This proposal brings together a new consortium of UK universities and Peruvian research organisations and NGOs. The wide expertise of the team incorporates individuals involved in the measurement of forest carbon stocks and biodiversity, remote sensing of land-use change, development of payment systems for ecosystem services and the management of conservation and rural development projects.


The Amazon Conservation Association (ACA) is a pioneering nonprofit organization working to conserve Amazonian forests in Peru and Bolivia. To protect biodiversity, ACA promotes research and the development of innovative conservation tools that support the livelihoods of local communities. Its first program provided incentives to Brazil-nut harvesters for forest protection and in 2001 ACA established the Los Amigos Conservation Concession, the first of its type in Peru. This protected area comprises 145,000 ha of lowland forest and acts as a buffer zone for the world-famous Manu National Park. ACA's Los Amigos Biological Station is now one of the most active research centers in the Amazon. In 2005, ACA created Peru's only permanent research centre for Andean cloud forest ecology and management, and in 2008 ACA facilitated the signing of the first conservation concession in the name of a native community, the Haramba-Wachiwiri. Cesar Moran-Cahusac (Project Partner; letter attached) is Executive Director of ACA and has a Master’s degree in Environmental Management from the Yale School of Forestry. Previously, he worked on a wide range of conservation projects including as project coordinator for the Machu Picchu Program, a debt-for-nature swap between Finland and Peru that supported the Machu Picchu Natural Sanctuary.

The Instituto de Investigaciones de la Amazonia Peruana (IIAP), Iquitos, Peru is the major public research and technology transfer institute working in Peruvian Amazonia. Its mission is to improve the quality of life of Amazonian people through research focusing on sustainable development and the conservation of natural resources. IIAP has 46 researchers and an annual budget of ca. US$3 million. Dennis del Castillo (Col) has a PhD in soil physics and conservation and is the Terrestrial Ecosystem Research Director at IIAP with more than 20 years of experience implementing integrated development projects and participatory applied research involving rural development, biodiversity conservation, soil and forest management and sustainable use of natural resources in the Peruvian Amazon, Madagascar, Cape Verde and Bolivia. He was executive president of IIAP (2000-2006) and was an active member of the Peruvian Ministry of Agriculture’s Special Advisory Group, the UNDP’s Special Advisory Group on Human Development, and other international groups working throughout the Amazon, including Procitropicos, the Initiativa Amazonica and Unamaz (Association of Amazonian Universities). Relevant publications: 1. Freitas, L., Otarola, E., Linares, C., Martinez, P., Del Castillo, D. (2006) Servicio ambiental de secuestro de carbono en humedales de la Reserva Nacional Pacaya


Capacity building for carbon- and biodiversity-based payments for ecosystem services in the Peruvian Amazon: Case for Support Part 2 - Project description

Introduction
Payments for C sequestration and biodiversity conservation have the potential to generate significant local revenue in forested developing nations [1]. If properly managed, such payments for ecosystem services could play a major role in poverty alleviation in Amazonia. This proposal brings together an interdisciplinary team of academic (Universities of Leeds, Bangor and Munich), NGO (ACA) and Peruvian research institutions (IIAP) with links throughout Amazonia, to identify the full range of opportunities and capacity building requirements to access C- and biodiversity-based payments for ecosystem services in Peruvian Amazonia.

Institutional strengths and needs
The Forest Management and Environmental Services group at IIAP is strongly focussed on improving the technical capacity in Peru to develop projects for payments for ecosystem services. As part of its strategic plan, it has identified the need to train 6 professionals over the next 3-5 years in this area. IIAP has an active research program into the forest C stocks of selected timber and palm species and routinely uses remote sensing data for land use classification. However, specific technical needs include the development of methodologies for large-scale monitoring of forest C stocks, validation of biomass equations and remote sensing of deforestation and disturbance. ACA has extensive experience in community-focused development projects and in establishing and managing conservation areas. ACA has identified the need to develop a legal framework within Peru to establish equitable payments for ecosystem services and is collaborating with the Sociedad Peruana del Derecho Ambiental. Our project will build on the results of that collaboration. The international partner institutions have complementary strengths: baseline data on forest C stocks and tree biodiversity and expertise in forest inventory (University of Leeds), expertise in remote sensing of disturbance and vegetation change (Technical University of Munich) and expertise on the linkage of forest resource management with local knowledge and livelihoods in payment systems for ecosystem services, ecological economics and participatory research (Bangor University). Existing collaborations between the University of Leeds/IIAP, and ACA/University of Munich underlie this proposal. Our project will create new interdisciplinary collaborations between IIAP/Leeds, ACA/Munich and Bangor University to form a team with the expertise in ecosystem monitoring, policy and community-based conservation that the development of systems for payments for ecosystem services requires.

Strategic importance
The potential value of C-storage and biodiversity based payments in the Peruvian Amazon is large, as there is a strong threat of an increase in deforestation rates and the C storage and biodiversity of these forests is high. Although historical rates of deforestation are low compared with neighbouring Brazil [2], the expansion of oil company concessions to almost all of Peruvian lowland Amazonia outside national parks during the last 5 years and current road infrastructure projects present new threats. There is strong institutional support to develop ecosystem service payments to alleviate poverty (e.g. support for Reductions in Emissions from Deforestation and Degradation to be included in a post-Kyoto emissions agreement, at the Copenhagen UNFCCC meeting in 2009). However, there are substantial scientific and socio-economic challenges. For example, on the demand-side, robust monitoring schemes need to be developed. On the supply-side, because of the weak property rights and poor representation at national and international levels of the dispersed, rural communities, the benefits may not have the desired effect on poverty. The costs to local people must also be carefully incorporated. To assess these constraints and how they can be addressed, our project focuses on the development of specific participatory C-sequestration and biodiversity conservation projects within existing protected areas. These case studies have regional-scale relevance for achieving payments for C sequestration and biodiversity conservation. Our proposal therefore aims to create a blueprint for how equitable payment systems for ecosystem services could be established in Amazonia.

Specific objectives
1. Identify the potential for, and constraints on, developing successful, C- and biodiversity-based ecosystem service payment projects in the Peruvian Amazon. This will include considering: (a) methods to measure avoided deforestation and degradation, including remote sensing methods to extrapolate measurements of C stocks/dynamics from inventory plots to forest landscapes subject to contrasting forms of disturbance and methods to assess the benefits for biodiversity, (b) methods to identify different local
stakeholders (e.g. councils, individuals dependent on farming or logging), how they may participate in ecosystem service projects and their costs in doing so, and thus the potential of payments to alter patterns of resource exploitation by households in local communities, and (c) an assessment of the most appropriate markets and policy options for payment systems, including consideration of monitoring costs.

2. Identify training requirements to develop C and biodiversity-based projects in the Peruvian Amazon.

Methodology, approach and research plan

We will create a new, interdisciplinary team to identify the research needs for developing the monitoring schemes, markets and payment mechanisms for ecosystem services that ensure that their poverty alleviation potential can be realised. Firstly, we will collate information on the threats, challenges and opportunities for such projects in Peruvian Amazonia. The draft report will focus discussion during a workshop to be held in February 2009, at IIAP, Iquitos, Peru. This will address the state of knowledge and challenges for (a) the measurement of stocks and changes in C and biodiversity, (b) identifying the dependence of local communities’ livelihoods on natural resources, the economic alternatives that payments might provide and how different stakeholders will be involved, and (c) identifying potential markets for C and biodiversity services and the development of equitable payment systems. The workshop will then identify the opportunities and limitations for developing projects for ecosystem service payments in two case study regions: the Los Amigos conservation concession managed by ACA in Madre de Dios, southern Peru and the network of protected areas (PROCREL) in Loreto, northern Peruvian Amazonia, established by the regional government. The region of the conservation concessions managed by ACA will shortly come under unprecedented pressure from population migration and expansion of agriculture and logging after the completion of the InterOceanica highway, linking Cusco to Brazil. The regional government in Loreto has developed a community-based conservation initiative in a region with recent expansion of concessions for oil exploration. Finally, the workshop will define the research needs to develop projects for the case studies.

Project management, career development opportunities, data stewardship and evaluation

The project will be coordinated by Tim Baker and each topic will be led by a member of the project team:

<table>
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<tr>
<th>Topic</th>
<th>Sub-topic</th>
<th>Leader</th>
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<tbody>
<tr>
<td>1. Measurement of C storage and biodiversity</td>
<td>1.1 Measurement of C stocks and biodiversity</td>
<td>T. Baker</td>
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<td>1.2 Monitoring schemes</td>
<td>J. Healey</td>
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<td></td>
<td>1.3 Remote sensing</td>
<td>R. Maria Román</td>
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<tr>
<td>2. Community involvement in ecosystem service projects</td>
<td>2.1 Livelihoods and resource use in Peru</td>
<td>D. del Castillo</td>
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<td></td>
<td>2.2 International perspective</td>
<td>J. Healey</td>
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<tr>
<td>3. Potential markets, payment systems and policy</td>
<td>3.1 Progress in Peru</td>
<td>C. Moran-Cahusac</td>
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<td></td>
<td>3.2 International perspective</td>
<td>J. Jones</td>
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The project will employ one research assistant for 6 months to coordinate the project outputs and workshop and one Iquitos-based Master’s student for 3 months. The project experience will give both an excellent basis to undertake new opportunities for project work on payments for ecosystem services. Senior researchers from IIAP and ACA will benefit from identifying the training needs within their institutions to further develop these projects. Tim Baker, Julia Jones and Rosa Maria Román are all early career researchers who will greatly benefit from the interdisciplinary links that will be established through this project. Raw data sets will be managed in accordance with NERC’s data policy and copies will be deposited with the appropriate NERC data centre if appropriate and the SIAMAZONIA database on Amazonian biodiversity and ecology managed by IIAP. A project advisory group of individuals from relevant institutions in Iquitos will be formed to advise on project progress and evaluate outputs.

Expected outputs and dissemination

1. A joint proposal to address the training and research needs for C- and biodiversity-based ecosystem service projects in the Peruvian Amazon, based on the 2 case-study locations. 2. One peer reviewed publication summarising the opportunities and challenges for establishing mechanisms for payments for ecosystem services in Peruvian Amazonia. 3. Press releases in Peruvian local (La Region) and national (El Comercio) press. 4. Three reports (in English and Spanish) to be widely disseminated (a) a briefing note for policy makers; (b) a layman’s report; (c) a technical report for practitioners. References 1. UNEP-WCMC 2007. Reducing Emissions from Deforestation: A Key Opportunity for Attaining Multiple Benefits. UNEP World Conservation Monitoring Centre, Cambridge, U.K. 2. Oliveira, P.J.C., et al., Science, 2007. 317: p. 1233-1236.