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The Clean Development Mechanism in Vietnam: potential and limitations

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Abstract

The Clean Development Mechanism (CDM) in Vietnam is used way below its full potential. In spite of efforts to further CDM projects in the recent years, Vietnam still lags behind the comparable neighboring countries in term of registered CDM projects. Especially, though 2008 and 2009 have seen a fast growth in the pipeline in the country but only 14 projects were registered as at 2 December 2009. This development progress is low to the country's greater potential and makes it as a late starter on the global CDM rise when the window of opportunity created by the first Kyoto Protocol period has almost closed. This paper analyzes the barriers explaining this late start and slow catch-up. It suggests strategic policy recommendations which could increase the attractiveness of investment business in the context of climate change protection in Vietnam.

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1. Introduction

The world has missed a new agreement on climate change at the last open important talks in Copenhagen (2009). Developing countries have opposed to their legal obligations of CO₂ emissions reductions though they agreed to implement mitigation actions.¹ However, they have also stressed that the extent to which they meet their obligations to take climate change actions depends on the extent to which developed countries meet their commitments to them on providing finance and technology. In this regard, they expect to continue their contributions to the global effort by hosting CO₂ emissions reduction projects and benefiting from these projects as specified in the Clean Development Mechanism (CDM), a financing mechanism arranged in the Kyoto Protocol (1998).

The current functioning of the CDM has been concerned and widely questioned about (i) the environmental effectiveness that relates to whether the CDM contributes to global greenhouse gas emission reductions (Cames et al., 2007; Michaelowa and

¹ Particularly, developing countries with high GHG emissions such as China, India and Brazil agreed to Nationally Appropriate Mitigation Actions (NAMAs), including some specific actions/targets to be set forth in an attachment to the Copenhagen Accord and to a set of basic commitments focused at making their NAMAs measurable, reportable and verifiable.

Purohit, 2007; Schneider, 2007; Chung, 2007; Wara and Victor, 2008; Wara, 2008; Schatz, 2008; Haya, 2009; Schneider, 2009), (ii) its contribution to the sustainable development goal in host countries as it's originally framed in the Article 12 of the Kyoto Protocol (Olsen, 2007; Matschoss, 2007; Schneider, 2007; Sutter and Parreño, 2007; Wara, 2008; UNEP/Risø, 2009), (iii) the need to promote equitable geographic distribution of the CDM project activities at regional and subregional levels (Cosbey et al, 2006; UNEP/Risø, 2009; Bakker et all, 2009), (iv) the institutional structure of the CDM and associated difficulties implementing CDM project activities (Michealowa et al., 2003; Michaelowa and Jotzo, 2005; Sterk and Witteneben, 2006; Streck, 2007; Streck and Lin, 2008; Castro and Michaelowa, 2008; Cames, et al., 2008; Boyle et al, 2009; Castro and Michaelowa, 2009), (v) sectoral distribution and windfall profits of projects that relates to the disparity of GHG reduction by CDM projects among sectoral emissions reductions potential (Zegras, 2007; Schneider, 2008; Sterk, 2008; UNEP/Risø, 2009) and high windfall profits/producer surplus of some project proponents and host countries as the costs of achieving some emission reduction have been very low (Wara and Victor, 2008; Schatz, 2008; Bakker et all, 2009), etc.

But it has experienced a strong success and steady growth since 2005: globally the trend in number of CDM projects in the pipeline has been almost exponential as at 6 December 2009 (see Figure 1), and an offsetting mechanism with global reach of over 2.9 billions certified emission reductions (CERs) expected to the end of 2012 (UNFCCC, 2009a).

Today, after Copenhagen, uncertainty on climate policies and market-based finance mechanism post-2012 still remains on the future of the CDM. A variety of options have been proposed to reform the CDM, in an abundant literature sources, aiming to carry on its momentum (Bodansky, 2007; Cosbey, et al., 2007; Bakker, et al., 2007 and 2009; Cames, et al., 2008; UNFCCC, 2008a; Larry and Jinhua, 2008; Olsen and Fenhann,

2008; CAN, 2008 and 2009; Asselt and Gupta, 2009; Schneider, 2009; Michaelowa and Muller, 2009; UNFCCC, 2009b.

This study, based on a review of key documents as well as interviews carried out with a number of experts and stakeholders inside and outside the country, is organized as follows. First, we review the present CDM development in Vietnam. We argue that the number of successful projects in the country is disproportionately small compared to the potential. Second, we analyze the barriers explaining why. Third, based on the lessons learnt also in comparable countries and considering possible post-Kyoto contexts, we offer a few suggestions to benefit more from the mechanism or its successor.

2. Vietnam and the CDM, a late start

2.1 A significant potential

Large potential for implementation of CDM projects

Due to growing energy needs, highly inefficient energy use and an ample potential for renewables, Viet Nam is a promising country with enormous opportunities for developing projects under the CDM system. The most potential sectors for developing CDM projects are renewables (dominated by hydropower, wind energy), biomass and biogas (residues from sugar, rice, agriculture, wood production), waste (landfills, animal farms, tapioca starch) and waste water treatment, fossil fuel switching (food, beverage, steel, iron, paper, pulp, rubber, wood), and finally energy efficiency in both industry and buildings.

Greater CDM potential should exist within Vietnam as demand for energy has been soaring. Over the last decade, demand for electricity increased by 14.9% per year for 1996-2000, 15.3% for 2001-2005, and 14.1% for 2006-2007. It is predicted to grow about twice the growth rate of the GDP, by 15% in a low scenario and 18% in a high scenario over 2010-2030. In addition, heavy industry is on the rise to satisfy the country's rapid economic growth. The Vietnamese power system capacity needs to

double, basically based on the additions of thermal coal-fired energy generation sources, in just five years to meet the demand. The Vietnam's carbon emissions will more than double in the period 2000 to 2020, increasing from 102.6 million tons in 2000 to an estimated 233.3 million tons in 2020. The sole biggest contributor to this increase is the energy sector, anticipated to rocket from only 45.9 million tons of carbon emissions in 2000 to 197 millions in 2020 (Institute of Energy, 2006, 2007, 2008a; Climate Focus, 2008). Moreover, in Nguyen and Ha-Duong, 2009a, 2009b, we examined that as a result of huge expansion of coal-fired generation capacities to meet the increasing demand for electricity over 2010-2030, CO₂ emissions in the power sector are expected to rocket up and reaching about 352 million tons of CO₂ in 2030, which is several times the 45.9 million tons of carbon emissions emitted by the energy sector in year 2000 (Institute of Energy, 2005; Climate Focus, 2008). Therefore, the potential for greenhouse gas (GHG) reduction projects in Vietnam's energy sector is very high, in which plenty of cleaner technological electricity supply and demand side options are available that could be effectively exploited under the climate protection activities. The country's natural conditions for these kinds of activities such as the CDM are exceptionally good with large hydropower resources, 3 000 km of windswept coast for wind turbine development, over 300 hot-stream sources ranging from 30 °C to 148 °C which can be used for geothermal power generating, 2 400 hours of sunshine per year for solar energy development, plentiful agriculture residues for energy usage, etc. More particularly, we find renewables could be developed for electricity generation at low carbon prices even cost-effectively competitive in some good conditions for small hydropower, biomass (bagasse, rice husk) and geothermal. Biomass (wood residue and plantation) and some other sources of mini and small hydro suggested as cost-effective generation sources at 2 \$/tCO₂ and significant wind energy potential would become economical for producing electricity at 3 \$/tCO₂ (Nguyen and Ha-Duong, 2009a, 2009b). Energy efficiency in

both industry and buildings offer ample potentiality for the CDM development in Vietnam. Energy efficiency of lighting usage on the household and service sectors could offer a free lunch reduction in CO₂ emissions, i.e. the abatement cost is negative (Nguyen and Ha-Duong, 2009b; Wetzelaer et al., 2007). Furthermore, Vietnam as a developing country has been experiencing an inefficient heavy industry with backward techniques and technology systems that could be a fertile field to exploit the CDM projects potential (PREGA, 2005; USAID, 2007; Institute of Energy, 2007, 2008b). It is estimated that beyond 20% of energy in the whole energy sector could be saved by adoption of specific programmes. For example, most of the existing thermal coal/oil-fired power plants operate with very low efficiency, reaching about only 28-32% that is 10% lower than in developed countries. The average efficiency of industrial boilers reached approximately only 60% that is 20% lower than the world level (Institute of Energy, 2004, 2005, 2008b). More practically, the on-going project of Small and Medium Enterprise (SME), which comprises an integrated set of activities designed to address the barriers to widespread utilization of energy efficient management practices, operations and technologies in the 5 selected Vietnamese sectors of brick, ceramics, textiles, paper and food processing estimates to save an amount of 189.5 Ktoe in energy consumption and about 1 Mt of CO₂ emissions reduction per annum during the period 2005-2015 (PECSME, 2008).

There is room for other greenhouse gas emissions reduction measures, which could potentially be implemented under the CDM system, in energy sector, industry and mining, waste management and other sectors such as CH₄ recovery and utilization from waste disposal sites, coal mining and waste water treatment; associated gas recovery and utilization by oil production activities; agriculture; afforestation and reforestation; chemical, manufacturing, building, and transportation..., etc.

The country has no shortage of CDM buyers/project developers.

Like most CDM countries in the region of Asia, Vietnam is not short of CDM buyers. Except for a handful of buyers with established offices in Vietnam, most buyers are from abroad. They undertake frequent visits and regular contacts with local CDM consultants and the Designated National Authorities (DNA). Japanese companies, who often act as investors in the projects, are the first buyers and most dominant group in the country. Buyers or prospective purchasers so far have been large energy companies such as RWE, Tohoku Electric Power, Tokyo Electric Power, Kyushu Electric Power, Essent Energy Trading BV, Shell International, etc, and some of the well-known carbon funds that are acquiring carbon credits as a service to participants or for speculative trading such as KfW Carbon Fund, Tricorona AB, or EDF Trading. Also, project entities have signed deals with European compliance buyers that are large energy utilities (Climate Focus, 2008; Germany Trade & Invest, 2009; UNEP Risø Center CDM pipeline). Table 1 presents CDM project developers and consultancy companies in Vietnam.

Available supports from CDM partnership agreements

Vietnam cooperates with many partners from Austria, Japan, Germany, Denmark, and other countries on climate change issues. For example, Vietnam has signed a new cooperation agreement with Denmark since December 2008 with a financial framework of EUR 40 million (Germany Trade & Invest, 2009) and cooperated with the Japan International Cooperation Agency to implement a development program for the afforestation and reforestation Clean Development Mechanism (AR-CDM).

In terms of local capacity building initiatives, Vietnam has received support from many international organizations such as Australian government, Dutch government, World Bank, Japan Bank for International Cooperation (JBIC), the United Nations Environment Programme (UNEP), the Asian Institute of Technology (AIT) and Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), etc. Table 2 summaries capacity building activities in Vietnam under different supportive programmes.

2.2 Opportunities exploited so far

Vietnam soon ratified the Kyoto Protocol on 25 September 2002 and is considered as possessing great opportunities for CDM climate protection activities. However, the CDM development has risen very slowly until now. Though 2008 and 2009 have shown increased activity and many new projects are undertaken, the Vietnamese CDM market has experienced a late start compared to other developing countries with similar climate opportunities.

Early starting but very slow development progress: the carbon offsetting market is gathering pace at a frenzied rate, notably in Asia since 2005. Like other countries in the region, Vietnam was ready early to start the implementation of CDM projects with 2 projects being approved in 2004 by the country DNA. But more than 3 years later, only 23 projects were additionally approved by the host country DNA reaching about 25 projects cumulatively in year 2007. Among these, two projects had been registered at the CDM Executive Board (CDM-EB) by this time: the large-scale Rang Dong gas flaring reduction project and the small-scale 2 MW Song Muc hydropower project (Figure 2).

Fast growth in the pipeline over 2008-2009 but low to be registered compared to other developing country in Southeast Asia: the recent 17 months have witnessed the increased activity of CDM implementation in the country. By August 2008, there were 44 CDM projects being received host country DNA approval, 27 projects had been submitted to the United Nations Framework Convention on Climate Change (UNFCCC), and only two registered projects. Today, as at 2 December 2009, 104 projects have been approved by Vietnamese DNA, 122 projects submitted to UNFCCC, and 14 registered (Table 3). However, in direct comparison, Vietnam currently shares 1% in the region's CDM projects both in number of registered projects (Table 3) and volume of credits expected by 2012 (Figure 3). Table 3 also shows that the country is

lagging behind other South East Asian countries such as Malaysia, Philippines, and Indonesia, and still ranks at the lower end of countries in the region, just higher than other countries such as Cambodia, Lao PDR, and Myanmar, in term of numbers of registered projects. While Vietnam is endowed with ample hydropower resources, about 30 GW, of which less than a quarter have been developed by 2005 (Institute of Energy, 2007, 2008a), as of 2 December 2009 the country has only registered 7 small-scale hydropower projects (< 30MW) whilst 218 around the region were registered by the same time (Climate Focus, 2009). Apart from hydropower, additionally, the scope for CDM activities in renewables has been mostly left untapped while greater potential should exist within the country, by which only one renewable energy project, the Binh Thuan wind power farm (30MW), has been registered in early 2009.

The Kyoto Protocol's first commitment period expires at the end of 2012 so that the window of opportunity for registering projects will close because long-time required for building a project to generate any meaningful emission reductions before the end of 2012 whilst the current demand for post 2012 is very limited, the momentum of the CDM may not be easy to remain until 2012 (Lecocq and Philippe, 2007; Climate Focus, 2008).

3. Why has CDM in Vietnam not been more intense? A barrier analysis

On the ground of the country's key studies/documents and experts/stakeholders' options based on face-to-face interviews, the major barriers were identified and analyzed including regulatory barriers for approval process, bureaucracy and corruption, and tariff uncertainty barriers for project developers, barriers of access to information and local capacity, and barriers due to type of projects.

3.1 Regulatory barriers

The institutional structure and regulatory framework for CDM activities

The Ministry of Natural Resources and Environment of Vietnam (MONRE) was assigned by Vietnamese government as a national focal agency for implementing the Kyoto Protocol in Vietnam. Within its Ministry, the Department of Meteorology, Hydrology and Climate Change is designated since May 2008 to act as CDM Designated National Authority (DNA). This department is responsible for executing CDM projects approval process, and managing all other climate change related activities in Vietnam. The National Steering Committee for UNFCCC and Kyoto Protocol (VNNSCUK), which consists of 16 representatives from 14 different ministries and one science association and chaired by Vice Minister of MONRE, is the supreme entity of approving CDM projects in Vietnam. Table 4 presents an overview of the regulatory framework for CDM projects in Vietnam. Figure 4 describes the organizational structure and host country approval procedure for CDM projects. The current administrative system and approval procedure for CDM projects in Vietnam, however, causes a number of critical hindrances for project developers, CDM consultants and buyers involved in CDM activities.

Delays in approval process: as the DNA's own stipulation, time requirement for approving a Project Idea Note (PIN) is 25 days and 55 days for a Project Designed Document (PDD). But project developers experience approval times of about 4-6 months for a PDD in reality. This is due to an inappropriate organizational system for running the CDM approval activities and lack of standing specialized experts-in-charge. According to the DNA's standards, it requires at least 75% of total VNNSCUK members to be present during the CDM project approval meeting. However, a majority of these members are government delegates/experts invited from various ministries and they have own different important tasks/business, which must be executed at their ministries at the same period so that it is a very difficult task to coordinate their agenda and gather full participations for such project approval meetings.

Document submission system: the submission process for CDM project documents is recognized inadequate and very underdeveloped by which project developers are required to hand-deliver hard copies of the PDDs personally to all VNNSCUK members. To contact these members for such a hand-submission, developers got to involve a number of phone calls ahead to ask for VNNSCUK members/receivers' appointments whilst electronic email and postal delivery as business standards globally are not preferable by receivers. This peculiar submission procedure takes a plenty of waste time, increases project transaction costs, intensifies opportunities for bureaucratic harassment, and creates motive and environment for the proliferation of corruption.

Lack of approval criteria: the evaluation and approval system for PDDs of CDM projects in Vietnam has the absence of clear sound approval criteria on which the members of VNNSCUK could basically rely when there is confusion about the mandate and on which grounds the DNA should comment. The VNNSCUK members, who are assigned from various Ministries, have tendency to evaluate projects on the basis of PDD and their own experiences, backgrounds and reference points on what constitutes sustainable development. They cannot revert to a clear set of guidance criteria but have to form a viewpoint on case by case basis. This is a very work intensive approach for all parties involved. As VNNSCUK members hold a diverse set of backgrounds, this leads them to provide comments on PPDs from their own perspectives. This can create excessive works for project developers and in extreme cases even conflict with CDM guidance (Climate Focus, 2008).

Lack of a consultative process: CDM guidelines and regulations have effects on CDM project entities and developers but there is no process in place to consult them. An example is: the Prime Minister issued a Decision No. 130/2007/QD-TTg in August 2007 stipulating a number of financial mechanisms and policies for CDM projects in Vietnam but a year later, MONRE and MOF have jointly issued the Circular No.

58/2008/TTLT-BTC-BTN&MT in July 2008 which further explains some articles of the above Decision. Particularly in the circular, a tax on CDM revenues was introduced, which should be channeled back to CDM projects and used to subsidise project development. This message that experienced CDM consultants and project entities were not invited to participate to the drafting national CDM legislation at the beginning stage. Moreover, the guidance document only became known to CDM project developers once it had already been issued.

The DNA experts' capacity and provincial approvals: the Vietnamese DNA consists of only 6 standing experts/staffs and dominantly occasional VNNSCUK members for the whole current CDM activities. Such staffing levels may not be able to manage the CDM activities with the expected increasing PDD submissions. The most concerned cumbersome regulation is due to the provincial approval required by the Vietnamese CDM standard, which is considered as a peculiarity of the Vietnamese administrative system (Climate Focus, 2008). As stipulated, project developers should necessarily demonstrate support from the provincial government for implementation of CDM projects at local territories through endorsement letters from provincial governors. However, provincial governors do not have necessary tools and methods to analyze, to evaluate the feasibility of proposed CDM projects even they have not been well-trained about the CDM either. Project developers therefore face a mass of unpredictable difficulties to obtain the endorsements, especially when they have no “close-relationship” with the government.

3.2 Barriers due to business climate

Corruption and bureaucracy?

Vietnam is in a transition phase from a “centrally planned” economy to a “market-driven economy with socialist orientation”. The recent country's efforts of attracting foreign/private investments have led the central government to seek to improve the

country's business and investment climate for foreign/domestic investors. Unfortunately, the evil of corruption and inefficient bureaucracy remain as one of the most problematic factors (including poor law enforcement and poor infrastructure) for doing business generally and executing CDM projects particularly.

Germany Trade & Invest, 2009 provides a CDM market brief that evaluates the CDM investment climate among Asian countries through the CDM investment climate index (CDM ICI). The CDM ICI index ranges from 100 points (highest) to 0 point (lowest). As its evaluation, the Vietnamese CDM investment climate is ranked as "average climate" with the CDM ICI of 54.4 points only. The parameters that go into the current assessment are the general investment conditions, intransparent administration, the taxation of CDM projects, and the small number of registered projects to date. The detailed expression in Table 3 shows a regrettable backward step far behind, in term of CDM investment climate, compared to other countries in the region such as Malaysia (91.7 points), South Korea (90.2 points), Thailand (83.7 points), China (83.3 points), India (80.7 points), Indonesia (80.1 points), Philippines (79.5 points)..., etc. Practically, the major barriers for CDM investment climate in Vietnam could be recognized by looking at the country's systematic problem of corruption and intransparent regulation, CDM investment conditions with lack of supporting measures, cumbersome administrative system.

In term of competitive climate at global scale, the "Global Competitiveness Report, 2008-2009" published by the World Economic Forum assesses the country's current overall business climate is eroded by weaknesses in the quality of infrastructure and institutions, as well as in higher education and training. Specially, the country's business climate heavily suffers from burdensome government regulation and weak auditing and reporting standards.

Point Carbon, 2009b found that institutional conditions have little improved and the DNA was still relatively slow in approving projects due to its inadequate organization. The CDM investment climate has deteriorated by cumbersome regulation and high corruption.

The current organizational structure of the VNNSCUK appears explicitly cumbersome and inefficient. This could lead to conflict objectives and interests among the examiners/evaluators then causes power shifts to lobbyist, and hinders approval progress. In addition, the existing submission and approval system often puts investors/developers into a struggling position so as to obtain necessary endorsements should they are not well-connected with the government (Climate Focus, 2008). Because of endorsement requirement in due time, lobbying governmental officials/authorities in one common “business trading way” in the country with “fostering envelopes” seems to be hardly avoidable. On the other hand, because the low wage standard and insufficient law-abiding spirit, government officials/authorities could easily engage in corruption activities in such a given context. Given the country’s current widespread corruption evil, the situation that investors/developers’ one blind-eye must be turned to them should they demand extra commissions or bribes in one way or another is not implausible. The unhurried or delayed approval progress for CDM projects in Vietnam, thus, could be foreseeable accordingly.

Tariff uncertainty and less attractive?

Compared to other economic sectors in Vietnam, the government is very present in the energy sector. Most of energy products are closely regulated: fixing prices for electricity, setting ceiling prices for gasoline, oil and petroleum products, controlling prices of coal for producing electricity, cement, and fertilize, etc. That leads to decreasing the business attractiveness to investors in the sector and wasting energy resources. The electricity market has been in the process of deregulation since 2005. As

per the government's roadmap, the electricity sector will be opened fully to retail/household sales only after 2022. The government now still interferes with the market by limiting the average electricity price at rather low level, at 5.8 cents (US\$/kWh), to enable the country's products to remain competitive around the globe. Beyond, the Electricity Corporation of Vietnam (EVN) is subsidized by regulated fuel-costs lower than the market price. By now almost the whole power sector is run by EVN. Currently, the average electricity pricing is governmentally moderated rather low compared to those of other countries in the region. These market distortions detract domestic/foreign developers from investing in generating capacity. Therefore, a scarcity of financial resources² for the expansion of the power generating system has been blamed as a key reason of electricity shortages over several years. And this is also putting EVN into a difficult position that to add and deliver a kilowatt-hour of electricity to users is more costly than that they are now allowed to charge for (Fulbright, 2008; Institute of Energy, 2009). They attempts to run, hence, the business by minimizing power purchase of external sources at their charges. As a result, many CDM project investors/developers claimed for a bankrupt if they lay out their capital resources for the energy projects whilst EVN continues to purchase electricity production at their expenses only. On the contrary, EVN debates their selling price is already considered at ceiling level and purchasing electricity from external generators at long-term cost of production is beyond what they can charge for.

Furthermore, electricity price is often one way used to help the government control the inflation. When a power supply shortage comes out, as practically-adopted solution the government allows EVN to increase the purchasing price until additional power generators exist sufficiently. However, to investors/developers this solution contains

² The development of power generation source and power network would require an estimated fund of 4.5 billions USD per annum, while the EVN's revenue of electricity sales reached only 2.4 billions USD in year 2005 (Institute of Energy, 2007).

many potential risks of electricity prices and they can not commit to build their electricity generators without long-term contracts or without power purchasing agreements (PPAs) that cover actual costs. Often, EVN declines to commit for long-term contracts and many negotiations for PPAs have gone to dead-end alley already. Another factor limiting investment in CDM projects is that there are no government-incentives for pricing reflective of clean energy's extra benefits and it is not strategically integrated yet into the national regulatory framework. There are no supportive schemes as national cost-sharing system, feed-in tariff mechanism, power purchasing agreement, etc, to create incentives for investment business under the CDM system.

3.3 Access to information and local capacity

Awareness and information of national physical potentials and local markets

The information on national CDM potential and development strategy are very important to project developers, but they are often hardly accessible in Vietnam. Nguyen, et al., 2010 points out that the national potential of renewable resources has not yet been systematically estimated with precision and is often unavailable. That results in many difficulties to project investors/developers in Vietnam. The country's databases are limited, scattered, dispersed, and infrequently updated and mostly centered with a few major state groups/companies such as Electricity Corporation of Vietnam (EVN), and PetroVietnam (PVN). However, the door to these sources is barely accessible if investors/developers have no good relationship with the authorities. Because of this barrier, the awareness/knowledge on CDM potential among enterprises, private sectors, public entities, and NGOs is limited.

Moreover, information on local markets for small-scale renewables technologies is not publicly available in Vietnam. Nguyen, et al., 2010 shows that technology recipients/developers are lacking information and awareness of available domestic and international renewables technologies, which often causes them difficult to make proper

investment decision. Some prospective developers even are not aware about potential emissions reductions opportunities offered by these technologies that could be implemented for their projects.

Access to the electricity sector data

Climate Focus, 2008 finds that one of the key barriers for projects seeking CDM registration in Vietnam lies in limited access to the electricity sector data for calculation of the carbon dioxide emission factor of the Vietnamese grid, called Baseline Emission Factor (BEF). CDM consultants and project entities often find it difficult to come by the data for their calculations of the baseline emission factor according to CDM methodologies. So, CDM consultants and project entities often use their personal contacts and relationships for obtaining data but lacking official feature. As a result, projects are often held up in validation stage because of failures in proving transparent and sufficient official data underlying their calculations.

On the same observation, Climate Focus, 2008 and Germany Trade & Invest, 2009 argue that the lack of reliable official data on the Vietnamese power grid generating a leading impediment to calculation of crucial emission factors and baselines for ascertaining carbon emissions savings. Different CDM projects entities use different BEFs for their project calculation design in spite of referencing the same data source and feeding into the same national grid. Table 6 shows examples of the BEF calculated for some Vietnamese CDM projects. As Climate Focus, 2008 noted, most CDM consultants calculated the BEFs for CDM projects in the Vietnamese electricity sector based on the EVN Masterplan covering the period 2001-2010. However, this document is considered a not good source of information for CDM purposes due to the following reasons: (i) there are a number of different versions of the Masterplan but none of which can be clearly identified as the final or official version, (ii) actual generation data is only available for years 2001-2005, which is not current enough to meet validators' requests,

(iii) the Masterplan constitutes a plan, which does not fully reflect reality and can deviate from actual power generation in the country. Some of listed plants are not operational yet but are included to meet demand targets.

Local capacity

Overall local capacity is definitely constrained that often creates frustration to project development in Vietnam as: experience is still lacking with the set of CDM instruments at all levels, inadequate technical skills, difficulty in communication because of the language barrier, insufficient knowledge of the mechanism among local CDM participants, poor quality PDDs and methodological groundwork establishing. Particularly, the country's domestic capacity resources for CDM development is at slow growth rate, and vital stakeholders are still lacking awareness and understanding of the CDM and its eligibility criteria in general as a prerequisite for the implementation of CDM projects. Knowledge is supposed to be strongest among a handful of established CDM consultants and government institutions, notably the DNA. Whilst the biggest impediment is the lack of knowledge among projects entities, local banks and engineering consulting firms (Climate Focus, 2008; Germany Trade & Invest, 2009).

Local CDM consultants are at different levels of knowledge about the CDM and its associated requirements and generally well-connected to external carbon market and national institutions as evaluated by Climate Focus, 2008. Leading local CDM consultants in the country are VNEEC, INTRACO, and RCEE which have together undertaken 40% of submitted projects and are suffering from under-capacity. Other typical local consultants include Vietnam Institute of Energy, Electricity of Vietnam, Investment and Trade Consultancy Co. Ltd. However, hardly any local consultants are able to design viable project models or support a project from the beginning to registration stage, especially for new projects that require new methodologies and baselines without foreign partners.

Project entities in the country have insufficient knowledge and capacity to develop projects alone and can not connect with the carbon market without incorporation with a few foreign investors. Therefore, they are fully depending on CDM consultants to help them navigate the CDM flows. Domestic banks appear relatively unfamiliar with the CDM and its requirements that leads to problems for project entities.

Among stakeholders, engineering consulting firms take an important role in the CDM by preparing feasibility studies of projects. They should be trained to look for CDM opportunities and to factor in carbon revenues at an early stage of project development.

Government institutions in Vietnam are still learning about the CDM, therefore lack of awareness exists among themselves that could create a number of barriers: (i) investment guidelines defined by the government may not be suitable to support CDM transactions and hamper demonstration of additionality; (ii) increasing complication from host country approval should members of the National Steering Committee are not fully turning into the mechanism's requirements; (iii) provincial governors, who have to extend their support to projects under the Vietnamese CDM regulation, find it difficult to sign endorsement letters should they are not fully familiar with the mechanism.

3.4 Structure of the projects portfolio

The country's CDM potential lines with small-scale renewables: greatest CDM potential within the country exist in renewable energy sector, which is dominated by small-scale hydropower and wind energy. At the end of April 2009, about 70% of the CDM projects approved by the DNA involve small-scale hydropower. The scope for more measure of this type, however, is limited (Germany Trade & Invest, 2009). Through international CDM practice, project type, character, size and the host country's specific situation are recognized as the variables most likely to affect CDM project, especially it causes an important influence on CER issuance rates, lead times, and validation and registration success (Castro and Michaelowa, 2008). Compared to other types, small-scale

renewables in the country face more technological and financial barriers than larger ones. Though these are proven technologies that are implemented successfully and dominant CDM category in many countries, barriers clearly exist that prevent small-scale renewables technologies from being more widely implemented in the country especially when projects developed without intervention or investment from an Annex I party. Nguyen, et al., 2010 identifies the following typical barriers: a lack of sufficient technological skill, information, and domestic suppliers, difficulties gathering the financial means and capital, and unsatisfactory government policy. Moreover these projects often require raised levels of funding beyond the CER revenues while the current energy pricing system is less incentive, thus they consume longer time for planning stage and experience longer delays.

EVN has no interest in small-scale renewables projects: today the independent power producers (IPPs) are recognized as the sole active enabler for promoting small-scale renewables projects in Vietnam instead the EVN. Legally, EVN is assigned as a state CDM function unit to undertake a principal responsibility for CDM projects in the sector. However, EVN basically operates all for the benefit of their business by which EVN has no interest in small-scale renewables projects. An example is: the wind power project of Phuong Mai could not be implemented under the mechanism even it provides a qualified PDD that was approved by the DNA for carbon financing. The reason is simply that EVN did not agree with the purchasing price of electricity proposed by the project developer, which is supposed not lucrative compared to the current average electricity pricing (USAID, 2007). Many experts argued that the implementation of small-scale power projects under the CDM does not attract much interest to EVN because these projects are often small and generate less profit but consume more timing, human resources. To EVN, compared to larger fossil-fuel fired power projects it seems likely that implementing CDM projects does not bring in expected business benefits but

faces more difficult and risky. The reasons could not only be a part from the EVN's business strategy, but also the present national regulatory framework in which sufficient support measures are entirely absent and the electricity prices are government administered.

4. Strategic recommendations

Overall, the study's barrier analysis gives an answer to the research question that why Vietnam has not been more successful for CDM development during the high movement period of the mechanism around the globe as well as provides signals of necessary changes and improvements for Vietnam's CDM development in the context of the window of opportunity getting closed. These necessary changes and improvements today could be late on the global CDM rise but will be never a waste, the changes we should do today, instead, for the country's future sustainable opportunities. By establishing the country's regulatory and institutional system in a methodical and standardized manner, and building up sufficient essential infrastructures and human resources/capacities, the country is ready position for new international climate change agreements. Climate change challenges could be possibly turned into greater opportunities for sustainable development to the country if the mechanism continues to be a major or a part source of emissions credits for Kyoto signatories. With the objectives in mind, the next discussion provides strategic suggestions.

First, the Vietnamese approval system for CDM projects should be strongly revised and significantly streamlined so as to ensure a smooth and righteous application process for the letters of approvals, without consuming too much timing, energy, and capacity of all involved parties. More specially, a clearer set of criteria and guidelines built up so that VNNSCUK members could use to evaluate projects in a common manner in stead of keeping the assessment of projects up to the discretionary judgment of each member. Moreover, the current method of project-by-project assessment could be no longer

suitable in the way of processing larger volumes of projects³. To simplify the approval procedure, it is recommended to cut down the cumbersome capacity existing within the DNA by reducing the required number of participations to 50%. The number of representatives involved by combining only-related ministries in groups, which are controlled by elected group leaders, should be limited. Only in this way, Vietnam can operate as single window clearance to speed up the projects approval⁴. Alternatively, consult the ministries connected to the letter of approval on a project specific base only and do not involve ministries that have no clear connection to the project (Climate Focus, 2008).

Vietnam can infer lessons from other neighboring countries such as China, India, and Indonesia in providing favorable conditions for involved parties. The business standards as postal-mail, electronic-email should be legally obligated for the submission of PDDs. The CDM consultants and projects entities, somehow, should be publicly invited to give comments on the country's draft CDM legislation.

Next, as local capacity is slowly growing there is a need for enhancing the awareness/knowledge of climate change and CDM issues among involved bodies. Vietnam, in the past, has been quite successful in attracting international and bilateral donors for capacity building (Dang Hang, 2006). However, there is a further demand to intensify partnerships with foreign counterparts to disseminate deep knowledge on CDM more broadly as well as to improve foreign language. Important here is increasing local experience in preparing and implementing CDM projects. Climate Focus, 2008 further

³ A good example is the Indonesian approval procedure that has approval times of only 1 month. The host DNA has applied several approval criteria translating into a questionnaire. Project developers got to provide information, for example, on what measures are foreseen to mitigate any negative social impacts of the projects. Rather than evaluate projects on their PDDs, which has a distinctly different purpose. Projects then are evaluated based on their responses to the questionnaire (IGES; UNEP Risø.).

⁴ Another good example is the Indian DNA that runs as single door unit for approving CDM projects. The country's DNA has established an elaborate and effective institutional structure that make the approval process remain straight-forward. On the other hand, India has CDM promotion cells being set up at state level to favor CDM activities such as information dissemination, strengthening coordination between local and central government (IGES; UNEP Risø.).

suggests when receiving technical support from donors, the government should forge more partnerships between local and international carbon market consultants and necessitate that capacity building extends to all private sector participants with a stake in carbon transactions (in particular project entities, banks, engineering consulting firms). Alternatively, the country could extend international cooperation to establish consultative or training centers for DNA and provincial authorities, and involved ministries bodies. More on-the-job/sectoral trainings or workshops to transfer skills should be periodically held. Education programmes, campaigns, and R&D activity could also play as a considerable panacea.

Third, for more specific on large small-scale projects potential, e.g. projects of renewables, demand-side energy efficiency, etc, the government of Vietnam should support developers' calculating grid emission factors in order to facilitate validation of these huge potential projects in Vietnam. The proper calculation and periodic updating of the baseline emission factor (BEF)⁵ and necessary information should be organized and disseminated to relevant stakeholders. In this aspect, Climate Focus, 2008 suggests a structural process as follows:

- (i) The Ministry in charge of promoting investments and regulating the energy sector, Ministry of Industry and Trade (MOIT), takes the lead in organizing the process and provides necessary funding.
- (ii) MOIT commissions a local consultant to gather the data, perform the calculation progress and undertake yearly updates of the BEF.
- (iii) A local consultant should be selected who has access to information on the Vietnamese grid and knowledge of the CDM methodologies. The local organization best positioned for the task is the Institute of Energy (IE), which is

⁵ China is considered as the country having very effective supports in this regard. The government publishes the grid emission factors for all Chinese regional grids on the DNA homepage: <http://cdm.ccchina.gov.cn/english/NewsInfo.asp?newsId=2871>.

in charge of producing the Power Sector Master Plan. One of the specialized local CDM consultancies could be co-commissioned to ensure that the calculation of BEF fully meets project developers' needs.

- (iv) The DNA then publishes the factor and supporting calculations and datasheets on its website.

Beyond most necessities for achieving more benefit from the CDM until the window of opportunity for registering projects closed then reaching more fully benefit from any other climate mechanisms that could appear from a new deal for post-2012 is a clear national strategy and comprehensively bright policies with incentive schemes towards climate mitigation goals⁶. Essentially, there is a vital demand to improve the CDM investment climate by eliminating the cumbersome bureaucracy, and wipe out the existing corruption evil, otherwise the country could continue to wrestle with itself at the lower end of countries in the region in term of climate change mitigation activities under the CDM mechanism.

More specifically on how to move from state monopoly to renewable portfolio in the Vietnamese electricity sector, learn lessons from international practices and the reform progress of different countries having similar electricity industry development should be taken into account at different future sector development stages.

5. Conclusion

We have shown that Vietnam is a late-starter on the global rise of CDM. The country lags behind its regional neighbors in term of registered CDM projects activities. By December 2nd, 2009, there were only 14 registered CDM projects in Vietnam. This is a small fraction of the potential for successful CDM projects in the country. Opportunities

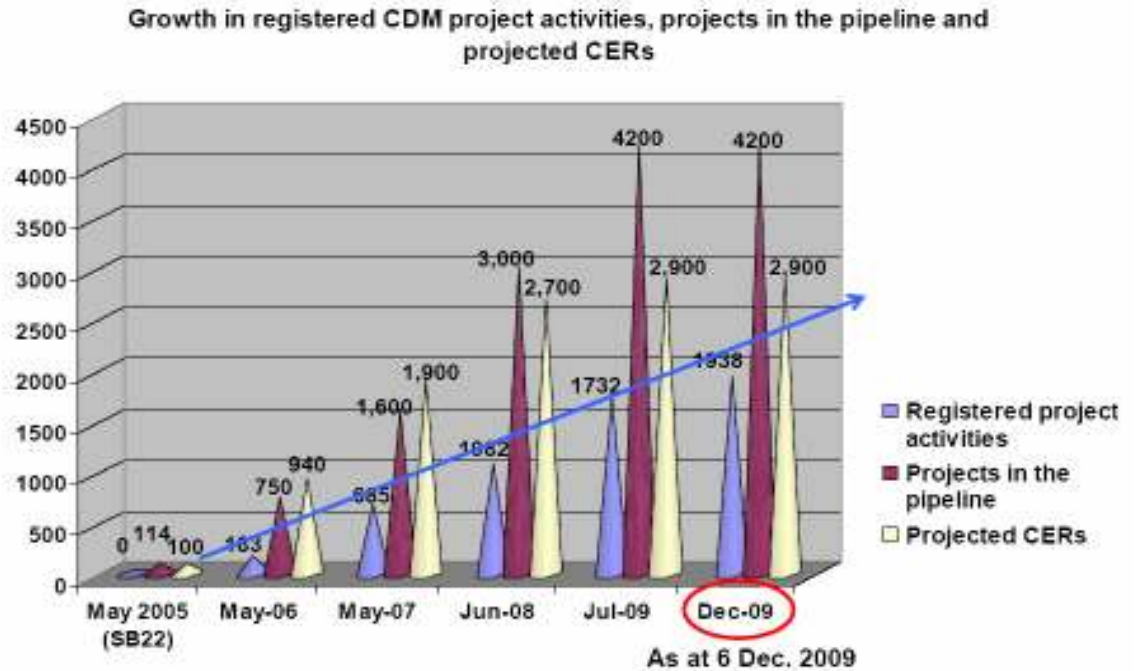
⁶ In this regard, Vietnam can learn from Chinese effective policy. To support for the DNA's operation, national CDM policy and its regulatory framework constitutes remarkable features towards CDM such as participation requirements, allocation ratio of CERs, etc so that the approval process could be undertaken within 30 days and effectively operated with 50 CDM projects submitted every month. On the institutional side, China establishes incentive schemes and service providers towards CDM information dissemination and supportive CDM activities (IGES; UNEP Risø).

abound in the energy sector, as the country is richly endowed in renewable resources, especially hydropower, wind and biomass.

The barrier analysis outlined the ways in which that facilitating the CDM in Vietnam has not been methodical and efficient enough to complete successful projects. Climate mitigation is not yet considered a strategic priority in the long-term economic development plan. Policy measures are available for a stronger strategy of climate change investment business, fully consistent with the general goal of improving country's investment climate by reducing red tape (bureaucracy, cumbersome regulation) and fighting corruption. Some could be effective even before the window of opportunities for projects under the up-to-2012 rules entirely closes. These measures would be necessary to benefit from a post-2012 CDM-like mechanism. And in any case, they would also facilitate future climate protection activities within the country, could be used as a foundation to improve Vietnam's position in future international climate discussions, and more generally contribute to *turn the climate challenges into sustainable development opportunities for Vietnam* (Vo Van Kiet, 2008).

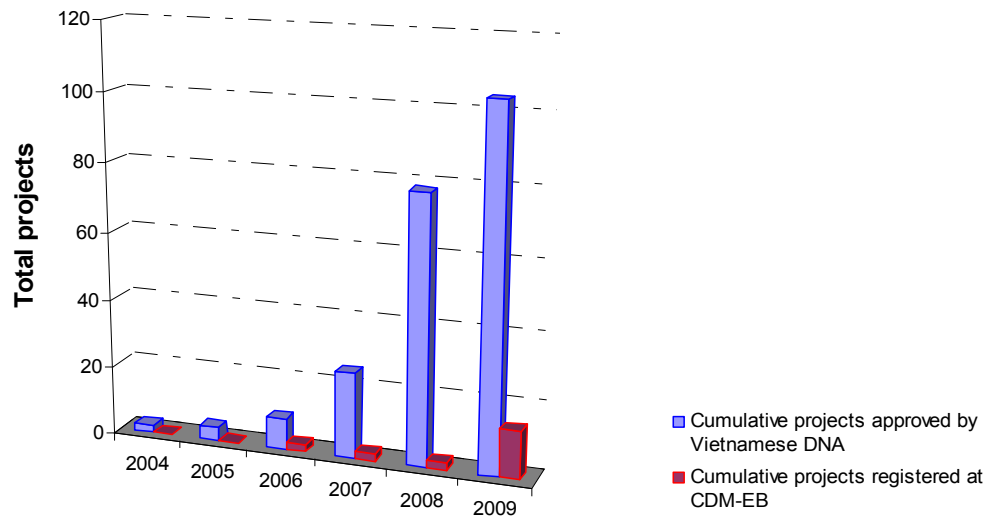
Figures and Tables

Figure 1: The CDM continuously grows strongly and steadily since 2005 even we are now getting closer to 2012.



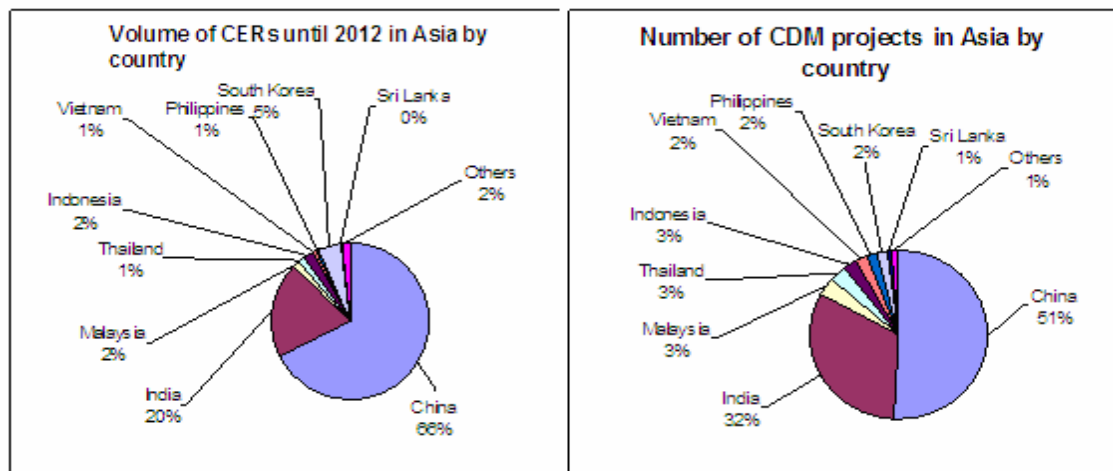
Source: UNFCCC, 2009a.

Figure 2: The situation of CDM projects in Vietnam: early starting but slow progress, then rapidly increased in the pipeline recently but too late on the global rise.



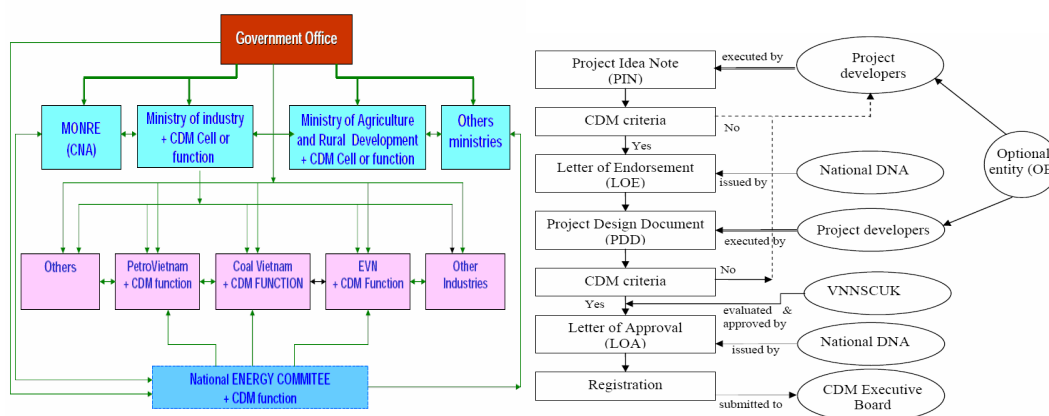
Source: CDM approval updates from Department of Methodology, Hydrology and Climate Change, Vietnam: <http://www.noccop.org.vn>;

Figure 3: Share of CDM projects in Asia, 2 December 2009.



Source: UNEP Risø Capacity Development for CDM, www.cd4cdm.org.

Figure 4: The CDM institutional structure and host country approval procedures for CDM projects in Vietnam.



Source: Nguyen K. Hieu, 2007; Hoang Manh Hoa, 2008.

Table 1: Project developers and consultancy companies in Vietnam, as 2 December 2009.

Name	Number of CDM projects	Number of registered projects	Country
AES	5		America
Asia Carbon	6		Singapore
CAMCO	3		England
Carbon Resource Management	3		England
Ecoeye	4	2	South Korea
Energy and Environment Consultancy/Joint Stock Company (VNEEC)	21	1	Vietnam
INTRACO	13		Vietnam
KYOTOenergy	12	4	Singapore
Mitsubishi UFJ Securities	3		Japan
RCEE	3	1	Vietnam
Toshiba	2	2	Japan
Others	18	4	
Total	93	14	

Source: UNEP Risø Centre CDM pipeline: <http://www.cdmpipeline.org/>

Table 2: Capacity building initiatives in Vietnam under various programmes, as 2 December 2009.

Programmes	Donor, implementing agency	Number of registered projects
National CDM Strategy Study	Australian government, World Bank	Early assessment of GHG reduction opportunities and abatement costs.
Capacity Development for the CDM in Vietnam (CD4CDM)	Dutch government, UNEP Risø	Improve awareness, capacity development for policy makers and the DNA through a series of workshops, among others.
EU-Asia institutional cooperation and multinational dialogues on enabling the meaningful participation of Vietnam, Laos, Cambodia in CDM	EU Asia ProEco Programme, HWWA, Germany, JIN, Netherland	Questions and answers on the Kyoto Protocol and the CDM, workshop and brochure.
	GTA, Germany	Opportunities for biogas projects under a Programme of Activities.
	DANIDA	Identify CDM project opportunities in cement sector.

Source: Climate Focus (2008).

Table 3: Status of CDM projects under development in Southeast Asia, as 2 December 2009.

Country	submitted to UNFCCC	Registered CDM projects	Under validation	* Others	Rejected	Approved by DNA
Cambodia	5	4	1	0	0	45
China	2,048	652	1,057	310	29	2279
India	1,476	463	697	275	41	1455
Indonesia	117	33	50	33	1	104
Lao PDR	2	1	1	0	0	No data published
Malaysia	167	66	46	51	4	No data published
Myanmar	0	0	0	0	0	0
Philippines	89	3	33	14	2	64
Thailand	119	26	78	14	1	91
Vietnam	122	14	101	0	1	104

* Projects that are requesting registration, under review, under request for review or under request for correction

Source: own compilation from UNFCCC project search: <http://cdm.unfccc.int/Projects/projsearch.html>; UNEP Risø Centre CDM pipeline: <http://www.cd4cdm.org>; IGES CDM fact sheets of Asian countries: http://www.iges.or.jp/en/cdm/report_country.html, CDM approval updates from NDRC website: <http://cdm.ccchina.gov.cn/web/index.asp>; CDM approval updates from Department of Methodology, Hydrology and Climate Change, Vietnam: <http://www.noccop.org.vn>; UNFCCC CDM Statistics: <http://cdm.unfccc.int/Statistics/index.html>; Monthly newsletter of the GTZ Climate Protection Programme.

Table 4: The current national regulatory framework for CDM development in Vietnam.

Date	Regulation	Issued by	Subject
17 Oct 2005	Directive No.35/2005/CT-TTg	Prime Minister	Instructions given to ministries, government entities/bodies, provincial/municipal People's Committee to implement the CDM.
12 Dec 2006	Circular No.10/2006/TT-BTNMT	MONRE	Guidelines for developing CDM projects in Vietnam.
6 April 2007	Decision No.47/2007/QD-TTg	Prime Minister	National Action Plan to implement the Kyoto Protocol in the period 2007-2010.
2 August 2007	Decision No.130/2007/QD-TTg	Prime Minister	Financial mechanisms and policies for CDM projects implementation in Vietnam.
4 July 2008	Circular No.58/2008/TTLT-BTC-BTN&MT	MOF/MONRE	Guiding the implementation of some articles given in Decision No.130/2007/QD-TTg.

Source: Hoa M. Hoang, 2008 and Climate Focus, 2008.

Table 5: CDM investment climate index (CDM ICI) in the Asian region by April 2009.

Rank	Country	CDM ICI (max 100 points)	Regional classification
1	Malaysia	91.7	Very good climate
2	Korea (Rep)	90.2	Very good climate
3	Thailand	83.7	Good climate
4	China	83.3	Good climate
5	India	80.7	Good climate
6	Indonesia	80.1	Good climate
7	Philippines	79.5	Good climate
...
25	Vietnam	54.4	Average climate
...

Source: DEG- Deutsche Investtions and Entwicklungsgesellschaft mbH cited by Germany Trade & Invest, 2009.

Table 6: BEFs applied by some Vietnamese CDM projects.

Projects	PDD date	OM EF (tCO ₂ /MWh)	BM EF (tCO ₂ /MWh)	CM EF (tCO ₂ /MWh)	Data source
Song Muc Hydro Power Project	registered	0.788	0.407	0.598	Masterplan-EVN 2001-2010
Song Giang 2 Hydro Power Project	11/2006	0.658	0.503	0.58	Masterplan-EVN 2001-2010
Za Hung hydro Power Porject	06/2006	0.658	0.503	0.58	Masterplan-EVN 2001-2010
Nam Chim Hydro Power Project	06/2006	0.658	0.503	0.58	Masterplan-EVN 2001-2010
Dasiat Hydro Power Project	09/2007	0.744	0.469	0.62	Masterplan-EVN

Projects	PDD date	OM EF (tCO ₂ /MWh)	BM EF (tCO ₂ /MWh)	CM EF (tCO ₂ /MWh)	Data source
					2001-2010
Nam Pia Hydro Power Project	09/2007	0.692	0.495	0.591	Masterplan-EVN
					2001-2010
Su Pan 2 Hydro Power Project	01/2008	0.698	0.681	0.690	Masterplan-EVN
					2001-2010
Wind Power Plant No.1 Binh Thuan, 30MW	02/2008	0.701	0.475	0.644	Masterplan-EVN
					2001-2010
Ngoi But 1 Hydro Power Project	04/2008	0.84	0.4	0.62	Masterplan-EVN
					2001-2010
Dak Drung 1 Hydro Power Project	04/2008	0.84	0.4	0.62	Masterplan-EVN
					2001-2010
Song Con 2 Hydro Power Project	06/2008	0.676	0.597	0.637	Masterplan-EVN
					2001-2010
Ngoi Duong Hydro Power Project	06/2008	0.676	0.597	0.637	Masterplan-EVN
					2001-2010

Note: according to the “tool to calculate the emission factor for an electricity system” adopted by the CDM-EB the BEF is to be calculated as the combined margin (BM), the weight average between the operating margin (OM) and the build margin (BM). Source: Climate Focus, 2008.

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All errors and opinions remain ours.

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