



*Strengthening local capacity
in the economic analysis
of environmental issues*

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Can Carbon Forestry Provide a Solution for Community-led Conservation? A case study from the Philippines

A new EEPSEA study from the Philippines has explored the potential of using the Payment for Ecosystem Services (PES) approach as a way of facilitating community-based forest conservation.

The project is the work of a team led by Margaret Calderon from the College of Forestry and Natural Resources at the University of the Philippines Los Baños.

It specifically assesses the feasibility of developing a forestry carbon project for the Magbukún Ayta of Kanawan, Morong, Bataan. In such a project the Ayta people would be paid for the carbon they keep locked up in the forests of their ancestral homelands.

The study finds that such a project, which would involve a range of forest conservation and regeneration work, would be technically and socially feasible. What's more, the project's net present value (NPV) and internal rate of return (IRR) for a forest area of 9.775 hectares managed over 30 years would be at least PhP 170.271 million and 40%, respectively.



A summary of EEPSEA Research Report No. 2013-RR1: 'Exploring the Forestry Carbon Finance Potential for an Indigenous Cultural Community in the Philippines' by Margaret M. Calderon, Nathaniel C. Bantayan and Florencia B. Pulhin (University of the Philippines Los Baños) and Lourdes J. Cruz, NS (University of the Philippines Diliman). Comments should be sent to Margaret Calderon, College of Forestry and Natural Resources, University of the Philippines Los Baños, College, Laguna 4031, Philippines. Telefax: +63 49 536 2557. Email: bargecal@yahoo.com.

This shows that such a forestry carbon project would be financially viable. Overall, the study recommends that the proposed project would be an excellent opportunity for the Ayta community and suggests that funding be made available to put it into action.

Payment for Ecosystem Services

In the Philippines, as in many developing countries, new approaches to conservation are being developed and implemented. The Payment for Ecosystem Services (PES) approach is one of the most promising options being investigated and trialed. PES is based on the principle that communities that help conserve and manage ecosystem services, such as watershed services and landscape beauty, should be compensated for the work they do by those who benefit from such services.

One example of the PES approach is the REDD+ Strategy that aims to create a financial value for the carbon stored in forests. The REDD+ Strategy came out of the United Nations Climate Change Conference held in Copenhagen in December 2009. It offers incentives for developing countries to reduce their emissions from forested lands and invest in low-carbon paths to sustainable development.

The current situation in the Philippines

In the Philippines, a group of NGOs have spearheaded the formulation of a national REDD+ Strategy. Currently, a number of organizations are piloting REDD projects in the Philippines. For example, Fauna and Flora International (FFI) is coordinating a project in southern Sierra Madre, Quezon Province.

What's more, two forestry carbon projects have passed the voluntary carbon market (VCM) standard, which facilitates carbon trading. Both projects were developed by Conservation International and are located in the provinces of Quirino and Cagayan. They are the Quirino Forest Carbon Project (QFCP) and the

Peñablanca Sustainable Reforestation Project (PPSRP).

In light of the current interest in – and potential of – such carbon forestry projects, the EEPSEA researchers decided to look at the feasibility of a forestry carbon project for the Magbukún Aytas. These people are an indigenous tribe living in the Bataan Natural Park (BNP). The Park is one of the ten priority reserves of the national Conservation of Priority Protected Areas Project (CPPAP). The BNP covers 23,688 hectares of land.

Funds needed to conserve ancestral land

The project was suggested for study because the Aytas need funds to allow them to conserve and manage their ancestral lands, which are under constant threat. A community mapping exercise showed that the boundary of the ancestral domain extends toward the west inside of the Subic Bay Management Authority (SBMA). This follows the Boton River and the administrative boundaries between Morong and the adjacent towns of Orani, Samal, Abucay and Bagac.

The tribe is already working to protect this land. In 2004, they applied for a Certificate of Ancestral Domain Title (CADT) for a 10,000-hectare area that straddles the Morong and Subic Freeport Zone parts of BNP. They also work with the Philippine Tropical Forest Conservation Foundation (PTFCF) to do eco-restoration work in about 1,500 hectares of forest in the BNP. However, funding for this work is only short-term and needs to be made more sustainable. In addition, the Aytas need support to build their

capacity to manage their ancestral lands, particularly in the area of technical know-how and in their understanding of administrative and legal aspects.

The proposed project

The carbon forestry project covering 9,775 hectares proposed by the study was designed to reverse the current deforestation trend in the Aytas' ancestral domain. If put in place, it would have three components: reforestation, enrichment planting, and forest protection. Reforestation would be undertaken in brushland areas while enrichment planting and forest protection would be implemented in second growth and old growth forests, respectively.

Four different scenarios (i.e., high, medium high, medium low, and low) were used in the analysis. These represented different levels of conservation work. For example, under the 'high' scenario 100% of the old growth forest would be protected, 80% of the second growth forest would be enriched, and 50% of brushland would be reforested. In the 'low' scenario the respective figures would be 100%, 50% and 20%.

The feasibility of this project was evaluated from three different points of view: its technical feasibility, social acceptability, and financial feasibility. To do this a number of research activities were conducted. These included consultation meetings, community mapping, carbon benefit estimations, and an in-depth financial analysis.

The first consultation meeting with the Magbukún Aytas was conducted in February 2011 at the Center for

Table 1. Assumptions used for four project scenarios

Scenario	% Old Growth Forest Protected (Area: 5,101 ha)	% Second Growth Forest Enriched (Area: 2,849 ha)	% Brushland Reforested (Area: 1,825)
Low	100	50	20
Medium low	100	60	30
Medium high	100	70	40
High	100	80	50

BioMolecular Science Foundation office in Morong, Bataan. At the second meeting the research team presented the project to the Aytas' general assembly to obtain its decision on whether or not to support the project.

Judging the status quo

To determine the amount of carbon gain that the proposed project would produce, the status quo (i.e., with no project in place) was first assessed. To do this the rates of change of the different land cover types in the study area were determined using relevant data for 1976 and 2001. Using these rates of change, the researchers were able to make predictions about how land use would change in the thirty-year period between 2011 and 2040, which is the lifetime of the proposed project.

Using these values, potential biomass and carbon losses were estimated. The assessment showed that if no steps are taken to reduce deforestation in the Aytas' ancestral lands, then the carbon contained in the region would drop to around 1.16 million tons by 2040 (from 1.31 million tons in 2011).

This assessment allowed the project team to assess the potential impact of the proposed reforestation, enrichment planting, and forest protection work outlined in the project plan.

Carbon benefits and social acceptability

Results show that under the 'low' scenario, the total carbon benefits that the project would bring would amount to 5.53 MtC or 20.26 MtCO₂e. Under the 'high' scenario total carbon benefits would be 6.84 MtC or 25.07MtCO₂e. These findings show that the project would provide significant environmental benefits and that it would be technically feasible.

To assess the social feasibility of the proposed project, the research team looked into how the Aytas implement projects, share benefits, and resolve conflicts. The team also looked at the Aytas' familiarity with PES, their experience with contracts, and whether contracts are compatible with their cultural values and practices. This was all achieved by assessing the indigenous system of governance through consultation meetings,

key informant interviews, focus group discussions, and a literature review.

The study found that the Magbukún Ayta already have an Ancestral Domain Sustainable Development and Protection Plan; they also have well-established benefit-sharing and conflict resolution mechanisms. These will all be important if they decide to pursue a forestry carbon project – and point to the conclusion that the project would be socially acceptable.

This conclusion was confirmed when, after deliberation, the Magbukún Ayta issued a resolution in July 2011 stating that they would be amenable to the possibility of being involved in a PES project, specifically on the carbon sequestration potential of their forests. The resolution was signed not only by officers of the Tribal Council and Council of Elders, but also by 74 members of the General Assembly.

Financial feasibility

The financial feasibility of a forestry carbon project for the Ayta community was evaluated by comparing the costs of implementing the project with the value of potential carbon benefits.

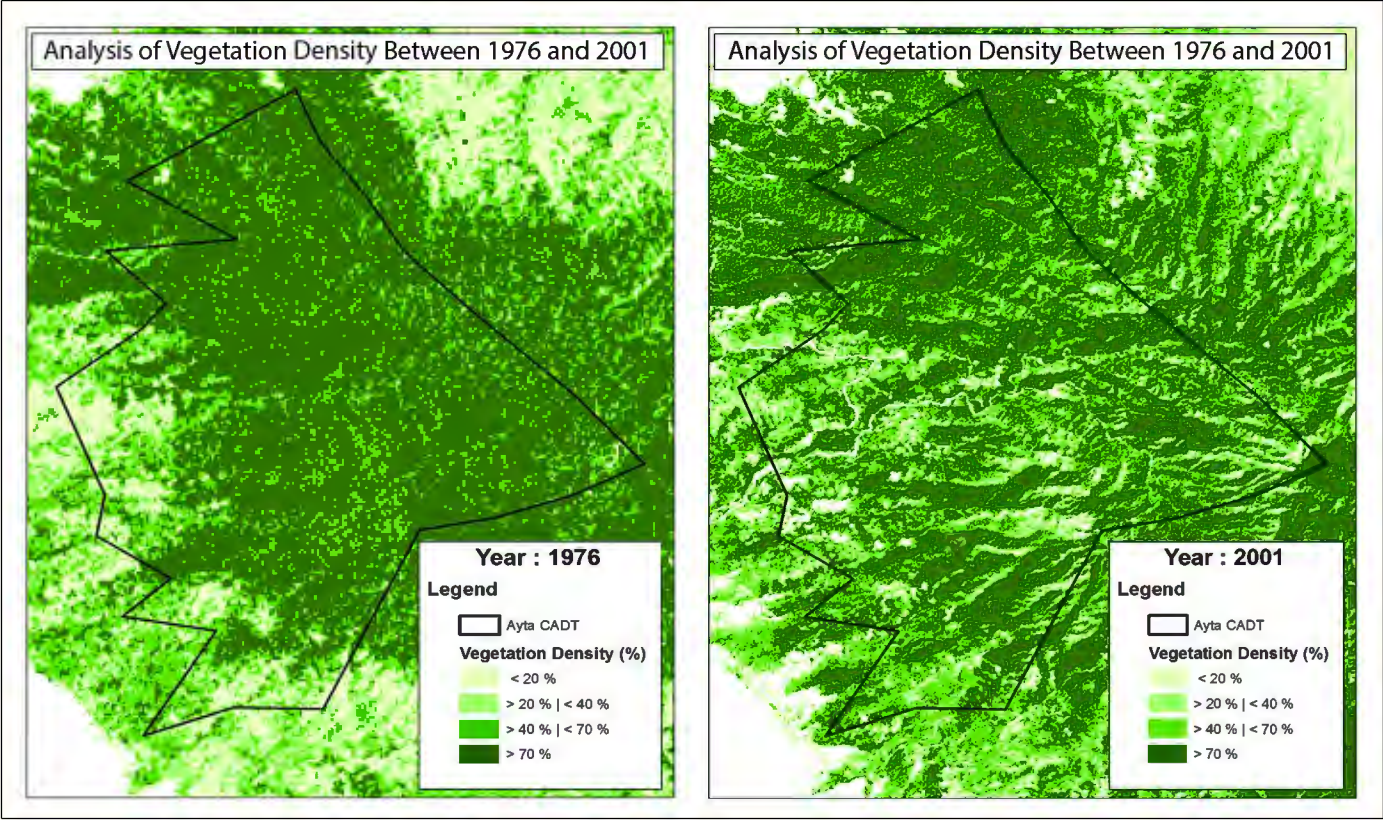


Figure 6. Analysis of vegetation density between 1976 (left) and 2001 (right)

The researchers found that, with carbon valued at a low price of USD5/tCO₂, the four scenarios' net benefits for years 1 to 3 would be negative, but that they would become positive from year 6 onwards. At a higher carbon price of USD20/tCO₂, the net benefits for the medium low, medium high, and high scenarios would be negative for years 1 to 2; however, the low scenario's net benefit would be negative only in year 1 and would become positive from year 2 onwards.

The net present values (NPVs) of the forestry carbon project at different prices per tCO₂ and for the four scenarios were computed using discount rates of 10%, 15% and 20%. As expected, the highest NPVs were realized for the highest price per tCO₂ of USD20 and at the 10% discount rate. The NPVs for the 'low', 'medium low', 'medium high' and 'high' scenarios were PhP 3.874 million, PhP3.137 million, PhP3.339 million, and PhP 3.537 million, respectively. However, even at the most conservative price of USD5/tCO₂, the NPVs for the four scenarios (at the highest discount rate of 20%) would be positive, indicating that the forestry carbon project would be financially feasible.

Underlining this financial feasibility, the research team identified potential buyers of the forestry carbon that the Ayta community may conserve. These potential buyers were drawn from firms registered with the Philippine Business for Social Progress (PBSP), and from the Subic Bay Freeport and Clark Freeport Zones.

The project should go forward

Based on the results of the study, it is clear that the proposed project has a high potential to promote the environmental stability of the Magbukún Aytas' ancestral domain and, at the same time, improve their well-being.



The study therefore recommends that the potential of developing a forestry carbon project for the Magbukún Ayta be comprehensively studied and that a Project Idea Note (PIN) be developed to detail all necessary steps that need to be taken. It is clear that the project's development will require the following activities: the identification of the project boundary; an assessment of carbon stocks of the various land uses in the ancestral domain; a biophysical survey; and a socioeconomic survey.

As the development of the proposed forestry carbon project for the Magbukún Ayta will require both technical and financial assistance, the study concludes by recommending that funding be made available to ensure that this is provided.

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