Capacity building for carbon- and biodiversity-based payments for ecosystem services in the Peruvian Amazon

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Introduction

- The development of equitable payment systems for ecosystem services (PES), such as through Reducing Emissions from Deforestation and Degradation (REDD), has the potential to unlock the value of the large stocks of carbon and biodiversity in Peruvian Amazonia to achieve poverty alleviation goals.

- *Innovative, collaborative, interdisciplinary research, as well as specific training, is essential to ensure that these opportunities are fully utilised.* Identifying the research and training needs to develop these projects is a central goal of our work. We are committed to developing our research in this project and exploring future opportunities for funding through the Ecosystem Services and Poverty Alleviation (ESPA – NERC/ESRC/DfiD[1] funded) programme and elsewhere.

- *This project will concentrate on informing the development of national strategies for ecosystem service payments.* This is both *timely and of international importance*, given the focus on developing national implementation strategies as part of the World Bank FCFP[2] in preparation for COP 14 in Dec 09 and the Peruvian government's commitment to halt deforestation of primary forest by 2018.

- *We will use a comparative approach, contrasting current projects and opportunities in different regions of the Peruvian Amazon.* These regions have a range of historical deforestation patterns and current threats, relevant to a wide range of tropical forest countries.

- We will consider *a range of forest-based, ecosystem service payment schemes*, relevant to the different scenarios of current threats and land-uses in different regions.

- We recognise that these schemes should be *developed at a landscape scale with a connected series of projects and encompass a wide range of stakeholders* including public and private landowners, local and indigenous communities, NGOs and regional and national government.

Aims

We will address specific issues related to four general aspects of the design of a national-level PES scheme (1) the type of projects that should be implemented, (2) the choice and design of specific projects, (3) the cost of implementation, and (4) methods to ensure that the benefits reach local communities.

1) Where and what type of projects should be implemented?

(a) Assessing the carbon stocks is a fundamental requirement for developing appropriate carbon-based PES projects, therefore we will:

(1) produce a new field-based map of forest carbon stocks in the Peruvian Amazon, stratified by forest type, region and current land-tenure (e.g. protected areas, forest concessions, indigenous reserves, local community reserves, Brazil nut concessions). Above- and below-ground carbon stock data from the Amazon Forest Inventory Network (RAINFOR) will be used as the basis of these maps.

(2) estimate gross carbon emissions using published deforestation maps and determine the potential carbon benefits of different types of ecosystem service projects in different regions using carbon stock data for different land-uses, (e.g. afforestation, agroforestry, sustainable forest management, avoided deforestation) (RMC, TB, IC, OR). *Key output: Map of carbon stocks by principal forest types.*

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[1] Natural Environment Research Council - NERC, Economic and Social Research Council - ESRC, and Department for International Development - DfiD
[2] Forest Carbon Partnership Facility- FCPF

(b) The co-benefits to biodiversity of carbon-based ecosystem services projects in tropical forests are increasingly recognised but quantifying these benefits remains problematic. One of the challenges is to compare how habitat loss will affect tree species richness in different landscapes that differ in both alpha- and beta-diversity. Typically, species/area relationships are used to quantify these effects. We will use new landscape-scale estimators of these relationships based on the RAINFOR plot data, to quantify how loss of habitat may affect tree species richness in the southern (comparatively low alpha and beta diversity) and northern (high alpha and beta diversity) Peruvian Amazon. *Key output: Tree species/area relationships for the northern and southern Peruvian Amazon* (IC, TB, RM, OR).

2) How should specific projects be designed and selected? Regional government organisations and NGOs require frameworks to design and prioritise funding for ecosystem service projects. We will develop broad criteria based on existing carbon credit verification schemes in order to evaluate the potential of existing and proposed initiatives to receive payments and protect forests. They will be based on existing criteria developed for project-based carbon credits (eg additionality, permanence) but also consider factors relevant to designing a landscape-scale strategy for ecosystem service projects (e.g. connectivity between project areas, speed of delivery). A set of indicators to be used in project design and selection between projects will then be derived for each criterion. These criteria and indicators will be developed in consultation with two project partners and tested at the workshop to be held as part of the project. *Key output: Report 'Criteria and indicators for designing a regional strategy for ecosystem service projects' available on project website.* (OR, JH, TB).

3) What is the optimum scale for project implementation given transaction and monitoring costs? The transaction costs of ecosystem service projects are poorly understood and seldom explicitly considered in discussions of the best scale at which to implement PES schemes. We will analyse the monitoring and transaction costs incurred currently by existing carbon-based ecosystem service projects in the Peruvian Amazon, and examine how these costs would vary with project size. *Key output: Report on 'Transaction costs of forest-based PES projects' available on project website.* (OR, JJ, CM, TB).

4) How can the benefits reach local communities? We will analyse how local communities receive benefits from existing forest-based, ecosystem service projects in the Peruvian Amazon and review other examples of mechanisms in place through regional governments that could be utilised to ensure the benefits of ecosystem service projects reach local communities. *Key output: Report on 'Forest-based ecosystem service projects and poverty alleviation in the Peruvian Amazon' available on project website* (DC, TB).

Through discussion with our partners we also hope to contribute to the debate concerning:
- the use of remote sensing and statistical methods to monitor and understand deforestation and forest degradation patterns
- the design of the legal framework to allow ecosystem service payments in the Peruvian Amazon
- the analysis of the opportunity costs of different land use options

Activities
The focus of the project will be a workshop, to be held in Iquitos during the first week of June. At the workshop, preliminary outputs from the project will be presented (carbon and biodiversity maps, monitoring cost analysis, criteria and indicator analysis), and capacity building and training needs will be identified with participating organisations.

In addition, a training course on calculating carbon stocks from inventory data will be run in conjunction with WWF, IIAP and ACA during this project. *Key output: Training manual on the calculation of carbon stocks from forest inventory data* (EH, TB, with WWF).

Outputs
Final outputs will also include a report for policymakers, a paper in English and Spanish reviewing the state of development of a national strategy for ecosystem service payments and a proposal for research and capacity-building for PES in the Peruvian Amazon (TB, OR et al.).