

Promoting Smallholder Projects through the Clean Development Mechanism by Afforestation and Reforestation

*Exploring ways to help smallholders participate effectively
in the Certified Emission Reductions trade and simultaneously
promote sustainability through poverty reduction
and protection of natural resources*

Mogens Buch-Hansen
WORLD AGROFORESTRY CENTRE

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Abstract

Land Use, Land Use Change and Forestry Projects (LULUCF) were accepted as Clean Development Mechanism (CDM) projects as part of the Marrakech Accord in 2000 while rules and regulations were agreed for Afforestation and Reforestation (A/R) projects during the CoP 9 meeting in Milan in 2003. In order to allow smallholders who practice agroforestry to benefit from CDM payments, it is vital to establish institutional linkages between smallholder farming communities at the grassroots level, the designated national authority (DNA), other local and national institutions, and the international carbon market. After presenting an overview of the CDM process concerning A/R projects and smallholders, this paper discusses the requirements for effective institutional mechanisms between the grassroots level and the national level. Fieldwork to study existing institutions was conducted in Claveria, Philippines and in Nyando, Western Kenya. In Kenya the fieldwork included the start-up of a participatory research project aimed at determining what type of local-level institutions in Nyando could eventually empower the local population to participate in carbon trade at the national and global level. The paper concludes by discussing the need to further strengthen institutional mechanisms and possible modifications to procedures that will minimize transaction costs, to make it feasible for smallholders to participate in the CDM.

I. Introduction

The Clean Development Mechanism (CDM) as defined in Article 12 of the Kyoto Protocol provides for developed countries to implement project activities that reduce emissions in developing countries, in return for Certified Emission Reductions (CERs). The CERs generated by such project activities can be used by developed countries to help meet their emissions reduction targets under the Kyoto Protocol. Such projects are to assist host developing countries achieve sustainable development while contributing to the reduction of greenhouse gas emissions (GHG).

The current modalities and procedures for the CDM focus on developing activities that have a real impact on reducing emissions. A CDM project might involve, for example, a rural electrification project using solar panels or the installation of more energy efficient boilers. (Developed countries are to refrain from using CERs generated through nuclear facilities to meet their emission targets.) By investing in CDM projects in developing countries, developed countries could trade off the high costs of reducing GHG emissions.

Since its inception, the CDM has been the topic of debate, with all sides discussing how to best meet the conditions of development, equity and sustainability in stabilizing GHG emissions.

While some clean technologies in the energy sector and in waste treatment are considered to be inexpensive methods of reducing global atmospheric GHG emissions, sink projects to sequester CO₂ have been more controversial as a means to mitigate GHG emissions. It was, however, decided as part of the Marrakech Accords to accept Land Use, Land Use Change and Forestry (LULUCF), defined as Afforestation and Reforestation (A/R) projects as a means of sequestering carbon in soils and biomass production. So far this has only been relevant for large-scale industrial plantations and

efforts to include small-scale agroforestry projects as CDM ventures have met with a good deal of scepticism. However, aggregating of smallholder agroforestry projects in large-scale afforestation and reforestation CDM projects have not yet been fully investigated.

CDM specifically requires sustainable development goals to be met. As the more than one billion smallholder farmers in the developing world manage a major part of the terrestrial resources of the globe, smallholder A/R projects may be able to play a major role in supplying the required CERs in the future. As smallholders will also need to adapt to climate change, mechanisms to help them benefit from mitigation measures have to be identified. However, the mechanisms are not yet in place to ensure that smallholders can fulfil the CDM requirements. Institutional linkages are needed that will minimize the transaction costs of involving the smallholders in this global endeavor. The challenge is to find ways to ensure that smallholder farmers who use agroforestry technologies can also benefit from selling CER according to the carbon they sequester. Such projects are highly desirable from a development point of view as they accomplish a number of things at once: agroforestry practices increase smallholder farmers' food and income security and they enhance soil and water conservation, thereby improving both social and ecological sustainability. In addition, smallholders who are able to sell CER will find even greater economic sustainability.

Since the end of the 'Cold War' the global scene has changed. The traditional official development assistance (ODA), That is transfers of economic means from 'rich' to 'poor' countries, no longer has the same political justification with only one superpower promoting free trade and the 'nothing is free' philosophy. In that context, the concept of 'payment for environmental services' will, with little doubt, gain strength as a new mechanism of equalizing global inequalities.

Many communities are maintaining environmental services that benefit others without being compensated for their sacrifices in terms of missed income opportunities. For example, a watershed protection project in one area will benefit downstream urban water consumers and farmers who irrigate their fields in the lowlands. Small-scale farmers planting trees that sequester carbon dioxide might forego alternative incomes from growing crops or using the land for pasture. Accordingly, their opportunity costs should be compensated through the CDM of the Kyoto Protocol, which is the first internationally negotiated treaty that provides for payment for environmental services.

At the CoP 9¹ meeting it was decided to ask the UNFCCC Secretariat to prepare a technical paper on simplified modalities and procedures for small-scale A/R projects under the CDM. This paper will introduce a discussion on the need to implement the CDM procedures and modalities to allow bundling smallholder projects or scaling up findings from agroforestry practices under specific agro-ecological conditions to larger landscapes. Local institutions that are sufficiently robust to ensure compliance with CDM conditionalities over a broad range of smallholders have to be identified or introduced.

The findings presented in this paper are based on rapid institutional capacity surveys in and around Claveria in North Mindanao and in the relevant national institutions in the Philippines. A similar survey was conducted in Kenya where it was complemented by participatory institutional and socio-economic surveys in Nyando River Basin in western Kenya. The outcome of the research suggests two pilot projects should be conducted in Claveria and Nyando to facilitate South-South knowledge transfer with a view to identify the most efficient institutional mechanism that will allow smallholder farmers to participate in the carbon trade.

¹ Congress of Parties (CoP) is an annual meeting where the signatories to the United Nations Framework Convention for Climate Change (UNFCCC) meet to discuss remedies to mitigate and to adapt to climate change.

The paper begins by briefly introducing the main problems and concerns of incorporating A/R smallholder projects under the CDM. This is followed by a discussion of the necessary requirements of institutional mechanisms at the local and national level before the lessons learned from the field studies in Claveria, Philippines and Nyando, Kenya are described. The paper concludes by discussing the main needs for further institutional strengthening in order to reduce transaction costs and make it feasible to include smallholders as CDM contributors and beneficiaries.

II. General overview of the CDM process concerning the problems of incorporating A/R and smallholders

All CDM projects must prove that the endeavor will reduce the concentration of atmospheric GHG rather than simply maintain current levels. For A/R projects, this means that the baselines should project the level of natural reforestation on degraded land *without* the project, thereby establishing the ‘additionality’ of the project. The baselines therefore require information on soil types, natural vegetation and land pressure, based on historical records. As conditions for land pressure are changing rapidly due to factors such as de-agrarianization, the HIV/AIDS pandemic, and the rapid deterioration of natural resources, are making a compilation of reliable baselines for large areas a major challenge. In addition, A/R projects face problems in comparison with the two other types of CDM projects as they will sequester carbon dioxide and store it as carbon stocks for a certain period of time after which it may be released either from burning or from decomposition of biomass. This is what in technical terms is referred to as the issue of permanence. Cacho et al. (Cacho et al., 2003) refer to Sedjo who argues that “carbon sequestration should be viewed as a temporary activity, like parking of a car, more than a long-term activity, like the purchase of a parking space.” These temporary ‘parking the car’ activities should be identified and developed into permanent solutions. Cacho et al. continue by asking whether “smallholders are more likely to have incentives for liquidating sequestered carbon earlier than other participants” and answer the rhetorical question by stating that “smallholders are likely to default if they face population pressure and limited food supply leading to land clearing for agriculture.” This problem has to be dealt with under carbon accounting and leakage, where reliable solutions must be found to save smallholders’ woodlots for carbon sequestration and to ensure that farmers don’t compensate by going outside the project area to cut trees. One sustainable solution to this problem could be outgrower contracts, which provide for individual smallholders and communities to enter contracts with a tree-growers’ association and these contracts are followed up by strict bylaws.

One issue is the abatement costs of reducing the concentration of atmospheric GHG where there are no reasons to believe that the abatement costs for smallholder agroforestry projects should be any higher than large-scale A/R projects. On the contrary, it could be argued that the opportunity costs for land and labor for smallholders living on degraded land is lower than for land used for industrial plantations. The other, and much more intriguing issue, is the problem of transaction costs. The transaction costs of involving smallholders in A/R projects have created a good deal of scepticism but have so far not been sufficiently investigated to prove the scepticism. Cacho et al. mention that “the political transaction costs of involving larger landholders in carbon sequestration projects may be higher than for smallholders also give some reason to suspect that involving smallholders may be

more cost effective for some aspects of transactions – for instance, gaining landholder cooperation with agreed monitoring and enforcement procedures – than involving plantations.”.

Cacho et al. are referring to a set of general classification transaction costs for searches, negotiations, approval, monitoring, enforcement, and insurance, to which they add administration costs. They discuss the potential roles for various organizations in possibly reducing transaction costs for smallholders in the various categories (ibid.). They also discuss the design of carbon projects to benefit the poor. One major issue in this is the role for common-property regimes. It is considered pertinent that the carbon trade will be handled by one organization on behalf of a large number of smallholders, instead of individual smallholders dealing with the trade. If tree-planting activities could be carried out under common property regimes and leave farmers with individual plots for their subsistence production, including a woodlot that will be sufficient to care for needs of fuel wood and for construction purposes, the trees for carbon sequestration could be left in place. But as noted by Cacho et al.: “The transaction costs of smallholders acting as a common-property regime in undertaking GHG abatement projects will be reduced to the extent that their prior experiences has developed their capacities for collective action” (ibid.).

Smallholders in the Philippines who are members of Landcare associations have such experiences with collective action, while the appropriate social network among smallholders in western Kenya still has to be identified. For the Luo communities this could well be the clan structure in which much social trust is embedded.

In order to identify the possible social network that might make collective action work, it is crucially important that the communities are fully involved in the process through participatory research. “A well-established strategy for increasing the legitimacy of regulatory interventions and for improving the fit of regulations with local biophysical and cultural circumstances is to encourage participation of resource users in the process of designing and implementing those interventions” (ibid.). Cacho et al. also emphasize that if this process is well executed it can be expected to reduce the transaction costs of monitoring and enforcing the regulations. It can also be expected to increase the transaction costs of reaching agreement on the regulatory program to be implemented. In other words, the *ex post* transaction costs can be expected to be reduced, while the *ex ante* costs can be expected to increase. The process of involving smallholders in the carbon trade through participatory processes involve major efforts in sensitizing communities and training them to an extent where they are empowered to see the immediate and long-term benefits of agroforestry practices that will eventually also compensate them for carbon sequestration. If that short-term development effort is funded, there is a good chance that the transaction costs of involving smallholders in A/R CDM in the long term will be significantly reduced and possibly make smallholders competitive in the market.

III. The requirements of institutional mechanisms

III. i. The requirements for institutional mechanisms to be efficient at the local level

It is a hypothesis that local institutions that assist communities and individual farmers to enhance livelihoods rely on two basic factors to be successful. First, they must build up social trust and local networks by talking with individual farmers to develop a shared understanding of the issues in

question, whether these are the causes of soil degradation, marketing concerns, farming practices or other problems that impede production efficiency. Second, such institutions must assist farmers to enhance production efficiency, which can be measured in improved livelihood (immediate and long term) in relation to input of labor and return from land.

Local institutions are more likely to achieve the goal of enhancing livelihoods when the users/managers of the land are identifiable – when they live in the local area and they represent a somewhat coherent group. Success is more difficult to achieve if the users/managers of the land are absentee farmers or a mix of pastoralists and sedentary farmers. In addition, it is important that farmers, with the assistance of the institution, come to understand the causes of natural resource degradation – such as soil erosion or weed infestation – and that they learn how to mitigate these factors. Without that knowledge, farmers may simply decide to leave their land idle.

Local institutions can enhance natural resource management by investing in gathering information on the resources in question and making that information available to the local people. Helping users establish farmer or community groups that can share this information and their own experiences and knowledge, is likely to be a good investment for promoting natural resource management (Gonsalves and Queblatin, 2003). Local institutions only function satisfactorily if they address issues that are of common concern to the majority of farmers, building on shared understanding of the issues in question.

In addition, the mechanisms involved in promoting natural resource management must be transparent. In many cases, local institutions may need assistance to become more efficient in enhancing indigenous technologies and farming practices or introducing new technologies and farming practices. For example, in the carbon trade arena, it is essential that local institutions understand the national and global rules and regulations governing this in order to make informed decisions at the local level. Therefore, local institutions must have the capacity to link up to institutions at the national level. It is crucially important that any support from outside to change farming practices or, more radically, an entire farming system, must respond to the social capital and coherence embedded in local networks. The hypothesis is that farmers willingly adopt new technologies and farming practices and respond to market demands, provided these add to the social trust or social capital of local communities and networks.

It is also important for all levels to understand local institutions in the context of different ethnic groups' historical adaptation to their local natural environments, which is embedded in cultural heritage. Today this cultural heritage is challenged by the rapidly changing conditions that follow globalization in terms of market constraints and opportunities, labor migration, land degradation due to population pressures, improved means of communication – and climate change.

To sum up, in order for local institutions to promote smallholder A/R CDM projects, there is a need to

- create awareness of synergies between carbon trade and other benefits of tree planting
- ensure tangible benefits and fair distribution of the payments from carbon trade
- maximize reliability and minimize risks of involving smallholders

- build on trust (social capital) in the community combined with sufficient expertise and production efficiency from outside (possibly by enhancing indigenous technologies and farming practices)
- effectively link the local and the national level institutions on all aspects concerning the carbon trade and the sustainability of the local communities
- minimize transaction costs

III. ii. Institutional linkages from the local level through to the national to the global level

Designated national authorities (DNA) will soon be identified in most countries that have ratified the Kyoto Protocol. There is a huge need in most developing countries for capacity building and training of people to run the DNA effectively. A large number of operational entities (NGOs and private companies) are mushrooming in most developing countries, and are struggling to acquire necessary capacities and define their role in the national division of labor. Minimizing transaction costs will be closely connected to the creation of the necessary capacities and establishing an efficient division of labor. This will be dealt with in more detail in the cases of Kenya and the Philippines below.

IV. Expected lessons learned from pilot projects in the Philippines and Kenya

IV. i. Institutional mechanisms for carbon trade in the Philippines

The national level

The Philippines was active in the international negotiations under the UNFCCC leading up to the Kyoto Protocol in 1997. In the early the 1990s, the Inter-Agency Committee on Climate Change (IACCC) was established and has scrutinized, reviewed and evaluated projects qualifying for Global Environment Facility (GEF) funds and the World Bank's Carbon Fund. The Philippine's Department of Environment and Natural Resources (DENR) has functioned as the secretariat for the IACCC. So far only renewable energy and waste treatment projects proposed by private project proponents have been considered by the IACCC. Until May 2004, there was considerable reluctance among the committee members to consider A/R projects, mainly because of uncertainties vis-à-vis the CDM stipulations. The uncertainty has included doubts of whether there would be sufficient technical capacities to handle carbon sequestration issues such as additionality, leakage and permanence. That reluctance has been steadily decreasing because the technical capacity at the national level has been greatly enhanced and there has been an effort to create CDM projects to enhance sustainable development. It is acknowledged that smallholder A/R projects in particular have a much greater potential for supporting that goal.

The Dutch government has, through UNDP and Risø, Denmark, given a grant to the Philippines to work out the modalities for establishing a DNA and the procedures that should be involved in approving projects qualifying for selling CER under the CDM framework. It is envisaged that the

DENR will continue to function as the secretariat for the DNA as well as being a leading member of the Committee. It is also envisaged that three technical committees will be established, one for each of the three groups of CDM projects. In April 2004, a project was prepared with the assistance of Dr. Rodel Lasco (Co-ordinator of World Agroforestry Centre, Philippines), for a A/R project on private land that will be submitted to the IACCC for review and evaluation. This will be the first trial of having A/R projects accepted as qualifying under the CDM rules. It is envisaged that a DNA will be approved and start to function by the end of 2004.

It is going to be proposed by the IACCC that a marketing and promotion entity (possibly private) be established to create links between buyers and potential sellers of CER in all three types of CDM projects. Smallholder projects should be bundled to reach sufficient scale to negotiate with the DNA on the project concept and to sell the CER through the future Promotion and Marketing Entity. All projects to be considered for approval as CDM projects must have an Environment Compliance Certificate (ECC), issued by the DENR. The process of obtaining an ECC involves a public hearing where the local population can object to a proposed project.

The procedures envisaged by DENR for submitting a project to the DNA entail that the project proponent submits a project concept/idea paper to the technical committee for A/R projects. In the case of smallholder A/R projects, this could be the local Landcare Association or another organisation at the regional level². If approved for further exploration, the communities involved shall be sensitized about the synergies between the benefits of tree planting as agroforestry or small-scale plantations and the possible rewards through the carbon trade. It is important that the farmers who are going to plant and maintain the trees are participating actively and have realistic expectations about the rewards from the carbon trade; but that carbon payments will be additional to the benefits they will enjoy from tree planting. With the consent of the communities the technical steps outlined in Annex 1 can be implemented.

The local level

As has already been documented, (for descriptions of the Philippines Landcare movements, see for example: Mercado et al., 2000; Pulhin et al., 2003; Pulhin and Pulhin, 2003) the Philippine Landcare movement has managed to create an efficient and dynamic linkage between peoples' organizations working at the grassroots level, local government units and technical support institutions that can be either government agencies (i.e. DENR), international research organizations like The World Agroforestry Centre or local and national NGOs. The Philippines Landcare movement shares similarities with the Australian Landcare Association, which has many years of experience of being a farmer-led extension service and training provider for better land management. Experience in the Philippines (200 groups) and Australia (4500 groups) suggests that such an approach may provide a means to more effectively share and generate technical information, spread the adoption of new practices, enhance research, and foster farm and watershed planning process. (Gonsalves and Queblatin, 2003).

In 1992, the Philippine government introduced the Community Based Forest Management (CBFM) policy to reverse the old, top-down and commercially oriented timber production forest policy. The aim of the new policy was to encourage local communities to take responsibility for implementing forestry projects and maintaining the remaining forest cover (Pulhin and Pulhin, 2003; Lasco,

² Depending on the scale of projects the DNA accepts for approval, the smallholder A/F projects should be bundled to live up to the requirements. The project proponent should subsequently be the Landcare Association at the appropriate level.

2004). At the same time, the CBFM is an enabling policy for empowering local communities or peoples' organizations to implement land use systems that will enhance local livelihoods in terms of soil and water conservation and increased food production. The CBFM is being supplemented by the Local Government Code, introduced in 1991, that devolves power to the municipalities and barangays³ (Mercado et al., 2000). The devolution of power, combined with cooperation at the local level between peoples' organizations and local government units, brings decisions closer to the grassroots and hence creates enabling conditions for natural resource management that correspond to the needs of the local communities. Presently, national CBFM programs and projects cover 5.8 million hectares of forest lands (personal communication with Director of DENR Forest Management Bureau, 7/5/04), with participation of more than 355 000 families (Pulhin and Pulhin, 2003). This covers approximately two thirds of the target of nine million hectares to be under CBFM by 2008.

It is important to keep in mind that for the peoples organizations (POs) that the total CBFM project package, and the economic benefits that it promises, serve as the 'binder' that holds the members together. This contrasts sharply with organic communities, in which shared ethnicity, culture, history, identity and locality act as the binder. This weak basis for 'community-ness' makes PO-based communities extremely vulnerable to internal threats, whether in the form of initial indifference or scepticism toward the project, or conflicting views with regard to the way funds are being used or accounted for (Gonsalves and Queblatin, 2003).

Smallholder A/R projects for carbon sequestration could therefore ideally be identified among projects that qualify for CBFM projects, with the above reminder in place. This will emphasize the synergies of benefits from tree management as well as reduce the transaction costs of introducing the carbon trade. The triangle of peoples' organizations such as the Landcare movement, local government units and technical/research support institutions has proven to be quite successful in promoting and managing CBFM projects. If sensitized about carbon trade, the 'triangle' should be successful in implementing smallholder A/R projects.

In the case of Claveria, a pilot action research project will be set up based on an agreement between the DENR regional executive director in Cagayan de Oro, Region 10, the CENRO covering Claveria Municipality, the mayor of Claveria, the barangays where projects are located and the Claveria Landcare Association on behalf of the local landcare groups involved. Eligible projects will be identified in agreement among the stakeholders. Individual projects must be bundled to reach a scale feasible to submit as a project concept/idea note to the DNA technical committee for A/R projects. After approval of the project idea/concept note, a MoU will be signed between DENR/CENRO, CLCA, the Municipality and the barangay(s) in question and possibly NGOs. This MoU will outline the division of labor between these groups in conducting awareness campaigns, providing extension services and training to the farmers, and monitoring carbon stocks and sustainable development indicators.

The steps envisaged in establishing a smallholder A/R project for carbon trade in Claveria are specified in Annex 1 of this document. A pilot action research project will specify the details in each step and prove the feasibility of involving smallholders in LULUCF projects under the CDM.

³ Barangay is the lowest administrative unit in the Philippines. There are 77 provinces, 1700 municipalities (including 77 cities) and 41 952 barangays in the Philippines.

Concerning the technical issues of establishing a CDM project, an agreement should be reached between DENR at the regional level and research institutions like UPLB and the World Agroforestry Centre on the division of labor in providing baseline data for the project(s), measurements on carbon stock for different land uses included in the project(s) as well as describing the additionality, possible leakages, permanence, reliability and risks.

A consortium of academic and other institutions should be formed to

- develop the PDD for approval by the DNA
- recommend on the methods used in measuring CER and monitoring sustainable development indicators
- create a learning process for regional/local academic institutions

The University of Philippines, Los Banos (UPLB) should take the lead in establishing a consortium of universities and research institutions including Central Mindanao University, the Xavier University in Cagayan de Oro and the local college, Misamis Oriental State College of Agriculture and Technology, based in Claveria. The latter institutions should be incorporated in order to enhance local capacity building.

In developing the PDD, it is important that this is based on a consultative and participatory process where all stakeholders are aware of their responsibilities and the benefits that will eventually accrue to the local communities. The CLCA must play a leading role in ensuring the participatory process while the Regional DENR and the CENRO must initiate a participatory decision making process among all the stakeholders, ensuring full transparency in distribution of the benefits of carbon trade.

After approval by the DNA, the project proponent⁴ shall through the ‘Promotion and Marketing Board for CDM projects’⁵, strike a deal with the incumbent buyer on the price and conditionalities of selling CER⁶. Having signed a contract among the stakeholders implementing the project, the remaining steps in planting trees and monitoring the carbon stocks and indicators on sustainable development can be pursued.

IV. ii Institutional mechanisms for carbon trade in Kenya

The national level

In February 2001, Kenya issued national guidelines on the CDM. The criteria for accepting CDM projects emphasize a tangible contribution to sustainable development, although it is not specified what is meant by sustainable development. The document also emphasizes that CDM projects should be pegged to poverty reduction and “address community needs through effective public participation in project design, planning and implementation in order to ensure equitable distribution of sustainable development benefits.”

⁴ This could be CLCA or a consortium of Landcare associations depending on the scale of the proposed project.

⁵ It will be proposed during the present preparation for setting up the DNA and procedures for approving CDM projects to establish an independent promotion and marketing entity to facilitate market deals in selling and buying CER. (Personal communication with Ms. Joy Goco, Environmental Management Bureau, DENR, 7-5-04).

⁶ Depending on the agreement between the DNA and project proponent on the type of rewards to communities and individual farmers for participating in the project, the payment for CER will be transferred to the stakeholders at the local level accordingly.

The National Environment Management Authority (NEMA), an autonomous body affiliated to the Ministry of Environment, has been acting as the DNA. A grant from the Japanese Government for capacity building for three years starting from 2005 will make the final identification of the DNA and train the officers designated to work with it. It is envisaged to have a clearing house for CDM projects. The Investment Promotion Council under the Ministry of Trade and Industry will promote carbon trade internationally.

Future CDM project proponents will be asked to forward a project concept paper to the DNA for a prospective CDM project. With the DNA's approval, the project proponent is requested to develop a full PDD. The target is to have 10 PDDs ready to attract prospective investors by the end of the three year period.

The local level

Nyando River Basin in Western Kenya is proposed as another case to be included in the A/R CDM Institutional Mechanism Pilot Project. Unlike in the Philippines, Kenyan institutions that will be capable of organizing tree growing among smallholders and participate effectively in CDM carbon trade are not considered to be in place at the local level. Kenya might therefore present itself as a good case where South-South knowledge transfer on local institutional development could assist in enhancing social, economic and environmental sustainability at the local level and participation in the CDM carbon trade at the global level at the same time. The historical and political settings, as well as the natural resource environment, in Claveria and Nyando are widely different and there can be no direct institutional 'turnkey' transfer from the Philippines to Kenya. However, important lessons could be learned by running the two pilot projects simultaneously that will generate ideas on how to reduce on transaction costs in both countries. Since the relevant local institutions are deemed not to be in place in the Kenya case, it's important that the idea of introducing such institutions are planned carefully with the full participation of the communities involved.

Nyando River is one of the main rivers draining into Lake Victoria and contributes to the aquatic welfare of the lake. The river basin covers 3550 square kilometres with a population of more 60 000 predominantly of the Luo tribe downstream and Kipsigis upstream. The main economic activity in Nyando is agriculture, with only minimal off-farm income opportunities. Extensive tree felling has been ongoing in the upper catchment on the border between Nyando and Kericho districts, which is also the division line between the Kipsigis living upstream and the Luo downstream. Due to the tree felling in the upper catchment, the heavy monsoon rain water does not infiltrate the soil and runoff water is creating deep gullies downstream. Especially in the Katuk Odeyo area, gullies of 15 to 20 meters deep and 10 meters wide are rapidly washing the soil away. This creates major problems of maintaining land production capacities in the area. It also contributes to siltation of Lake Victoria.

The sodic soils easily disperse in the excess runoff water during the heavy rains and little is done to prevent a further washing away of the remaining soils. The tree cover in the area is very low – 1.7% for the whole of Nyando District (National Environment Management Authority, 2003). Although the World Agroforestry Centre has been working for some years in the area, agroforestry farming practices are not generally adopted. Trees are mainly used for boundary fencing. If this is counted as an agroforestry practice, then 5/6 of the farmers practice agroforestry. The poverty level in the river basin is among the highest in Kenya and is heavily aggravated by the HIV/AIDS pandemic. A major part of the land in the river basin is lying idle due to lack of human and financial resources to cultivate it and due to reluctance to cultivate with unreliable rainfall and poor soils. The

opportunity costs of land in most parts of the river basin are deemed to be very low as are the opportunity costs of labor.

Adoption of agroforestry farming practices could enhance food production and food security for the present population, improve water and soil retention, and would decrease the siltation of water courses feeding into Lake Victoria. The result would be obvious positive effect on the sustainability of the local communities, both from an economic and social perspective, but certainly also from an environmental perspective, retaining the natural resources for future generations as well as diminishing the immediate threats to the aquatic life in Lake Victoria. If carbon trade can assist in encouraging smallholders and communities to plant trees, land resources can be revitalized to sustain the present generation and retained for future generations. At the same time, the trees will sequester carbon dioxide. The challenge is to identify institutional mechanisms that will work to enhance tree growing within the communities and link smallholder communities to national- and global-level institutions for carbon trade.

A primary issue for an international investor will be the reliability of smallholders and the risks involved in buying carbon credits from the many unknown sellers. A strong organization needs to take the responsibility of dealing with the many 'unknown' smallholders and present itself as a reliable seller. Further, before settling a deal, the technical issues of additionality, leakage and permanence have to be dealt with. This will be tested in the proposed study. But even before reaching the stage of a study to try out the institutional mechanisms, it must be confirmed whether the smallholder communities in question are at all ready and interested in dealing in such trade. Thus a participatory action research program was initialized in Nyando with a view to revealing the interests of the smallholder communities in such endeavours.

Some preliminary results of the participatory research

The **long-term development objective** of the research is to empower smallholders and local communities to enter the carbon trade through their understanding of their own role as providers of global environmental services for which they should be compensated. The **immediate objective** is for smallholders to see the short- and medium-term benefits by adopting agroforestry farming practices that will eventually also lead to economic compensation for carbon sequestration.

The research will cover communities from the upper parts in the Nyando River Basin in Nandi Hills, the Kipsigis communities above the Kapleraget escarpment in Sigowet Division in Kericho District, the communities experiencing rapid soil erosion and gully formation in Katuk Odeyo, Lower Nyakach, Nyando District, and communities living in the Kano Plains wetlands that are prone to flooding. So far research has been conducted in two Kipsigis villages in Sigowet and two Luo villages in Lower Nyakach. From the outset of the research, community meetings were conducted to inform the villagers about the purpose of the research and the possible long-term benefits of carbon trade for the communities. This was followed up by three types of information gathering: interviews with key informants (i.e. district officials and local leaders); four stratified household samples (one for each village, stratified according to a 'pathways out of poverty' stratification⁷) responding to a formal questionnaire; and focal group interviews.

⁷ Pathways out of Poverty is a methodology that has been used in Western Kenya to categorize three groups of households according to their own perceptions of their capability of escaping poverty. According to this categorization the first group falls below the poverty line as they can only afford basic needs like food, shelter, clothing and a few utensils. The third group is above the prosperity line, indicating that they can afford to invest in tools and enhancing

The preliminary findings of the research indicate that all respondents, both upstream and downstream, find the unreliable rain pattern to be the most serious land management problem, followed by problems of soil erosion downstream in Lower Nyakach and weed infestation upstream in Sigowet. One sixth of the household respondents didn't practice any agroforestry activity⁸, with a few more practicing agroforestry upstream than those downstream. The unreliable rainfall also seems to be the main reason for not practicing agroforestry, followed by shortage of seedlings coupled with lack of training in agroforestry practices, and little awareness its benefits. A special problem among the Luo communities is the tradition of free-grazing livestock. Only a strong institution could possibly persuade them to use fences and not allow their livestock to graze freely.

When questioned about how the communities would view a tree growing association (TGA) that would help individual farmers and communities grow trees, most people welcomed the idea. Asked whether a TGA would interfere with other activities or other institutions in the communities, the majority of people seemed to agree that a TGA would have specific and different tasks than other institutions in the communities. A few respondents (less than 10%) thought that a TGA might create conflicts, as tree growing would compete with grazing and people might abandon other activities to grow trees. Due to the low level of human development capacity in the communities, such as the high rate of illiteracy and poverty, the expectations of a TGA is mainly to provide training and seedlings or help establish nurseries. While the idea of a TGA seems to be widely accepted, the communities strongly want to be represented in the association and there is a marked demand for transparency of the association and election of officials. While about 80% of the Kipsigis want to be represented in the association as individuals and about 20% want some kind of group representation, the Luos are heavily relying on the clan structure. Almost 70% of the Luo household respondents want to be represented in the association through election of clan members, while less than 15% want individual representation and about 15% want some kind of group representation.

There are big differences in farm sizes upstream among the Kipsigis, where average farm size in Chebetit is 9.6 acres and 8.5 acres in Bang'oror, and downstream among the Luos, where average farm sizes were found to be 4.2 acres in Katuk Odeyo and only 2.5 acres in Achego. While respondents were ready to set aside only slightly more land for tree growing in the Kipsigis villages compared to the Luo villages⁹, there was a marked difference in how they wanted to be compensated. Almost 60% of the Luos wanted to be compensated in kind in terms of development projects that would assist the communities and 34% wanted to be compensated in cash. In the Kipsigis villages this was found to be the other way round. Here 56% of respondents wanted to be compensated in cash and 34% wanted to be compensated in kind.

their production capacity, while the second group falls between the two lines. It should be noted that only seven out 120 respondents were in the third category, out of which five were found in Kipsigis village, Chebetit.

⁸ It should be noted that more than one third of the respondents claiming to practice agroforestry only had trees for fencing of farm boundaries, while 5% of all respondents grow fruit trees and 10% keep a woodlot. No one uses contour planting.

⁹ The acreage the respondents claimed that they would set aside for tree growing varied between 0.125 and 1.0 acre in Achego and between 0.125 and 3.0 acres in Gatuk. In Chebetit they were ready to set aside between 0.1 and 4.0 acres and in Bango'ror between 0.2 and 4.0 acres.

In summary, the Nyando River Basin is a good example of a rural area in Kenya where land resources are rapidly disappearing due to poor land management. Poverty and lack of human resources leave large portions of land idle that could be used to serve the double purpose of bringing sustainable livelihoods to the smallholders and at the same time sequester carbon dioxide for the benefit of the global atmosphere. It seems most likely that the formation of a tree growers association would be based in the social trust of the communities and would add positively to the local networks that would eventually empower smallholder communities to deal with carbon trade at the global market. Serious consideration should be taken of the warning stated above in the description of the CBFM in the Philippines – that a ‘project package’, promising economic benefits that serves as a binder that holds the members together, contrasts sharply with organic communities in which shared ethnicity, culture, history, identity and locality act as a binder. This makes the project package (in this case the TGA) vulnerable to internal threats in the form of indifference or scepticism towards the project or conflicting views with regard to how the benefits are being shared, accountability, etc. There is a strong belief among the respondents in the survey that a TGA should be guided by strong bylaws that could take care of these potential threats to the organization.

The institutional linkages in establishing smallholder A/R projects.

If a TGA is established in Nyando River Basin, it must link up with institutions at the national level that will implement the carbon trade through established links to the global level. This goes for the DNA but also for the envisaged large number of local and national project implementation entities. Will local universities, colleges and research institutions take up the challenge and share their intellectual resources in dealing with these new institutions? The pilot project will prove the feasibility of the proposed institutional linkages as shown in Annex 2 and will reveal the effectiveness and the possible need for further capacity building of the institutions and the possibilities of reducing transaction costs.

V. Expected focal points for further strengthening institutional mechanisms, modifying procedures and minimizing transaction costs

Strengthening institutions in rural areas in the developing world to enhance agricultural production and living standards among small-scale farmers has, especially in Africa, a long and not very successful history during the last part of the 20th century. Increased world trade with trade liberalization during the 1990s created growth in certain pockets of the developing world’s rural areas specializing in export products for markets in Europe and USA, but hasn’t necessarily been followed by a broad-based development process. Payment for environmental services will target some of the remote communities, many of whose inhabitants live on degraded land, that could be revitalized through compensation for providing environmental services. The challenge is to identify the institutional mechanisms that will facilitate provision of environmental services and compensation for them.

CDM is governed by a set of rules and regulations that facilitate this provision of environmental services in terms of reducing the concentration of atmospheric greenhouse gases, and compensation in terms of payment for CER. The rules and regulations, however, are highly complicated and comprehensive in a way that makes it difficult for small-scale farmers to participate. Sink projects, such as A/R, are much more complicated than renewable energy and waste treatment projects, especially due to the issue of permanence. At the same time smallholder A/R projects are further complicated due to problems of additionality, leakage and reliability. This makes it necessary to

implement the rules in a practical manner that will allow smallholders to benefit from the major contribution to sustainability that these projects represent.

Below are some areas that need to be further explored in order to implement rules and regulations in a practical manner and to strengthen institutions to make the CER trade feasible. The proposed CDM A/R smallholder pilot project is expected to contribute significantly to the exploration of these outstanding problems.

- There is a need to identify or create robust grassroots institutions that build on the local trust and social networks and that have the competence at the same time to deal with the technical issues of the carbon trade, including the capacity to work with national institutions handling CDM projects. It is believed that the Landcare Movements in the Philippines have that capacity and many important lessons can be learned in creating the proposed TGAs in Western Kenya.
- Models have to be created that scale-up experiences from farming practices among local smallholders to larger landscapes to ensure sufficient scale of proposed smallholder A/R CDM projects. The scaling-up will be needed to establish baseline data, including estimates of carbon sequestration and carbon stocks in different types of agro-ecological landscapes. The scaling-up of biophysical data will likewise be necessary for issues such as additionality and permanence but also for practical participatory monitoring systems.
- The problems of leakage and permanence are serious problems in A/R projects, especially when smallholders are involved. The daily struggle to survive and the lack of management among smallholders make it difficult to avoid leakage as well as to maintain permanence. However, strong bylaws enforced by the local institution responsible for tree-growing endeavors might be able to solve that problem.
- There is a need to build capacity among all institutions taking part in the carbon trade right from the DNA to national and local operational entities, which should be identified among local universities, colleges and research institutions apart from NGOs and small-scale private companies. The tasks that will be handled by these institutions include identifying possible smallholder A/R projects and preparing project concept papers and PDDs, including the analysis of additionality, leakage, permanence, reliability and risks. National and local operational entities should also have the capacity to validate procedures for establishing baseline data, establish indicators of sustainability, and validate emission reduction.
- Some sort of promotion and marketing board, either private or public, must be established to facilitate the exchange of deals between buyers and sellers of CER. In Kenya this will be within the Ministry of Industry and Trade and in the Philippines possibly a private promotion entity will be established.
- CER must be certified by an internationally recognized entity. It is, therefore, important to properly identify practical standardized monitoring procedures that will allow smallholder A/R projects to be bundled in a way that will make certification comparable to large scale A/R projects in order to prevent this step in the institutional chain from increasing transaction costs exorbitantly.

VI. Conclusions

CDM is one of the new mechanisms for transfer of economic means to the developing world. Being the only internationally negotiated agreement that provides for compensation for maintaining environmental services – in this case reducing the concentration of atmospheric GHG, emitted mainly by the rich industrialized world – it could be a mechanism that in the future might replace traditional ODA. Since A/R projects have become part of the CDM, it is important that the more than one billion smallholders in the developing world also have the opportunity to benefit from the mechanism according to the amount of carbon dioxide they sequester. This is especially so because the CDM rules clearly specify that sustainable goals should be pursued in developing countries as part of the trade with CER.

The procedures and modalities guiding the CDM are both complicated and comprehensive in ways that make it difficult for smallholders to participate. However, the procedures and modalities are under constant review and it is essential that they are implemented in a way that will accommodate the participation of smallholders in order to emphasize the sustainability goal. Transaction costs have always been emphasized as one of the major weaknesses in incorporating smallholders in the CER trade. Admittedly, there are major challenges to address in order to sufficiently reduce the transaction costs so that smallholders can benefit.

This paper has argued for the need to create robust grassroots institutions among smallholder communities where such don't exist. The paper has also argued for the need to investigate further the possibilities of scaling-up experiences from smallholder communities practicing agroforestry to larger landscapes in order to reduce the costs of collecting baseline data, estimating additionality and permanence, and creating simple procedures for monitoring carbon sequestration and fulfilling sustainability goals. In addition, the need for capacity enhancement in order for local and national institutions to deal with CDM projects has been highlighted.

The paper discusses the possibilities of South-South knowledge transfer through an institutional mechanism pilot project covering sites in Mindanao, Philippines and western Kenya where the World Agroforestry Centre has undertaken extensive biophysical research on different tree species and the capacity of different agroforestry landscapes to sequester carbon dioxide and store carbon. An institutional mechanism project will reveal the weak links in the institutional chain and suggest ways to further reduce the transaction costs of involving smallholders in the carbon trade under the CDM.

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Annex 1

Steps in establishing a smallholder A/R project for carbon trade in the Philippines

Activity	Institutions	Institutional capacities
Identify project. Prepare project concept/idea note to be recommended by DENR Technical Committee Secretariat ¹⁰ .	DENR/CENRO and Municipality with CLCA selecting projects among CBFM and possibly on private land.	Knowledge of C-trade and local potentials
Sensitize communities on carbon trade and synergies with other environmental services and	DENR/CENRO and LGUs with CLCA with technical support from NGO **	Community communication capabilities

¹⁰ Individual projects to be bundled to reach minimum scale to be determined by DNA

livelihood enhancement		
Establish baseline data ¹¹	DENR/WORLD AGROFORESTRY CENTRE *	Scientific research*
Estimate carbon stock with different types of land use ¹²	DENR/WORLD AGROFORESTRY CENTRE *	Scientific research*
Identify indicators for sustainable development ¹³	DENR/WORLD AGROFORESTRY CENTRE possibly with NGO *	Socio-economic participatory research*
Establish: <ul style="list-style-type: none"> • 'Additionality' • 'Leakage' • 'Permanence' • 'Reliability and risks' 	DENR/WORLD AGROFORESTRY CENTRE *	Scientific research*
Prepare Project Design Document (PDD) Approval by DNA ¹⁴	Northern Mindanao Consortium of Research in agriculture, NR management and development ¹⁵	Analytical and formulation capacity
Identify buyer and fixing price of tC CER ¹⁶	CLCA dealing with promotion and marketing entity for CDM projects	International marketing skills

¹¹ The SAFODS project has conducted a major survey in Claveria on land management, socio-economic conditions, constraints in adopting agroforestry, perceptions of development, etc.

¹² Augustin Mercade (Jun) and several Ph.D. students under SAFODS have conducted surveys on carbon stocks in different tree species, soils, etc. Hhuhuan Girnay, an Eritrean Ph.D. student with a Dutch university has been estimating carbon stocks in different land use systems in Claveria.

¹³ Balay Mandanaw Foundation has been working with sustainable development indicators for smallholders in Claveria.

¹⁴ There is not yet an established DNA in the Philippines. The Dutch Government has through UNEP, Risø, given a grant to develop the procedures to be established, membership of DNA and division of labor among the various institutions. It is envisaged that DENR will serve as secretariat to the DNA as to the present IACCC and that there will be three technical evaluation secretariats for the three types of CDM project.

¹⁵ The DENR Regional Technical Director discussed DENR collaboration with a university consortium on research in environment and development based in the Central Mindanao University (CMU). Otherwise UPLB has the capacity to develop a PDD and validate the methods of monitoring. The local college, Misamis Oriental State College of Agriculture and Technology (MOSCAT), based in Claveria, should be incorporated to enhance local capacity building.

¹⁶ It will be proposed that a promotion and marketing entity for CDM projects will be established separate from the future DNA Secretariat.

Provide seedlings ¹⁷	Local LC groups and barangays	Generate seedlings suitable for agro-ecological conditions
Plant and maintain trees	Farmers and LC groups	Clear tenure and user rights
Extension service/training ¹⁸	DENR/CENRO and LGUs with CLCA with technical support from NGO **	Outreach capacity to meet farmers' needs
Monitoring	DENR/CENRO and LGUs with CLCA with technical support from NGO **	Capability of systemizing scientific and socio-economic data
Negotiate rewards for communities and individuals with DNA. Incentives for participation ¹⁹	DENR/CENRO responsible for a community participatory decision process	Insight in all aspects of sustainability for local communities
Implement community development facilities to enhance sustainable development	Government agencies and LGUs	Understanding the needs of the communities and having the professional capacity to implement and maintain facilities.
Validate CER and SD indicators	Northern Mindanao Consortium of Research in agriculture, NR management and development ²⁰	Recognized capabilities in assessing scientific and socio-economic data
Certification of CER ²¹	Independent international entity	Internationally recognized accountability

¹⁷ Most barangays have nurseries. It is a precondition for being a member of the CLCA that local groups have established tree nurseries. Seeds are provided by DENR/CENRO or the World Agroforestry Centre. DENR/CENRO has a problem providing high-quality seeds.

¹⁸ Balay Mindanaw Foundation has good records from training barangay councillors and LC groups in issues related to agroforestry and rural development. They have 12 staff on the ground in Claveria

¹⁹ The importance of a participatory and transparent process is emphasized by all stakeholders. There are many warnings of distributing the rewards to individual farmers as cash payments.

²⁰ See note 15

²¹ Awaiting decisions from CoP 10 on procedures for smallholder LULUCF projects. Transaction costs, especially for this step, could be exorbitantly high for smallholder projects.

* Models should be developed for different types of landscape/land use that will minimize the costs of individual projects. Sustainable development indicators for CBFM projects should be established on a national scale.

**After approval of project idea/concept note by DENR A/R Technical Committee Secretariat, a MoU shall be signed between DENR/CENRO, CLCA, the Municipality and the barangay(s) in question and possibly NGOs on the division of labor between them in conducting awareness campaigns, providing extension services and training to the farmers and monitoring carbon stocks and sustainable development indicators.

Annex 2

Possible steps in establishing a smallholder A/R project for carbon trade in Kenya

Activity	Institutions	Institutional capacities
Identify project. Prepare project concept/idea note to be recommended by DNA	TGA in collaboration with research entities like World Agroforestry Centre, KARI, KEFRI a.o.	Knowledge of C-trade and local potentials
Sensitize communities on carbon trade and synergies with other environmental services and livelihood enhancement	TGA with NGOs like VI Agroforestry	Community communication capabilities
Establish baseline data	TGA in collaboration with research entities like WORLD AGROFORESTRY CENTRE, KARI, KEFRI a.o.	Scientific research*
Estimate carbon stock with different types of land use	KEFRI/WORLD AGROFORESTRY CENTRE	Scientific research*
Identify indicators for sustainable development	TGA with NGOs like VI Agroforestry	Socio-economic participatory research*
Analyze: <ul style="list-style-type: none"> • ‘Additionality’ • ‘Leakage’ 	TGA in collaboration with research entities like World Agroforestry Centre, KARI,	Scientific research*

<ul style="list-style-type: none"> • ‘Permanence’ • ‘Reliability and risks’ 	KEFRI a.o	
Prepare Project Design Document (PDD) Approval by DNA	National or local operational entities	Analytical and formulation capacity
Identify buyer and fixing price of tC CER	Investment Promotion Council	International marketing skills
Provision of seedlings	TGA	Generate seedlings suitable for agro-ecological conditions
Plant and maintain trees	Farmers with TGA extension service	Clear tenure and user rights
Extension service/training	TGA	Outreach capacity to meet farmers’ needs
Monitoring	TGA	Capability of systemising scientific and socio-economic data
Negotiate rewards for communities and individuals with DNA. Incentives for participation	TGA with NGOs like VI Agroforestry	Insight in all aspects of sustainability for local communities
Implement community development facilities to enhance sustainable development	Government agencies with NGOs	Understanding of the needs of the communities and the professional capacity to implement and maintain facilities.
Validate CER and SD indicators	National or local operational entities	Recognized capabilities in assessing scientific and socio-economic data
Certification of CER	Independent international entity	Internationally recognized accountability

* Models should be developed for different types of landscape/land use that will minimize the costs of individual projects. Sustainable development indicators for smallholder A/R projects should be established on a national scale.