# From GHGs Abatement Potential To Viable CDM Projects – The Cases Of Cambodia, Lao PDR And Vietnam

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This study was conducted under the Project "*EU -Asia Institutional co-operation and Multinational Dialogues on Enabling the Meaningful Participation of Cambodia, Lao PDR and Vietnam in the Clean Development Mechanism (CDM)*" funded by "*European Union under Asia-Wide Programmes*".

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# Abstract

This study evaluates the CDM potential in Cambodia, Lao PDR and Vietnam by focusing not only on the absolute GHG abatement value of these countries. Rather, the potential of CDM inflows into the three countries will be identified through assessing the comparative CDM endowment on the basis of an holistic analysis of each country, thereby highlight the relative positions of Cambodia, Lao PDR, and Vietnam in the global CDM market.

The three main factors determining the competitiveness of Cambodia, Laos and Vietnam in the global CDM market will be examined, namely "Potential supply size - countries' facts", "Country business climate" and "Country CDM institutions and CDM project experience".

The study shows the overall competitiveness level of each studied country as well as discusses which activities a country shall take to maximise the opportunities to convert theoretical mitigation options into real CDM investments.

In Vietnam, for instance, the highest challenge now is to make CDM ideas economically feasible. This study shows that it is questionable that a boom of CDM investment inflows into Vietnam or - in more quantitative word - a dozen of CDM projects will be registered before 2012.

In Cambodia, the probability to get a couple of CDM projects running in the first commitment period is not high although the country is quite ahead in establishing their CDM institutions in comparison with other LDCs. One of the solutions to get through the narrow window is to gain attention from multilateral carbon funds, like the Community Development Carbon Fund (CDCF) and Bio Carbon Fund (BioCF).

In the case of Lao PDR, this study demonstrates that the entry into the CDM is likely to be extremely high competitive for them given their poor CDM endowment and the "lag behind" activities of the government in constituting its own CDM structure. Thus, Laos needs to make a greater effort to develop its capacity to provide a basic sufficient framework to make the country as of one CDM-LDC destination in the international donors' eyes.

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# I. SCOPE AND STRUCTURE OF THE STUDY

## I.1. Scope of the study

Within the framework of the "EU – Asia institutional co-operation and multinational dialogues on enabling the meaningful participation of Cambodia, Lao People's Democratic Republic (Lao PDR) and Vietnam in the Clean Development Mechanism (CDM)" project (or *CDM dialogue in EU – Asia context* Project*),* the initial purpose of this study is to investigate the investment climate for CDM in Cambodia, Lao PDR and Vietnam with the two main topics as follows:

- Review the status of existing governmental regulations that regulate CDM project investments

- Assess the national institutional structure and target groups for the establishment and functioning of DNAs

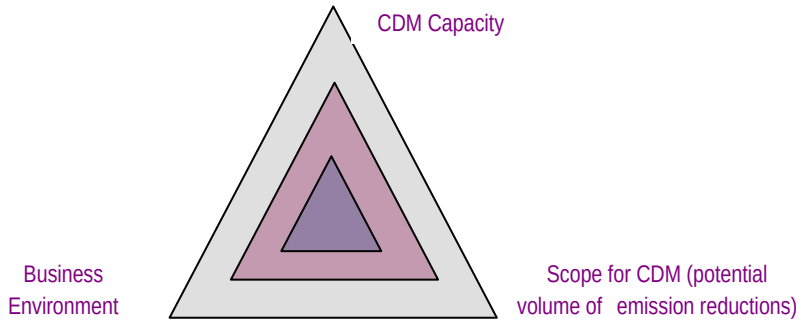
While investigating the national context with regard to CDM capacity in the three countries, we realised that a prevalent approach in previous and on-going studies in Cambodia and Vietnam, such as NSS for Vietnam, CD4CDM for Cambodia and Vietnam, (since no CDM study has been done for Laos) was to focus on the countries' mitigation options, then derive a country's CDM potential from such options.

Certainly, the potential volume of GHG emissions reduction could be highly correlated with the CDM perspective of a country. However, a number of mitigation options may not guarantee a proportional volume of CDM investment flows into a host country. This is because the absolute potential of emission reductions does not reflect other critical factors of the investment decision like political, economic risk, opportunity costs and market barriers, etc.

In fact, the scope for CDM (potential volume of GHG emissions) is only one of many factors to consider in making an investment decision with respect to a certain CDM project. As emphasised by Niederberger and Saner (2005), the flow of CDM transaction in a host country depends upon three key factors (see Figure 1).

For this reason and motivated by the attempt to bring added values from this project, our study will not evaluate the CDM potential by focusing only on the absolute GHG abatement value of the three countries. Rather, the potential of CDM inflows into their countries will be identified through assessing the comparative CDM endowment on the basis of an holistic analysis of each country, thereby highlight the relative positions of Cambodia, Laos, and Vietnam in the global CDM market.

By showing the state of play of the three countries on the 'world CDM map', the underlying study concludes with some suggestions on what and how a country might do to expedite favourable CDM investment climate.




Source: Niederberger and Saner, 2005

**Figure 1** Key host country factors in CDM transaction decision

We define the CDM competitiveness as "a measure of the levers a country has, to promote CDM projects inside the country as compared to global competition."

## I.2. Structure of the study

The three main factors determining the competitiveness of Cambodia, Laos and Vietnam in the global CDM market will be examined in a single section. Section 2 deals with the "Potential supply size - countries' facts", Section 3 examines "Country business climate" and Section 4 studies "Country CDM institutions and CDM project experience". In the final, conclusions will be drawn and the derived overall competitiveness level will be given for each country. The latter thus discusses which activities a country shall take to maximise the opportunities to convert theoretical mitigation options into real CDM investments.

# II. POTENTIAL SUPPLY SIZE - COUNTRIES' FACTS

## II.1. A country CDM potential and CDM economic viability factors

CDM is a market-driven mechanism. Both supply and demand side factors can be distinguished in determining CDM investment flows into a country. These determinants can also be differentiated by 'endogenous' (up to a host country itself) or 'exogenous' (up to investors and international market) factors. Generally, *ceteris paribus*, CDM investments will flow to the countries that can generate cheap certified emission reductions (CERs) and at large enough volumes.

Given relatively high transaction costs of CDM projects vs the relatively low price of CERs in the carbon market, a CDM project must be large enough to be economically viable. It is a significant barrier for small host countries with small potential CDM projects. Analytical studies suggest a minimum size of above 20,000 tCO2 per year for regular CDM projects even in case more approved baseline and monitoring methodologies become available (Michaelowa and Jotzo, 2005). At present there is no information on the potential number of small scale CDM (SSc) projects available. However, a study undertaken by Point Carbon (2002) concluded that the opportunities for being business case of SSc CDM projects is relatively low due to the reputation risk of projects, the constraints of additional transaction cost and problems related to simplified rules for SSc. A recent assessment (Haites, 2004) indicates that projects delivering less than 100,000 CERs per year are unlikely to be cost-effective under the CDM. The minimum size of a project may vary considerably from a study to another given the different assessments and assumptions about the market factors such as demand, supply and thus price as well as the projections on the changes in climate policy internationally and regionally taken by each study. Currently a large number of projects with annual reductions between 10-20,000 tCO2 per year are submitted for validation, showing the effect of higher CER price expectations.

Projections up to now indicate that about 70% of the CDM investments will be directed towards China and India (Michaelowa and Jotzo, 2005). Thus, other developing and Less Developed Countries (LDCs) have to compete for the remaining 30%. Note that such an uneven distribution is against the spirit of the Kyoto Protocol. Nevertheless, the actual trends of the world-wide carbon market do show that the CDM is dominated by a small number of countries and a small number of high volume projects. By 11 November 2005, Brazil, China, India and South Korea were together having a share of about 75% of the expected CER volume until 2012; 32% of the volume will be achieved by just five projects.

Against the trends of the CDM market, we first examine the potential volume of emission reductions that can obtain through CDM projects in the three countries through top-down and bottom up approaches.

## II.2. Top-down approach to identify the country's potential of CDM projects

A common top-down approach to evaluate a host country's CDM potential has been generally employed in a national study on CDM potential and is summarised in Figure 2.

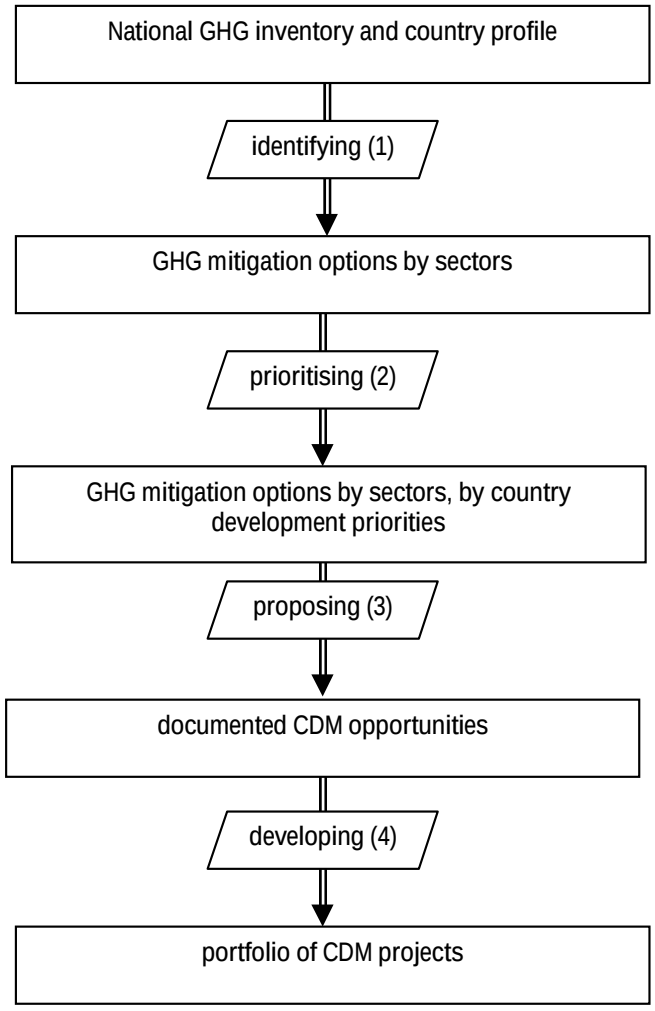



**Figure 2** Top-down approach to identify the country's potential of CDM projects

So far, except the nascent status of the study on CDM potential in Laos, the mitigation options and CDM opportunities have been examined in a number of capacity building projects in Cambodia and Vietnam (see CD4CDM, IGES projects for Cambodia and ALGAS, CD4CDM, NSS projects for Vietnam) based mainly on the top-down approach. However, as discussed in the introduction, the absolute GHG mitigation potential alone cannot properly reflect the position of a country in the CDM world market. Therefore, this study will employ a comparative method that will assess the CDM capacity of each studied country in comparison with the values of their neighbour countries. Indicators related to the energy profile of each nation will be used.

We focus on energy indicators because most mitigation potential logically stems from the energy sector. After all, a country's profile of energy production and use is highly correlated with national GHG emissions and mitigation options. Moreover, afforestation and reforestation (LULUCF) represented only a very modest proportion in the number of methodologies submitted and this trend is not likely to change substantially in the near future, although methodologies are being proposed for approval by the afforestation and reforestation Working Group.

In this section, Indonesia and Thailand are selected as the reference group in order to show the competitive position of the three countries in the Southeast Asia region. The reasons to choose the two countries are the availability of data, the activity of the two nations in the CDM and also the closeness and similarity in society and economic structures to the three studied countries.

## 1. National energy profile

### a) Primary energy potential

The national resource endowment, especially energy resources, is a factor in assembling the economic development prospects of a country. In this section, we use the absolute primary energy potential as a measure of energy endowments (see Table 1) as this variable is indeed highly correlated with a country's trends of energy production and use.

**Table 1** Primary energy potential

| Country | Energy type | | | | | **Resource endowment ranking** |
|---|---|---|---|---|---|---|
| | Oil reserve (Billion Barrels) | Natural gas reserve (Trillion Cubic Feet) | Coal reserve (Mt) | Hydro power resource (GW) | Wood fuels (Mt) | |
| Cambodia | -- | 9.9 | -- | 10 | 82 | **5** |
| Lao PDR | -- | 3.6 | 600 | 26.5 | 46 | **4** |
| Vietnam | 4 | 21.9 | Anthracite: 3,500 Lignite: 150,000 | 68.5 | 49 | **2** |
| Indonesia | 10 | 169.5 | 38,000 | 75.6 | 439 | **1** |
| Thailand | 0.16 | 12.2 | 1,240 | N/A. | 67 | **3** |

*Source for energy data:* ASEAN Center for Energy

Table 1 shows that Vietnam, in comparison with Indonesia and Thailand, is a naturally well-endowed country with abundant coal, hydro and medium oil resources. Cambodia and

Laos possess modest bases of indigenous energy resources in both terms of absolute preserved volume and the diverse types of resources.

The last column of Table 1 ranks countries according to their endowment in natural resources. In terms of CDM project eligibility, the richer in primary resources a country is, the higher the potential for CDM development they may have.

**b) Energy consumption**

The endowment of resources is a favourable development factor but not necessarily demonstrates the level of economic development of a country as, for example, in the case of Japan. We therefore examine indicators related to the actual energy consumption of these countries. To show the link between an economy and energy consumption indicators, the GDP per capita of each country is incorporated with energy indicators in Table 2.

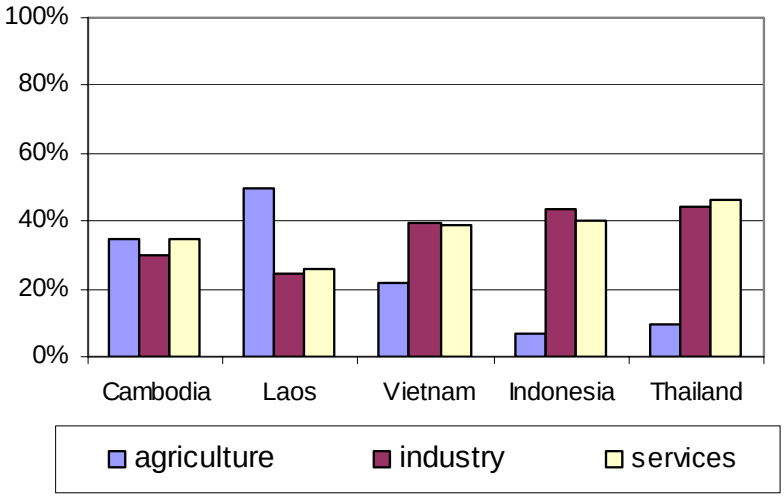
**Table 2** Energy-consumption indicators in 2002

| Country | Total energy consumption (TWh) | Per capita energy consumption (kWh/year) | Energy intensity (kWh/$1995) | GDP - per capita purchasing power parity ($) |
|---|---|---|---|---|
| Cambodia | 2.3 | 175.8 | 0.6 | 1,900 |
| Laos | 11.7 | 2110.1 | 4.41 | 1,700 |
| Vietnam | 255 | 3165.2 | 7.68 | 2,500 |
| *Indonesia* | *1305* | *6008* | *5.96* | *3,200* |
| *Thailand* | *9015* | *14360.5* | *4.89* | *7,400* |

*Source:* Official Energy Statistics from the U.S. Government

The energy-consumption indicators reflect the level of economic and industrial development, the structure of the economy and the consumption patterns of a country. Energy intensity measures the amount of energy needed to produce a dollar's worth of GDP – will continue to decline as energy efficiency improves. It therefore can be seen as an indicator, albeit imperfect, to reflect an economy's potential to improve energy efficiency (Fankhauser, 2003).

Figure 3 indicates that Cambodia, Laos and Vietnam are primarily three agricultural-based economies, with agriculture representing above 20% of total GDP in 2002.




*Source:* The World Fact Book

**Figure 3** GDP composition by sector in 2002

Combining Table 2 with Figure 3, it appears that GDP per capita and share of GDP by industry and service are proportional to the level of energy consumption. In the case of Cambodia and Laos, their lowest rank in GDP per capita among the five countries and the dominant role of agriculture in their respective economies are obviously consistent with the very low energy consumption level. Although the energy intensity of Laos is nearly as high as the value of Thailand, this may result from high inefficiency in usage of energy resources rather than a reflection of the country's industrialisation status. The actual per capita consumption of energy in Vietnam though, is higher than that of Cambodia and Laos, but still far from the consumption levels of Indonesia and Thailand. This corresponds to the ratio between GDP per capita of Vietnam and those of Indonesia and Thailand.

The analysis of the GDP per capita and energy consumption per capita in OECD and non-OECD countries have shown the correlation between the level of economic development and the potential to improve energy efficiency (see Figure 4).

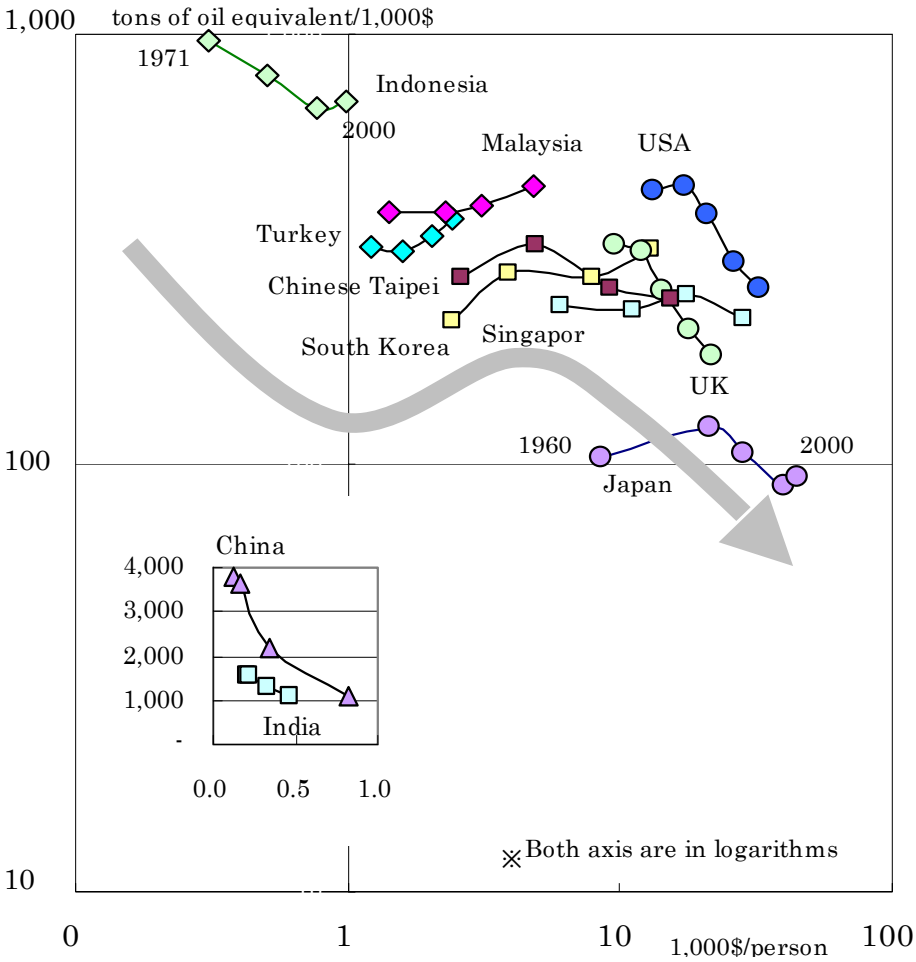
The correlation is not linear with the economic development status in terms of GDP per capita. Sakamoto (2003) differentiated the link according to the three levels of GDP per capita as follows:

1st stage: low GDP per capita → improvement of energy efficiency

2nd stage: middle GDP per capita → deterioration of energy efficiency

3th stage: high GDP per capita → improvement of energy efficiency

In this view, the early stage of economic development of the three nations entails opportunities to improve energy efficiency in their countries. Theoretically, there are opportunities for CDM projects from improving energy efficiency in the three countries.




Source: Sakamoto (2003)

**Figure 4** GDP per capita and and accompanying energy consumption (per GDP per capita) (Developed countries: 1960-2000; Developing countries: 1971-2000)

### c) $CO_2$ emissions from the energy sector

Due to (perceived) high levels of uncertainty associated with future CDM development, investors typically evaluate the potential performance of projects more comprehensively than focusing only on one case. Among numerous complex quantitative and qualitative factors, the potential emission reduction is one of the critical factors of the project's potential performance that investors consider in making CDM investment decisions. In this study, we concentrate on the potential $CO_2$ emissions from energy only as it is difficult to obtain reliable and comparable data for the three countries for other GHGs.

**Table 3** Energy-related $CO_2$ emissions

| Country | Energy-related $CO_2$ emissions indicator in 2002 | | |
|---|---|---|---|
| | $CO_2$ emissions from the consumption and flaring of fossil fuels emission (million tonnes) | Per capita $CO_2$ emissions (tonnes) | $CO_2$ intensity: tonnes/thousand $1995 |
| Cambodia | 0.57 | 0.04 | 0.14 |
| Laos | 0.39 | 0.07 | 0.15 |
| Vietnam | 51.9 | 0.7 | 0.39 |
| *Indonesia* | *299.80* | *1.38* | *1.37* |
| *Thailand* | *188.62* | *3.01* | *1.02* |

*Source*: Official Energy Statistics from the U.S. Government

The scope for emission reductions in each country will be determined based on the three indicators examined in Table 3. These are:

(1) Potential to generate emission reductions: obtained by measuring a country's emissions share of world emissions (absolute value reflected by Total carbon dioxide emissions from the consumption and flaring of fossil fuels emission)

To make it illustrative, we compare the two latter indicators in Table 3 with the US indicators which is employed as a scale unit (100%) to derive the following two indicators:

(2) Potential to improve energy efficiency (absolute value reflected by Per capita $CO_2$ emissions)

(3) Potential to switching fuel (absolute value reflected by $CO_2$ intensity: (metric) tonnes/thousand $1995)

The evaluation of the scope for emission reductions is provided in the last column of Table 4.

Table 4 shows that the scope for $CO_2$ emission is severely limited in both Cambodia and Laos while being moderate in Vietnam. However, the growth rate of energy consumption in the future may change this picture.

**Table 4** Scope for emission reductions (data for the year 2002)

| Country | Total $CO_2$ emission | | Energy intensity | | Carbon intensity | | Scope for emission reductions |
|---|---|---|---|---|---|---|---|
| | % contribution to world's emission | Potential to generate emission reductions | vs U.S. value of 3.1 kWh/ $1995 (100%) | Potential to improve energy efficiency | vs U.S. value of 0.63 metric tons/ thousand $1995 (100%) | Potential to switching fuel | |
| Cambodia | 0.022 | very low | 19.4 | very low | 22 | Low | **Low** |
| Laos | 0.015 | Very low | 142 | High | 24 | Low | **Low** |
| Vietnam | 0.2 | Low - medium | 248 | Very high | 61 | Low | **Medium** |
| *Indonesia* | *1.2* | *Very high* | *192* | *High* | *217* | *Very high* | ***Very high*** |
| *Thailand* | *0.7* | *high* | *152* | *High* | *161* | *High* | ***High*** |

*Source for data:* Official Energy Statistics from the U.S. Government

## 2. Bottom up approach - CDM potential by sectors

The top-down approach applied in the above section, however, is an imperfect reflection of a country's CDM development potential, because it neglects other important factors constituting the attractiveness of a CDM proposal in the world carbon market. For example, the decisive role that comparative abatement costs play. The CDM is a project-based activity. Eligible CDM projects include a wide spread of activities and potential host countries. Looking at the abatement costs of CDM projects, one observes strong differences between sectors. Usually, a marginal abatement cost curve will be employed as the first criterion to prioritise mitigation options of a country (step 2 in Figure 1). However, it can be the case that the lowest cost CDM option quantified within a host country is not included in the list of preferred CDM projects which generate the lowest cost credits in the world CDM market. For example, the option to destroy HFC-23 from HCFC-22 production does not exist in our three countries. Thus low cost CDM project ideas prioritised in a country itself may be uneconomically feasible on the international market.

Another factor that might constrain a mitigation option from being economically viable is the lead-time to develop a project from the initial idea to actual implementation. The actual experience in developing a project shows that lead-times for large CDM projects may add up to four to nine years. This factor is not taken into account at all under the top-down approach.

In fact, investors will predominantly stick to projects with low abatement costs (at a global scale), high abatement volumes and a relatively short lead-time in order to increase the Internal Rate of Return (IRR) of a concrete investment project.

Other notable challenges in making a project CDM viable are the difficulties in assessing additionality and development of a baseline for a specific project type. This 'hurdle' to be taken has a substantial influence on overall transaction costs of a CDM project. Hence, it will influence the decisions of CDM investors. These challenges are also not reflected in the top-down approach.

The current trend of the carbon market reasserts that the preference of investors and CER buyers is allocated to those CDM projects that can generate CERs at a large amount and for which the assessment of additionality and baseline development is relatively easy as is the case for emission reductions of non- $CO_2$ gases (F-gas, $N_2O$ and $CH_4$) at existing facilities. Figure 5 shows the particular interests of CDM project types.

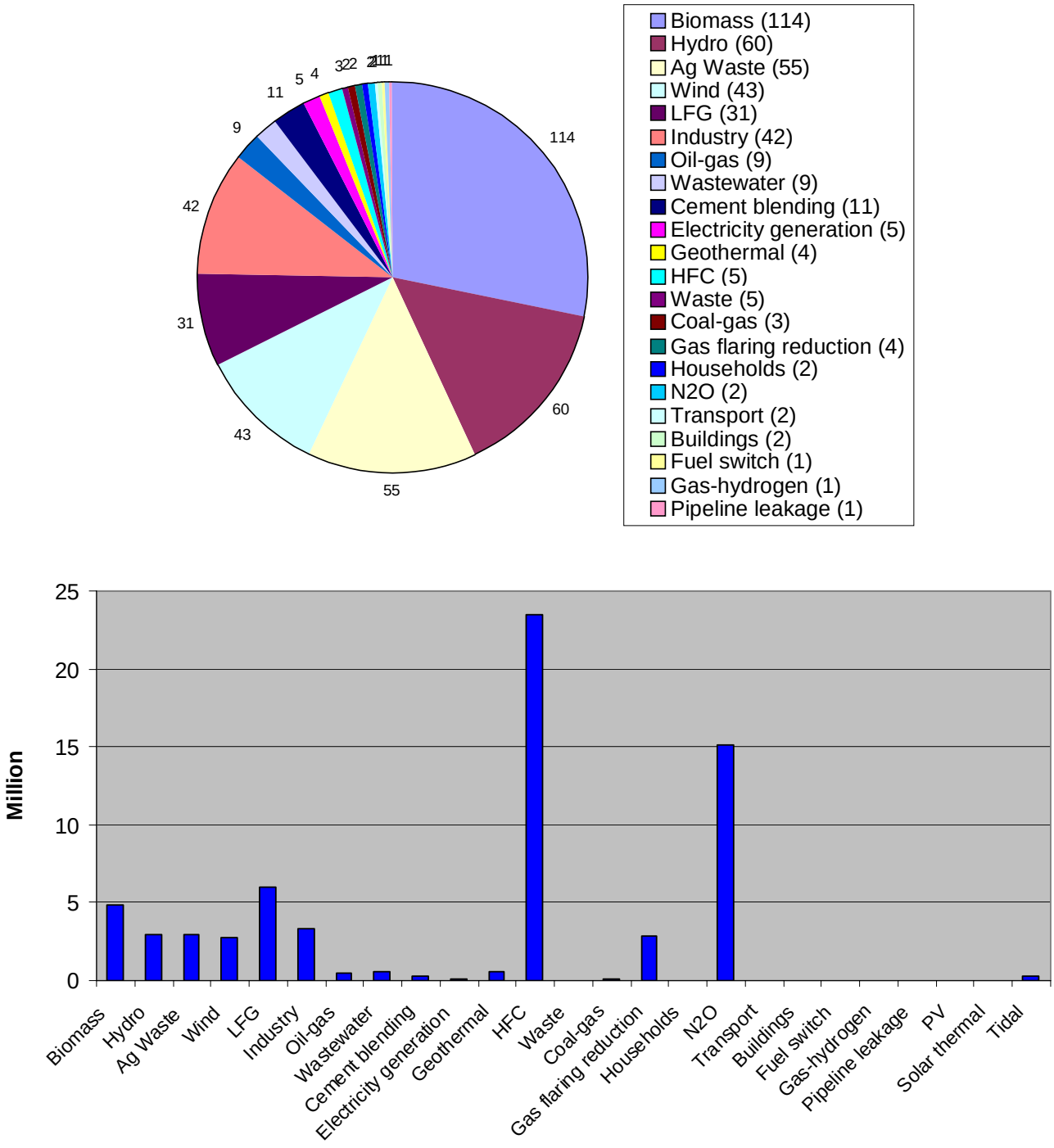
The dominance of large, non-carbon dioxide projects in the CDM is inevitable, at least in the short- and medium- term. Prevalent CDM project types of a host country will influence the competitiveness of the country in the market. Generally, the top down method cannot incorporate such market factors in the assessment of the potential for CDM project development.

For that reason, we apply a bottom up approach in addition to the top down assessment in order to provide more comprehensive assessments on a country's CDM capacity. CDM opportunities by sector in the three studied countries will be evaluated.

The result is presented in Table 5. Data for the assessment is based on studies executed in Cambodia under the CD4CDM project and Vietnam under the ALGAS, NSS and combined with our own assessment. A similar study to build a marginal cost curve for Laos is not available thus far. The mitigation options for Laos are thus based on our rough expert assessment.

Certainly, there are options to mitigate GHGs emissions in the three countries, mostly based on renewables and energy efficiency. Although such projects are most commonly seen, they are generating only about 25 % of all carbon credits through the CDM (data from UNFCCC website, status November 11, 2005). It reflects the fact that "the market will seek out the cheapest credits not the best environmental outcome" (Pearson, 2005). This trend is likely to be continued in the years ahead, unless the pressures on mandating the CDM as a mechanism to deliver additional sustainable development benefits to host countries will be strong enough to manoeuvre the preference of investors to renewables.

Thus, emission reductions obtained from such prevalent types of projects in the three countries is likely to face enormous international competition. In other words, taking into account crucial factors determining the viability of converting mitigation options to CDM investments, table 5 implies that most of these options are not likely to be attractive CDM options on the international CDM market in the coming years.




*Source:* data from UNFCCC website, status November 11, 2005, submitted projects

**Figure 5** Classifications of CDM project types according to annual credits and number of projects

**Table 5** Sectoral CDM opportunities

| Mitigation options | CER cost range | Abatement size | Difficulty in assessing additionality and baseline | Lead time | Cambodia | Lao | Vietnam |
|---|---|---|---|---|---|---|---|
| **Energy efficiency** | | | | | | | |
| Industrial boiler | Low | Low-medium | Medium | Low | -- | -- | xx |
| Cement manufacture (blending old fuels) | Low | Medium | Medium | Medium | -- | -- | x |
| Substitution of incandescent lamps with fluorescent lamps | Low | Low-medium | Medium | Medium | x | x | x |
| Cooking stoves | Low | Low | Medium - High | Medium | x | x | xx |
| Energy savings in building | Low | Low | Medium | Medium | x | x | xx |
| Waste heat recovery in heavy industry (steel, paper industries) | Low | Medium | Medium | Medium | -- | -- | x |
| **Energy efficiency - Power generation** | | | | | | | |
| Thermal renovation and modernisation | High | Medium-high | Medium | Low-medium | -- | -- | xx |
| Cogeneration | Low | Medium | Medium | Medium | x | x | xx |

x: small size available xx: medium size available xxx: large size available -- not available

**Table 5** Sectoral CDM opportunities (cont.)

| Mitigation options | CER cost range | Abatement size | Difficulty in assessing additionality and baseline | Lead time | Cambodia | Lao | Vietnam |
|---|---|---|---|---|---|---|---|
| **Renewable energy** | | | | | | | |
| Wind power | High | Medium | High | Medium | -- | -- | x |
| Mini hydro power plants | Low - medium | Low | High | Medium | x | x | xx |
| Large hydro power plants | Medium | High | High | High | -- | xx | xx |
| Solar power | Very high | Low | High | Medium | x | x | xx |
| Geothermal power plant | Medium-High | Medium-High | High | High | x | -- | x |
| Biomass | Low-Medium | Medium | High | Medium | x | x | xx |
| **Transportation** | | | | | | | |
| Fuel switching | Medium | Low-medium | High | Medium | -- | -- | x |
| Public transportation | High | Low | High | Medium | x | x | x |

x: small size available xx: medium size available xxx: large size available -- not available

**Table 5** Sectoral CDM opportunities (cont.)

| Mitigation options | CER cost range | Abatement size | Difficulty in assessing additionality and baseline | Lead time | Cambodia | Lao | Vietnam |
|---|---|---|---|---|---|---|---|
| **Fugitive emissions control** | | | | | | | |
| Landfill gas (LFG) | Low | Medium-High | Low | | x | x | xx |
| Associated gas from oil production | Low | Very high | Low | Medium | -- | -- | xx |
| Methane capture from agriculture waste | Medium | Medium-High | High | Medium | x | x | xx |
| Coal mine/bed methane | Low | High | Low | Medium | -- | -- | x |
| **Industrial gases** | | | | | | | |
| $N_2O$ - nitric acid | Very low | High | Low | Medium | -- | -- | x |
| PFC aluminum | Low | High | Medium | Medium | -- | -- | x |
| $N_2O$ - adipic acid | Very low | Very high | Low | Medium | -- | -- | x |
| HFC 23 | Very low | Very high | Low | Medium | -- | -- | -- |

x: small size available xx: medium size available xxx: large size available -- not available

In summary, the energy context of Cambodia and Laos are quite alike in both terms of low consumption rate and the trend of development. Both countries have a potential for small-scale CDM projects such as mini-and micro-hydro, small municipal and agricultural waste, as well as energy efficient appliances. From a development point of view, these projects can benefit local communities as they abate GHG emissions but also deal with local (environmental) challenges. However, as actual practice shows, these types of CDM projects are not likely to be favoured by carbon investors at least in the first commitment period. High risk levels and associated business costs put those projects at a considerable disadvantage when competing for carbon finance.

Given the circumstances of Cambodia and Laos and the current preferred project types in the CDM, it is really a difficult challenge to find a niche to enter the carbon market for the two countries.

The story is slightly different for Vietnam. Compared to Cambodia and Laos in terms of socio-economic development, Vietnam is in a better position. Moreover, its CDM endowment is also more diverse and more competitive in quality terms. However, there are only a limited number of mitigation options that can issue enough high quality and quantity (>100.000 CERs) projects situated in the sectors favoured by investors as reflected in Figure 5. Having limited driving force for leveraging investment, a considerable inflow of CDM investment in Vietnam is not likely to happen, as least not during the 1st commitment period.

# III. COUNTRY INVESTMENT CLIMATE

## III.1. Investment climate and CDM investment attractiveness

The investment climate is another critical factor in determining the attractiveness of a country for CDM investment. This favourableness is usually considered based on the attractiveness of the general investment climate and associated level of financial/investment risks.

Total FDI has an advantage of being a broader measure and being more closely linked with the general state of the investment climate in a country. FDI plays the strongest role in economic development of almost all developing countries. It indicates a possible relationship between the types of enabling conditions that attract FDI and the ability to succeed in the establishment and use of a "CDM" type mechanism.

An analysis of actual FDI and ODA flows and potential CDM investments show that the countries expecting to generate the most credits from proposed CDM projects are also often the countries that are recipients of a significant proportion of total flows of FDI (Ellis *et al.*, 2004).

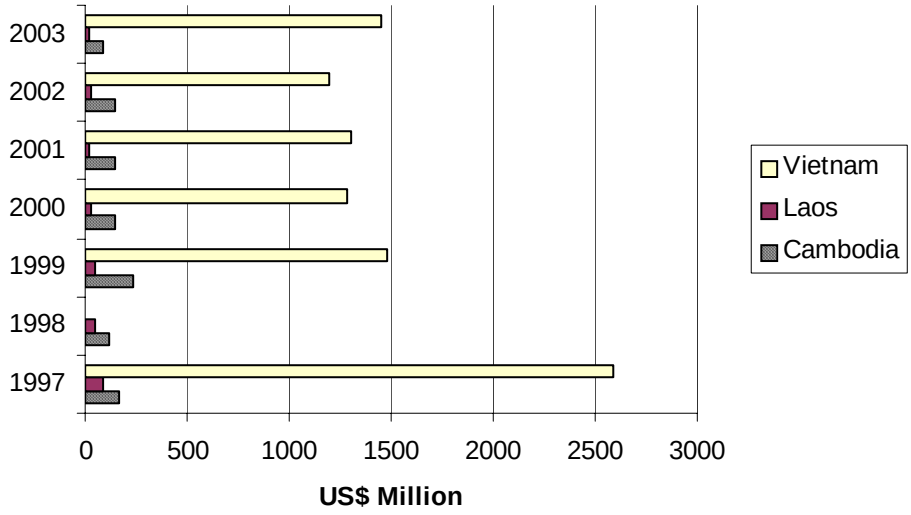
FDI flows are selective – it will only flow to countries and locations where relatively strong "enabling conditions" for investment exist. These enabling conditions include, *inter alia*, stable political regimes, strong legal environments for contracts and proven enforcement capabilities, macro-economic stability, availability of pools of skilled workers and other sources of human capital. Since many of the poorest developing countries do not have the basic 'governance' conditions to attract FDI, ODA will remain a relatively more important source of financing for technology transfer in these countries for the foreseeable future (Ellis *et al.*, 2004).

In this section, we evaluate the investment climate of the three countries and its implications for the potential flow of CDM in these nations.

## III.2. Investment climate in Cambodia, Laos and Vietnam

Cambodia, Laos and Vietnam opened up to foreign investment since the late 1980s. With the emergence of the Southeast Asia region as an attractive destination for FDI, total FDI flows into the three countries reached around 4,390 million US$ in 1997. Unfortunately, this year marked the peak in the rush of FDI flows into this sub-region even until today (see Figure 6). The decline of FDI flows was substantially due to the Asian financial crisis in mid 1997. However, the underlying reason influencing long term FDI inflows into these countries may well be the ceasing of investor's expectations. Overestimated growth projections for this region have been fading since foreign investors were faced with considerable obstacles when conducting FDI projects in Indochina.

Cambodia, after decades of war, has been making meaningful progress in the transition to a market economy. However, it still remains heavily reliant on foreign assistance. In 2001, 58% of the central government budget depended on donor assistance. Cambodia has had trouble attracting FDI, due in part to the unreliable legal environment. New FDI levels fell from 1997 onwards. Foreign investment has been concentrated in garment and textile sectors, which account for 90% of the country's exports.



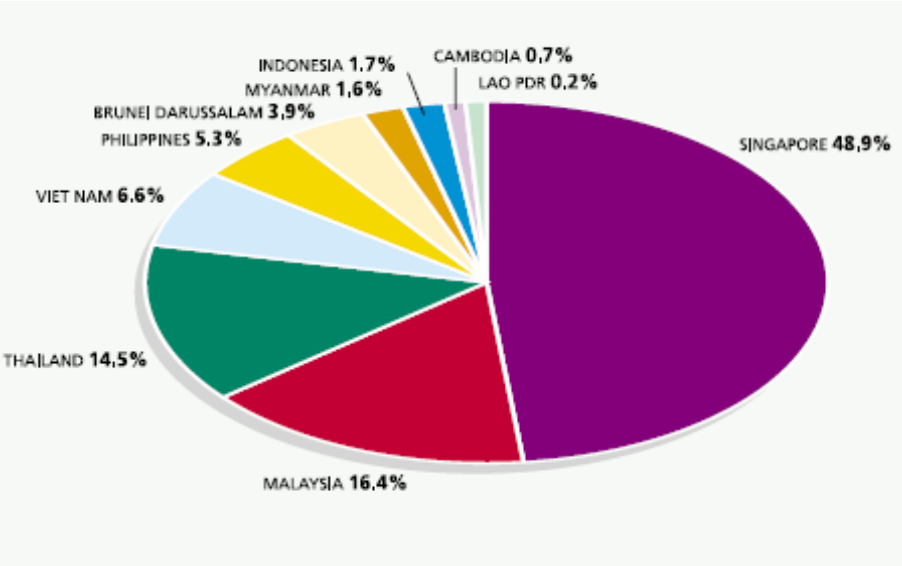

*Source:* ASEAN Secretariat - ASEAN FDI Database, 2004

**Figure 6** Annual FDI in Cambodia, Laos and Vietnam 1997 – 2003

Lao PDR is the second poorest country (after Cambodia) in East Asia. The government has become totally dependent on foreign aid. After eight years of reforms and economic progress, this process slowed down in 1998. Low confidence in the Laotian economy, generally poor investment climate and a primitive infrastructure make this land-locked country extremely difficult in attracting FDI. Recently, most foreign investors (especially the Thai) have withdrawn from Laos. FDI approvals in Lao plummeted from a peak of $2.6 billion in 1995 to a mere $25 million in 2004. Hydropower schemes account for much of FDI, and this sector is likely to attract most foreign investments (Bank of Lao PDR, 2005), opening a niche for CDM investments.

Vietnam is becoming the 21st most preferred investment destination globally according to AT Kearney (2004). A crucial element in its long-term development strategy is the continued ability to attract and utilize relatively large amounts of overseas capital, both FDI and ODA. For the 2001-2005 period, the Government of Vietnam has established targets for FDI at US$ 11 billion in disbursements from existing and newly licensed foreign investments and for approximately US$ 10-11 billion in ODA disbursed by foreign donors. These levels of FDI and ODA estimates are required to support the government's GDP growth target of 7.5 % per year. By December 2004, Vietnam had attracted nearly US$ 46 billion in investment commitments.

However, many significant obstacles still remain, discouraging foreign investors. Inadequate infrastructure, slow privatisation process of state owned enterprises and a lack of institutional and administrative capacity to manage a market economy are the most important hurdles that limit Vietnam's FDI potential.




*Source:* ASEAN Statistical Yearbook, 2004

**Figure 7** FDI Inflows to ASEAN by host country, for the Period of 1995-2003

Figure 7 clearly indicates the humble positions of Cambodia and Laos in the regional map of FDI inflows in absolute value terms. Although Vietnam ranked as the fourth highest FDI recipient, the gap with Thailand – occupying the third place - is considerable.

To highlight the relative positions of ASEAN nations in a more comprehensive manner, an "Annual IPS ASEAN 9+1 Competitiveness Ranking Indices" compiled by the Institute of Policy Studies (Tan Khee Giap *et al.*, 2005) has ranked the nine ASEAN countries based on four main groups of indices (see Table 6).

**Table 6** ASEAN competitiveness ranking

| Country | Overall | Economic environment | Political environment | Business environment | Social environment |
|---|---|---|---|---|---|
| Singapore | 1 | 1 | 1 | 1 | 1 |
| Malaysia | 2 | 3 | 2 | 2 | 2 |
| Thailand | 3 | 2 | 3 | 3 | 3 |
| Philippines | 4 | 4 | 4 | 4 | 4 |
| **Vietnam** | **5** | **6** | **6** | **5** | **5** |
| Indonesia | 6 | 5 | 5 | 6 | 8 |
| **Cambodia** | **7** | **7** | **7** | **7** | **6** |
| Myanmar | 8 | 8 | 8 | 8 | 9 |
| **Lao PDR** | **9** | **9** | **9** | **9** | **6** |

*Source:* Tan Khee Giap et al. 2005

So the competitiveness ranking may explain the share of the three countries in the region with regard to FDI flows as rendered in Figure 7.

At the global scale, "The Global Competitiveness Report" published by the World Economic Forum annually assesses the competitiveness of a nation based on three pillars: the macroeconomic environment index, the public institutions index, and the technology index. In this report, Vietnam dropped from 60th ranking position in 2003 to 77 in 2004 (World Economic Forum). It is due to significant drops in all three areas constituting the indices, particularly with regard to public institutions and technology.

Unfortunately, Cambodia and Lao PDR have not been classified in this global annual ranking. This may again reflect the fact of a peripheral position of both countries on the global FDI map.

In September 2005, 'Institutional Investor' magazine gave the risk rating for the three countries as follow:

| Country | Risk rating | Risk ranking in the world |
|---|---|---|
| Cambodia | 21.2% | 139 |
| Laos | 24.6% | 125 |
| Vietnam | 40.0% | 80 |

The magazine publishes country credit ratings based on information provided by leading international banks, money management firms and economists. The scale is zero to 100, with 100 representing the least risk of default.

If the country's attractiveness in FDI does indicate the ability to succeed in the attractiveness of CDM investment, one can say the trends of FDI flows and investor experience in conducting FDI projects in Cambodia and Laos show an unpropitious precedent for CDM investors to make their decisions to invest in these countries.

In Vietnam, it seems that FDI inflows remain well below its potential. The biggest hurdle involves high transaction costs due to government red tape. Such unfavourable images of Vietnam's investment climate may have a negative influence on the country's attempt to gain the attention of CDM investors.

# IV. COUNTRY CDM INSTITUTIONS AND CDM PROJECT EXPERIENCE

## IV.1. Host country CDM institutions

In order to be able to participate in the CDM, host countries have to devise specific institutional arrangements. Institutions may be set up quickly, however, it will require considerable time until the overall domestic institutional system is working efficiently and properly.

The result of an 'expert poll' undertaken by Point Carbon (2002) regarding the relative importance of factors influencing CDM investment showed that a supportive host country's CDM approval system will be one of the most critical factors to attract investors.

A supportive system of CDM institutions will include the following factors, although this list is certainly not exhaustive:

- Fulfilment of prerequisites for CDM participation, such as the ratification of the Kyoto Protocol, notification of a Designated National Authority (DNA);
- A clear policy decision by the host Party to engage in the CDM and transparent procedures/adequate institutions for project approval by the host government;
- Availability of advanced project proposals that meet the eligibility criteria for CDM projects and/or a failure to communicate these project opportunities to interested investors;
- Degree of awareness of private sector actors in potential CDM host countries of the opportunities offered by CDM;
- Degree of knowledge and acceptance of CDM by local stakeholders

There is no 'one-stop shop' approach or model to arrange a national CDM institution. There are many possibilities and each country will have to decide on the particular form of institutional development that is appropriate and in line with national circumstances.

In this section, the summary of current CDM institutional structures in Cambodia, Laos and Vietnam will be presented with regard to the following:

- Prerequisites for CDM participation, such as the ratification of the Kyoto Protocol, notifications of DNA
- Status of CDM-relevant regulations
- Involvement of domestic actors in CDM

Then an analysis of strengths and weaknesses (SW) of the project approval procedures and the functions of existing DNAs of Cambodia and Vietnam will be taken. The experience of CDM implementations in the three countries will also be considered.

In this section, Laos is excluded from some in-depth analyses because the CDM institution of the country is still in its very early stage of formulation. Although the country has notified the DNA to the Secretariat of the UNFCCC, its main functions and the structure are not yet defined.

## IV.2. Summary of current CDM institutional structures

### 1. Prerequisites for CDM participation

Cambodia, Lao PDR and Vietnam all ratified the Kyoto Protocol in 2002. The ratification was an initial step to facilitate CDM projects in these nations. Later on, the three countries have notified their DNAs to the Secretariat of the UNFCCC and Kyoto Protocol.

#### a) Cambodia

Cambodia ratified the Kyoto Protocol in August 2002 and established its Climate Change Office (CCCO) in the Ministry of Environment (MoE) in June 2003. The MoE serves as interim Designated National Authority (DNA) by decree of July 2003. CCCO's budget is completely financed by foreign donors; the government only funds the building, electricity and water.

CDM activities of CCCO are funded through participation in UNEP-Risoe's CD4CDM (see below). The CCCO works in a very professional manner and its staff is enthusiastic. They have already provided capacity building to the one-man Laotian DNA. However, it is unclear when the final decision on the DNA status will be taken. Criteria for the assessment of sustainable development are currently being developed.

As in the case of the existing Interim DNA, the proposed structure of the future Cambodian DNA gives a central role to the Ministry of Environment. The approval process of proposed CDM projects is similar. However, the structure has been developed to give key DNA players more formalised roles in the assessment process.

#### b) Lao PDR

The Science Technology and Environment Agency at the Prime Minister's Office has been notified as DNA in late 2004. However, a recent workshop in Laos showed that this decision was taken thinking that the DNA was just another name for the climate change focal point and that no decision-making competencies would be linked to the DNA function. It has now been agreed that a formal request for "grafting" the DNA on an existing committee has to be made and that procedures need to be adopted. The main difficulty is the lack of project proposals, which prevent the DNA staff to gain experience. Main functions of Laos' DNA are still under discussion.

Compared to Cambodia and Vietnam in terms of functioning DNA and building up a national framework, Laos lags far behind with far-reaching consequences for its perceived unattractiveness in the carbon market in general and in seeking finance donors in particular.

### c) Vietnam

Vietnam was one of the first countries in Asia to establish its DNA. Official document 502/BTNMT-HTQT issued on March 24, 2003 specifies that the International Cooperation Department of the Ministry of Natural Resources and the Environment (MONRE) is the DNA. A National Executive and Consultative Board in addition to the DNA. Decision 553/QC-BTNMT of 29 April 2003 defined the CDM National Executive and Consultative Board (CNECB) with representatives of the following ministries: MONRE (three members), Ministry of Trade, Ministry of Science and Technology, Ministry of Foreign Affairs, Ministry of Finance, Ministry of Planning and Investment, Ministry of Agriculture and Rural Development, Ministry of Industry, and the Vietnamese Union of Science and Technology Associations - a Governmental NGO.

CNECB meets twice a year (April and September). Acknowledging that the semi-annual meetings of CNECB will cause inflexibility and less time efficiency for project developers, the decision on convening CNECB meetings more frequently from autumn 2005 onwards has been made.

There is a rough set of sustainability criteria but MONRE staff has not yet operationalised them. The spring meeting 2004 discussed criteria for energy projects; the autumn meeting the general legal framework. Under the assistance from the German Technical Cooporation Agency (GTZ), the sustainable development criteria are under process of being defined into specific, quantitative standards. PDDs in Vietnamese and English have to be submitted one month before a CNECB session together with an approval letter of the relevant line Ministry. Ministries with a seat on the DNA will give comments to their CNECB members. CNECB decides with three-fourth majority voting. Rejected proposals can be resubmitted an unlimited number of times. A Vietnamese language document on the project cycle will be issued shortly.

## 2. Status of CDM-relevant regulations

A review of the national legislation is crucial as the legal framework of a host country will directly affect the success of the national authority. Depending upon the development priorities of the host country, some legislation might be CDM compatible. As is usually the case with trade and investment in general, host countries with the most transparent rules and most streamlined procedures, will be in the best position to compete for CDM resources.

National strategies for CDM should be based on local sustainable development objectives. It is important to identify national policies already established for social and economical development in areas related with climate change such as energy, LULUCF, industry, *etc*. These policies will ultimately have the greatest impact on national resources and the environment at the local level and on climate change at the global level. CDM is a real

opportunity to channel resources towards projects that are most likely to further national development priorities.

CDM investments in Cambodia and Vietnam are mostly regulated based on existing laws and regulations that apply for managing regular investment activities. In Laos, understandably, no list of existing regulations that can govern CDM investment activities is made so far.

### a) CDM approval process in Cambodia

The legal framework and relevant laws and regulations for CDM investments in Cambodia are reflected in Figure 8.

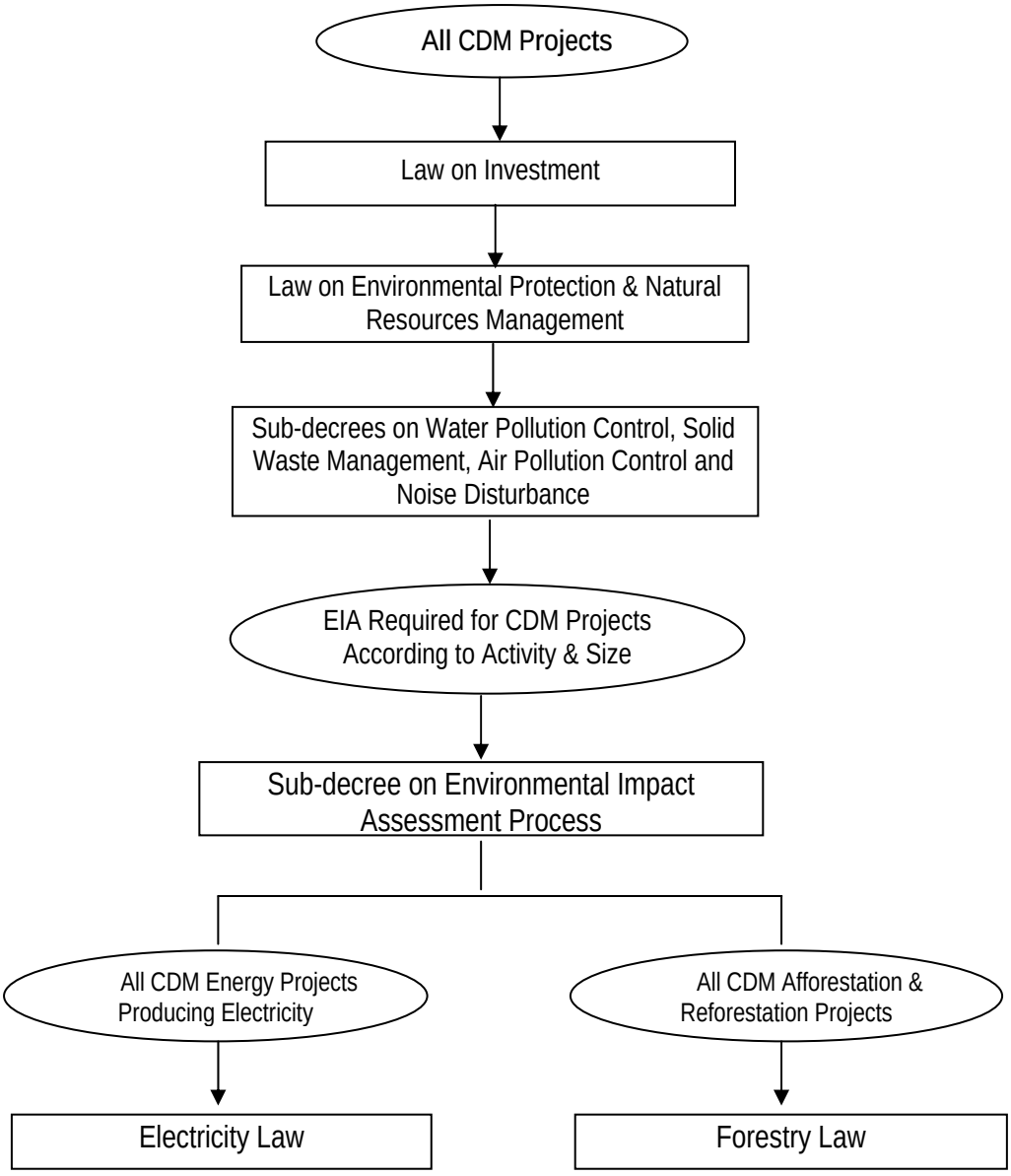



**Figure 8** Summary of key legislation applicable to CDM projects in Cambodia

The procedure to approve a submitted CDM project is illustrated in Figure 9. The whole process will take around 55 working days.

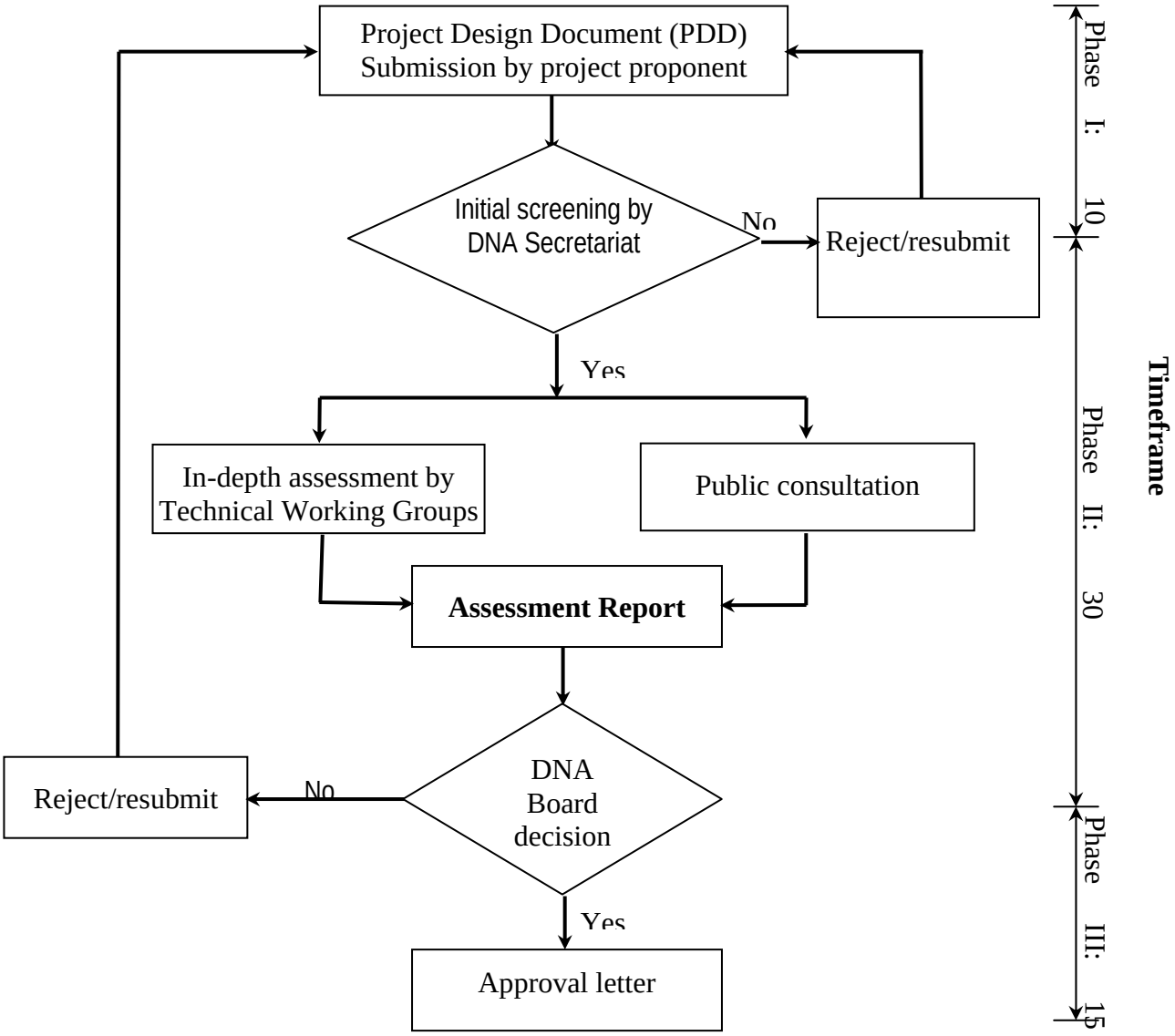



**Figure 9** Approval process for proposed CDM projects in Cambodia

### b) CDM approval process in Vietnam

In order to facilitate CDM projects, a Prime Minister's Guidance on CDM is being developed in Vietnam. It was planned to come into force at the end of 2005. Recently, there are a number of the laws and/or regulations relevant to all investment projects in Vietnam which all CDM projects must comply with.

- Law on Foreign Direct Investment, Ministry of Planning and Investment
- Law on Environment Protection, Ministry of Natural Resources and Environment
- Law on Finance, Ministry of Finance

- Law on Tax, Ministry of Finance

Besides these laws, the specific sectoral laws and/or regulations will also apply for sectoral CDM projects, e.g. CDM afforestation and reforestation, CDM energy etc. Within the energy sector, the relevant sectoral regulations include:

- The Decree of Government No. 45/2001/ND-CP dated 2 August 2001 on activities and use of electricity.
- Law on Mineral Resources
- Law on Oil and Gas
- National Policy on Energy

If a CDM project is conducted in the agricultural sector, it shall be consistent with the "Strategy for agriculture and forestry development by 2020." The "Law on Forest Protection and Development" will be applied for forestry CDM projects. The key legislation applicable to CDM projects in Vietnam is summarised in Figure 10.

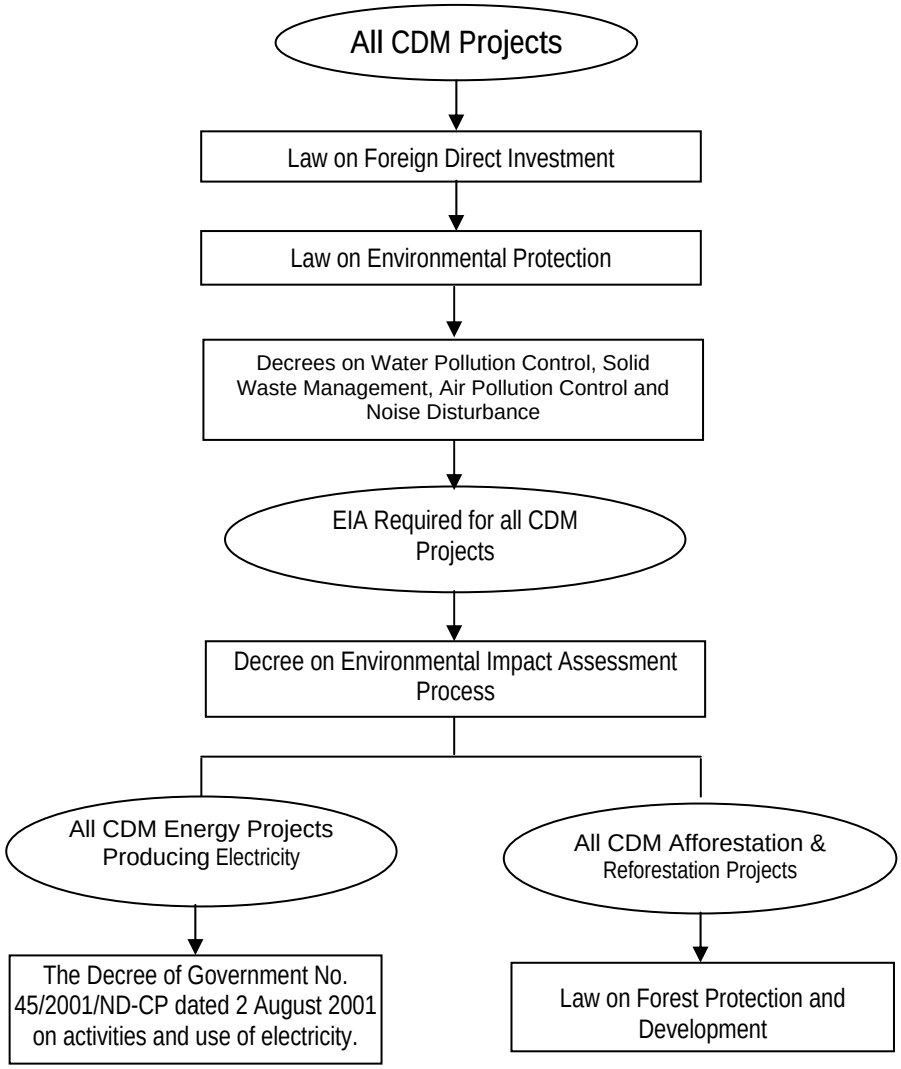



**Figure 10** Legislation applicable to CDM projects in Vietnam

The procedure to approve a submitted CDM project is illustrated in Figure 11.

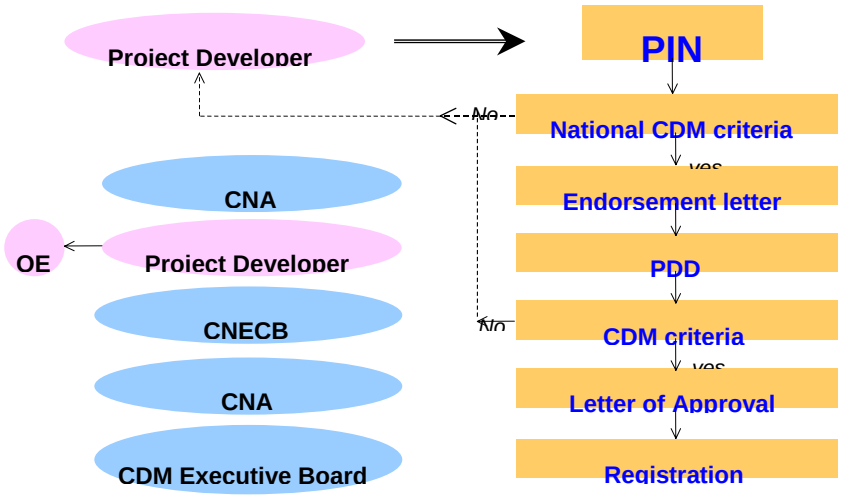



**Figure 11** Approval process for proposed CDM projects in Vietnam

## 3. State of involvement in CDM of domestic actors

Attaining broad stakeholder participation is one of the most challenging steps for a host country in order to promote CDM projects. Some countries have centralised programs within the central government institutional framework. Others have achieved active participation from all sectors of the society and different sectors of the economy. Including participation of the private sector encourages a less bureaucratic, more result-oriented and business-like approach. Private and public developers together or on their own are the real actors and the driving forces for the implementation of cost-effective mitigation options (Manso, 2003).

Given the thin presence of both NGOs and private communities in socio-economic activities in the three countries, an expectation of a broad representation of these actors in the CDM is not realistic.

From the experience in Cambodia and Vietnam, the priority is to obtain a smooth, supportive cooperation within ministries and relevant governmental agencies at the beginning of establishing the structure of national CDM institutions. However, it met only necessary conditions but is not sufficient in creating driving-forces for promoting CDM activities.

In the two countries, the first priority to establishing a smooth inter-ministry co-operation has been achieved via institutional strengthening projects thus far. Thus, the need for capacity building of the local actors in order to raise the business demand for CDM involvement from bottom line, should be the focus of the next stage of the capacity building programmes. Stakeholders to be involved should be companies, consultants specialised on energy and environmental issues as well as banks and other financial institutions.

**Table 7** Local stakeholders participating in CDM projects and their main roles

| | |
|---|---|
| Government | • Overall coordination and information service<br>• Initiate and support the development of CDM related expertise/capacity on all levels<br>• devise GHG policies, including integration of these policies with sectoral policies<br>• develop CDM specific rules and criteria<br>• definition of standards/protocols<br>• project cycle management (assessment, selection, evaluation)<br>• co-financing of projects, e.g. through revenues from CO2 tax<br>• verification (including: baseline, additionality. monitoring)<br>• enforcement<br>• UNFCCC reporting |
| Enterprise, industry | • plan and propose projects<br>• financial engineering for projects<br>• implement projects<br>• monitor emissions and baselines<br>• report on successful projects and problem areas<br>• provide feedback on efficiency of procedures etc., |
| Institutions, firms providing special expertise | • provide technical/economic/financing know-how<br>• help mobilise the industry sector<br>• baseline calculations<br>• modelling<br>• verification/certification services |
| NGOs | • help in promoting public awareness on the issue<br>• help in project identification<br>• watchdog role: policies, procedures, implementation, enforcement |

## IV.3. Evaluation of national CDM institutions

Besides the proper embodiment of a national CDM institution, the project approval procedure is of paramount importance for investors as this step will determine part of the transaction costs incurred.

Based on the design of the CDM- project approval procedures in Cambodia and Vietnam, an strenght-weakness assessment of the procedures of each country is undertaken. The details of assessment criteria and results are discerned in Table 8 and Table 9 shows the evaluation of the DNA functions in Cambodia and Vietnam.

**Table 8** Strength (S) -Weaknesses (W) assessment of the CDM-project approval procedures in Cambodia and Vietnam

| Criteria | Cambodia | Vietnam |
|---|---|---|
| Cost-efficiency | S: no approval fee | S: no approval fee |
| Time-efficiency | 55 working days for CDM approval, 28 days for<br>S: quite clear timeframe for approval phases and one window approach<br>W: medium time length compared to other DNAs | Submit 1 month before either April or September meeting of CNECB<br>W: less efficiency and flexible in comparison with other countries and time frames in international stages |
| Definition of mandatory provision (EIA; compliance with applicable legal framework; national/sectoral development plans) | S: provided legislation applicability to CDM projects | S: provided legislation applicability to CDM projects<br>W: EIA for all projects |
| Consistent set of SD criteria | W: general and qualitative criteria | W: too general and contained qualitative criteria |
| Provision of monitoring and ex-post evaluation | W: not yet available | W: not yet available |
| Project document required | S: submission of only PDD required | Both PIN and PDD required<br>S: minimise risks<br>W: increase of burden for project developers |
| Simplified procedure for small scale projects | W: not yet available | W: not yet available |

**Table 9** Evaluation of DNA functions of Cambodia and Vietnam

| Criteria | Cambodia | Vietnam |
|---|---|---|
| **Orientation function** | | |
| Priority portfolios | x | x |
| Strategic studies | x | x |
| Policy making | x | x |
| **Regulation function** | | |
| Project assessment and approval | x | x |
| National registry and project reporting | -- | -- |
| **Promotion function** | | |
| Public awareness: training, information dissemination/providing | x | x |
| Technical and commercial assistance | -- | -- |
| **Coordination among ministries** | fairly good | good |
| **Involvement of interested stakeholder** | limited representation from private sectors, NGOs | limited representation from private sectors, NGOs |

In summary, the CDM institutional system in both Cambodia and Vietnam have been developed to meet the necessary conditions to enter the carbon market. However, distinguishing themselves in the CDM market with respect to the host country CDM institutional competitiveness depends upon how efficient these two systems perform.

## IV.4. Climate projects experience

Although the Point Carbon "expert poll" showed that the experience in developing and implementing climate projects of a host country is only counted as the least critical factors among five variables that determine the country's CDM attractiveness , this may only hold true for today's embryonic CDM market. In the long term, rich experience not only reflects the potential of high volumes of executable CDM projects, but also implies an efficient functioning of CDM institutions and a good investment climate in a host country.

So far, only Vietnam has two mitigation projects under the pilot phase for AIJ (See table 10 for details.)

**Table 10** Vietnam AIJ projects registered to the Secretariat

| Title | Investor | Project type | Project cost | GHG Impact ($CO_2$equivalent in metric tons) |
|---|---|---|---|---|
| Increasing Carbon Sequestration through use of genetically improved planting stock | CSIRO Forestry and Forest Products, Australia | Afforestation | US$242,000 | Sequester 5,900 t carbon (21,500 t $CO_2$) per annum |
| The model project for reduction of electric power consumption in Cement Plant HA TIEN 2 | New Energy and Technology Development Organisation (NEDO), Japan | Energy efficiency | n.a. | 14,230 t per annum |

*Source:* UNFCCC Secretariat

Up to September 2005, three PDDs from Vietnam and one PDD from Cambodia have been submitted to the UNFCCC for validation (see Table 11 for details).

In general, experience of the three countries in developing CDM projects, especially no experience in Laos, is consistent with the CDM endowments and the level of institutional capacity of each country.

Cambodia and Vietnam have constituted their DNAs and essential institutions in order to facilitate the development of CDM projects in their countries. However, the lack of specific and quantitative criteria to evaluate CDM projects in both countries could lead to project-by-project decision making, making the approval process less transparent. Concerning the functions of DNAs, the promotion functions have not been considered appropriately. As a consequence, awareness on the countries' potential as well as the

competitiveness of the country, is not properly raised on the CDM market, thus limiting opportunities to approach CDM investors/buyers and donors.

CDM institutions in Laos are still under development. The good thing is that the country can learn from Cambodia and Vietnam to develop an efficient, flexible DNA. However, if the formulating process is not moved on fast to catch up with the level of their neighbour countries, the window of opportunity to enter the CDM market will be smaller given the very modest CDM potential Laos possesses.

**Table 11** PDDs submitted for validation

| Country | Title | Investor | Project type | Project cost (million US$) | GHG Impact* ($CO_2$equivalent in metric tons) until 2012 |
|---|---|---|---|---|---|
| Cambodia | Angkor Bio Cogen Rice Husk Power Project | • Mitsubishi Securities<br>• Angkor Bio Cogen | Renewable electricity | 3.5 | 240.000 |
| Vietnam | Rang dong oil fiel associated gas recovery and utilisation project in Baria – Vungtau Province | • PetroVietnam<br>• Japan Vietnam Petroleum<br>• PVEP<br>• Conocophillips Gama | Gas capture | 73 | 6770 |
| Vietnam | The model project for renovation to increase the efficient use of energy in Brewery in Thanh Hoa province | • HABECO<br>• Thanh Hoa Beer Joint Stock Company<br>• NEDO, Mayekawa MFG | Energy efficiency | 3.64 | 71 |
| Vietnam | Anaerobic Wastewater Treatment and Energy Recovery Project at Rubber Producing Company in Vietnam | • Nippon Mining Research<br>• Vietnam Rubber Corp<br>• Baria Ruber Corp | Mining methane capture | na | 51 |

*Source:*UNFCCC website, status November 11, 2005

# V. CONCLUSIONS

## V.1. Country CDM competitiveness ranking

To illustrate the competitiveness of the three countries in the world CDM map quantitatively, we grade these countries based on the three variables determining a host country's competitiveness, which have been analysed and evaluated in the previous sections (see Table 12).

**Table 12** Country CDM competitiveness ranking

| Country | Overall | CDM capacity | CDM institutions & CDM project experience | Investment environment |
|---|---|---|---|---|
| Vietnam | B | B | B+ | CCC |
| Cambodia | CC | C | B | C+ |
| Lao PDR | C- /D | C | C- | C- |

The scale for ranking in this study is inspired by Point Carbon but may not be consistent with Point Carbon's ranking as the group of scales has been changed. Please refer to Table 13 for the meaning of the scales.

**Table 13** CDM competitiveness scale

| Competitive | | | |
|---|---|---|---|
| AAA | extremely highly competitive | AA | very competitive |
| A | competitive | BBB | somewhat competitive |
| Regarded as risk elements | | | |
| BB | not totally competitive | B | a slightly higher chance to be successful than to fail |
| CCC | not so competitive | CC | reasonably unlikely that investments in this country will be successful |
| C | unlikely that investments in this country will be successful | D | no competitive/unsuitable for CDM investments |

Thus it appears that at a national level, the three countries are likely to be perceived as either risky (Vietnam) or unattractive (Cambodia and Laos) for CDM investments.

On a project level, given that buyers are quite risk sensitive, only a limited number of project types in the three countries will be an appetite for underlying project capital for investment.

## V.2. Conclusions and suggestions

The ultimate goal of the CDM is to support sustainable development. However, CDM procedures are complex, difficult and costly. Obtaining underlying project financing is a critical constraint. Given the size of the market for carbon credits today and the uncertainty of a post-Kyoto regime, CDM projects will highly compete with each other and also with the other Kyoto Protocol's flexibility mechanisms.

In Vietnam, the highest challenge now is to make CDM ideas economically feasible. It is questionable that a boom of CDM investment inflows into Vietnam or - in more quantitative word - a dozen of CDM projects will be registered before 2012.

In Cambodia, the probability to get a couple of CDM projects running in the first commitment period is not high although the country is quite ahead in establishing their CDM institutions in comparison with other LDCs. One of the solutions to get through the narrow window is to gain attention from multilateral carbon funds, like the Community Development Carbon Fund (CDCF) and Bio Carbon Fund (BioCF), which are designed to enable smaller and rural poor communities to benefit from carbon finance or investors, caring for their reputation, seek credits that can be a story for sustainable development.

The entry into the CDM is likely to be extremely high competitive for Laos given their poor CDM endowment and the "lag behind" activities of the government in constituting its own CDM structure. Hydropower projects may have the best chance but could suffer additionality problems, i.e. the debate on the sustainable aspects of reservoirs. Thus, Laos needs to make a greater effort to develop its capacity to provide a basic sufficient framework to make the country as of one CDM-LDC destination in the international donors' eyes.

However, the additional financial/technological values that the CDM can contribute to the social-economic development of host countries are obvious. CDM just got off politic ground to be a new commodity in around less than a decade. The recent uptake of the carbon market showed that the further development of the carbon market in the near future may surprise even deep-involved carbon experts. Taking into account this fact and the long term perspective of CDM as well as climate change issues, the three countries should continue their efforts in exploiting benefits from CDM though concrete steps to improve the investment climate for CDM investment or whatever mechanism evolves from the current CDM in a future climate policy regime. The definition of a 'niche', i.e. a specific project type where the country has a realistic advantage would be helpful.

The task of assisting and boosting local project developers in accessing international carbon markets should get as on the top along with other priorities to strengthen national institutions.

Furthermore government authorities and local stakeholders should be aware that marketing is an important task. As CDM projects generate CER goods in a competing market, so in other words, the country should take a pro-active position instead of waiting and expecting grants flowing to their countries as what happens under other assisting finance regimes such as the GEF.

It is essential that the fruitful and achievements through capacity building activities should be maintained and extended after the sponsoring has been stopped. This could be done in collaboration with governmental or international donors, particularly addressing the capacity building needs for other national stakeholders like financial institutions, NGOs, private entities and local independent consultants.

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