Carbon Sequestration and Sustainable Livelihoods

A Workshop Synthesis

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We are also grateful for the active interaction of 70 participants who represented 20 nationalities and are based in 15 countries. The present of Indonesian and Canadian government officials and donor agencies based in Indonesia are also thanked and appreciated.

Peat swamp forest affected by fire (*Photo by Jill Hyde*)

Preface

The Center for International Forestry Research (CIFOR) is working in more than 30 developing countries. Millions of the population of these countries are forest-dependant and relatively poor. With its three programs dealing with forest governance, forest livelihoods, environmental services and sustainable use of forests CIFOR is well placed to facilitate a multi-stakeholder process where practitioners and policy-makers working in different natural and social systems could interact. The Canadian International Development Agency (CIDA), supported CIFOR to organize a workshop on *Carbon Sequestration and Sustainable Livelihoods* held in Bogor on 16-17 February 2005. The event was among those recognized by the United Nations Framework Convention on Climate Change (UNFCCC) secretariat that marked the entry into force of the Kyoto Protocol on 16 February 2005.

This report is based on the presentations, discussions, and break-out sessions of the said workshop designed to answer various questions related to technical and non-technical issues in connection with the development and implementation of community development projects having climate change component. There were 18 speakers representing government, authors of Intergovernmental Panel on Climate Change (IPCC) Report, UNFCCC official, project implementers, private sector, intermediaries from non-government organization, and academia. The papers presented were grouped into five sessions. General presentations were meant to provide background on the preparedness of developing countries, current development in the climate change agreement, financial mechanisms, and institutional issues. The lessons were learned from eight cases ranging from small to large scale projects, from community-based to corporate operations, and from development to conservation activities.

Although most projects are still in their infancy stage and many more lessons to be learned it was generally agreed that bundling climate change and community development projects is a strategic approach to support sustainable livelihoods. Some emerging applied research and policy responses were identified and need further elaboration.

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Summary

Carbon sequestration projects have been implemented in association with community development. This is a strategic way to demonstrate environmental as well as social benefits. To some extent the projects are in line with the dual objectives of the Kyoto Protocols' Clean Development Mechanism (CDM).

The lessons learned from Mexico, Colombia, Costa Rica, Philippines, Indonesia, and Timor Leste generally demonstrated strong local participation. However, most of the projects do not necessarily comply with the strict rules of CDM partly due the facts that the current agreement only allows afforestation and reforestation project activities. Conservation of carbon storage (e.g. in peatlands) is not eligible for funding under the existing rules. Strategic approaches, such as inclusion of deforestation avoidance in the next round of negotiations and subsequent commitment period were critically reviewed. Scientifically sound justification is needed in the area of methodology to determine the baseline, to monitor additionality and leakage, as well as permanence.

Many of the projects are too small in size that may generate high transaction costs. However, small-scale projects allowing community to participate offer the possibility to earn carbon credits. Provided that the transaction cost is low enough projects could demonstrate financial additionality from the point of view of the hosts.

Possibilities of mainstreaming gender equity, reviving traditional laws and adaptation measures were discussed. It was strongly suggested that climate change projects to demonstrate practical livelihood options. In addition, linkages with donor and policy responses to climate change merit further elaboration as to what extent should the public funding be extended and engagement of private sector could be enhanced. Examples from on-going projects demonstrate the complexity of the problems. The workshop gave the opportunity to share the lessons learned from community-based projects in different regulatory and institutional framework.

In order to answer the frequently asked questions the breakout sessions were organized in the workshop. They included the communication problems from global to local level and vice versa, methodological issues regarding carbon accounting, standards, and verification. To lesser extent a number of emerging research needs were identified. Assessment on the policy responses in terms of institutional and regulatory frameworks, human well-being, gender issues, and financial mechanisms were also discussed.

Introduction

1

Carbon sequestration projects through land-use, land-use change and forestry (LULUCF) activities could demonstrate a win-win situation from the point of view of climate change and sustainable development. Properly designed, these projects conserve and/or increase carbon stock and at the same time improve rural livelihoods. Project design is very crucial. This includes the use of methodologies to determine the baseline of carbon stocks, to monitor additionality and leakage, and to assess the broader environmental and socio-economic effects. In this way, one can measure the maintenance or increase in carbon stocks, and simultaneously increase involvement of low-income rural communities in sustainable forestry, agroforestry, and other natural resource management activities.

Such projects have been developed and implemented in a number of countries with different ecosystems and social settings. They do not necessarily comply with the current legally binding carbon market under the mechanism of the Kyoto Protocol‘ CDM. This will eventually improve the understanding of the links between increasing carbon sinks and sustainable livelihoods in community-based natural resource management. Furthermore, it is timely to explore strategic ways to approach future mandatory as well as voluntary markets.

The workshop was designed to meet the following objectives:

- To bring together practitioners/project developers, policy makers, and academia to share knowledge, lessons-learned, and best practices that have arisen during the implementation of projects focused on carbon sequestration and sustainable livelihoods.
- To provide up-to-date information on the requirements of both mandatory and voluntary carbon markets, and guidance on what project partners would need to do in order to benefit from these markets. This is particularly important to anticipate future directions of payment mechanisms where carbon credits would play an important role in initiating these mechanisms.

By sharing the lessons learned the participants attempted to address questions that are frequently asked:

- How successful have the projects been in establishing or strengthening community-based natural resource management that promotes climate change mitigation and improves livelihoods?
- How the progress and results achieved have been quantified, reported, and communicated?
- What are the gaps in methodologies, tools, and training materials that research and extension agencies could make them more appropriate to the rural communities?
- How can these projects attract outside donors and potential investors through the sale of ecosystem services including certified emission reduction credits through mandatory or voluntary markets?
- What new or revised policies and programs are required at various government levels to encourage replication and expansion of this type of programming?

2 Kyoto Protocol and beyond

Kyoto rules

One of the Kyoto Protocol's mechanisms that allows developed and developing countries to collaborate is the CDM. The objectives of the Protocol are two-folds, to assist developed countries to meet the emission reduction targets; and to assist developing countries to meet the objectives of sustainable development. There are a number of requirements to be met by project activities, to ensure that they truly support 'development' for the people living in the area, that they are 'clean', and that they follow proper procedures. Technically, eligibility of lands for the implementation of CDM project activities has to comply with the international rules and national regulations and priorities. In the first commitment period of the Kyoto Protocol, LULUCF activities under the CDM are limited to afforestation and reforestation, later known as A/R CDM.

In this connection, the seventh session of the Conference of Parties (COP7) to the UNFCCC provided the definition of afforestation and reforestation under the provision of Decision 17/CP.7, where *afforestation* is the direct human-induced conversion of land that has not been forested for a period of at least 50 years to forested land through planting, seeding and/or the human-induced promotion of natural seed sources. Whereas *reforestation* is the direct human-induced conversion of non-forested land to forested land through planting, seeding and/or the human-induced promotion of natural seed sources, on land that was forested but that has been converted to non-forested land. For the first commitment period, reforestation activities will be limited to reforestation occurring on those lands that did not contain forest on 31 December 1989. The implementation of A/R CDM will be guided by very strict rules concerning methodologies to

Non-forested land that could benefit from A/R CDM projects (*Photo by Meine van Noordwijk*)

determine the baseline, to monitor greenhouse gas removals and leakage, and the monitoring plan.

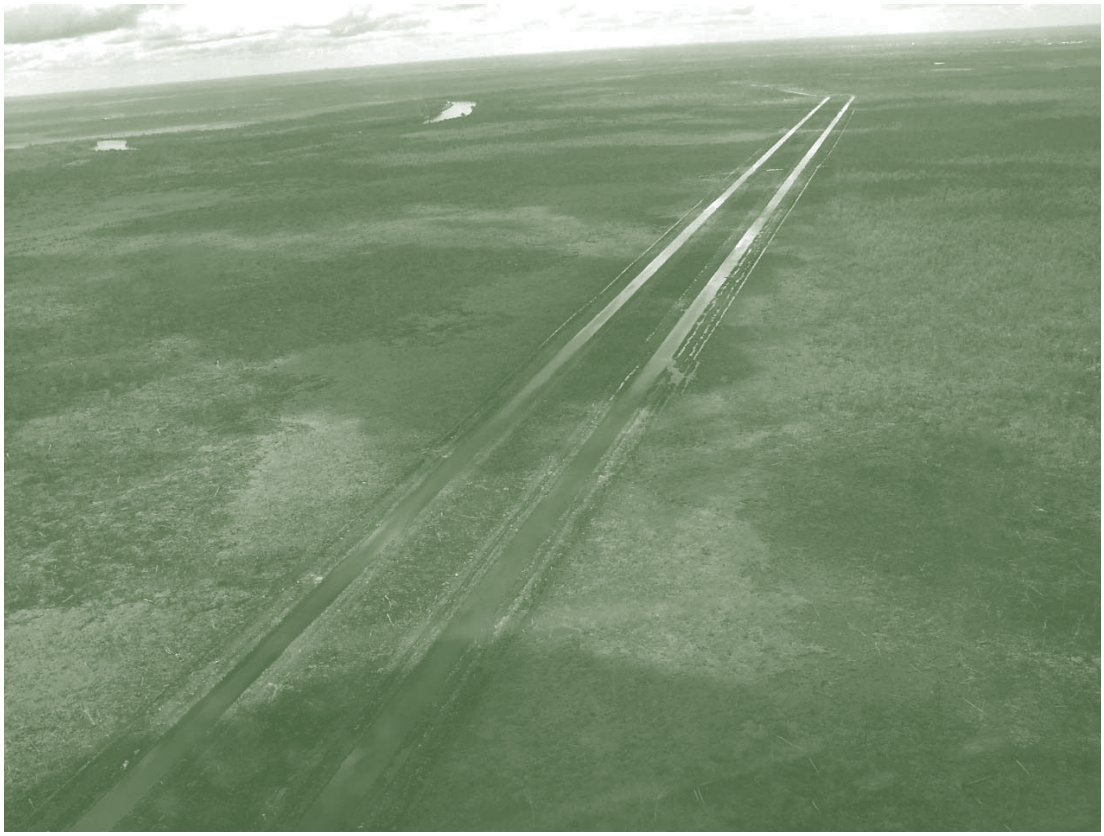
There is also a newly launched scheme for LULUCF activities called small-scale A/R CDM (Decision 14/CP.10). This scheme gives smallholder rural communities an opportunity to participate. Such projects should be able to sequester a maximum of 8 kt CO_2 per year. This could potentially involve an area of 500-800 ha depending on the species chosen and management of the project. Baseline and monitoring methodologies and approval procedures are very much simplified. This is to ensure that the transaction cost is low enough as compared with larger scale projects as guided by Decision 19/CP.9.

Deforestation avoidance

One of the consequences of the COP7 decision is that avoiding deforestation and conservation activities are not eligible under CDM, at least in the first commitment period. In fact, tropical deforestation is the largest individual source of CO_2 emission not yet covered by the Kyoto Protocol. In many tropical ecosystems, forest carbon projects with conservation objectives and significant livelihood benefits are both possible and desirable. They may mitigate climate change through sequestration of atmospheric carbon as well as conservation of the existing terrestrial carbon stocks. The projects may be designed to meet high standards of atmospheric, environmental, and social benefits, thereby generating credits to be traded in the voluntary markets but not necessarily complying with the current Kyoto rules.

In COP9 Brazil, the largest forest-rich country, proposed a scheme called compensated reduction of deforestation (Santili *et al*. 2003). In this proposal the baseline is derived from the average annual deforestation for the 1980s based on assessments from satellite imageries. Tropical countries that elect to reduce their national emissions from deforestation below the baseline during a commitment period and demonstrate success are authorized to issue a "carbon certificate". These countries agree not to increase (or to further reduce) deforestation in subsequent commitment periods. It was also proposed that IPCC establish common criteria for baseline and equivalence between deforestation and carbon stocks. In order to maintain the Protocol's integrity, the baseline may be revised after 20 years.

Log raft in Kalimantan, Indonesia (*Photo by Willie Smits*)



Canals for draining the peatland (*Photo by Yus Rusila Noor*)

The advantage of having deforestation avoidance projects is that leakage is minimized and permanence is better addressed than temporary credits. Forest-rich developing countries may be interested in participating provided the supporting data are credible and well-documented. The participation of non-Annex I countries in deforestation avoidance projects could be voluntary, but the accounting should be mandatory.

Policy responses backed up by scientifically sound methodologies should be addressed in the next round of negotiation. Special attention should be paid to the rules and then targets of emission reduction. Rules applied in developed countries under Joint Implementation (JI) may be adopted. There is a potential debate regarding the definitions of deforestation and degradation due to technical issues related to the determination of baseline and the monitoring methodologies.

Managing terrestrial carbon in peatlands

Globally the extent of peatlands is approximately 400 million ha. They occur in arctic, boreal, temperate, sub-tropical, and tropical zones that cover over 120 countries. Peat comprises layer of partly decomposed plant materials deposited over 5-10,000 years. Peatlands have a high water table and slow decomposition rate. They are extensively found in regions with high rainfall and or low temperatures. Therefore, peatlands play a critical role in water management.

Given their depth and extent, peatlands also play a significant role in carbon storage and sequestration. It is estimated that 25-30% of all terrestrial carbon is in peatlands. This is equivalent to 550,000 to 650,000 million tons of carbon dioxide (CO_2) or 75% of carbon in the atmospheric carbon or 100 years of fossil fuel emissions. Therefore, peatlands helped to prevent global warming over the past 10,000 years by absorbing over 1,200 billion tons CO_2.

Blocking the canal
(*Photos by Alue Dohong*)

As far as climate change is concerned, conservation and rehabilitation of degraded peatlands are both urgent and strategic. However, no market-based mechanisms have yet been envisaged to achieve this important objective. Consequently, limited public funding has to be stretched out to enhance the capacity of stakeholders and raise public awareness. No carbon benefits have been demonstrated in terms of additionality. However, local participation is very promising.

Peatlands management in Indonesia, home of some 20 million ha or 50% of tropical peatlands, has a significant role in maintaining biological diversity, including endangered species of *orangutan*. This includes the rehabilitation of degraded peatlands due to the ill-planned Mega Rice Project causing devastation of peat forests and hydrologic systems. Involving local communities in canal blocking and reforestation shows promising results in terms of environmental benefits and livelihoods. Fire risks are reduced as the water table is increased. Fish production is increased as the local practice of fish ponds called *tebat* is re-introduced. The blocking of canals also reduced the possibility of transporting logs illegally cut from conservation areas. Sustainable management of peatlands is highly desirable from both global and local perspectives.

During 1997/1998 Indonesian forest and land fires, 2.12 Mha of peatlands were involved (Tacconi 2002). The estimated carbon loss from peatland fires ranged between 0.81 and 2.57 Gt (Page *et al*. 2002). In addition, global annual CO_2 release due to peatland drainage or degradation ranges from 2 to 20 tC/ha (Maltby and Immirzy 1993). It is obvious that peat degradation causes substantial change in global carbon cycle, hence climate change. However, most peatlands are vulnerable to climate change and variability. Prolonged and severe drought such as that during the El-Nino events could substantially drained peatland ecosystems and lower water table causing the peat prone to fires.

Box 1. Lessons learned from peatlands management

- There are many common issues as well as solutions in different regions, great and significant values of exchange and networking
- Early engagement of local stakeholders provide social values of community-based climate change projects
- Local communities can act as key stewards of resources, including carbon stocks to address proper rewarding mechanisms of facilitated local initiatives
- Look at practical management alternatives/linked with livelihood options
- Integrate climate biodiversity, water management, and sustainable use non-timber forest products
- Assessment and monitoring of carbon stocks is complex but critical

Methodological issues

3

LULUCF baseline methodologies: robust or complicated?

In LULUCF projects the above-ground carbon stock at the beginning of the project and its changes over time can be estimated using remote sensing and Geographic Information System (GIS). The changes without the project (known as baseline) will be compared with the increase in carbon stocks due to the project to determine the additionality. Due to the slow increase monitoring may be conducted in every five years.

In the case of small scale A/R CDM such luxury may not be affordable. Therefore, the indicative baseline will be developed by the Executive Board for different project types, such as:

(a) Grassland to forested land
(b) Cropland to forested land
(c) Wetland to forested land
(d) Settlement to forested land

The monitoring of baseline is not required. Further the Executive Board will develop simplified monitoring methodologies based on appropriate statistical methods to estimate or measure the actual net greenhouse gas removals by sinks.

In the full scale CDM project, participants or developers should be able to indicate the reference to the methodology used, the justification of using the methodology, and the assumptions baseline scenario.

To date there is no methodology approved by the CDM Executive Board. It is not clear whether the rule is too robust in order to demonstrate that the project is additional or it is so complicated that discourage the developers.

Below-ground carbon storage

Estimate of below-ground carbon content in peatlands is very important as most carbon in this ecosystem stored as decomposed organic materials. It may be calculated using the following formula:

$$CC = A \times B \times C \times D$$

where:

CC = carbon content (ton)
A = land area (m^2)
B = bulk density of peat soil ($g\ cm^{-3}$ or $ton\ m^{-3}$)
C = organic-carbon content (%)
D = peat thickness (m)

Tropical peat bulk density ranges between 0.1 and 0.3 $g\ cm^{-3}$ depending on the maturity. The organic carbon content ranges between 40 and 50 per cent. It is obvious that peat thickness is a very important parameter and in most pristine tropical peatlands it could be as deep as 15 m.

The method was demonstrated in various places in Indonesia. Below-ground carbon loss per unit area could be more than double compared with above-ground carbon loss. However, it was not thoroughly tested if reduction of peat depth means emission of carbon. Methodological issues remain crucial for below-ground carbon estimates.

Measuring the impacts

In order to comply with the rules, the impacts of CDM project should be measured against its dual objectives. However, non-CDM project or voluntary carbon projects bundled with community development activities could

Seedling production for rehabilitation activities along blocked canals (*Photos by: I. Nyoman Suryadiputra*)

employ multi-criteria analysis using criteria and indicators tailored for the specific purposes.

Experiences in Mexico indicate that one should consider the project size and participants. Small scale farmers may find difficulty in demonstrating carbon benefits, but real impacts on livelihoods can be demonstrated relatively easily. Meanwhile large scale farmers could easily demonstrate carbon benefits, but few impacts on livelihoods and poverty reduction.

Box 2. Balancing carbon benefits and livelihoods

Multi-criteria analysis using criteria and indicators (C&I) may be implemented to make a balance between carbon sequestration in terms of environmental benefits and livelihoods in terms of socio-economic benefits. Such analysis should differentiate between large and small scale projects. Technical handicaps may be anticipated in small scale project, while impacts on livelihoods may be difficult to be demonstrated in large scale projects.

Climate change with human face

4

Sustainable livelihoods

In many parts of protected areas human settlements are rarely found. They are often seen as threat to the sustainability of the areas. Similar situation may be found in large scale plantation projects. The question is how forest-dependence people could benefit from LULUCF project either in protected or managed forests?.

At the onset of project development, human dimensions could initially be identified and introduced. The project design could involve a wide range of stakeholders, including local community with the existing institutions.

The case study in large-scale plantation of pulpwood in Riau Province, Indonesia indicates that the project has negative impacts. It means involving local people in the plantation project with climate change component is not compatible with their current practice (e.g. shifting cultivation). The value of the project is extraordinarily low for locals (less than $0.5/ha/month). On the other hand the project has reduced biodiversity and decreased productivity for nearby agriculture. Further, it resulted in farmers land expropriation. In short, involving local people in such type of project is like a poverty trap.

Two contrasting experience is found in Mexico when small scale family-led was compared with communally-led reforestation. It was demonstrated that reducing poverty is not a matter of increasing level of income. People participation, legitimacy, and knowledge are key issues. In this case project's legitimacy is more contested in family-led community because poor households are not well represented and cannot participate in formal local institutions.

In order to secure rural livelihoods, it is important to identify a project's expected outputs starting with the feasibility studies. Rural organizations can play an effective role in building legitimacy but they are not always inclusive of all local people. Local political and resource dynamics need to be carefully observed. Enhancing communication and dialogue is crucial. It is also critical to develop effective arrangements with national institutions and complement carbon activities with other projects since carbon demand is low.

Engendering climate change

Gender refers to the socially constructed roles and responsibilities of women and men. The concept of gender also includes the expectations held about the characteristics, aptitudes, and likely behaviours of both women and men (femininity and masculinity). The roles and expectations are learned, changeable over time, and variable within and between cultures. Gender analysis has increasingly revealed how women's subordination is socially constructed, and therefore able to change, as opposed to being biological and static.

Agriculture, fishery and poultry husbandry activities for enhancing local livelihoods (*Photos by Yus Rusila Noor*)




Catching fish, Dayak Woman from Nunukan, Kalimantan, Indonesia (*Photo by Garry A. Shea*)

Climate change is an issue that cuts across all aspects of sustainable development, and must be addressed within the context of sustainable development. Specific conventions, such as UNFCCC, cannot be implemented as stand alone initiatives but must be part of an integrated strategy for sustainable development. Gender equality is one of the prerequisites for sustainable development.

Climate change is not gender neutral since it will have a disproportionate impact on the poor women. The majority of the 1.5 billion people living in poverty on 1 dollar a day or less are women. In addition, the gap between women and men caught in the cycle of poverty has continued to widen in the past decade, a phenomena commonly referred to as "the feminisation of poverty". Worldwide, women earn on average slightly less than 50 per cent of what men earn. It was suggested that at community level a gender analysis of all budget lines and financial instruments regarding climate change should be undertaken. Whereas at national level, gender-sensitive criteria and indicators should be developed and applied in the UNFCCC and Kyoto Protocol mechanisms and instruments, starting with instruments related to adaptation and vulnerability, as this is the area in which gender differences are most crucial and most visible.

Practical livelihood options

Climate related disasters such as flooding, drought, and fire combined with poverty are real challenge to climate change projects implemented without strong commitment to livelihood issues. In many cases, climate change projects with a single objective to reduce greenhouse gas emissions by sources and sequestration by sinks are not an urgent development agenda for developing countries. Therefore, climate-related projects should one way or another be developed to have practical relevance for livelihoods with a broad range of options depending on the local needs.

In the degraded peatlands of Indonesia the restoration of hydrological regimes is one of the options to put the ecosystem function back. Canal blockings combined with fire breakers, and introduction of aquaculture are among practical solutions that enhance livelihoods while maintaining peatland carbon storage. Some practical solutions related to micro financing is needed. This is to support the on-

going economic activity when the ecosystem function is back to normal.

From technical point of view, compiling materials and experiences on peatland best management practices in Indonesia and elsewhere, which can be implemented in pilot sites, could generate knowledge to produce manuals for the establishment of agriculture, silviculture, and aquaculture, in addition to water management and fire control manuals. Simple methods to estimate carbon assets have been developed and tested in tropical peatland ecosystems while empowering local community.

Rehabilitation and conservation of watershed in the Philippines has been designed in the framework of carbon sequestration and payments through market-based mechanisms. The expected total net carbon benefit during 2004-2014 would be 3,204 tC (11,759 tCO_2-e) and 1,424 (5,230 tCO_2-e) under the high and low scenarios respectively. This implies a total value of US$ 31,380 (low scenario) to US$ 70,554 (high scenario) at a market price of US $6/ton CO_2.

Timor Leste unique experience is to engage projects while reviving traditional law. This way, further degradation of natural resources and loss of carbon may be reduced. Moreover, carbon sequestration may be expected.

Box 3. *Tara Bandu* – could secure carbon stocks and livelihoods

Tara bandu is a form of traditional law in Timor Leste that originated during the pre-Portuguese colonial period. It has been proven to be an effective institutional tool in the protection of the forest, wild animals, water sources, sacred places, and property rights of the people. Reviving *Tara Bandu* which has to go through local institutional process could effectively control almost any project involving local leaders and communities. Successes on crop protection from over-grazing and the use of controlled fires have been demonstrated.

Tara Bandu ceremony in Timor Leste (*Photo by Marlon Cardinoza*)

5 Funding opportunities

Who are the resource stewards?

Since most projects are recently developed some implementers are in a learning process. They are relatively expensive and the use of development assistance is greatly appreciated. To this end a number of questions remain:

- Who should be rewarded and received the benefits?
- How could the transaction costs be reduced to a level that increases local benefits?
- How fast would the track of the project cycle that attract private sector engagement?

In LULUCF project finding beneficiaries is relatively easier because project participants are usually identified and involved in the planning stage. This is not the case for conservation activities. Reward mechanism may go to the wrong target because the stewards or guardians may not necessarily the owners or custodians of the resources. In a sense this may not meet the target of poverty alleviation.

On the other hand rewards may not be translated as financial payment. Smallholder farmers may have several options in addition to financial terms, including land tenure and acknowledgement of rights.

Public funding

Public fund such as official development assistance (ODA) may be used to increase local capacity and remove possible barriers. Research and development of new methods and technology could also be funded using such source of finance. Identifying markets and finding a niche may well be incorporated during capacity building exercises and public awareness campaign.

Transaction costs in small projects is relatively high but bundling a number of small projects result in substantial reduction in transaction costs. Building the capacity of local stakeholders in monitoring project could even increase direct income. It is necessary to use public funding in transparent ways.

Engaging private sector

Private sector may be engaged in CDM-like (voluntary mechanisms) as it is widely found in Europe and North America. These buyers usually want to see the environmental services such as carbon sequestration should at least meet a certain standard/criteria and indicators.

In a smaller scale financial sector (domestics micro financing) and use Banks services (e.g. Philippines) may be another way needs to explore. Furthermore, insurance is another financial instrument by which the buyers and sellers could have the confidence, especially in a risky situation either from biophysical as well as political perspectives. Taping the World Business Council for Sustainable Development (WBCSD)'s agenda for biodiversity, Carbon sequestration, and watershed issues as priority in Corporate Social Responsibilities (CSR).

The way forward

6

Policy responses

At national level, in all the participating countries the national policy seems inclusive but a lot more to be done at lower levels (provincial, district). To large extent a lot of policy measure needs "surgery" for the sake of harmony and synergy.

The capacity at local level is relatively poor and a special effort is needed to a address this issue. That is why participation of LULUCF activities in Southeast Asia is low due to:

- Lack capacity at different levels of government
- Capacity to implement, awareness of the national or local implication of the international agreement/law
- Lack of available expertise

Integrated actions

Gender should be integrated into mechanisms, policies, and measures. Guidelines within the climate change debates are necessarily meeting these objectives.

Integrating other environmental services such as biodiversity and watershed conservation may reduce transaction costs and elevate income for local people.

More pressure on forests will also result from the response of human societies to climate change. Institution wise, in the developing world there is no such example that can demonstrate a speedy response to the changing climate. One has to start from the scratch and learn from other countries or other natural disaster related cases.

Adaptation

Net removal of carbon sinks could affect climate but the changing climate cause some vulnerable forest ecosystems are threatened. Adaptation measures are needed. More pressure on forests will also result from the response of human societies to climate change. Historically, the social consequences of shortages in food production and water stresses have often been buffered at the cost of forests. Climate change can exacerbate such processes, but government, civil society, and resource managers should explore the adoption of appropriate and cost-effective adaptation measures.

It is timely to integrate adaptation and mitigation strategies, especially in the most vulnerable forest ecosystems.

7 Conclusions

Some conclusions may be drawn from the presentations, discussion, and break-out sessions. These cut across scientific, technical or practical as well as policy-related issues.

- Climate project development will lead to enhanced environmental resilience and alleviation of rural poverty. Although the lessons learned are limited and experiences are sometimes not replicable, there are a number of success stories as well as failures that are worth taking into account.
- Some emerging technical/methodological issues need further elaboration by academia to support decision-making processes.
- Funding opportunities are still widely open, but asking the right questions would address strategic as well as practical solutions.
- Links between mitigation and adaptation strategies and measures are urgently needed, especially for ecosystems and communities that are vulnerable to climate change. Support from policy communities at all levels are desired.

Sunset at the peatland canal, Mantangai, Central Kalimantan, Indonesia (*Photo by Alue Dohong*)

Further Reading

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Carbon sequestration projects conducted as part of community development strategies can offer considerable environmental and social benefits. Such initiatives do have some degree of compatibility with the dual objectives of the Kyoto Protocols' Clean Development Mechanism (CDM).

The lessons learned from such initiatives in Mexico, Colombia, Costa Rica, Philippines, Indonesia, and Timor Leste generally demonstrate the importance of engaging strong local participation. Although most of these projects do not fully comply with the rigid guidelines governing the Kyoto Protocol's Clean Development Mechanism, this is partly because the current agreement only allows afforestation and reforestation project activities. Conservation of areas that store large amounts of carbon, such as in peat lands, is ineligible for funding under existing rules. This synthesis also looks at how strategic approaches might be addressed for including deforestation avoidance initiatives in the next round of negotiations and subsequent commitment period. To succeed, these projects employ a scientifically sound methodology in determining the baseline, monitoring additionality and leakage, and permanence.

The workshop reviewed in this paper examined a range of possibilities, including mainstreaming gender equity, reviving traditional laws and implementing adaptation measures. Findings from the workshop suggest that climate change projects must include practical livelihood options and that further investigation of donor and policy responses is needed to determine the level of public funding these projects should receive and how to best encourage private sector involvement. The complexity of these projects is demonstrated with examples from a range of on-going projects. The workshop and this synthesis provide a valuable opportunity to share the lessons learned from community-based projects in different regulatory and institutional frameworks.

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