was first discussed in the third Conference of the Parties (COP3) of the United Nations Framework Convention on Climate Change (UNFCCC), it was described as a “win-win” mechanism because of its dual objective –to assist developed countries in achieving compliance with their quantified emission reduction targets *and* to assist developing countries in achieving sustainable development by implementing projects. Together with the other two flexibility mechanisms of the Kyoto Protocol, CDM was considered as a highly innovative approach to tackling global environmental problems, by relying on market mechanisms.

Since 2004, more than 550 CDM projects have been registered by the UNFCCC Secretariat, and 760 million certified emissions reductions (CERs) are to be issued by 2012 (as of March 2007). Seemingly, the CDM and its carbon market progress satisfactorily, and approximately another 1000 projects are under preparation to be registered. Those projects present a substantial contribution to greenhouse gas (GHG) mitigation at the global level. However, the contribution of the projects to sustainable development is often unclear. Especially, when it comes to benefits to community on local level, it is often reported that current CDM does not live up to its purpose.

One of reason of this imbalance between success in terms of overall market development and failure with regard to sustainability is a CDM provision that was agreed at the COP7. There, it was decided that the international supervisory board of the CDM (CDM Executive Board, CDM EB) is to assess GHG mitigation only, but the contribution to sustainability is to be assessed solely by the developing country in which the project is implemented. However, up to now, many developing countries have failed to establish strict assessment criteria. And this failure led investors of the North to concentrate on cost-effective carbon mitigation rather than sustainability.

Under these circumstances, it is difficult to describe CDM as a “win-win” mechanism. Then, question is what sustainable development could mean in the context of CDM. Could carbon mitigation on global level mean it or should it be something else on local level. If it is the benefit on local level, how CDM projects could promote those benefits under current CDM rules?

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This paper attempts to investigate options to implement CDM projects that contribute more to local sustainability, from a perspective of stakeholders' participation in a project. It especially focuses on a non-profit organisation on national and local level, and how it acts in a network of project participants. It first discusses what sustainable development is in the CDM context, with regard to links between climate change and sustainable development from a viewpoint of the South. Second, it analyses how CDM could be discussed focusing on local sustainability and non-governmental organisation (NGOs)' participation in a network, based on CDM debates in the literature. Third, a case study is used to analyse links between local sustainability and the actors involved in a project. By doing so, it will be attempted to identify key actors in the quest to promote further sustainable development through CDM.

## **2. Local and sustainable development in the CDM context**

Article 12.2 of the Kyoto Protocol regulates the objective of CDM as follows:

“The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Annex I countries in achieving compliance with their quantified emission limitation and reduction commitments under Article 3.”

When the protocol was adopted in 1997, some described CDM as a “win-win” mechanism that benefits both the South and the North. Others conceived it as a new problem-solving approach to global environmental issues. At the same time, first criticisms were voiced, such as concerns for “carbon colonisation” or “low-hanging fruits”.

Today, many studies point out that the current CDM framework fails to promote sustainable development benefits. Sutter and Parreno (2005) analyse that CDM is unlikely to provide a long-term employment solution in developing countries. According to Sterk and Wittneben (2005), meaningful participation of the local community in CDM is limited. Cosbey et al. (2006) look for possibilities how to increase projects that generate benefit that is other than GHG mitigation, in the South. Ellis et al. (2007) suggest that CDM should be reformed in a way to promote local sustainable development. Many criticisms focus on sustainable development, but what does “sustainable development” really mean in the context of CDM?

Current CDM rules provide no definition of “sustainable development”. This is due to the decision taken at the COP7. The COP7 decided not to agree on an international definition for sustainable development in the context of CDM because many developing countries avoided having a single definition and insisted that defining the sustainability was their “sovereign matter” (Kenber 2005). Therefore, instead of an international definition, the COP agreed that every developing country could set sustainable development criteria based on its own preferences. The assessment of sustainability was thus left to each developing country, it was decided that the CDM EB and its panels could assess GHG mitigation only. However, this decision allowed developing country to have weak criteria (Sutter and Parreno 2005), partly due to lack of human and financial capacity. Many developing countries do not clearly define sustainability in the context of their country, while they accept CDM projects without strict assessment how they would contribute to sustainability. As a consequence, project investors started giving weight to

cost efficiency and carbon trade and neglecting sustainable development. Through the absence of concrete concept of sustainability, GHG reduction, which means carbon credit, has been gradually understood as the major sustainable development benefit of CDM. However, as long as the Protocol regulates a dual objective –carbon mitigation and sustainability- in parallel, GHG reduction and sustainable development should be implemented without one dominating over the other.

Then, what does sustainable development mean for the South, especially focusing narrowly on links between sustainable development and climate change? Equity is certainly one of the key components in the discussion of sustainable development and climate change, as it is part of the core concept of the IPCC Second Assessment Report and the Third Assessment Report (Najam et al. 2003). Generally, equity is understood in various, context-dependent ways (Olsen undated). First, equity is often discussed in a debate about distribution of emission reduction efforts (Metz et al. 2002). Second, Najam et al. (2003) points out social, environmental and economic elements of sustainable development evolve climate change debates: equity is treated in the social dimension of sustainable development, while climate change and its impacts is considered to fit in the environmental dimension, and cost efficiency is treated in its economic dimension. Finally, Brown and Corbera (2007) state that equity is fairness in decision-making and outcome benefits, in the context of a carbon market.

Development is a further key issue for the South. One of the main conclusions of the IPCC Third Assessment Report is that achievement of the goal of the Convention largely depends on the development pathways to be implemented in the future. Following two development approaches imply a part of the concept of development paths' objective with related to climate policy from a viewpoint of the South. One notion of development paths is "the development first approach". Davidson et al. (2003) state that "development can be shaped in such a way as to achieve its goals and at the same time reduce vulnerability to climate change, thereby facilitating sustainable development that realises economic, social, local and global environmental issues". In addition, they point out development objectives are understood as how human well-being can be achieved in basic and individual needs, such as energy, water and food. A second approach is "Sustainable development policies and measures (SD-PAMs)", which is similar to the development first approach. Its development objective includes poverty abatement, job creation, food security, access to modern energy services, transport, drinking water, education, health services, and land (Winkler et al. 2005). Under this concept, "sustainability [...] is taken to mean providing for these basic human needs in a way that can continue over time, result in less damage to the environment, and provide more social benefits and long-term economic development. Sustainable development must be driven by local and national priorities". By integrating (or undermining) climate strategy in to the development strategy, development objectives for sustainable development are achieved without setting strict emission reduction targets.

Some basic points are found about sustainable development from the viewpoint of the South. First, development objectives are focused on the local level and connected to individual basic needs. For example, modern renewable energy service improves of energy pumping system of water, or distributes energy for irrigation in agriculture, which contributes to development of local communities directly. Second, GHG reduction is not the first priority for the South. Instead of setting a strict emission reductions target, installing renewable energy system may reduce future emissions and promote sustainable energy use. Third, equity is a significant concept for distribution of benefits. This may

include equity in access to information, communication and knowledge, equity in decision-making, and equity in benefit (Brown and Corbera 2007).

These three notions of components of sustainable development can be applied to the discussion of “sustainable development” in the CDM context. First, goals of sustainable development have to target specifically the local level. In other words, the local community is a beneficiary that should have the opportunity to access the benefits generated by a CDM project. Such sustainability benefits imply not only GHG mitigation, but also visible and measurable benefits at social, environmental and economic dimensions. Second, from equity perspective, a CDM project should integrate the population that is marginalised by the current CDM framework and development strategy. By integrating both objectives, those marginalised populations can get an opportunity to access to benefit.

These aspects of sustainability in the context of CDM are well reflected in the Development Dividend<sup>1</sup> criteria framework (Table 1), which was developed by the International Institute for Sustainable Development (IISD) for the purpose of promoting contribution of CDM to development dividend benefit<sup>2</sup> (Cosbey et al. 2006). For instance, Criteria 1-c, 2-c and 2-d clearly consider about impacts of local community. Criteria 2-a, 2-b, 2-c imply involvement of marginalised populations, and 3-a states distinctly that GHG emissions are not accounted for under the criteria of this framework.

As discussed in this section, sustainable development in the context of CDM implies the realisation of local benefits based on equity, and not simply GHG mitigation. Concretely, the criteria of the Development Dividend could be one of the indexes to assess local sustainability. Although achieving in GHG mitigation in a cost efficiency manner is one of the main goal of CDM, sustainable development on local level should not be treated as a secondary objective of the CDM. It should be strived for in parallel to carbon mitigation.

Table 1: Criteria for the Development Dividend Framework

1. Economic:
a. Does it generate employment in significant amounts? Here the focus is not on construction employment (though such employment is not completely discounted), but on long-term opportunities.
b. Does it have balance of payments/ foreign exchange benefits? Does the project reduce the need for significant imports, for example, of fossil fuels? Does it significantly boost the prospects for exports (by creating transportation infrastructure, reliable energy supply, etc.)?
c. Does it involve technology transfer/ capacity building? Does the project use local suppliers, or otherwise build up the capacity of local manufacturers, local users, to adapt and utilize new technologies?
2. Social:
a. Does it benefit marginalized populations economically (e.g., employment creation, income supplement)? Construction employment is heavily discounted here in favour of ongoing employment opportunities.
b. Does it benefit marginalized populations environmentally (e.g., reduced resource degradation, reduced

<sup>1</sup> The study assessed 215 registered projects (as of mid 2006) by utilising multi criteria analysis based on the assessment framework as Table 1 shows.

<sup>2</sup> Development Dividend benefit is defined as “benefits to developing countries beyond those strictly related to climate change, in the areas of economic growth through investment; technological evolution; poverty alleviation; environmental and human health improvement”.

health-damaging pollution)? Criteria 3(a) and 3 (b) pose the question whether these sorts of environmental improvements occurred. Here the question is whether those improvements resulted in a significant portion of benefits going to marginalized populations.
c. Does it provide energy to energy-poor populations? Does any energy generated go to satisfying the needs of energy poor populations? Alternatively, do a significant number of energy-poor people benefit, even if their numbers as a percentage of total beneficiaries are low?
d. Does it increase adaptive ability, resilience of communities, regions? The project might do this by allowing the community to take ownership of the project or the technology. Or it might involve capacity building to help the community use or replicate the technology. Or the project might have inherent adaptation benefits.
3. Environmental:
a. Does the project reduce polluting emissions (air, water, soil)? GHG emission reductions are not counted (unless reducing those emissions serves a non-climate change-related environmental goal, such as preventing ozone depletion.) They are <i>assumed</i> to be reduced, and that reduction does not constitute part of the development dividend.
b. Does the project prevent and/ or reduce natural resource degradation? It might do this by, for example, reducing the use of fuelwood, protecting biodiversity. Reducing the draw-down of <i>non-living</i> resource stocks (such as fossil fuels) does not count toward this criterion.
c. Does the project “green” the process of energy production? Does it involve deriving energy from renewable sources, or from sources that are less polluting than the baseline? Does it increase the efficiency of energy use? (Bonus: actually displaces dirty energy- no leakage or simple fulfilment of suppressed demand.)
d. Does it foster development, dissemination of new energy technologies/ sources? Does the project contribute to a fundamental restructuring of energy regimes by using new “green” technologies for energy production? The key here that the technology should be relatively new. Green and traditional is not sufficient; this is already captured in criterion 3(c).

Cosbey et al. (2006)

### 3. Framing CDM

This section focuses on how CDM could be framed for a further discussion regarding local sustainability. In order to do this, it provides a survey of the current CDM literature and describes the perspectives from which the authors discuss CDM and sustainability (3.1). In this context, six different categories are distinguished: a *carbon market approach*, a *technical approach*, a *regime approach*, a *sustainable development approach*, a *critical approach* and a *partnerships approach*. The second part of the section analyses how sustainable development at local level is framed under each of these perspectives (3.2). Then, it frames CDM as partnership s network based on these discussions (3.3). Finally, it explains natures of actors that involved in CDM (3.4).

#### 3.1 CDM main debates in the literatures

##### *Carbon market approach*

Reduction of GHG in CDM project is calculated as CERs, credits that are tradable at international carbon market. Therefore, in this approach, CDM is framed as one of the mechanisms that generate carbon credit through a market mechanism in cost efficient manner.

Regarding carbon trading, trade between CERs, and trade among other trading scheme are one of the main topics of this discussion. Surely, understanding the state of CDM is essential to estimating carbon costs and identifying market trends (Jotzo and

Michaelowa 2002, Capoor and Ambrosi 2006b). Other studies concentrate on the structure of carbon trading, the relationship between costs and specific project types, and the performance of certain types of credits in the market.

More recent contributions focus on problems of the current carbon market. This includes discussions of the undeveloped carbon market in Africa due to its small potential for CDM projects (Capoor and Ambrosi 2006a). Limitations of the market for CDM credits from forestry, due to the permanence problem of credits from sinks (Locatelli and Pedroni 2006), have also been treated. How to reduce transaction cost is another significant issue under this stream of literature. Some simply prefer to reduce the cost that investors have to pay. Others are specifically concerned that some types of projects require high transaction cost while they are especially likely to contribute to more sustainability in the South (e.g., small scale projects in renewable energy, such as solar power).

#### *Sustainability approach*

Based on Article 12.2 of the Protocol, some argue that CDM generates benefit of sustainability. Those who would like to maximise benefits of sustainability at the South and at the global level by implementing CDM mainly support this approach.

Sustainability impacts at the global level could be understood as GHG mitigation. However, GHG is assumed to be reduced in every CDM project. Therefore, sustainability impacts other than GHG mitigation are mainly discussed in the literatures of this category. Those benefits are: abatement of air and water pollution, contribution to technology transfer (Haïtes et al. 2006), promotion of renewable energy use (Silveira 2005), protection of biodiversity (Hardner et al. 2000) and so on.

Some prominent works have been conducted, such as Markandya and Halsnaes (2002) and Olhoff et al. (undated) that discuss the impact of CDM on sustainable development. Yet, the definition of what is or what is not sustainable development in the CDM context is not clear in these studies. Under this circumstance, a study of developing criteria and indicator to measure contribution of sustainable development was discussed (Heuberger et al. 2007, Sutter 2003, Markandya and Halsnaes 2002, Olhoff et al. undated). In addition, non-governmental organisations (NGOs) established their own criteria based on their experience with the environment/development interface. The CDM Gold Standard supported by World Wide Fund for Nature (WWF) and the SouthSouthNorth Matrix tool (2004) by the SouthSouthNorth are examples for this.

#### *Regime approach*

CDM being a mechanism that is regulated in an international agreement on climate change, there is a possibility that it may conflict with other international agreements. In part, this concerns the relationship of the Kyoto Protocol with other multilateral environment agreements (MEAs), but also with investment-related multilateral agreements.

A prominent example is the discussion on inconsistencies between the Montreal Protocol<sup>3</sup> regime and HFC 23 CDM projects<sup>4</sup> under the Kyoto Protocol regime (Matsumoto 2006). This inconsistency discussion has been negotiated in the CDM EB

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<sup>3</sup> Montreal Protocol on Substances that Deplete the Ozone Layer regulates reduction the HCFC production.

<sup>4</sup> This project may cause unexpected increase of HCFC 22 production, especially from 'new production facility' in developing countries.

and the COP/MOP. The agenda of eligibility of carbon capture and storage (CCS) project under CDM also opened a discussion of incoherency between the Kyoto Protocol and the 1996 Protocol to the London Convention<sup>5</sup>. Some also point out contradictions between the Cartagena Protocol on Biosafety and forestry CDM projects, however in practice, this has not been reported or discussed in the CDM EB yet.

Regarding multilateral agreements other than the environment, possible conflicts between the WTO regime and the Kyoto regime are often indicated. Werksman et al. (2003) and Carlarne (2006) examine potential conflict between investment law and the CDM rules and suggest solutions for dispute settlement.

#### *Technical approach*

Once the legal provisions for CDM are discussed and agreed, a large number of technical studies were and are still being conducted to investigate options to further promote the mechanism. Literature under the technical approach conceives of CDM projects as merely mitigation-oriented and attempts to contribute to its development by utilising scientific knowledge, specifically related to CDM issue.

A great deal of literature has studied technical issues of CDM over the past few years. Most of the literatures are commenting on concepts (such as additionality) or agreements (such as approved methodology) made by the CDM EB and the COP/MOP. Hence, these studies are rather practical than academic and aim to resolve a specific issue of CDM operation. For instance, Kartha et al. (2005) observe that conventional methods to assess additionality<sup>6</sup> do not properly evaluate additionality of project and propose a new additionality concept for evaluating new technologies installed by a project activity. Development of baseline methodologies are also widely discussed, as for example the setting of carbon emission factors in developing countries (Yamaguchi 2005, Sharma and Shrestha 2006). Other works, for example, deal with the selection for project sites (Benitez and Obersteiner 2005) or the feasibility of transport projects (Browne et al. 2005).

Furthermore, proposals to reform CDM are submitted by the private sector. Those include, for example, new thresholds for eligibility of small-scale CDM projects, bundling of large-scale projects, simplifying the conventional methods to assess additionality, and management of the CDM EB (Marcu and Dornau 2005).

#### *Partnerships approach*

According to Article 12.9 of the Protocol<sup>7</sup>, CDM is supposed to be a mechanism in which both private and public actors take part. Actors could be, for instance, governments of the North and the South, private sector of the North and the South, NGOs of the North and the South, international organisations, local authorities and local communities. The private sector can be involved as project developer, investor, consultant, certifier and verifier, or credit broker, depending on the particular set-up of the project. International organisations may join to promote investment in the South, to promote development and to development carbon market. NGOs' activity level may be on local level or

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<sup>5</sup> Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972)

<sup>6</sup> The tools for the demonstration and assessment of additionality (version 03), The 29<sup>th</sup> CDM Executive Board Meeting Report, Annex 5.

<sup>7</sup> Article 12.9: "Participation under the clean development mechanism, including in activities mentioned in paragraph 3 (a) above and in the acquisition of certified emission reductions, many involve private and/or public entities, [...]."

international level. Overall, different actors are of a different nature, and each actor has different incentive to participate in a project. A project is implemented partnership between these actors.

A study of partnership in the CDM context mainly focuses on how each actor works in a project network. For instance, Brown and Corbera (2003) measure expectation and preference of each project actor through multi criteria analysis, and one of a key conclusion is that participation of NGOs is important for realisation of equity in decision-making in forestry projects. Nelson and de Jong (2003) take a similar position, and they point out that local NGOs play a role to coordinate for a carbon projects with local farmers. These studies are often taken with forestry project case study. Regarding partnership of private and public actors, Streck (2004) explains it as new type of partnerships in environmental governance, and gives the example of the Prototype Carbon Fund (PCF), which was launched by the World Bank and is a multilateral fund in which governments and the private sector participate to implement CDM projects.

As Brown and Corbera (2003) explain, different actor create participate in a project network based on their own purpose and interest. By pooling the resources of all actors, Streck (2004) concludes, CDM can contribute to global environmental objectives.

#### *Critical approach*

The last approach is relatively more recent compared to other five approaches, which were mentioned above. This is because this approach is based on criticisms of current CDM operation and status, such as imbalance of regional distribution (Silayan 2005), poor performance of sustainability (Sutter and Perreno 2005), and lack of “ownership” of the South (Olsen 2006).

Most of the literatures support the continuation of CDM, however, they strongly propose changes in current CDM rules. Some of these proposals are sectoral CDM (Sterk and Wittneben 2006, Samaniego and Figueres 2002), integration of sustainable development policy and measures (SD-PAMs) into CDM (Winkler et al. 2002), and the Development Dividend approach (Cosbey et al. 2006). For instance, the proposal of sectoral CDM aims at enabling sector-wide transformations toward low-carbon pathways, at aggregating dispersed activities, and resolving the issue of perverse incentives (Streck and Wittneben 2006).

Narrowly focussing on the local level, criticism is also found how local communities are treated under CDM. Fogel (2004) remarks that the local is “disappeared in the protocol’s discourse of market efficiency”. Although there is the complexity of local communities and their impact on the ecosystem, CDM negotiators define them in the CDM context by simply subsuming them under the unspecific label ‘stakeholder’. Consequently, local communities have to follow decisions made by the global elite (Fogel 2004). In addition, opinions of local community are not reflected well in project design due to the transaction cost that project investors have to pay. Based on this assessment, some suggest that the community should be involved proactively in project decision-making processes (Boyd 2007, Sterk and Wittneben 2006).

### 3.2 Main debates and local sustainability

CDM has been discussed in many different ways and from different perspectives, with each of them contributing to the development of the mechanism. However, when

zooming in to the issue of sustainable development at the local level, some of the debates are not suitable for a discussion of local sustainability as they mainly focus on specificities of the operation of CDM. This section analyses that how each debate frames local sustainability (Table 2).

Current international CDM negotiations are strongly led by technical and carbon market debates, which pay little attention to the agenda of sustainable development. Technical approach's CDM-related science knowledge gives directions to discussions of the CDM EB and its Methodology Panel. Especially referencing the IPCC Good Practice Guidance (1996), agreements are made for baseline/monitoring plan methodology. At the same time, the carbon market puts pressure on CDM negotiations, however rather indirectly compared to the technical knowledge. Issues relating to the development of the carbon market are not debated explicitly in the CDM negotiation, but they do influence them, e.g. the concerns voiced by private actors voice at diverse fora for opinion exchange, such as side events of conference organised by private sector<sup>8</sup>, international organisations<sup>9</sup>, or the UNFCCC secretariat<sup>10</sup>. Also, every CDM EB meeting provides a timeslot for interaction between CDM EB members and stakeholders. At these occasions, carbon market representatives make a strong case for deregulation and simplification of procedures and methodologies with a view to reducing transaction costs. From their perspective, carbon projects are only viable if they succeed in keeping the transactions costs down, which is often involves minimising the time and cost of involving local community (Fogel 2004). For both technical experts and carbon market proponents, promotion of local sustainability is not a key objective for operation of CDM. The former emphasizes the generation of CERs in an accurate manner using scientific knowledge, while the latter focuses on the generation of CERs in a cost efficient manner. Local is conceived as a spatial place where a CDM project is implemented, simply as "project boundary" or "project site" as described in project designed documents. Both discussions do not consider sustainable development as the main purpose of CDM, and if GHG mitigation is accomplished through a project, the sustainable development objective is also met.

Regime discussions share a similar approach with carbon market and technical discussion to local sustainability. Their primary goal is to ensure the achievement of the objectives of an international agreement. Especially keeping coherency between the Kyoto regime and other multilateral agreement is understood as a significant issue, because CDM is one of the components of the Kyoto regime. The discussions of coherence between the Montreal regime, or the WTO regime are examples for this. Therefore, as long as CDM does not violate other multilateral agreements' objectives that deal with local sustainability, this approach pays little attention to the local sustainability issue. Under this approach, local is rather taken as a place where CDM is implemented. Under this approach, the literature understands sustainable development simply as Article 12.2<sup>11</sup> in the Protocol, although the Protocol has failed so far to define sustainable development.

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<sup>8</sup> Such as annually held conference, the Carbon Expo organised by the International Emissions Trading Association (IETA).

<sup>9</sup> Such as UNEP Riso's CD4CDM regional event. Often some of members of the CDM EB is invited and exchange opinions.

<sup>10</sup> Such as side event "Questions and answers session with CDM Executive Board" of COP/MOP and Subsidiary Body.

<sup>11</sup> Article 12.2: The purpose of the clean development mechanism shall be to assist Parties not included in

Critical discussions are often diametrically opposed to the carbon market approach, because many projects are mainly market-driven but not developing country-driven, as Olsen (2006) points out. It also partly counters the technical and regime discussions, with their approaches of the local, as noted above. The main objective of the critical approach is to promote equitable and fair CDM, including participation and benefit distribution, and regional project distribution. Meaningful participation in decision-making is very limited in the currently registered projects (Brown and Corbera 2003, Fogel 2004, Bäckstrand and Lövbrand 2006, Sterk and Wittneben 2006, Boyd 2007), and benefit distribution on the local level is unclear. Critical discussion gives high weight to the local sphere, and considers it as a beneficiary of sustainable development. It also considers sustainable development as local needs, policies and opinions, but not simply as GHG mitigation at the global level.

Sustainability discussion is strongly connected to critical discussion regarding local sustainability. GHG mitigation is taken as one aspect of sustainability, but it seeks for further, visible and direct co-benefits to the South, such as power distribution, air and water pollution abatement, and poverty alleviation. Although there is no single definition of sustainable development in the context of CDM, this approach mainly identifies it with social, economical and environmental dimensions. Local is conceived as the place that would receive benefit- a beneficiary of sustainable development.

Partnerships discussion partly overlaps with the carbon market, critical and sustainability discussions from a viewpoint of who participates in a project and who does not, and what the outcome is. In this approach, local could be one of stakeholder of project participants, when a project is designed for a purpose of promoting local benefit. Sustainable development is considered as one of the purposes of creating networks, while promotion of investment, mitigation of GHG and building business opportunity could be the main aims as well, because the perceived purpose of the network varies between the stakeholders involved.

In sum, the issue of local sustainability is well pointed out in the debate of sustainability and critical approaches, while they do not provide tools to promote the issue. On the other hand, the debate of partnerships partly covers general issue of sustainable development as one of the objective of network, and the notion of partnerships bring a tool to understand stakeholder's behaviour with regard to sustainability.

Table 2: CDM main debates and its perspectives

<i>Discussion approaches</i>	<i>Main focus</i>	<i>Main discussions</i>	<i>Local</i>	<i>Sustainable Development</i>
<i>Carbon market</i>	Benefit- CERs	Cost efficient CERs generation	Spatial place	GHG mitigation
<i>Sustainability</i>	Benefit-sustainable development	Co-benefit/ GHG mitigation	Beneficiary	Co-benefit of mitigation
<i>Regime</i>	International	Achievement of	Place for	Article 12.2 of the

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Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Annex I countries in achieving compliance with their quantified emission limitation and reduction commitments under Article 3.

	agreement	objectives	implementation	Protocol
<i>Technical</i>	Scientific knowledge	Accurate CERs generation	Spatial place	GHG mitigation
<i>Partnerships</i>	Project participation	Achievement of objective of network	Stakeholder	Aim of network
<i>Critical</i>	Equity and fairness	Proactive participation	Beneficiary	Local needs

### 3.3 CDM as partnerships network

To answer the questions raised by sustainability and critical debates above, I focus on CDM as a mechanism that allows various actors to participate in a project through network. Although CDM has a hierarchical structure (decisions and regulations made by the COP/MOP and the CDM EB), partnerships network explains the basic premise of CDM that a variety of actors can participate in a project to bring their own resources in network and accomplish sustainability when participant's network is carefully arranged.

Partnerships has been explained as one of the alternative means for problem-solving to protect global commons that traditional approach, which is only handled by governments or single government, cannot deliver effective results (Streck 2002, 2004). It promotes changes through introducing new actors, new settings, and new modes of interaction into global environmental governance, and the new actors are from different sectors, namely public, private, civil society, both from the North and the South, and different levels, namely local, national, international (Witte et al. 2003). In concrete, public-private partnerships, multi-stakeholder processes, global public policy networks, and global issue networks are the good examples of networks (Ivanova 2003). In this regard, some of the advantages of partnerships are: first, it has potential to close the implementation gap by connecting local practice and global rules in a flexible and decentralised manner (Streck 2004, Bäckstrand 2006). Second, since public, private and civil society are expected to involve in network, it has possibility to close 'participation gap' (Bäckstrand 2006). Third, partnerships bring together the advantages and resources of each actor to one table, for example innovation, technical expertise, financial resources and local knowledge, thus it makes possible to close deficit of resources (Witte et al. 2003).

Supporting the notions of partnerships that can make sustainable development tangible, however, Hale and Mauzerall (2004) (and the others such as Andonova and Levy 2003, Bäckstrand 2006) point out that there is imbalance of distribution of partnerships in implementing area of category due to donor's preference, stating partnerships reflect "capabilities of rich countries and donors rather than the needs of poor countries". In addition, they suggest that international organisations can take their leadership to bring other actors in a network into priority area that is not implemented yet. This imbalance is also identified in CDM project types. Current CDM project types do reduce GHG and generate a great deal of CERs (e.g., capturing of high global warming potential gas such as HFCs, N<sub>2</sub>O, and CH<sub>4</sub>), while they do not accomplish benefit to local. As a number of international organisations that relates to CDM are very limited, it is unlikely that international organisations can give more impact to local sustainability in whole CDM projects. Under such a circumstance, which actor's participation leads more impact in the South is unclear. Business actors are considered as

a new actor, however projects are mainly implemented by private business and those are criticised not accomplishing sustainability. As Ivanova (2003) states that market actions alone do not solve the serious problems of integrating environmental, economic, and social concerns, nor do governments' action. Explicitly planned and arranged precondition is required for network.

On the other hand, another main private actor of partnership debate is NGOs. The role of NGOs has broadened from local to international levels under complex circumstances of global environmental problems. In cases where actors' participation in a project and the aim of the network affect the outcome of local sustainability, does involvement of NGOs in a network promote such impact, and if so, which type of NGOs could give more impact in the South?

### 3.4 Networks between actors involved in CDM

The natures of CDM actors vary depending on sectors (public or private) and levels (local or international) of its activity. There are, for example, business companies which seek for profit, some act only at local level in steel production, while the others are an international company for information distribution or a national own company. This section explains the nature of proponents of CDM.

Regarding sectors of proponent, I divided into 4 types, which are government/public, hybrid of government and business, business and NGOs. In some cases, a municipality acts as one of a proponent of a project. In this case, it belongs to the category government/public, since a part of its budget is from governmental funding and it works for public service. Business companies that are involved in CDM have diverse in its type depending on their expertise: it acts as a project developer, an investor, a consultant, a certifier and verifier, or a credit broker. These companies are, however, common to act "for profit"<sup>12</sup>, therefore it is classified as business category. Hybrid between government/public and business is the category of network by public and private actors, namely public private partnership (Streck 2004). A good example of this category is the Community Development Carbon Fund (CDCF) and the Prototype Carbon Fund (PCF), which are both launched by the World Bank. These trust funds are composed by governments and companies of the North (for more detail, Streck 2004). A national company, which has both public and private spheres, also fits in this category (e.g., the Petrobras, the Brazilian national oil company).

Division according to levels is also a prominent notion of actors involved in CDM, since stakeholders vary from international to local depending on their role. In one hand, the International Emission Trading Association (IETA), for example, is the internationally acting carbon trade association, which is composed by private companies that implement carbon projects and international trading. Another example is, some NGOs work at the national level with consultation to its headquarter of the international level (e.g., WWF, Greenpeace). Division of level, therefore, makes it possible to analyse more closely whether level matters for local sustainability. NGOs and companies are divided into three levels depending on their activity level (e.g., NGOs that have foreign branches or activities go beyond boarder are considered as international NGOs).

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<sup>12</sup> In some cases, it acts for non-profit purpose. Activity such as corporate social responsibility is a good example.

Based on this categorisation of actors (see Table 3), it finds out whether there is a connection between participation of actors and implementation of local sustainability in the next section.

Table 3: Categorisation of actors involved in CDM

actor level	Government/public	Hybrid of government and business	business	Non-governmental organisations
Local	Municipality	---	local (small and medium enterprises) company	local NGOs
National	Governmental agency, fund	National company	Company (large enterprises)	NGOs (large size but no influence to abroad)
International	International organisation (UNDP, UNCTAD)	Fund owned by international organisations which composed by government and business sector (e.g., CDCF, PCF by the World Bank)	Company owning foreign branches (e.g., IETA, EcoSecurities), fund	NGOs owning foreign branches (e.g., SouthSouthNorth, WWF)

#### 4. Case study

This section examines the relationship between the achievement of local sustainability benefits and the participation of actors in a CDM project. Particular attention is paid to the nature of actors (government, private or NGOs, and local entity or international entity etc.) and their way of involvement.

##### 4.1 Methodology

In this study, the assessment framework of the Development Dividend is used to evaluate the contribution of CDM to local sustainability, as mentioned earlier in section 2 (see Table 2). The programme of the Development Dividend assessed 215 registered projects (as of mid-2006), and ranked all projects using multi criteria analysis. The highest ranked project<sup>13</sup> type were energy efficiency (EE) projects in households, followed by solar, EE at service, biogas, geothermal, hydro, wind, biomass, fossil fuel switch, EE in industry, cement, landfill gas, fugitive gas capture, agriculture, N<sub>2</sub>O and HFCs incineration projects. For this case study, a number of projects were selected from the project list compiled by the Development Dividend programme, based on the following criteria.

1. The study focuses on projects that distribute energy to energy-poor population (Criteria 2-c). Therefore, project types such as HFC 23 and N<sub>2</sub>O incineration, agriculture, cement, fossil fuel switch and fugitive gas capture projects are excluded from the analysis, because those projects does not generate electricity. EE projects in households, solar, EE at service, biogas, geothermal, hydro, wind, biomass, EE industry and landfill gas projects meet this requirement.
2. To eliminate peculiar cases, project types, which appear in the list less than three times, are excluded. Solar (2 projects) and EE at service (1 project) are therefore

<sup>13</sup> A project that has high score means it is a project that has high benefit of the Development Dividend.

disregarded. The following 8 project types remain: biomass, biogas, EE at households, EE at industry, geothermal, hydro, landfill gas and wind projects.

3. The three highest ranked projects from each of the eight project types are examined in more detail. For these 24 projects (3 projects x 8 project types, see table 4), the participation of the different actors involved in the project will be assessed in more detail (the information of participants is taken from the Project Designed Documents (PDDs) of the 24 selected projects<sup>14</sup>).

Table 4: 24 case projects (based on the result of the Development Dividend)

Ref. #	Project type	Development Dividend ranking	Project name	Country
1	Biogas	12	Biogas Support Program - Nepal (BSP-Nepal) Activity-1	Nepal
2		15	Biogas Support Program - Nepal (BSP-Nepal) Activity-2	Nepal
3		21	Bagepalli CDM Biogas Programme	India
4	Biomass	1	Biomass Power Project at Kalpataru Energy Venture Private Limited, Bayana Tehsil, Bharatpur District, Rajasthan	India
5		1	Indur 7.5 MW Non-Conventional Renewable Sources Biomass Power Project	India
6		5	Biomass based independent power project at Malwa Power Private Limited, Mukatsar, Punjab	India
7	EE in households	3	Moldova Biomass Heating in Rural Communities (Project Design Document No. 1)	Moldova
8		3	Moldova Biomass Heating in Rural Communities (Project Design Document No. 2)	Moldova
9		9	Kuyasa low-cost urban housing energy upgrade project, Khayelitsha (Cape Town: South Africa)	South Africa
10	EE at industry	53	TSIL – Waste Heat Recovery Based Power Project	India
11		58	Waste heat based 7 MW Captive Power Project Godawari Power and Ispat Ltd (GPIL)	India
12		58	Process Waste Heat utilization for power generation at Phillips Carbon Black Limited, Gujarat	India
13	Geothermal	15	Lihir Geothermal Power Project	PNG
14		70	San Jacinto Tizate geothermal project	Nicaragua
15		89	LaGeo, S. A. de C. V., Berlin Geothermal Project, Phase Two	El Salvador
16	Hydro	10	"Las Vacas" Hydroelectric project	Guatemala
17		11	e7 Bhutan Micro Hydro Power CDM Project	Bhutan
18		12	Yojoa Small Hydropower Project	Honduras
19	Landfill gas	28	Landfill Gas Extraction and Utilization at the Matuail landfill site, Dhaka, Bangladesh	Bangladesh
20		42	Nubarashen Landfill Gas Capture and Power Generation Project in Yerevan	Armenia
21		58	Nanjing Tianjingwa Landfill Gas to Electricity Project	China
22	Wind	12	Essaouira wind power project	Morocco
23		15	Wigton Wind Farm Project (WWF)	Jamaica
24		53	Huitengxile Windfarm Project	China

<sup>14</sup> Each PDD is available from the UNFCCC web site.

The detail of information provided and the number of case projects are limitations of this methodology. In this study, all the information is taken from PDDs, which are official documents of the UNFCCC, however it does not mean PDDs always describe role of each stakeholder and how much they are involved in a project. For instance, it is well possible that there may be stakeholders that are not mentioned in a PDD, but nevertheless play an important role in the implementation of local sustainability. On the contrary, certain stakeholders (e.g., carbon buyer) may not influence project planning in terms of sustainability, while their name is still mentioned in the PDD. This problem cannot be removed without an interview survey to main stakeholders of each project. Regarding the number of case projects, this study attempts to remove the peculiar case by eliminating projects that do not have more than 3 registered projects. However it is still difficult to ascertain that such peculiar cases are entirely removed. It should be also noted that the project list of the Development Dividend only comprised registered projects as of mid 2006 (which is 215 projects) and thus does not reflect the current CDM status as of mid 2007 (which is more than 550 projects).

Although some limitations are found in methodological terms and although it might be difficult to distil complete actors' constellation in a network from the available data, this is a worthwhile first step to determine general trends of networking in CDM projects, with a specific focus on local sustainability.

## 4.2 Findings

Based on the methodology described above and categorisation of actors (see Table 3), the actor network of each of the 24 selected projects was examined and the following patterns emerged. First, it focuses on the relations between local sustainability and actor's participation. Most of the projects have been implemented by more than 2 entities, except a few cases. In the highest ranked 10 projects, only one project (#16) is implemented by business sector network. The objectives, levels, and sectors of actors of the rest of 9 projects' network are different in each case – some are NGOs (e.g., a gender related NGO at national level, a sustainable development related NGO at international level), hybrid of public and private entities (a community development fund at international level), others are purely public entities (e.g. governmental energy agency, a municipality), especially international organisations and NGOs have a tendency to take leadership in promoting and planning project, and they act as a core actor. Interestingly, those organisations are mainly from the development and energy field, while few are from the environmental issue field. By contrast to high ranked project, low ranked projects have tendency to create project network between business sectors.

Narrowly focusing on NGOs, some projects intensively promote participation of NGOs at national and local level for information gathering (#3, 4). According to their PDDs, the core project developers (the CDCF by the World Bank, and Carbon Finance Unit Moldova managed by the Ministry of Ecology and Natural Resources of Moldova) included more than 12 local NGOs for consultation of its project design. These 12 NGOs are from different fields, such as a social investment, rural development and agriculture. Although less intensive than # 3 and 4, other projects also sought for comments on their project design from national and local NGOs. High ranked projects specifically have a tendency to involve such local or national NGOs in the project design or at least have them comment on the project plan, while low ranked projects do not.

From this analysis, it is understood that high ranked project have a tendency to create networks between NGOs at international/ national levels or hybrid entity of public and private at international level, and NGOs at local/ national level. The network is created in a way that NGOs or hybrid type actors at international/ national level proactively involve and outsource part of their responsibilities to local/ national NGOs. The core actors gather information and comment to project design through outsourcing to local/ national NGOs, since these NGOs are familiar with information, such as what local needs are and where marginalised population is. By including such NGOs of local in a network, a project can get useful information in the early stage of project design.

Second, it focuses on the relations between project types, network and community involvement. EE in households and biogas projects, which are considered as high ranked projects, directly involve local community by installing biogas digesters or energy efficiency electric light in each household. These projects are implemented by governmental agency, hybrid, and NGOs of international and national level. The CDCF is the only 'for-profit' entity that is involved in these project types. Biomass energy projects and EE at industry project, which are middle ranked for the Development Dividend benefit, are mainly implemented by business actors, and some of them consulted local NGOs. Geothermal projects do not involve any levels of NGOs for gathering information or project design, and these projects are designed by business actors (e.g., gold mining company, geothermal engineering company, energy company). Neither is the local community in any way involved in the project design. Landfill gas projects do not figure particularly highly in the Development Dividend ranking, and it has similar tendency of geothermal in terms of stakeholder involvement.

In sum, it seems that the project type clearly relates to the actors that participate in a project as well as participation of local community. Where location of resources (geographical condition where geothermal is available and where landfill is located etc.) is limited due to geographical reason, participant network is generally created between business entities solely. In addition, local community's involvement in a project is unlikely to occur. On the other hand, project type that have less geographical limitations, such as EE at households and biogas project, offered more possibilities to involve NGOs and hybrid type of international organisations.

## **5. Conclusion**

CDM has been criticised for its limited contribution to sustainable development. This paper analysed a possible way how CDM can promote sustainable development in the South, especially by focussing on sustainability benefits for the local community. By focusing on linkages between local sustainability and actor's constellation in a project, it was found that involving local and national NGOs, in a project network would be a one of a possible step to find out local needs for further promotion of local sustainability.

The contribution of NGOs to collect information of local needs is important. However, this does not mean that consultation with many NGOs guarantees sustainability benefits for a certain project. In fact, even low ranked projects collected comments from local NGOs in a one-day seminar. To have a meaningful contribution from NGOs, a long-term involvement in a network and knowledge of specific field (e.g., biogas, investment, agriculture, development, gender etc.) seems required, not only a one-time consultation exercise. The present case study does not provide further indications with regard to the desired and effective degree of NGO participation (number of NGOs to be

involved, duration of participation, degree of involvement and so on). These gaps will be filled in further in-depth case studies.

Needless to say, it would be difficult to expect local sustainability benefit from all the project types. This study only looked into projects that include power generation, but the projects that do not generate power still have a possibility to promote local sustainability, by creating network with national and local NGOs. For instance HFC23 and N<sub>2</sub>O incineration or fugitive gas capture projects do not generate power, and these projects are considered to generate little sustainability impacts. However, some of those projects plan to implement an additional activity regarding development or environment in same area where the CDM project is implemented. This second activity could be a project that promotes local sustainability by proactively involving local NGOs.

Ellis et al. (2007) conclude that an exploitation of potential linkages between local sustainable development and GHG mitigation in CDM is a key component of developing countries' future participation to the climate regime. If so, partnership network which seek for involvement of NGOs on local and national level could be one of the effective ways of implementing local sustainability.

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