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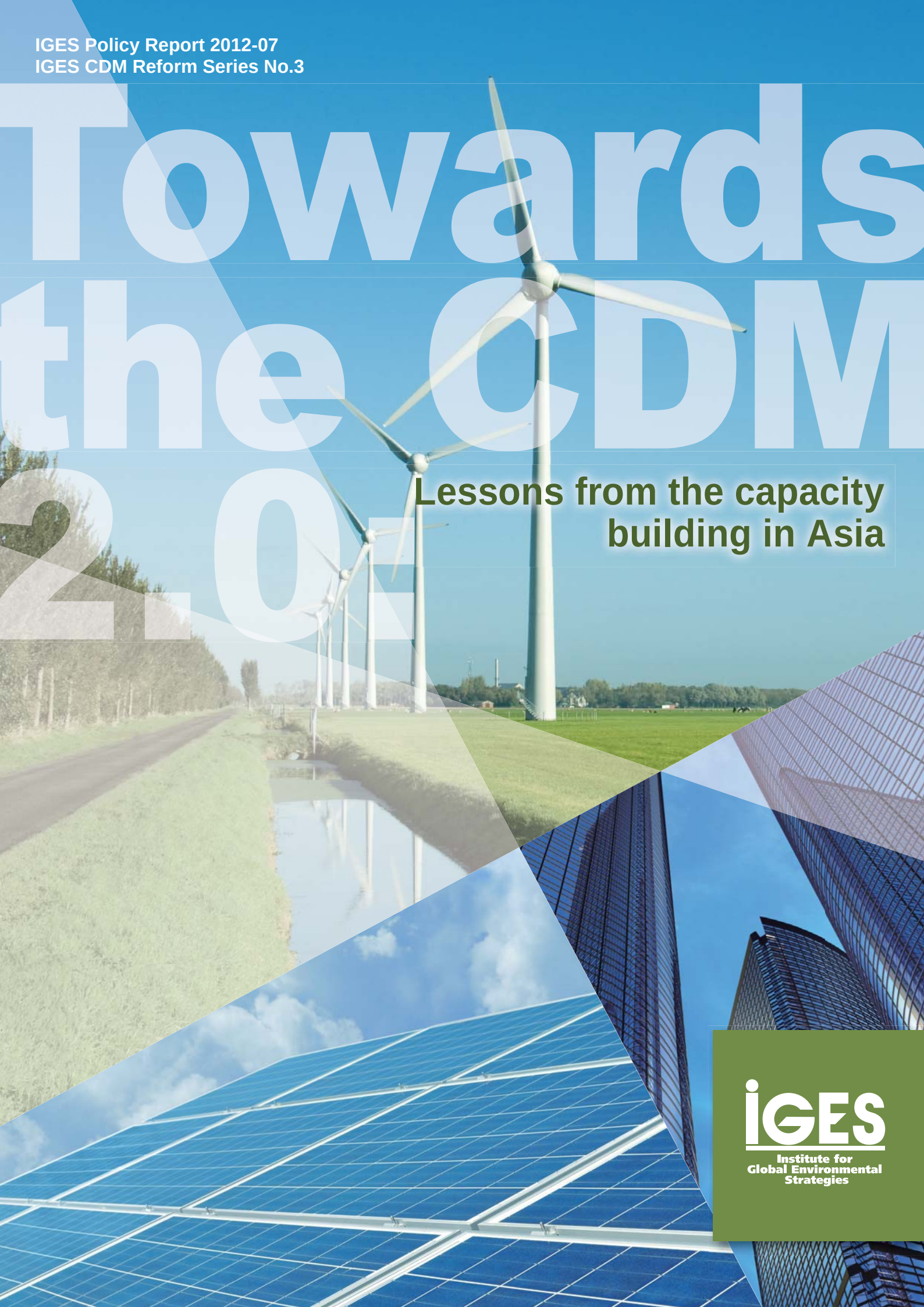
Towards the CDM 2.0

Lessons from the capacity building in Asia



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About this report

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Scope of the report:

This report aims to propose ideas for CDM reform, targeting international negotiators of the CDM. The Market Mechanism Group of IGES has been implementing IGES CDM capacity building activities in Asia as well as developing IGES CDM databases for quantitative analysis. This report aims to introduce new findings related to progress and challenges for reforming the CDM. It will also propose how the CDM will be further improved based upon the analysis of IGES researchers and partners.

Acknowledgements:

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Executive Summary

Introduction

While the form of new framework including new market mechanisms with participation from all the Parties under the UNFCCC will be further discussed and elaborated in order to be agreed upon by 2015 and implemented by 2020, CDM still has a significant role in terms of the foundation of market-based mechanisms and supporting tools especially for the least developed countries (LDCs). This report summarises 1) the current situation of CDM focusing on supply and demand of certified emission reductions (CERs) to provide quantitative analysis on the market, and 2) past experience on capacity building to identify what has been learnt. It is hoped that this report will contribute to the next phase of CDM 2.0 so that the potential of CDM can be fully utilised.

Need for additional demands of CERs

Thanks to of the great efforts from various stakeholders, there have been improvements to the registration of CDM projects and the CER issuance process making them shorter than before. As a result, it has become easy for developers and DNAs to access CDMs to achieve emission reductions. However, the demand for CERs has decreased, due to restrictions on the use of CER by the EU emission trading system (EU-ETS) and non- quantified emission limitation and reduction objective (QELRO) parties in the second commitment period of the Kyoto protocol (CP2), and also because of the economic recession. This report estimates the potential CER supply based on existing project design documents (PDDs) and potential CER demand based on emission reduction targets and limitation to CERs in various countries and schemes. As a result of the analysis, CER supply is likely to surpass its demand during CP2.

Lessons learned from CDM implementation – Need to strengthen host countries capacity

Treatment for the equitable distribution of project activities and capacity building

Capacity building has played an important role in starting up CDM project activities and includes various activities from raising awareness at the initial stage to support for project developments at the practical stage. However, it cannot be said that a country which receives capacity building support becomes successful in terms of the number of registered CDM projects, especially in LDC. Therefore, effective implementation of capacity building activity is necessary.

Country case study 1: Cambodia

Cambodia's designated national authority (DNA) has reduced barriers and published helpful information related to the implementation of CDM projects. For example, the DNA published the grid emission factors of Phnom Penh's grid electricity system and submitted several proposals to the CDM executive board (CDM EB) with its support organisation. These efforts not only enhanced CDM project development in the country but also contributed to raising awareness of such difficulties in LDC.

Country case study 2: Mongolia

Despite Mongolia's high carbon intensity per GDP, CDM investments have not been brought in. One of the barriers to this is that Mongolia has a small population, which means there is less total energy demand. The second barrier is a lack of suitable methodologies for energy efficiency projects even though Mongolia has a large potential for energy saving. To solve these issues, CDM-related support needs to be provided to sparsely populated countries as is practiced for LDCs. At the same time, there needs to be development of proper methodologies that are geared to the needs of the country.

Country case study 3: The Philippines

As with other countries, the Philippines has also faced issues of governmental structure and financing on projects, but the country has worked on these issues with international support. The lessons learnt from the Philippines case are 1) the need for a regulatory body to clearly define their rules of CDM operations in the host countries, 2) the need to set up national standards and benchmarks for project validation, monitoring and verification and 3) also the need to establish simplified monitoring procedures.

Abbreviations

A/R	afforestation and reforestation
CDM	clean development mechanism
CER	certified emission reduction
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CO_2	carbon dioxide
CP1	first commitment period
CP2	second commitment period
CPM	carbon price mechanism
DENR	Department of Environment and Natural Resources
DNA	designated national authority
DOE	designated operational entity
EB	executive board
ETS	emission trading scheme / emission trading system
EU-ETS	EU emissions trading system
GHG	greenhouse gas
GNI	gross national income
HFC	hydro fluoro carbon
IGES	Institute for Global Environmental Strategies
LDC	least developed country
N_2O	nitrous oxide
NZ-ETS	New Zealand emissions trading scheme
PDD	project design document
PoA	programme of activities
QELRO	quantified emission limitation and reduction objective
SIDS	small island developing states
UNFCCC	United Nations Framework Convention on Climate Change
WCD	World Commission on Dams

1. Introduction

Kazuhisa Koakutsu

The international framework to address the issue of climate change will enter a new stage from 2013 where existing rules and mechanisms developed under the Kyoto Protocol will continue to be implemented. In the meantime, the form of the new framework with participation from all the Parties under the UNFCCC will be further discussed and elaborated in order to be agreed by 2015 and to be implemented by 2020. In the context of market mechanisms, this implies that the mechanisms developed under the Kyoto Protocol (namely, clean development mechanisms (CDM), joint implementation (JI), and international emission trading (IET)) will continue to be operated, and at the same time, new market mechanisms will also be developed and utilised in order to increase the level of ambition in developed countries while enhancing mitigation actions in a broad segment of the economy in developing countries. It is important that market mechanisms will be fully utilised taking into the account the past experience of existing mechanisms, especially CDM.

Some countries, such as China, Thailand, Indonesia and Korea, have started to develop and experiment with their own market instruments (e.g. domestic emission trading and voluntary emission reduction schemes) in order to complement the existing UNFCCC-based mechanisms and stimulate further actions to support domestic policy objectives. The experiences from CDM have contributed to the foundation of market-based mechanisms to promote and incentivise the mitigation activities in the region.

This report summarises 1) the current situation of CDM focusing on supply and demand of CER to provide quantitative analysis on the market and 2) past experience on capacity building to identify what has been learnt. It is hoped that this report will contribute to the next phase of CDM 2.0 so that the potential of CDM can be fully utilised.

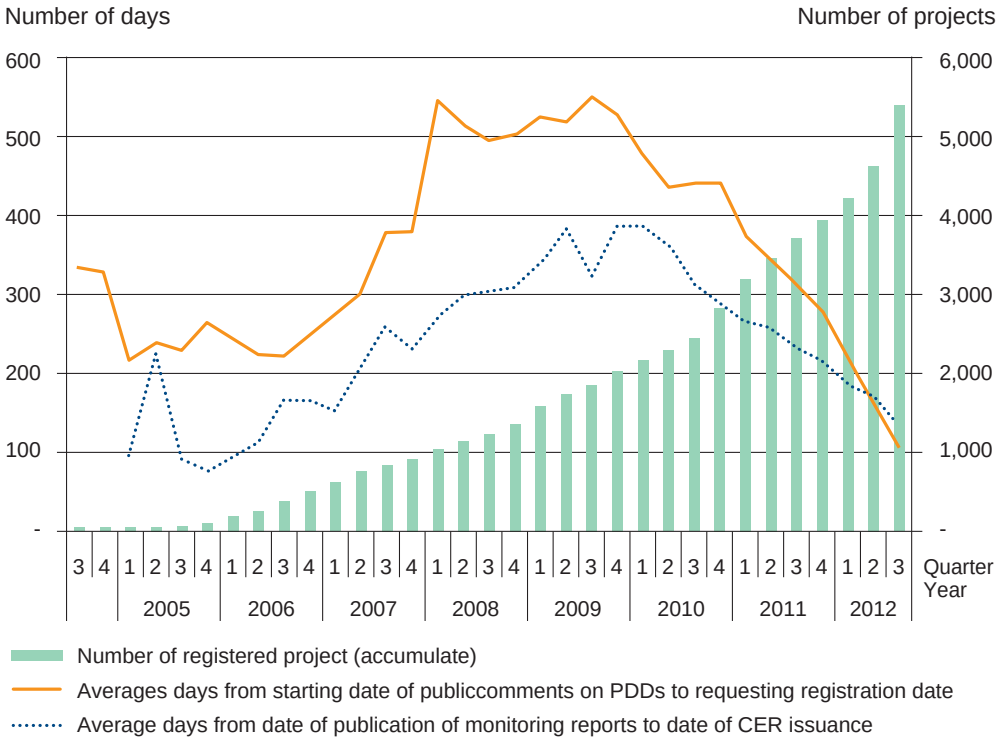
2. Need for additional demands of CERs

Akihisa Kuriyama

Background

The clean development mechanism (CDM) has played an important role in supplying carbon credits for Annex I Parties during the first commitment period (CP1). Since the first certified emission reductions (CERs) issued 20 October 2005, the total CERs issued had reached around 1.1 billion tCO_2 by the end of December 2012. Stakeholders, including project participants, designated operational entities (DOE) and UNFCCC staff have together instigated much reform within the CDM, which has in turn led to a drop in average number of days from public comments on PDDs to registration requests and a rise in the number of projects.

Figure 1: Overview of CDM projects



Source: IGES (2013a)

However, the circumstances surrounding CERs have become more severe. First, the demand and price of carbon offsets has declined due to the economic recessions such as the financial crisis of 2007-2008 and the European sovereign-debt crisis in 2011. Second, as a result of the decision at the eighth Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP), non-QELRO parties are only eligible to acquire CERs but not transfer them (UNFCCC, 2012a). This decision would truncate the pipeline of CERs to meet non-QELRO parties' demands.

Despite all the negativity, there are signs pointing to an uptake in CER utilisation. First, national Emission Trading Schemes (ETS) and other relevant mechanisms have been established in Australia and New Zealand. Such schemes incorporate flexible mechanisms in the use of CERs to achieve reduction targets. Second is the introduction, at the 69th CDM executive board meeting, of the voluntary cancelation account (UNFCCC, 2012b). In more detail, transferring CERs to the voluntary cancellation account at the request of project participants precludes transfer of the CDM registry to any other account in any registry. This means that the decision opens the door for Non-Annex I Parties to use emission reductions (via the CDM) to meet emission reduction targets if such targets were introduced by such parties.

Therefore, this chapter summarises the eligibility for CER usage and demand for CERs within the existing and emerging ETS and other relevant mechanisms and provides a forecast for CER supply using existing CDM project data. The conclusion highlights the mismatch between CER supply and demand.

Demand and eligibility for CERs

In this section, this report analyses the maximum demand of CER under the restriction of Kyoto Units in each mechanism. During CP1, one of the main sources of demand for CERs was, as stated under the Kyoto Protocol as regards Annex I Parties, the quantified emission limitation and reduction objective (QELRO). However, this demand was split during the second commitment period (CP2) into two types: QELRO parties and non-QELRO parties. One of the major QELRO parties is the EU, which demand of CER could be from the national target under the Effort Sharing Decision and the EU emissions trading system (EU-ETS). Under the Effort Sharing Decision, which occupies 55% of GHG emission in EU member states, the use of the CER and Joint Implementation (JI) credits for up to 3% of its 2005 emissions, equivalent to 700 million tCO_2 of CER during CP2. However, the European Commission encourages member states to use fewer credits than the maximum allowed in order to ensure investment in cleaner technologies and renewable energy is triggered by EU members (EU 2012). Some of the non-QELRO parties could act as sources of demand for CERs. For example, according to the Ministry of Environment of Japan (2012), Japan is still willing to use CERs to achieve its emission reduction targets agreed on at CMP 6 in Cancun (UNFCCC, 2010). Since Japan is eligible to use only primary acquired CERs by participating CDM project activities, it could use up to 330 million tCO_2 of CERs during CP2 (IGES, 2013), despite using 240 milliion tCO_2 of CERs during CP1.

While some Annex I Parties established domestic ETS during CP2, they have imposed restrictions on the usage of CERs by type and quantity, as shown in table 1. The EU-ETS has gradually tightened up on CER restrictions. In the EU-ETS phase 3, the participants in EU-ETS cannot use CERs from HFC, N_2O, afforestation and reforestation and large hydropower projects not consist with the criteria based on the World Commissions on Dams (WCD) guidelines (EU, 2004). EU-ETS Phase 3 also restricts CERs from projects that are registered in non-least developed countries (LDCs) after 1 Jan 2013 (EU, 2009). In terms of amount, international credits including CERs can be used to cover emissions of some 1.7 billion tCO_2 between 2008 and 2020 (EU, 2013). Since around 600 million tCO2 of credits had been used up as of the end of 2011 (Elsworth, 2012), the remaining demand is estimated at less than 1 billion tCO_2 of credits including CERs.

Table 1: Eligibility for CER usage and CER supply during CP2 (2013-2020)

Conditions	HFC, N2O A/R*4 CDM	Large hydro—non-WCD compliant	Other		
			Registered before 31 Dec 2012	Registered after 1 Jan 2013	
				from non-LDC	from LDC
Source of demand					
Emission reduction target of Annex I Parties	O*1	O*1	O*1		
EU-ETS Phase 3	X	X	O	X	O
Australia CPM	X	X	O		
NZ-ETS	X	O	O		
Domestic ETS in Non-Annex I Parties, e.g., China, Republic of Korea	O*2	O*2	O*2		
CER supply (million t CO_2)					
From all countries	**495**	**861***3	**2,299**		
			1,997	**299**	**3.7**
From China	323	649	1,370	77	-
From Republic of Korea	47	0.1	28	0.2	-

*1 Non-QELRO Annex I Parties for CP2 are only eligible to use primary acquired CERs.
*2 Only CERs from own countries through voluntary cancellation.
*3 Total CERs from all large hydro power plants.
*4 Afforestation and reforestation

Source: IGES (2013a)

New Zealand started to implement the New Zealand Emissions Trading Scheme (NZ-ETS) in 2009 starting in the forest sector. However, NZ-ETS restricts the usage of CERs from HFC, N_2O and afforestation and reforestation (MfE, 2011), and although the World Bank (2012) predicted potential demand for international offsets including around 100 million CERs, this amount is actually lower because New Zealand cannot utilise QELRO during CP2 and cannot transfer CERs from other parties.

Australia started to implement Carbon Pricing Mechanisms (CPM) in 2012. According to the Australia Clean Energy Act (Australian Government 2011a), the eligibility of international emission units may be surrendered, accepted or used for the purpose of the Climate Change Response Act 2002 of New Zealand or the EU-ETS. Thus, the CPM allows using CERs from projects other than HFC, N_2O, afforestation and reforestation and large hydropower projects that do not satisfy WCD environmental and social standards (Australian Government 2011b). According to the World Bank (2012), the expected demand for CERs was 348 million t-CO_2 (World Bank, 2012), accounting for the cost of domestic abatements.

Totaling the potential demand for CERs gives a figure of 2.5 billion tCO_2, which could act as a benchmark for potential demand from Annex I Parties.

As mentioned above, there is a small possibility that some emerging countries could use their emission reductions realised by domestic CDM projects. For example, two provinces and five cities in China have started a pilot Emissions trading programme (NDRC, 2011) and the Republic of Korea will implement ETS from 2015 (PCGG, 2012). However, the demands from those emerging countries are not included in this report.

CER forecasts based on existing PDDs

CER supply forecast in this report is based on the IGES CDM project database (IGES, 2013), which draws on estimated emission reductions described in Project Design Documents (PDDs). The forecast is calibrated by 1) discounting the estimated emission reduction of HFC that will have surpassed the crediting renewal date due to a reduction in rate of generation of HFC-23 from HCFC-22 from 3% to 1%, and 2) discounting the CER issuance ratio, which had caused a discrepancy in estimated emission reductions and actual issued CERs. The CER issuance date was also adjusted to allow for uncertainty factors calculated due to delays in validation and registration, as well as CER issuance at the post registration stage.

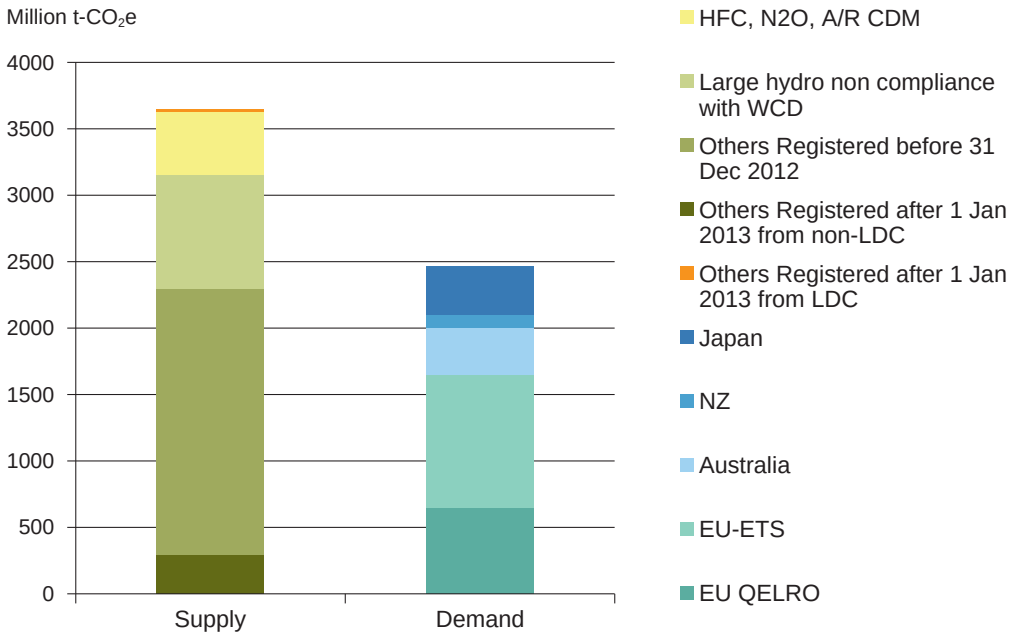
The forecast predicts a potential supply of CER for EU-ETS would be 2 billion tCO_2, which is sourced from 1.4 billion t-CO2 of Chinese and the republic of Korea's projects registered prior to 2012 and only 3.6 million tCO_2 of LDCs' projects in the post-2013 pipeline.

Imbalance between supply and demand

Figure 2 shows the mismatch between CER supply and demand. The estimation in this study includes only CERs from existing PDDs. The total demand is the maximum of the potential for international offsets from each party and scheme.

The fact above shows that the potential demand for CERs would be satisfied by current CDM projects in the pipeline, which lowers the opportunity for developing new CDM projects during CP2 because low demand cause low price of CER. In fact, some of CDM projects have been terminated due to the low CER price and high transaction cost of CDM process. Therefore, demand for CERs needs to rise to promote CDM projects post-2012.

Figure 2: Imbalance between CER supply and demand during 2013-2020 period



Source: IGES (2013a)

3. Lessons Learned From CDM Implementation - Need to strengthen Host Countries Capacity

3.1 Treatment for the equitable distribution of project activities and capacity building

Akiko Fukui

The CDM has been deemed as a success both in number of registered projects and issued CERs, though has suffered uneven regional distribution of project activities. The potential for CDM project development mainly depends on a country's economic standing. In order to reveal areas where improvements can be made, this report reviews measures introduced by the CDM executive board (CDM EB) in the field of equitable distribution of project activities, capacity building support status and lessons learned on CDM implementation in three countries of differing economic standing: Cambodia, Mongolia and the Philippines.

Discussions in the CMP and the CDM EB

The issue of the uneven distribution of projects has been discussed from the first CMP in 2005 (UNFCCC, 2005). The CDM EB initially addressed the issue from the 27th meeting in 2006, in which they recognised barriers and deliberated on certain measures, and has provided several flexibility measures to stakeholders (table 2). The programme of Activities (PoA), by which the bulk of small-scale project activities access the CDM, was adopted as an outcome of the deliberations. For countries demonstrating difficulties in the project development stage, which include LDCs, small island developing States (SIDS), African countries and countries with 10 or less registered project activities*1 , special measures were introduced from 2010. In 2012, the CDM EB and the UNFCCC secretariat tackled reform on this issue and launched DNA help desk and CDM help desk and the CDM loan scheme (interest-free loans).

Table 2: History of overcoming CDM barriers

Year of adoption / start	Measure	Benefit	Applicable country				
			All	LDCs	SIDS	Africa	10 or less registered projects*1
-	Participation in sub-regional and global capacity building events or awareness-raising activities	Awareness raising and capacity building	✓				
2003	Simplification of modalities and procedures for small scale projects	Access to the CDM for small-scale projects	✓				
2006	Programme of Activities	Access to the CDM for small-scale projects	✓				
	Removal of the registration fee for small scale projects	Access to the CDM for small-scale projects		✓ *2			✓
	DNA Forum	Capacity building of DNA staff	✓				
	Nairobi Framework	Capacity building		✓	✓	✓	(✓)
2007	CDM Bazaar	Information platform for stakeholders	✓				
2010	Simplification of demonstrating additionality of microscale project activities	Access to the CDM for small scale projects		✓	✓		
	Post-registration changes to the start date of the crediting period	Flexibility measures for project implementation		✓			
2011	Standardised Baseline	Reduce burdens of baseline identification and additionality demonstration	✓				✓ *2
	Positive list of specific technologies for small-scale project activities	Access to the CDM for small scale projects	✓				
2012	CDM loan scheme	Access to finance		✓ *2			✓
	DNA help desk and CDM help desk	Technical support		✓	✓	✓	✓
	Online course for DNA	Technical support	✓				
	Provide default factor options in the calculation of the emission factor for an electricity system	Provide flexibility in the calculation		✓	✓		✓

*1: This definition varies according to related documentation.

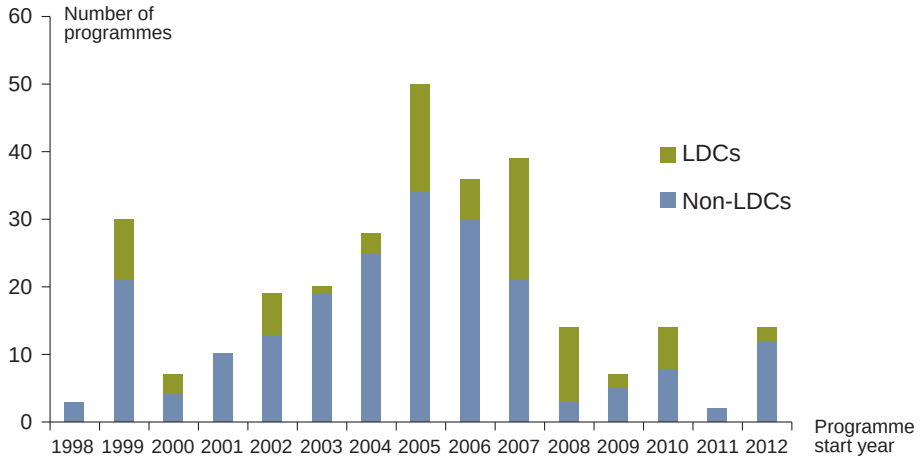
*2: Additional measures are applied.

Souce: CMP and CDM EB decisions (UNFCCC)

Overview of the CDM capacity building programme activities

After ratification of the Kyoto Protocol Non-annex I Parties needed to start establishing related regulations and institutions, including designated national authorities (DNA), to be host countries of the CDM project implementation. Government officers as well as potential project developers such as private sectors had to learn the procedures and requirements of the CDM in order to develop the project activities. Capacity building is one of the key elements for starting up the CDM projects activities. In the meetings of CMP and CDM EB, the Parties and UN organisations were encouraged to establish finance facilities and focus on capacity-building for enhancing project developments. Capacity-building programmes for the CDM have been conducted since 1998 and 82 programmes are covered in this report. This report excludes feasibility studies for specific projects by specific entities as capacity building programmes. Figure 3 shows the number of capacity building programme based on year of start. The increase in number of programmes in LDCs from 2005 results from the CMP and CDM EB decisions and treatments accorded by Annex I Parties and capacity-building programme organisers as regards opportunities in LDCs.

Figure 3:Total number of capacity-building programmes



Note: A programme which covers more than one county counts the number of countries in the programme (e.g., when a programme covers five countries, the number is counted as five).

There are three main players for organising capacity building programme; development banks, UN organisations and Annex I Parties of the Kyoto Protocol (including organisations supported by Annex I Parties). The activities, goals, target areas, and sectors of capacity-building programmes are diverse and depend on the purpose of sponsors and host countries, as categorised in table 3. The initial level of activities is awareness-raising of CDM project benefits to government officials and potential project participants, setting up institutional capacity within a country including establishing the DNA and facilitating network of stake holders, and establishing policies and regulations relating CDM. On a practical level, such activities include identification of projects, assessment of potential project types and sectors within a country, drafting of project design documents (PDDs), support financing (e.g., direct finance, supporting access to finance), and supporting technology transfer. Some programmes provide publications of materials such as studies, databases and guidelines, or develop websites for DNAs. Most of programme covers human capacity development to DNA members or potential project participants. The next highest number is practical supports for project identification and establishment.

Table 3: Type of activities and support in capacity-building programmes

Initial level

Practical level

Type of activities	Number of programme*
Awareness raising	27
Developing institutional capacity	33
Policy/strategy/regulation establishment	16
Developing human capacity (DNA, private sector)	66
Project identification /Assessment of mitigation potential sector	42
Project establishment (PDD/PIN writing)	30
Finance	23
Technology transfer/Assessment of technologies and barriers	16
Publications, support tools	30

*Multiple category applications allowed

Uneven distribution of the capacity-building programme

The selection of the host countries depends on the programme organisers or sponsors. Regional development banks support countries in their coverage area to finance projects. Bilateral support from Annex I Parties tends to end up in countries which have historical connections, are proximal geographically or have the same mother tongue. European countries tend to support African countries, Japan focuses support on Asian countries, and Canada supports Latin American countries. UN organisations and the World Bank choose host countries without any trends as long as programmes are not funded by specific countries.

The location of the capacity-building programmes is also unevenly distributed, to the same extent of CDM projects activities. The average number of capacity building programmes is 2.6 in all Non-Annex I Parties and 10.8 in the top 5 host countries in terms of number of registered projects[1]. The purpose of capacity-building programmes is to enhance project implementation, and sponsors and organisers tend to choose target countries which can achieve their goals. In other words, countries having a large potential for emission reductions are attractive for organisers and sponsors, the trend of which is seen in bilateral programme especially.

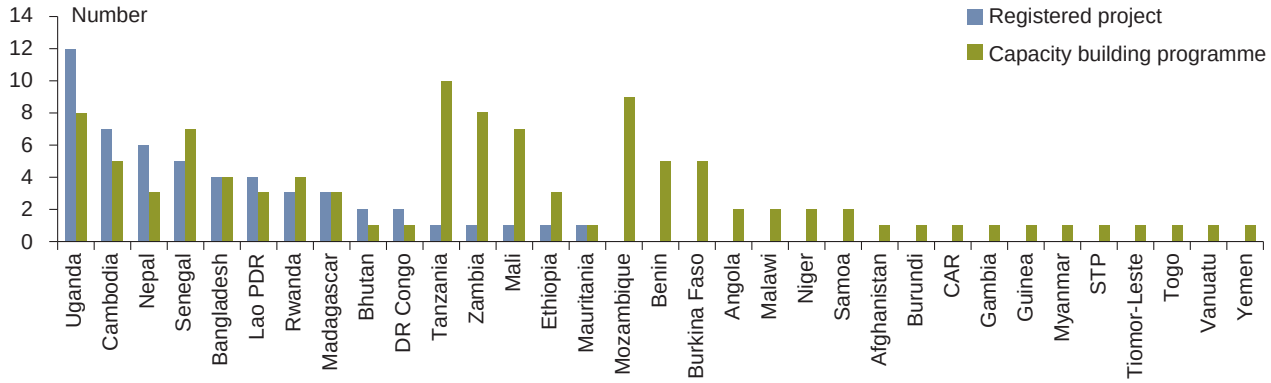
However, the above-mentioned correlation between the number of registered CDM projects and capacity-building programmes is not seen among LDCs (figure 4). African countries have more capacity-building programmes than Asian countries, because support from the EU as well as individual European countries is available in Africa in addition to support from UN organisations and the World Bank. LDCs in Asia receive bilateral programme support

[1] China, India, Brazil, Viet Nam and Mexico (as of 31th January 2013)

only from Japan. This is because Annex I Parties located outside Asia tend to implement capacity programmes in emerging countries having large emission reductions potential when they invest in Asia.

According to UNEP Risoe centre's report (Soren E.L., 2011), CDM projects are usually not implemented in 14 of the 49 LDCs[2] due to the small populations and social conditions. Programmes focusing on Pacific islands, in which half of non-DNA established countries are located, are scarce. In addition to due to the small populations and remoteness of such areas, the only Annex I Parties in the area, Australia and New Zealand, are not aggressive CER buyers in CP1 and do not conduct bilateral programmes. The LDCs in the pacific area are not even covered by the World Bank Institute's "Carbon finance assist"—the largest country coverage programme in the world.

Figure 4: Number of registered projects and capacity building programmes in LDCs



CAR: Central African Republic
STP: Democratic Republic of Sao Tome and Principe

Source: IGES (2013a) and the original study

As regards countries which fail to yield results with a number of programmes, Econ Pöyry (2009a) pointed out that existing programmes overlapped, which led to inefficient use of funds and resources and missed opportunities. Arens, C et al (2011) suggested the importance of pioneering effective knowledge management to share the lessons learned, analytical guidance, and success stories. One good example of World Bank Institute's Carbon finance assistance have a range of diverse indicators to monitor and measure the progress. This indicator reflects each of the three phases a certain country is currently in, in terms of factors such as governance and priority sector engagement.

[2] On 18 December 2012, the United Nations General Assembly added South Sudan to the list of LDC. The number of LDC was increased to 49.
http://unctad.org/es/paginas/newsdetails.aspx?OriginalVersionID=382&Sitemap_x0020_Taxonomy=Africa%20and%20Least%20Developed%20Countries;

3.2 Country case study 1: Cambodia

Akiko Fukui

Actions by Cambodia's DNA

Cambodia is one of the leading countries in CDM project implementation of the LDCs. After ratification of the Kyoto protocol in 2002, Cambodia's government established the Climate Change Office (promoted to a department in 2009) within the Ministry of Environment and appointed it as Cambodia's DNA secretariat in 2003, relatively early for an LDC. Such institutional establishment is important in accessing support. As regards the selection criteria for countries eligible for Capacity-building for the CDM (CD4CDM), a programme ran by the UNEP Risoe centre, which started in Cambodia from 2002, includes such countries must: be signatories to the UNCCC and Kyoto protocol; have established focal points, submitted a national communication; have a national policy promoting renewable energy and energy efficiency; have a foreign direct investment frame work, emission reduction potentials and so on (Ponlok, 2003).

The DNA secretariat, along with capacity-building organisers such as IGES and UNEP Riosoe Centre, have held training workshops for private sectors and government officers to provide a wide range of knowledge—from CDM introduction to actual Project design document (PDD) development and project identification. In the initial phase, the DNA secretariat shared the draft of the national approval procedures as well as assessment criteria of sustainable development in a workshop and exchanged opinions with participants. The number of capacity-building programmes in Cambodia is less than a typical African country; however, the average length of programmes is over seven years in Cambodia while only 4.3 years in LDCs. This situation is different in Tanzania, which has only one registered CDM project but is the recipient of a number of capacity-building programmes. As mentioned above, Econ Pöyry (2009a) pointed out that existing programmes in Tanzania overlapped, which led to inefficient use of funds and resources and missed opportunities. The reasons for the low number of registered projects in Tanzania asserted by Econ Pöyry are the stringent criteria for national approval and the high administrative fees.

Cambodia's DNA secretariat has attempted to reduce barriers in project implementation. In 2005 and 2011, it published the grid emission factor of the Phnom Penh grid electricity system. The grid emission factor, which is calculated with the "Tool to calculate the emission factor for an electricity system", is a commonly used parameter for GHG emission reduction calculations (Fukui, 2011b). It also submitted proposals to the CDM EB on procedures for registration (2008) and requested changes to the start date of the crediting period (2009). The latter proposal was considered in the 52th CDM EB meeting and applied to the guidance (UNFCCC, 2010a). Table 4 lists the preferable actions taken by DNAs to enhance project activity implementations in each country and indicates DNA's attitude for involvement in the CDM. Uganda, the first submitter of a standardised baseline proposal, has the largest number of registered projects among LDCs.

Table 4: Actions by DNA in LDCs

Country	Submission to the CDM EB			Approval	Publication
	Call for input / Proposal	Change in the definition of forest	First proposal of standardised baseline	Default values of fraction of non-renewable biomass	Grid emission factor
Angola				Apr-12	
Burundi				Sep-12	
Cambodia	Oct-08, Apr-09		Sep-12		Nov-05
Chad				Apr-12	
Democratic Republic of the Congo		Nov-08	Aug-12	Jul-12	
Ethiopia			Jul-12	Apr-12	Aug-08
Gambia				Apr-12	
Lesotho			Aug-12		
Liberia				Apr-12	
Madagascar				Jul-12	
Malawi				Jun-12	
Mozambique			Aug-12		
Nepal				Jun-12	
Rwanda				May-12	Jul-10
Senegal				Apr-12	
Togo	May-09 (2)				
Uganda			May-12	Apr-12	Jul-08
United Republic of Tanzania					2008
Zambia			Aug-12		
Start day of acceptance/ Guidance day	-	Jun-08	Sep-11	May-12	-

Source: UNFCCC website, IGES (2013), Michaelowa (2011)

Conclusion

In order to maximise the contributions of capacity-building programmes and to derive new support for the required areas, the host countries and the organisers need to share their information on the circumstances and situation of each country. Such information should include the capacity status of DNAs, private sector, finance sector and DOE, potential emission reduction sectors and types of technologies, and the types of support required for each country. The national communications and the biennial update reports which Non-Annex I Parties are set to submit biennially starting in 2014 are a good tool in this regard. Summary information on the national communication is available in a table format at the UNFCCC website[3], but it also suffers due this unified format, which makes little distinction of individual country requirements. Indicators or checklists based on a template could provide equally comprehensive and manageable information. In addition to the requirements from host countries, the shared information could include capacity, issues and best practices on CDM implementation.

[3] http://unfccc.int/cooperation_and_support/capacity_building/items/4093.php

3.3 Country case study 2: Mongolia

Kenta Usui

Mongolia is the most carbon intensive developing economy in Asia with a GHG emission per GDP of 1.15 Kg/USD—twice that of Indonesia and 24% higher than China. The bulk of GHG emissions come from the energy sector (58%), in which over 90% of the energy is generated via coal combustion (Ministry of Energy 2012). Of the remaining GHG emissions, 36% comes from the agriculture sector, primarily through methane emission from livestock.

Owing to Mongolia's aging energy infrastructure, comprised of outdated and low efficiency heat-generating boilers, coal-fired power plants and power grids, the primary interest for CDM investors in Mongolia has been the energy sector. Its high dependence on coal creates a good scope for renewable energy CDM. The agriculture sector, on the other hand, offers limited opportunities for the CDM due to the demographics of livestock herding—it would be prohibitively expensive, and perhaps culturally inappropriate, to monitor the activities of herds distributed throughout the country in order to reduce GHG.

Despite the country's high carbon intensity, inward CDM investments have been scarce; as of January 2013, only four CDM projects had been registered (table 5), which is low in comparison with other Asian countries of similar level of development. For example, the Philippines and Indonesia have per capita Gross National Incomes (GNI) similar to Mongolia, but have 62 and 107 CDM projects, respectively. Furthermore, many of the registered CDM projects in Mongolia involved support from external donors, including the World Bank, Millennium Challenge Corporation and German KfW. This implies that CDM in Mongolia has yet to mature.

Table 5: List of ongoing CDM projects in Mongolia

Project Name	Status	Annual ER (t)
Salkhit Wind Farm	Registered	178,778
Taishir Hydropower Project in Mongolia	Registered	29,600
Durgun Hydropower Project in Mongolia	Registered	30,400
A retrofit programme for decentralised heating stations in Mongolia.	Registered	11,904
Pellet and briquette plant in Mongolia	Under Validation	19,436
MicroEnergy Credits – Microfinance for Clean Energy Product Lines – Mongolia (PoA)	Under Validation	61,656

Source: IGES (2013a and 2013b)

Barriers to the CDM in Mongolia

Mongolia's DNA, devised as a part of the Ministry of Environment and Green Development (formerly Ministry of Nature, Environment and Tourism prior to 2012 election), conducted a comprehensive assessment of Mongolia's readiness for CDM. The study was financed by the World Bank (MNET, 2011). The report suggests five barriers of "high current significance" to promoting the CDM (table 6). These are barriers related to 1) small size of potential projects, 2) methodological complexity, 3) limited use of forestry credits, 4) shortage of finance and 5) the lack of CERs demand. Some of these barriers are commonly observed and not unique to Mongolia; for example, the lack of CER demand, including that from the forestry sector, is a problem common to all CDM hosts. The finance barrier, notably the high interest rates for project financing and limited availability of financial tools, is also common in developing countries. However, the problems related to Mongolia's small population and methodological complexity are specific to Mongolia, and are the main reasons why it has only received limited CDM investment compared to many other Asian countries.

Table 6: Barriers in the CDM project developments in Mongolia

Barrier	Description
Size-transaction cost	High transaction costs for smaller CDM projects, making them relatively unattractive investment vehicles.
Type-methodological complication	Methodologies applicable to Mongolia, in which the majority of GHG emission originates from high energy usage for heating, are not commonly used.
Afforestration/ Reforestation market	CERs from forestry projects are often either excluded from compliance markets or only considered temporary, despite Mongolia's high forestry GHG reduction potential.
Financing	It is difficult to arrange financing for Mongolian projects
Demand	CERs demand is low due to lack of clear international rules and regulations.

Source: Mongolian Ministry of Nature, Environment and Tourism (2011)

Barrier 1: small size of population and project scale

The fundamental barrier is the small size of Mongolia's population, which was 2.8 million as of 2011 (World Bank 2011) and one of the smallest in Asia. This naturally leads to small scales in terms of economy and energy demand, despite the high GDP carbon intensity. Under such conditions, the emission reduction opportunities are scarce and the scale of potential projects tends to be small. Furthermore, as the population is distributed across a vast land area it is extremely difficult to identify a project of even a modest scale.

Interestingly, on a per-capita basis the actual number of CDM projects in Mongolia is similar to other countries in Asia and is actually higher than India. However, for the reasons stated above, the emission reduction potential of each project tends to be small, which provides little incentive to pursue CDM registration, hence the following observation from Mongolia's DNA: "while Mongolia is doing reasonably in terms of registered projects given its economy and population size, it does not benefit enough in terms of issued CERs" (MNET 2011).

Barrier 2: lack of suitable methodologies

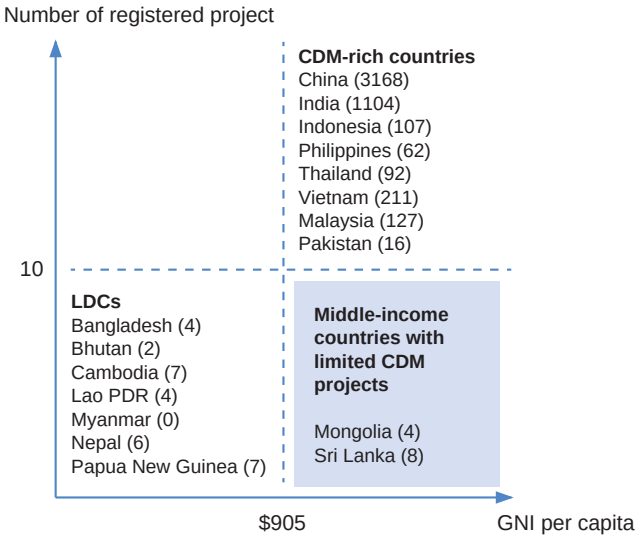
Another challenge unique to Mongolia is the gap between needs and availability of CDM methodologies. In particular, Mongolia has a high potential for energy efficiency improvements in the area of heat supply boilers, which are large sources of domestic coal combustion and air pollution, yet there are few practical methodologies related to this field.

Only two methodologies can be used for heat-supply boilers: 1) AM0044 (Energy efficiency improvement projects-boiler rehabilitation or replacement in industrial and district heating sectors)—an untested methodology that has yet to see use in any registered projects hence incurring a high risk for project developers; 2) AMS IIB (Supply side energy efficiency improvements-generation)—a methodology used in 10 registered projects and revised nine times (as of Nov. 2012) but unsuitable for the specific case of boilers due to its generic nature and lack of mathematical formula. Use of this methodology therefore requires a competent consultant able to customise it specifically for Mongolian boilers.

Conclusion

The first lesson from Mongolia is that lightly populated countries face a fundamental challenge in attracting the CDM. The population factor has to date been largely ignored in the modality of CDM-related support, which focuses primarily on LDCs. Most countries that lack CDM investment are LDCs, which attract preferential treatment such as post-2012 credit eligibility under European ETS and exemptions from additionality demonstration for microscale projects. However, non-LDCs lacking CDM investment also exist (figure 5); Mongolia and Sri Lanka are such countries in Asia. Furthermore, most of the non-LDC developing countries with limited CDM projects have small populations. For instance, the developing countries with both populations of less than five million and CDM registered projects more than 10 are scarce (figure 6), and such countries have been unable to attract many CDM projects due to the small scale of potential projects. As they are not eligible for preferential treatment like LDCs, CERs from projects registered post-2012 will be ineligible in the EU-ETS from 2013, severely reducing the incentive to promote CDM in these countries.

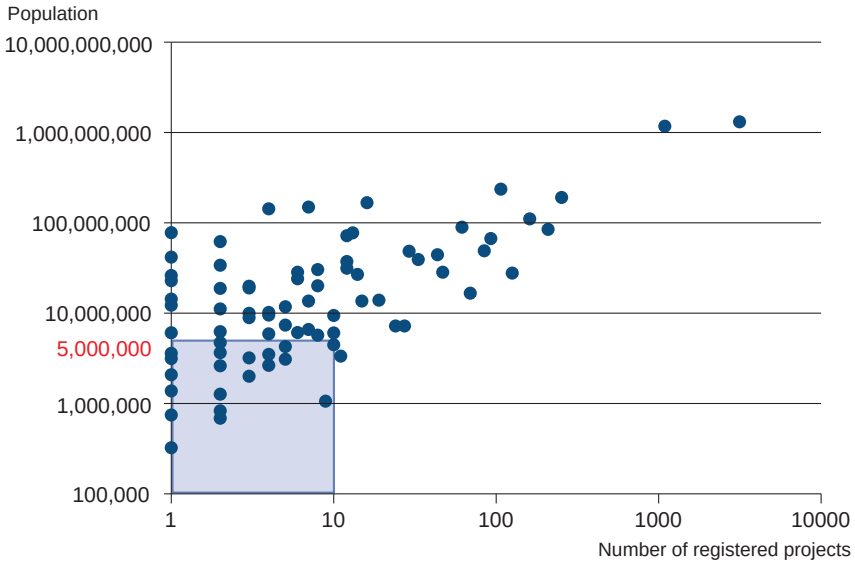
Figure 5: CDM project distribution in Asia



Note: 10 or less CDM project registration is the criteria for CDM-short countries in Asia. GNI of $905 per capita is the threshold for LDCs as defined by the UN.

Source: Author with data from IGES (2013a), Soren (2011)

Figure 6: Relationship between population size and registered CDM projects



Source : IGES (2013a) and World Bank (2012). The dataset has been generously provided by Akiko Fukui.

To address the challenges in these lightly populated countries, the following measures could be taken:

a) Provide CDM-related support to lightly populated countries as is practiced for LDCs and SIDS (See table 7 for scope of support). The exact threshold of population size is debatable, but the fact that all developing countries with populations of less than five million have 10 or less registered projects needs to be considered.

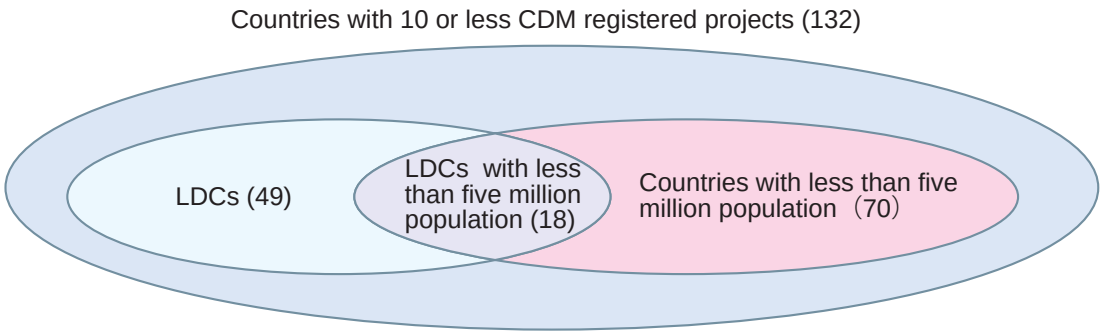
b) Provide technical support to further promote the Programme of Activities (PoA), as this is more suitable than project-based CDM for small project sizes.

Table 7: CDM-related support to LDCs and non-LDCS with 10 or less registered projects

Measure	Benefit	LDCs	Non-LDC with 10 or less registered projects*1
Removal of the registration fee for small scale projects	Access to the CDM for small-scale projects	✓ *2	✓
Simplification of demonstrating additionality of microscale project activities	Access to the CDM for small scale projects	✓	
Post-registration changes to the start date of the crediting period	Flexibility measures for project implementation	✓	
Standardised Baseline	Reduce burdens of baseline identification and additionality demonstration	✓ *2	✓ *2
Nairobi Framework	Capacity building	✓	(✓)
CDM loan scheme	Access to finance	✓ *2	✓
DNA help desk and CDM help desk	Technical support	✓	✓
Provide default factor options in the calculation of the emission factor for an electricity system	Provide flexibility in the calculation	✓	✓

*1: The definition varies according to related documentation.
*2: Additional measures are applied.

Figure 7: Relationship by country status



Figures are for number of countries in each group.
Countries with 10 or less registered projects: Countries listed in the table of "CDM Help Desk targeted countries" plus countries with 10 or less CDM registered projects as of 31th January, 2013.

Source: IGES (2013a), World Bank (2012) and CIA (2013)

The second lesson from Mongolia is that CDM projects specific to the country may face methodological challenges. In Mongolia's case, there is a high potential for emission reductions from small heat-supply boilers during the winter. As such emission reduction opportunity is specific to Mongolia's climate, related methodologies have limited applicability outside Mongolia, hence boiler-related methodologies are scarce and underdeveloped. To address this type of challenge the international community could:

c) Develop methodologies that are specifically geared to the needs of the country. As methodology development may not provide immediate economic returns, domestic or international public entities are likely to be most suitable for this task.

In conclusion, Mongolia urgently needs international support to maintain its capacity and incentive to operate CDM beyond 2012, in which EU-ETS will no longer act as a major buyer. To supplement the limited demand for CERs, Mongolia should concurrently explore non-CDM carbon finance schemes, including voluntary and bilateral carbon finance schemes.

3.4 Country case study 3: The Philippines

Marina T. Mallare
Jeanette Laurente
Tiffany Sotelo

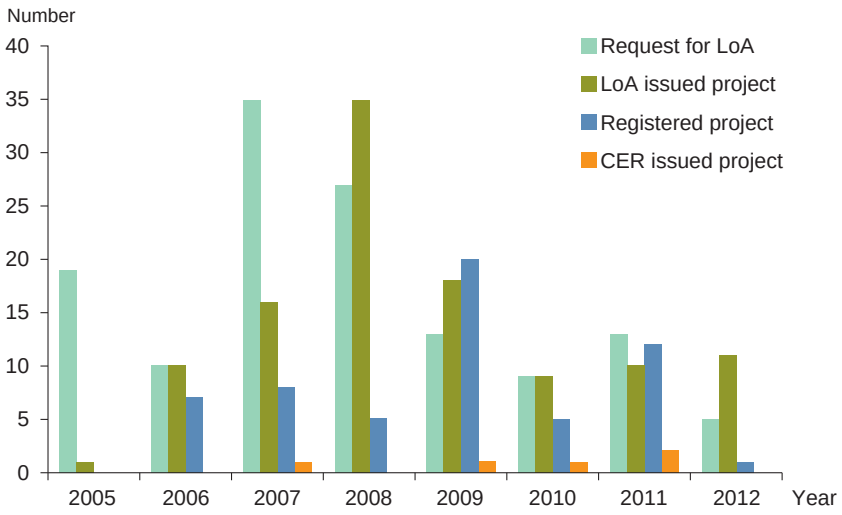
Implementation of the Clean Development Mechanism (CDM) in the Philippines has demonstrated that market-based mechanisms can work in developing countries towards achieving measurable and realistic greenhouse gas emission reductions. However, trends in project implementation reveal that barriers faced by Philippine CDM threaten to squander a chance for GHG emission reduction and contribution sustainable development.

This report gives an overview of CDM implementation in the Philippines, analyses the barriers it faced and looks at the impacts of these barriers on the CDM process. From this perspective, recommendations are drawn to enable better participation of the Philippines in new market mechanisms.

CDM Trends over the years

Since the signing of Executive Order 320 in 2005, which made the Department of Environment and Natural Resources (DENR) the Designated National Authority (DNA) for the CDM in the Philippines, a total of 131 projects have applied for approval from the DNA—106 of which have been approved, 58 registered and 5 successfully issued CERs as of June 2012, for a total of 551,281 emissions reduction credits. Of the approved projects 70% are small-scale. The amount of CERs issued compared to annual projected CERs of projects ranges from 52% to over 100%.

Figure 8: Status of project in the Philippines



Source: Provided by DENR-EMB

Barriers Encountered during CDM project development

National Requirements and procedures:

Each CDM project requires a letter of approval (LoA) from the DNA signifying that the project contributes to the sustainable development goals of the country. However, actual waiting periods averaging 200 and 237 days were noted for applications (small-scale and large-scale projects, respectively) quoted as only requiring 20–25 working days[4]. The main reasons for such are as follows:

- Lead times for project evaluations is long, because respective Technical Evaluation Committees (TECs) were generated by various members. Such specifics related to the TECs, particularly for energy-related projects (i.e., obtaining signatures from TEC members, directors from related bureaus, assistant secretaries, undersecretaries and department secretary), were not anticipated at the time the rules were drafted.
- All DNA personnel, including the Secretariat and the TEC members, are regular government employees with full-time work loads, thus all tasks related to DNA represent additional work.
- Additional requirements placed on project developers by the DNA in proving legal capacity and/or compliance with project-specific permit requirements (e.g., pollution control permits, Environmental Compliance Certificates, clearance from National Commission on Indigenous Peoples) add additional time before submission to the DNA, which stalls the application process as evaluation reports cannot be issued without such documents.
- The Sustainable Development Benefits Description (SDBD) is the main document used for evaluation by the DNA, but specific compliance therewith is problematic for some project developers (e.g., as regards quantified indicators).

CDM Methodology-related Issues:

The ever changing structure of CDM has impacted both the perception and actual uptake of CDM projects by project developers in the Philippines. Those uncertainties have meant that the CDM was only able to secure support from a handful of large companies which could take on-board the risks involved. Small and medium-sized enterprises, whose projects had high potential contributions to sustainable development, were inadvertently excluded from the scheme because most didn't fully respond the changed rules with limited human capacity and finance resource.

Earlier CDM projects, such as those involving animal waste-to-electricity projects, had to hurdle different versions of CDM methodologies from the time of validation to registration. Such complexity and continually changing methodology stalls capacity development among companies attempting to foster CDM knowledge due to the need to outsource CDM tasks to consultants or third parties.

Other projects were forced to drop out of the CDM due to the stringency of monitoring methodologies, or decisions of rejection relating to methodology, imparted by project participants, CDM regulators and designated operating entities. This occurred for at least two prospective PoAs and at least two projects. The volume of actually issued CERs is on average only 58.6% of that expected over the same period at the time of PDD submission for the seven registered Philippine projects (IGES, 2013).

Demonstration of additionality has also been a major issue with the Philippine projects. Absence of readily available data on benchmarks (financial, common practice, etc.) has greatly affected project timelines. Further, CDM additionality demonstration requirements to be biased towards certain sectors or technologies and leave little room for proofs, such for energy efficiency

[4] DENR Administrative Order No.2005-17

projects for which limited barrier analysis can be used. While much improvement in this area has been made over the years, current CDM (i.e., first-of-its kind) is biased against projects in the energy efficiency sectors, whose technologies are well-known but only have weak penetration. There are currently only three CDM-validated energy efficiency projects in the country.

Forestry projects have also seen very low CDM uptake—there are no registered forestry projects in the Philippines. Nationally accepted standards and skewed international rules favouring other sectors in the early days of CDM led to this situation, which is ironic since forestry is a major sector with well-acknowledged potential. Stringent methodologies, including those on impact monitoring, have thus dented this sector's participation in CDM.

The absence of a nationally published grid-emission factor data is a major setback for CDM projects. Attempts to calculate the grid emission factor have been made, but except for a CDM guidance publication in 2006, other efforts have had little success (DENR-EMB, 2006). The constant tug-of-war between what is defined as conservative and what is most beneficial to the project participants has prevented publication and updating of the Philippine grid emission factor. This in turn has led to an increased workload for project developers and reluctant acceptance of a "do-it-yourself" ethos.

Further, in an effort to foster small-scale projects under the CDM, a programmatic approach was introduced and gained momentum in 2009. But since the start, lack of full comprehension of PoA rules meant that the PoA concept failed to take root in the Philippines until 2011—which was coincidentally also the period of greatest volatility in the international CDM financing market. Currently, the Philippines' PoA statistics stand at 18 validated, 2 cancelled and 0 registered as of end of, 2012.

Project and CDM-Financing:

Challenges in securing financing, both for underlying finance and CDM registration, also exist. Except for proven technologies such as hydropower, CDM renewable energy projects are mostly only viewed as speculative thus pose certain risk premiums associated with their nature. Investors are therefore less keen to stake funds in such projects and generally favour those with lower risks and predictable returns. Securing underlying finance through bank loans was difficult especially for earlier CDM projects in the Philippines, as banks were more cautious in testing the markets.

Recent years have seen a proliferation of innovative financing schemes and environmental funds from banks[5] to address issues on securing underlying finance, as well as CDM project-cycle support funds[6]. Funds have generally been well received for renewable energy and methane capture projects. However, those for energy efficiency have low utilisation rates. Interviews have revealed that project developers undertaking energy efficiency projects have resorted to in-house financing for their energy efficiency projects[7].

CDM financing, or emission reduction purchase agreements, were generally put into effect at the early stages of the CDM project cycle and covers CDM transaction costs. Only a few projects opted for the "unilateral" CDM track. As such, CDM financing in the Philippines is buyer-driven and highly dependent on the upfront support of CDM financing. Further, volatility in the price of credits has contributed to a drop in CDM project applications in recent years.

[5] For example, Land Bank of the Philippines' Credit Line for Energy Efficiency and Climate Change Projects (CLEECP): https://www.landbank.com/newsdetails.asp?id=319; and World Bank's MLF/ GEF for Chiller replacement projects

[6] For example, Land Bank of the Philippines' Carbon Finance Support Facility (CFSF): https://www.landbank.com/products_carbon_finance.asp

[7] Interviews with DENR-FASPO, the Coordinating Managing entity for the Philippine Chillers Energy Efficiency Project, 2012

Best Practices in Addressing the Barriers

The barriers discussed above have also brought about positive developments that enabled CDM implementation in the Philippines to move forward continue over the years, the following of which are notable:

1. Development of efficient documentation strategy and timelines by both the DNA and project developers to mitigate delays in LoA issuances: On the part of the DNA, standard matrices designed for easy evaluation as well as standard questions have been developed. Quantified indicators and examples were provided in the SDBD for easier understanding by the project developers. Project developers have largely benefited from the improved guidance from the various DNA members on the proper documentation required, as well as in the increased transparency of their applications.
2. Greater awareness of changing rules and regulations: Numerous capacity-building activities have been undertaken both by the private sector and the government, with support from funding agencies of Annex I Parties, which have helped in mitigating the risks and in transforming the negative perception of CDM.
3. Innovative financing mechanisms and environmental funds to increase uptake of CDM projects: CERs are now viewed as an asset that can be used as collateral and/or loan amortisation payments. Environmental funds offered as loans with low interest rates also help reduce CDM risks. Pooled funds from various Annex I Parties to purchase carbon credits that have provisions for upfront payments have greatly assisted Philippine CDM projects.
4. Improved monitoring schemes with increased transparency, clearer procedures, project-appropriacy and implementability: This applies both for emission reductions and sustainable development benefits of the project.
5. Manpower support and additional resources for the DNA to effectively govern and regulate the CDM process in the Philippines: Recently, renewed efforts such as re-calculation of the grid emission factor and training of DNA members in PoA rules and regulations have taken place.

Conclusion

In light of the end of the first commitment period of the Kyoto Protocol, a lot can be learned from the barriers and best practices in CDM implementation in the Philippines to usher in a new type of market mechanism.

First, a regulatory body to clearly define the rules of market operations is needed. The government, acting as the regulatory body, must be in a position to carry out ongoing and effective governance, thus capacity-building involving familiarisation of personnel with the market as well as defining the framework and proper implementation of the rules are important.

The government must also be able to set acceptable standards and benchmarks such as those used for transparent accounting. National values for emission factors, including the grid emission factor, must be calculated and published.

Second, small-scale projects and those in sectors untapped by the CDM must be prioritised as they can contribute more to sustainable development. The international carbon market is vital in the development of such projects as they hold more potential co-benefits than most large-scale CDM projects. Projects in energy efficiency and forestry sectors must be included in this list, as well as projects enabling active participation of various local government units.

The CDM programmatic approach is a good promotion vehicle for small-scale projects.

Third, it is necessary to simplify monitoring procedures while at the same time maintaining the integrity of the emission monitoring process. This is especially beneficial for small-scale projects, of which the Philippines has the highest number. Data needs and measurement of emission reductions must be realistically achievable and conservatively calculated, but should not be as complex as the CDM additionality test.

Fourth, the domestic reporting system must be streamlined. A common rule for reporting, like that of CDM, is essential in providing uniformity and easy referencing. Like the CDM, it should provide sufficient data for transparent verification.

Lastly, the international verification process must be streamlined. Current CDM procedures are too complex and costly, which mostly affects small-scale projects. Simpler and replicable procedures must be put in place so that small-scale projects can be mainstreamed in the Philippines.

4. Recommendations

The CDM Capacity Building should be more standardised and more systemic to provide effective operation

Indicators or checklists based on a template could provide equally comprehensive and manageable information in which the host countries' requests, capacity status, issues and best practices on CDM implementation should be covered.

The CDM could be utilised more in less-populated countries (<five million)

The measures on simplification of demonstrating additionality of microscale project activities and post-registration changes to the start date of the crediting period, which are provided to LDCs, should be expanded to countries with populations of less than five million.

The CDM could be more decentralised by using a domestic reporting system to track emission reductions and sustainable development

Improved monitoring schemes with increased transparency, clearer procedures, and which make projects more -appropriate and implementable, are necessary for both emission reductions and sustainable development benefits of the project.

The CDM needs to be transformed to be a common infrastructure for all

Use of CER has been expanding to mechanisms other than Kyoto, such as EU-ETS, NZ-ETS and Australia CPM. At same time, the establishment of a voluntary cancellation account in the CDM registry has enabled project participants in both developed and developing country to use the CER for voluntarily claims of their emission reductions. These developments may suggest that the CDM, namely the CER and its accounting system (i.e. voluntary cancellation account and international transaction log) could be utilised as a common infrastructure linking different schemes and allowing voluntary participation from developing country project proponents.

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- JI Project Database
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