Planning for low-emissions development in Ucayali, Peru

Short Summary
Regional governments in Peru are stepping up their activities to participate in national and global efforts to reduce greenhouse gas emissions from land-use change by identifying possible mitigation actions. The ongoing process of Land Use Planning based on the Ecological and Economical Zoning is a key opportunity for integrating mitigation strategies within development planning activities. The regional government of Ucayali in Peru and partners are building on previous research on land-use change to understand the implications of development for emissions, effectively integrating economic development and environmental considerations in their land-use planning activities.

Key Messages
- LUWES (Land-Use Planning for Low-Emissions Development Strategy) is a land use planning methodology and process that estimates economic and environmental costs and benefits of alternative scenarios defined for existing forest and land management units, such as protected areas, forest concessions, community and private lands. In Ucayali, Peru, this approach indicated the importance of setting up strategies to reduce emissions and enhance carbon stocks in lands where smallholder settlement and tenure establishment processes are ongoing.
- The landscape approach in LUWES helps to estimate, evaluate and compare development scenarios and their individual and aggregated impact at the landscape level in terms of net emissions and economic and social returns.
- The work in Ucayali showed that lands outside of legally classified forests contribute the most emissions. These lands – where smallholder colonist farmers have been expanding agriculture for oil palm, pastures and cacao – have the highest potential for land-use-based mitigation both through avoided deforestation and enhancement of carbon stock on already deforested land.
- On-going land use planning processes at the sub-national level offer useful platforms to integrate carbon emissions as a dimension of development planning.

Implications
- Evaluations of land-use change impacts on carbon stocks, on associated greenhouse gas emissions and on other ecosystem services should be integrated into territorial and economic development planning.
- Land-use planning for low-carbon development and emissions reductions should (1) integrate an understanding of the interconnectedness of land-use and natural resources management systems and their overall impact on emissions, (2) combine the understanding of past land-use change dynamics and the wide range of drivers beyond them with the formulation of future scenarios and (3) encourage cross-sectoral negotiations and engagement of public and private sectors at multiple governance levels.
- Participatory processes should be promoted, tools for negotiations provided and capacity reinforced to enhance the participation of local institutions and civil society in territorial planning.

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**REDD+ momentum in Peru**

Peru began its official involvement in REDD in 2008 at COP 14 in Poznan, when the newly created Ministry of Environment (MINAM) committed the country to the international mitigation effort by fixing a target of “zero net deforestation rate” by 2021. Next, the government approved a plan to conserve 54 M ha of forest through multiple mitigation efforts over 10 years, an initiative of the National Forest Conservation Program for the Mitigation of Climate Change (PNCBMCC, D.S. Nº 008-2010). Peru’s REDD strategy uses a nested approach, with the Ministry of Environment and sub-national jurisdictions, in particular regions, working together in the development of reference emissions levels, the definition of CO₂ emissions reduction strategies and the tasks of monitoring, reporting, verification and crediting. The development of deforestation maps and reference emissions levels is carried out at the national level to ensure consistency in monitoring, reporting and verification. The role of sub-national jurisdictions aligns emissions reduction efforts with the decentralized responsibilities of regional government’s Ecological-Economical Zoning (ZEE acronym in Spanish) and Land Use Planning activities. The local government’s on-going land use zoning and planning processes at multiple levels offer opportunities to embed emissions reduction logic into existing land use governance frameworks. Ucayali is one of the regions where the ZEE process has not yet been completed.

In collaboration with the ASB Partnership for the Tropical Forest Margins, the Ucayali REDD Roundtable has been working to integrate REDD+ initiatives (REDD including also conservation and sustainable management of forests and enhancement of forest carbon stocks) with territorial and economic development activities.

**Planning for REDD+ in the Peruvian Amazon**

International sponsors of conservation so far have been the major players of REDD+ in Peru. But identifying cost-effective and attractive options for reducing emissions is a challenge that confronts and involves a variety of stakeholders, including indigenous and peasant communities, farmers and commodity associations, civil society and regional and national agencies working across sectors. Through the project Reducing Emissions from All Land Uses (REALU; Van Noordwijk et al., 2009), the regional government of Ucayali and ASB researchers co-organized a training workshop on Land-Use Planning for Low-Emissions Development Strategies (LUWES) in Pucallpa, Peru, in April 2013. ASB researchers and the Ucayali REDD Roundtable developed the workshop as part of a larger set of activities in the region. These initiatives are aimed at assessing the feasibility of emissions reduction options. Determining the feasibility of different options depends not only on estimating the associated benefits and costs, but also on examining how actions to reduce emissions are likely to achieve their intended effects. The workshop brought together the major REDD players in Ucayali to develop a process for evaluating options and scenarios for future development and for reducing emissions.

**Major players in the REDD process**

REDD roundtables (Mesas REDD in Spanish) are committees and communities of practice made up of professionals and stakeholders representing public, private and civil society organizations who are in some way participating in efforts to reduce greenhouse gas emissions. The national Mesa REDD was created in 2008 by civil society organizations to establish an inter-sector dialogue to discuss and formulate proposals about REDD+. Activities of the REDD roundtables are very important to ensure fair and transparent processes of government strategy development.

**MESA REDD UCAYALI**

Established under the initiative of participant organizations in 2011, the Mesa REDD Ucayali was formalized by the regional government in 2012. Its objective is to support the readiness process and REDD+ strategy implementation in line with the regional development plans and national policy. ASB partners have been collaborating with the Mesa RED in Ucayali since 2011, offering scientific and technical advice and capacity building.

**INDIGENOUS MESA REDD IN UCAYALI**

Established in 2011 and promoted by the Interethic Association for the Development of the Peruvian Rainforest (AIDESEP, Asociación Interétnica de Desarrollo de la Selva Peruana) with the support of 15 local federations, the Mesa REDD Indígena in Ucayali is part of the larger national Indigenous REDD roundtable. The main objective of the Mesa REDD Indígena is to ensure that decisions on REDD+ initiatives are subjected to Free, Prior and Informed Consent (FPIC), do not conflict with indigenous claims to land and respect the ‘Vida Plena or El Buen Vivir (Full life or Good Living) principles on the harmony between nature and human beings.

The workshop participants used the LUWES approach to understand and evaluate different development scenarios, estimate the impact of these scenarios on livelihoods and greenhouse gas emissions and summarize the analysis for use in ongoing development planning activities (Dewi et al., 2011).

**LUWES: Description of the main steps in the process**

1. An interdisciplinary team of experts collects information and analyzes current and future deforestation trends, placing particular emphasis on understanding key sectors affecting land-use change (Table 1). In Ucayali, emphasis was given to smallholders and large-scale agricultural expansion of oil palm, cocoa, livestock and to road-building – development activities that are at the center of current and future major land-use change in the region.

2. LUWES requires the selection of planning units (zones). In the case of Ucayali, past land use/land cover (LU/LC) changes and related emissions were estimated based on the management categories of the Forestry registry (Forest and Wildlife Law 22308), including forest concessions and protected areas, as well as indigenous and private lands. Land that did not belong to any category and without a fully settled tenurial arrangement was categorized as undetermined (“undeterminado” in Spanish).
3. An analysis of past LU/LC change and its consequences for carbon stocks is conducted in order to establish a historical baseline. This step in Ucayali was carried out using ABACUS software, a tool for estimating emissions, analyzing trade-offs between emissions and livelihoods gains (opportunity cost analysis) and developing scenarios for zone-specific policies and strategies (Harja et al., 2011).

4. Future development scenarios are defined, based on regional planning documents, surveying experts in the main economic sectors and a negotiation process among participating stakeholders. In Ucayali, scenarios identified include initiatives to create major new transportation corridors, expand palm oil area, convert degraded pastures to agroforestry and silvopastoral systems and limit deforestation through the identification of institutional instruments (e.g., regional conservation areas, concessions for conservation that reduce the conversion process, in particular over the indeterminado land).

5. Trade-offs between environment and livelihoods impacts are examined under the different scenarios identified in the previous step.

6. Final review and refinement is carried out — with the participation of decision-makers — of all the information and analysis mentioned above in order to identify and prioritize policies, investments and actions for reducing emissions.

Table 1. Data, information and preparatory work carrying out the LUWES approach.

<table>
<thead>
<tr>
<th>Data of information needed</th>
<th>Preparatory work</th>
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</thead>
<tbody>
<tr>
<td>Time series of land-use maps</td>
<td>Spatial overlay; land-use change matrix development</td>
</tr>
<tr>
<td>Planning unit and regional plan maps</td>
<td>Create unified planning units covering study area</td>
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<tr>
<td>Agriculture, livestock and forest data surveys</td>
<td>Prepare detailed assessment of current conditions</td>
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<tr>
<td>C stock and emissions factors data from surveys</td>
<td>Estimate C and emission fluxes for each land-use system</td>
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<tr>
<td>Economic and land-use activity data</td>
<td>Estimate net present value (NPV) of each land-use</td>
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<tr>
<td>Socioeconomic and demographic data</td>
<td>Estimate impacts of population growth, migration and other factors on emissions</td>
</tr>
<tr>
<td>Governance, land tenure and public policy data</td>
<td>Given the governance and policy environment, estimate potential climate change mitigation actions</td>
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</tbody>
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Key outcomes of the analysis

Two important outcomes of the LUWES analytical approach are (1) an evaluation of trade-offs between livelihoods and greenhouse gas emissions and (2) an analysis of future emissions for each of the alternative development scenarios.

Opportunity cost analysis can tell us the livelihood benefit to the farmer and the level of emissions for any and all land-use changes (White and Minang, 2010). An opportunity cost curve is a visual summary of the costs associated with foregoing current land-use practices and helps identify the land-use changes that cause most emissions within a region (Figure 2). ABACUS software calculates the profits forgone of different land-use changes in terms of tons of CO₂ equivalents emitted or sequestered. The measures can be used to identify levels of fair compensation required within a payments for environmental services (PES) scheme for REDD.

To determine the economic logic and viability of policy initiatives, analysts can evaluate these costs of avoiding emissions in the context of international carbon prices. Lands with low opportunity costs have an economic justification to be incorporated into plans for emissions reductions, although social, cultural and food security decision criteria may affect policy priorities, especially in the case of smallholders.

LUWES workshop participants created opportunity cost curves for selected provinces within the region and for different scenarios. The curve shown in Figure 2 includes all land-use change transitions with their opportunity costs and level of emissions, according to each land-use planning unit. Along the X-axis, colored bars and labels show that most emissions came when forests were converted to pastures or crops in lands without fully settled tenure (indeterminado in Spanish), in indigenous lands and on private lands. Along the Y-axis, the great majority of land-use transitions had opportunity costs of around $10 per ton of CO₂ emitted. While this analysis does not include the cost of setting up REDD programs, it does suggest that there is some scope for developing incentives to promote alternative land uses that would reduce emissions.

Figure 2. Opportunity cost curve for land-use changes by planning unit in the Padre Abad Province.

Figure 3. Proportion of emissions by land-use planning units in Coronel Portillo province (2005-2010). In Ucayali, most land-use changes and emissions occur in land with uncertain tenure (indeterminado), followed by the titled private land (Predios), indigenous lands (Comunidades Nativas), forest concessions under bid (Concesiones Forestales en Concurso), regional conservation areas (Áreas de Conservacion Regional), community reserves (Reserva Comunal) and others.

A second important outcome of the LUWES process is the development of estimates of future emissions based on development scenarios identified by the project participants. The process starts with an estimate of historical emissions from the remote sensing-based maps of past land-use change (Figure 3).
In the Coronel Portillo province of Ucayali, half of all the emissions between 2005 and 2010 occurred in the areas with unsettled legal status (indeterminado), followed by private lands (predios) and lands in indigenous communities (comunidades nativas). These findings suggest that successful reduction strategies will need to address problems related to land settlement, such as migration, land tenure and the process of land titling, which often encourages forest conversion.

Future emissions scenarios can be projected by using the historical baseline of land-use changes and information on projected future changes (Figure 4; GOREU, 2012). Future scenarios can emphasize: (1) the historical baseline of a business as usual scenario, (2) efforts to reduce deforestation and forest degradation (REDD), including restocking carbon (REDD+), (3) the REALU approach working across the whole landscape or any other scenario relevant to the local context. The Ucayali workshop participants used these and other scenarios to represent distinct government policy strategies and model the associated impacts on particular agricultural sectors. For example, they considered the effects on carbon emissions of new oil palm plantations replacing pastures or replacing forests. They also modeled the impacts on emissions of establishing silvopastoral systems – combinations of improved pastures and trees that sequester carbon and increase livestock productivity. Once the LUWES platform is set up as described above, any number of scenarios can be evaluated for land use and development planning. The partners in Ucayali now have the challenge of improving the input data and developing more detailed analyses for strategic sectors of the economy.

Policy message: the way towards low-emissions development

Planning for emissions reductions with a landscape approach requires determining the potential impact of ways to reduce land-use based emissions from all land uses. The work in Ucayali showed that lands outside of legally classified forests contribute the most emissions and thus have the greatest potential to mitigate emissions. Low-emissions development will require improvement in current land-use planning and governance practice spurred by (1) increased quality and accessibility of spatial data and statistics about land uses in particular over the post-deforestation lands, (2) increased transparency and coherence of land-use decision making and land governance processes across sectors and institutions and (3) political will to promote changes in land management practices across institutions and stakeholders, including the private sector.

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References


