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**Global Climate Change:
Carbon Reporting Initiative**

***Deliverable Yr6-1: Estimating Effectiveness in the USAID
AFOLU Carbon Calculator***

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report



Estimating Effectiveness in the USAID AFOLU Carbon Calculator

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TABLE OF CONTENTS

Introduction And Background	5
Forest Protection Tool	6
Reforestation and Agroforestry Tools	11
Annex 1 – Comments from Peer Reviews and Responses	14
Annex 2 – Background and Examples of USAID Forest Protection	24

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INTRODUCTION AND BACKGROUND

Throughout the world, USAID land use and land management activities are having direct, significant and positive impacts on the climate. USAID's forestry-related programs in more than 119 countries help to mitigate climate change by decreasing the concentration of greenhouse gases in the atmosphere. By increasing carbon stocks stored in forests and preventing the conversion of forests to other land used, USAID forestry-related activities increase removals and decrease emissions of the greenhouse gas carbon dioxide (CO₂). The impacts of these activities are real, but until now many of these projects have not had the ability or tools to translate these impacts into reportable, quantitative measures of carbon benefits. Through this cooperative agreement, the Ecosystem Services unit of Winrock International is developing the AFOLU (Agriculture, Forestry, and Other Land Uses) Carbon Calculator (AFOLU-CC) for the USAID Global Climate Change Program's that will enable USAID for the first time to systematically estimate specific CO₂ benefits of all its land based programs.

The AFOLU-CC applies a combination of default values and user-defined inputs to estimate the carbon benefit of forestry-related activities including forest protection, forest management, afforestation/reforestation, and agroforestry. The calculator has two levels. Level A, the default level, requires minimal data input. The user enters only the geographic location (at the administration level), the project area, and an "effectiveness rating" for project activities. In Level B, the user may enter additional project-specific data, if known, such as information on local deforestation rates or carbon stocks in the project area.

The effectiveness rating of the forest protection, afforestation/reforestation and agroforestry tools within the AFOLU-CC is a measure of the success of project activities in achieving their aims and successfully preventing GHG emissions or increasing GHG removals from land use and land use change. For example, for an avoided deforestation project to be considered 100% effective, it would successfully prevent 100% of projected baseline deforestation in the project area, in effect reducing the rate of deforestation in the project area to zero and avoiding 100% of potential emissions caused by deforestation. Equally, for a forest restoration project to be 100% effective all the trees would have had to be successfully planted and to have survived and grown optimally. Therefore the estimate of the quantity of carbon benefits generated by a forest protection, afforestation/reforestation, or agroforestry project in the AFOLU-CC is significantly impacted by the user-approximated effectiveness of the project

activity. There is no project effectiveness rating for the forest management, cropland management, or grazing land management tools – these activities are either implemented or not implemented, with no scale of success in terms of implementation.

In the existing AFOLU-CC, minimal guidance was provided to the user regarding the determination of the effectiveness rating and thus the effectiveness rating applied by users was largely subjective. To address this perceived weakness, decision assessments have been developed to provide explicit guidelines for generating an effectiveness rating for forest protection and afforestation/reforestation activities. The assessments are flowcharts that guide the user to select a score for a few simple factors related to the implementation of critical measures to stop deforestation in the case of forest protection or mitigate threats to forest survival in the case of afforestation/reforestation and agroforestry. After the user scores these factors, an overall effectiveness rating is automatically calculated in the tool. This report outlines the rationale behind the effectiveness rating decision assessment tools for the forest protection tool (deforestation) and the afforestation/reforestation and agroforestry tools and provides guidelines for their application within the AFOLU-CC. A draft of the effectiveness rating tool was peer reviewed (see acknowledgements) and revised in response to the reviews—the comments and responses are given in Annex 1.

FOREST PROTECTION TOOL

Project activities designed to protect forests against deforestation must result in a reduction in emissions that would have been caused by conversion of forest to non-forest land. Such activities must address the local causes or “drivers” of deforestation. USAID projects fund activities that seek to ameliorate or prevent causes of deforestation. However, just because programs that protect forests are in place, it does not mean that the programs are actually effective in achieving forest protection.

A fully protected forest would have no deforestation, that is, all of the baseline deforestation would be halted. For large protected areas this is often not practically possible, instead the forest protection activities will be partially effective, resulting in the prevention of some but not all of baseline deforestation.

The design of the AFOLU-CC is to allow its use and the resulting greenhouse gas estimation by non-expert users and users with limited data. In fitting with this design the effectiveness assessment asks simple “yes/no” type of questions that the user will be able to answer, leading to an output of percentage effectiveness of the activities in preventing baseline deforestation.

Winrock reviewed recent and ongoing USAID projects aimed at stopping deforestation to identify the main drivers addressed, and measures implemented to address them (Annex 2). We determined that globally, although various activities are implemented by USAID forestry-related programs, USAID country missions and partner organizations implement projects to address deforestation resulting from one or more of the following primary drivers:

- unclear or insecure land tenure/land use rights,
- inadequate enforcement of applicable laws, and
- lack of alternative economic opportunities leading to exploitation of forest resources and conversion of forest to other uses by local populations and migrants.

However, forest protection projects implement measures at different levels to address these issues depending on the goals of each project. Projects aimed at protecting discrete areas of forest implement measures to address these issues at the local level. Primary measures implemented by USAID projects to address these drivers at the local level are: assistance to individuals and communities to secure legal land tenure and land rights, capacity building for local groups to improve forest monitoring and enforcement of forest protection laws, and development of targeted alternative livelihood programs to reduce pressure on forest resources.

USAID projects and project activities with the broader objective of supporting capacity building and policy strengthening to enhance the development of the forest sector at the regional and national level, ultimately protect forests, albeit indirectly. However, the effectiveness decision tool is applied to projects that implement direct measures to protect forests at the local level.

The Decision Assessment for Determination of Forest Protection Effectiveness

The forest protection effectiveness assessment consists of four questions that should be answered easily by users of the AFOLU-CC. The answers are scored and the results are used to calculate the percentage effectiveness. The forest protection effectiveness assessment tree (Figure 1) illustrates the concepts discussed in this section, the proposed questions, and scoring criteria.

At the broadest level the questions ask about the existence of:

- land tenure or land use rights programs
- forest land protection measures, such as forest guards
- alternative livelihoods for forest dependent and forest adjacent people that may be impacted by forest protection activities
- macro-level market impacts of the project

The assessment considers land tenure/land use rights as the overarching question in the determination of forest protection effectiveness. If such programs are in place, then communities living in and around forests that depend on them for their livelihoods will likely have the incentive to maintain the forests and therefore their livelihoods will be intact; the only remaining reduction in carbon benefits would be the market impact of the absence of commodities such as food, fuel, or fiber that would have been produced in the baseline. However, we must additionally ask if the forest is being physically protected (e.g. with guards), and if alternative livelihoods have been developed for baseline land users to prevent deforestation outside the project area. This is especially important in the absence of significant tenure and land or forest user rights programs.

Total effectiveness is calculated as the product of the proportional values resulting from each of the questions.

Where monitoring of deforestation in the project area occurs AND leakage is directly assessed users will be allowed to enter their own effectiveness number which should be equal to the calculated proportional leakage.

Detailed explanations and guidance for the assessment

- 1. Does the project involve assisting individuals and communities to secure legal land tenure/land use rights?**

For land tenure or use rights policies to have a significant impact it is not necessary that every household or even every community participate. However, we consider significant participation in land tenure or use rights programs necessary to remove incentives for future deforestation and mitigate leakage from prevented deforestation. Here we focused on communities within the protected area or arbitrarily within 1 km of the protected area with the expectation that these would be the communities with most direct impact on baseline deforestation in the project area. The requirement for 75% of the communities to have programs is also arbitrary, but represents a clear majority and prevents the need for detailed population assessments.

- 2. Is an effective means of enforcing forest protection present within three hours of all access**

points to the project area?

Clearly deforestation can only occur in accessible areas of forest. This is true just for getting people to the site to cut down trees, but even more so because deforestation often is for commodity production or extraction, both of which need access to markets. Access points are typically roads or rivers leading into or adjacent to forests.

Guards must also have the capability and authority to physically protect the forest. In order for protection of forested areas by guards to be real we assume guards must be able to reach areas they are protecting within half a day by whatever is their common form of transport (e.g. by foot, car, boat, or a combination).

For the assigned proportional values we divided effectiveness into 25% increments to provide a relative indication so that if guards can reach all accessible areas a 100% value is achieved, for a majority 75%, for half 50% and for a minority 25%.

3. Are alternative livelihood programs in place over 95% of communities in and around the project area?

To require alternative livelihood programs in every single community in order to make the claim that project emissions and leakage are effectively prevented is overly onerous. The omission of few distant, low populated or hard to reach communities should not automatically result in a significant effectiveness deduction.

Here we state arbitrarily that 95% of communities should be included to omit leakage or project emissions, with the 5% not included being considered insignificant, that is, the activities of only 5% of the communities do not significantly total impact emissions reductions. Communities are considered rather than population for ease of making the assessment.

For the assigned proportional values we divided effectiveness into 25% increments to provide a relative indication. So that if programs are in 95% or more of the areas a 100% value is achieved, for a majority 75%, for half 50% and for a minority 25%.

4. Would the process of deforestation have led to the production of a commodity (e.g. timber, fuel wood or agricultural produce) that would have supplied national or international markets?

The focus is on national and international markets because any decrease in effectiveness (due to leakage) for supply to local markets shall be captured through the focus on tenure programs, alternative livelihoods and guarding of forest resources. If the implementation of project activity causes a reduction in goods to market (e.g., fuel wood, charcoal, wood products, or agricultural products), then the impact on market signals, and resulting emissions or “market leakage”, must be estimated. The idea is that a reduction in the supply of the commodity will increase the price of that commodity, causing an overall

increase in production. The question is whether the effect of commodity markets will cause increases in deforestation elsewhere in response to the project. Thus it is a yes or no question.

Where the answer is yes the deduction is 40%. And if no then there is no deduction. The 40% reduction is derived from the default market effects deductions applied by the Verified Carbon Standard to forest protection against deforestation projects. Where market effects leakage is expected and is expected to occur to areas similar to the project area the deduction is 40%.

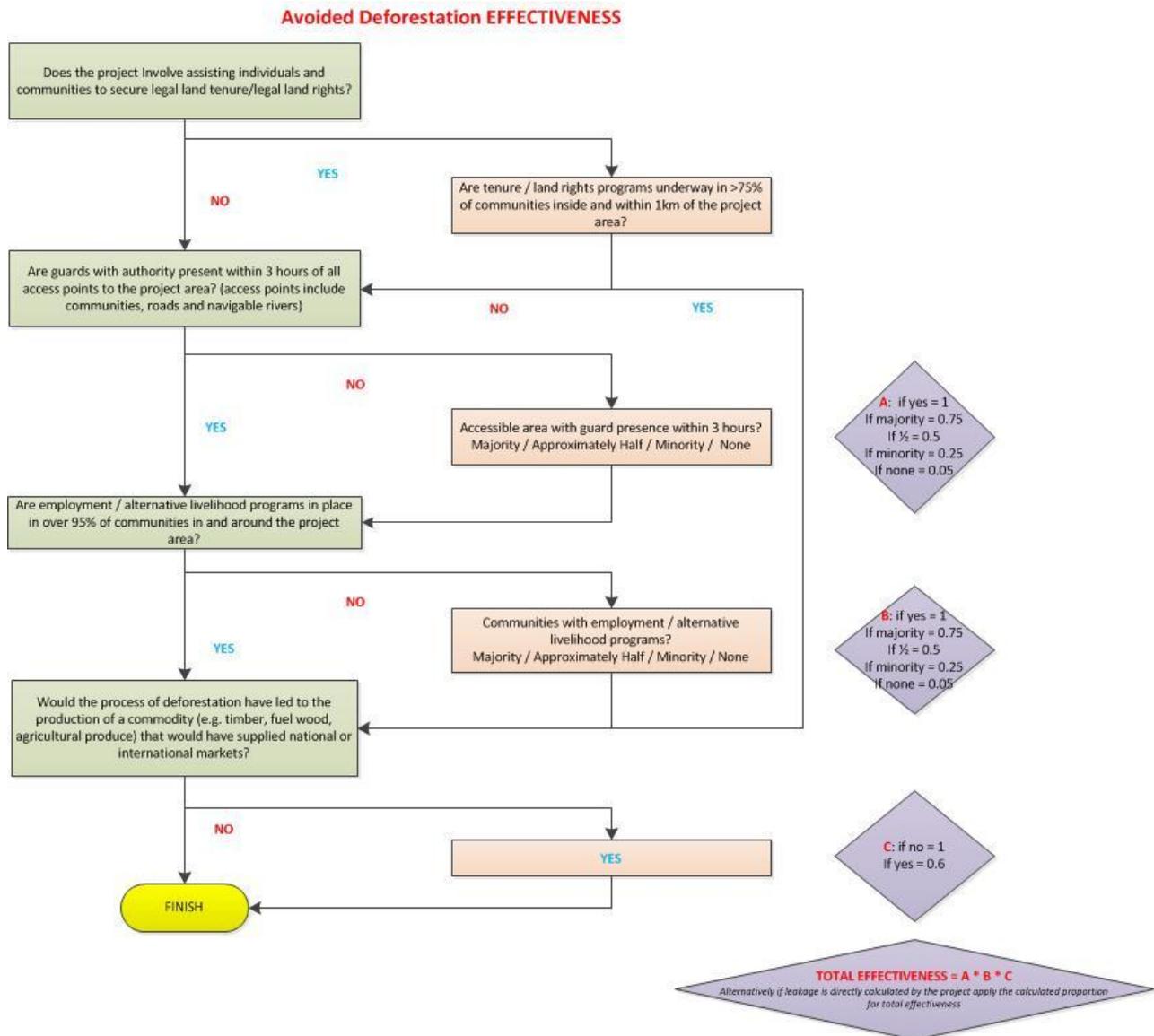


Figure 1. The forest protection effectiveness assessment tree

REFORESTATION AND AGROFORESTRY TOOLS

Reforestation and agroforestry projects can be less effective than anticipated due to planting less than the original plans, or through subsequent damage or mortality of planted trees.

The Decision Assessment for Determination of Agroforestry and Reforestation Effectiveness

The agroforestry and afforestation/reforestation effectiveness assessment tree (Figure 2) illustrates the key concepts, the proposed questions and scoring criteria. The effectiveness assessment examines three potential areas for decreased effectiveness by asking:

1. Has the entire planned area been planted and 90% seedling survival rates been achieved? For forest areas restored through natural regeneration, is 90% of the restored area regenerated?
2. Have natural disturbances decreased potential carbon sequestration (rain, wind, fire, disease, etc.)?
3. Have human or livestock trespasses decreased the potential for carbon sequestration?

In each case the assessment asks for the significance of the impact and applies a factor, which is a proportional value. The factors from the three questions are multiplied together to give a total effectiveness percentage.

Where direct monitoring of the growth of new trees is in place, effectiveness will be considered to be 100% (all planting failures and disturbances will be captured through monitoring). In addition, users will have the ability to overwrite the estimated effectiveness if more precise estimations are known.

Detailed explanations and guidance for the assessment

1. **Has planting/natural tree regeneration been completed?**

Here we divide effectiveness into 25% increments. So that if planting/establishment is completed a 100% value is achieved, for a majority 75%, for half 50% and for a minority 25%.

2. **Has the area experienced landslides, fire, drought, or flooding sufficient to cause tree**

mortality?

For the impacts of natural disturbances, a minor impact will be apparent but will likely have minimal to no impact on the total effectiveness of the agroforestry and forest plantation/restoration activities. So a minor disturbance is given just a 10% effectiveness deduction. A moderate impact is not expected to lead to the mortality of half the trees or a major impact to lead to the mortality of all the trees. Arbitrarily here a moderate impact is given a 40% deduction and a major impact a 70% deduction.

3. Have human influences impacted the planting such as vandalism, livestock incursions, inappropriate harvesting of fuelwood or coppicing etc.

For the impacts of human disturbances a minor impact will be apparent but will likely have minimal to no impact on the total effectiveness of the agroforestry and forest plantation/restoration activities. So a minor disturbance is given just a 10% effectiveness deduction. A moderate impact is not expected to lead to the mortality of half the trees or a major impact to lead to the mortality of all the trees. Arbitrarily here a moderate impact is given a 40% deduction and a major impact a 70% deduction.

4. Have management practices been sufficient to achieve full growth rates and full carbon sequestration potential?

Tree plantings will not achieve their potential growth rates and therefore potential for carbon sequestration because of no/poor management. This will typically be poor weeding or thinning practices. Arbitrarily here the answer will yes/no with no leading to a 25% deduction and yes leading to no deduction.

Where a project monitoring system is in place that determines survival and growth of trees and associated carbon stocks effectiveness shall be considered to be 100% with all biomass losses and departures from expected growth curves captured by the monitoring system.

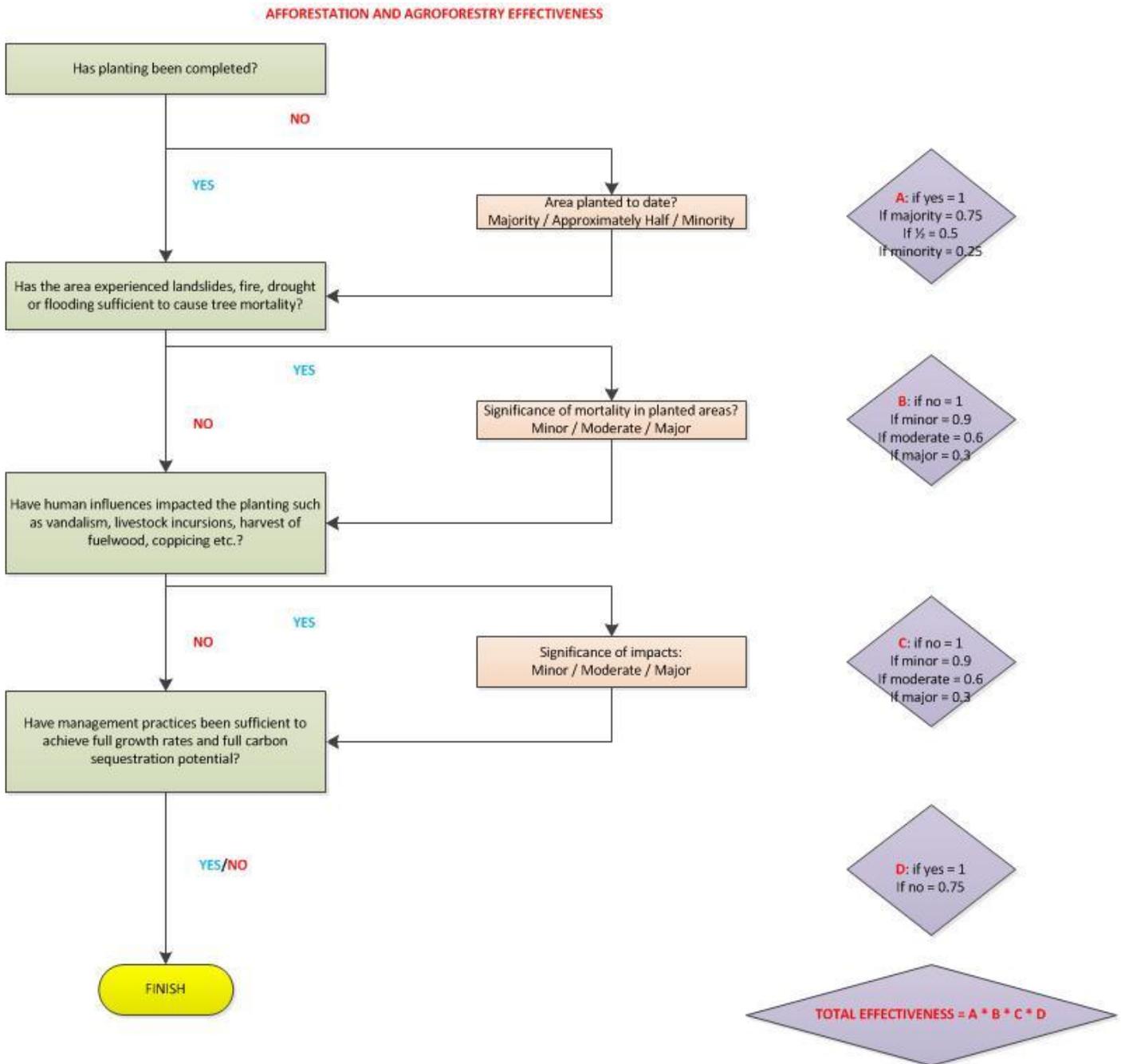


Figure 2 agroforestry and forest plantation/restoration effectiveness assessment trees

ANNEX 1 – COMMENTS FROM PEER REVIEWS AND RESPONSES

Reviewer	Document Section	Reviewer Comment	WI Response
A	2	<p>I think that first need to check if a system for monitoring results is in place.</p> <p>I also think there needs to be a framework to decide at what point in the process of project/program development versus implementation a project is in. Need to clarify for many programs the 1st year or 2 may not represent any qualifiable reductions if the program is still in development.</p>	<p>We are going to give projects the ability to add in their own effectiveness number with the guidance that if they are directly tracking land use change and leakage then the effectiveness should be equal to the calculated leakage.</p> <p>For the second point in the agroforestry/afforestation tool the questions directly get to this. They ask the proportion planted and effectiveness will be proportional to percentage planted. Beyond this we want to provide clear guidance to the calculator as a whole that if programs have not yet been implemented on the ground the calculator should not be used.</p>
A	2	<p>I am not sure that it makes sense to try to establish some arbitrary distance or percentage involvement. I think it might make more sense to require an assessment of community engagement - the setting of a goal that makes sense in the local context and a way to check if involvement was achieved.</p>	<p>To us this seems to depart from the purpose of the calculator. We are developing a means for determining emissions and emission reductions by non-experts. If users are required to have an understanding of greenhouse gas accounting and potential leakage then it sets the bar significantly higher. Users will be allowed to override the effectiveness assessment and we can provide guidance here on the situations in which explicit additional knowledge will make this the correct approach.</p>
A	2	<p>I am not sure if focusing on a single factor such as guards make sense. I think some of these factors should perhaps be more generalized. The correct actions should be based on current threats.</p>	<p>The single factor of guards was chosen for simplicity. Regular patrolling has been demonstrated to reduce deforestation.</p> <p>The assessment is designed to allow forests with various protection</p>

		Present of guards might be appropriate for some. Community involvement in others. Enforcement to stop illegal timber trade in another. In each case an appropriate mechanism for protection should be identified and confirmation that it is in place needs to be part of effectiveness.	measures in place to be assessed so that if community involvement exists then the presence of guards is not considered. If there is no commercial production then market impacts are not considered.
A	3	I think that this level of guidance generally makes more sense than the approach for forest protection.	There is significant difference between afforestation and avoided deforestation. Avoided deforestation is much more challenging to assess effectiveness because cause and effect are less direct. You plant trees and they grow vs you put in place programs and expect there to be a decrease in deforestation.
A	3	I think this is another place to verify if there is some monitoring system in place. For programs just getting started the types of guidance developed here are what may be used as guidance to include as a basic level of monitoring.	We have added the criterion that if a monitoring system is in place effectiveness shall be considered to be 100% with all changes captured by the monitoring results
B		Are alternative livelihood programs in place over 95% of communities in and around the project area? Could go beyond the coverage percentage of the alternatives and try to compare whether the livelihoods promoted is more or less profitable, this could be measured on scales.	This in our opinion introduces a level of complexity that is beyond what can be included in the tool.
B		Would the process of deforestation have led to the production of a commodity (e.g. timber, fuel wood or agricultural produce) that would have supplied national or international markets? Ranges could be improved by applying the percentage varying according to the increase in revenue to provide access to markets. These comments are based on the principle of the importance that promote alternatives to compete with the improper use of forests in economic terms.	This in our opinion introduces a level of complexity that is beyond what can be included in the tool. For expert practitioners we are adding the capability to override the effectiveness value with one calculated externally.
B		The value of carbon should also be evaluated for effectiveness.	We don't agree. The value of carbon will not itself influence effectiveness. It may do so indirectly by influencing the motivation of stakeholders to

			protect areas. The value of carbon will impact the profitability of activities and the likelihood of activities being implemented but the prime purpose at this time is to assess the effectiveness of USAID investments and activities already underway and therefore not directly influenced by carbon price.
C	2	They may have the incentive but they may not have the capacity or channels for legal recourse to stop illegal logging.	This forest protection tool assumes that communities with land use rights will have the incentive to stop illegal logging and that guards will have the authority to do so. The complexity of country by country variation in the economics of illegal logging is beyond the tool.
C	2	I think you have to ask this regardless of the tenure program status	Have edited text – these questions must additionally be asked and are especially important in the absence of significant tenure and land or forest user rights programs.
C	2	“For land tenure policies to have a significant impact it is not necessary that every household or even every community participate. Given that we wanted to determine situations where land tenure programs will remove incentives for future deforestation or for leakage from prevented deforestation we wanted very significant participation.” – Second sentence contradicts first sentence.	Sentence has been edited: “However, we consider significant participation in land tenure or use rights programs necessary to remove incentives for future deforestation and mitigate leakage from prevented deforestation.”
C	2	More important than location and ability to mobilize is both the political will for them to do so as well as their supervision and commitment ---how many forest guards live in town and do not ever get to the forest? Gives us foresters a bad REP!	We can't get into great complexity. Guidance will make clear that for guards to be considered they must be effective.
C	3	Is the density of tree crops a factor---seems like you could have tremendous variance in carbon pools depending on ag/forestry system used	We assume here the planting of closed forest for afforestation. For agroforests density will be lower and in the new iteration will be based on agroforest system: eg silvopasture vs fruit tree plantation etc.
D	1	Only dealing with or interested in CO2. No other AFOLU based GHGs (ie methane?)	Only include CO ₂ here – the calculator doesn't address non-CO ₂ emissions from A/R and avoided

			deforestation activities. Added text to clarify that forestry-related programs increase removals/decrease emissions of CO ₂ by increasing forest carbon stocks and preventing conversion of forests to other land uses.
D	1	Is it only CO2	Yes, the calculator only calculates CO ₂ benefits.
D	1	I am making the assumption that the reader of this report is familiar with the structure of the Carbon Calculator. If the reader is unfamiliar with the calculator some introductory text would be needed to explain Effectiveness rating and the 'Tools'	It is assumed that the reader of this report is familiar with the structure of the carbon calculator. Some additional text describing the overall structure of the calculator has been added however.
D	1	Why nothing on forest management	Effectiveness rating is not an input to the forest management tool. Moved text to this section of the report explaining why there is no effectiveness rating for forest management, cropland management, or grazing land management tools.
D	1	Would be nice to have a final paragraph to outlines the aim of this report – or what the reader needs to do as a result of this report.	Added text to end of this section describing the aims of the report.
D	2	"the activities" – which activities are we talking about here? What about "forest protection activities"?	Edited text to read "forest protection activities"
D	2	"Proportionally effective" – I know what you mean, but not sure 'proportionally effective' is the right term. And can't think of a better term right now either.	Changed "proportionally" to "partially"
D	2	"Fitting with the design"? Not sure what you mean – is it "In fitting with the simplicity of the AFOLU Carbon Calculator design, it is proposed that an effective assessment ask simple 'yes/no'...."	We have clarified. The calculator is designed to be simple so it can be used by nonexpert practitioners and by users with limited data.
D	2	While this list is very high level, it would seem very short. Infrastructure development is another big one across here – roads and hydro.	Added text to clarify that various activities are implemented by USAID forestry-related programs, but most activities in some way address the primary drivers described in the report.
D	2	Does this mean the effectiveness tool is therefore not applicable for a policy and/or	Yes this is correct – the forest protection tool is applicable to

		capacity building program?	projects that implement specific measures to protect forest areas with explicit spatial boundaries.
D	2	“Displaced people” – we don’t have displaced people any more do we. I thought we had moved well away from displacing people. Can I please suggest “Alternative livelihoods for forest dependent and forest adjacent people”	“Displaced” is a bit of carbon project jargon. It refers to people that may experience impacts on their socio-economic well-being as a result of project activities. For example, immigrant farmers who are no longer able to deforest a protected area of forest may go elsewhere to deforest. Have changed text to “forest dependent and forest adjacent people that may be impacted by forest protection activities”
D	2	Can an example be provided here. Virtually all alternative livelihoods work is linked to new markets or improved market access to new projects. Or are you referring to macro level market impacts on forest resources. If so a ‘project’ at the local level has very little ability to influence.	This text refers to macro-level market impacts. The accounting of macro-level market impacts of projects is required by carbon project development standards, even if the impact of an individual project is small. This is because the macro-level market impact of all carbon projects could be very large.
D	2	While I don’t disagree with this statement, helping communities gain legal tenure is a huge task. Forest protection is generally based public lands administered by a govt, such as a National Park. Communities will not get ‘tenure’ to this land. They may get some de jure use rights (statutory rights) and will certainly have de facto rights. Therefore I would suggest that a land use planning process that quantifies these rights is probably more important than tenure programs – for a USAID ‘project’. Working in Laos and Vietnam is influencing this response. PNG is completely different – communities ‘own’ 97% of PNG land, but again it is a forest and land use planning process that is more important than statutory land tenure. Basically tenure is highly contested and it is the programs to define and understand this	We take the point and thank you. We have edited throughout to not focus just on tenure but also on land use rights.

		contested relationship that seem to achieve some success.	
D	2	Market incentives for 'illegal logging', small scale 'legal logging' or collection of NTFPs	This is a form of leakage. If commodities are produced in the absence of the project then the market demand for these products could lead to deforestation elsewhere to satisfy the demand.
D	2	Please note comment above about difficulty in obtaining legal land tenure.	Changed to tenure/land use rights
D	2	If there is a protected area – there is a land tenure policy in place. Therefore it is not the policy, but the use rights (de facto and de jure) that will be impacting on deforestation rates.	Changed text: "For land tenure or use rights policies to have a significant impact..."
D	2	"Given that we wanted to determine situations where land tenure programs will remove incentives for future deforestation or for leakage from prevented deforestation we wanted very significant participation." – confusing sentence	Edited sentence. Text now reads "However, we consider significant participation in land tenure or use rights programs necessary to remove incentives for future deforestation and mitigate leakage from prevented deforestation.
D	2	Even defining an 'access' point to a protected areas is difficult. I would suggest simply asking – "Is there an effective forest protection policy and guarding system in place". It is more subjective, but perhaps easier to respond to. The issue of access is important – but the issue to actually enforce regulations is even more important. Often illegal loggers are not reported or fined, their equipment not confiscated, their snigging tracks not disrupted, their profits not confiscated. So access is important, but effective policy/regulation implementation is equally important.	Added text – "Access points are typically roads or rivers leading into or adjacent to forests." We have been trying to remove subjective elements.
D	2	"considered de minimis" – what does this mean	De minimis is carbon project jargon. Changed text to: "...with the 5% not included being considered insignificant, that is, the activities of only 5% of the communities do not significantly impact emission reductions.
D	2	The problem with this statement is that any	Yes. We are trying to systematically

		<p>forest product starts the value chain in a local market. Some of it will be consumed here and some will be sold or moved into national and even international markets. Mushrooms harvest from a protected area – some will be eaten locally, be sold by the road or in a local market, or sold to a broker for distribution nationally.</p> <p>Timber is easier to define its market, but trying to segregate local, national and international is difficult.</p> <p>I also have problems understanding the logic chain here. The Tenure, livelihoods and guarding programs are all to stop illegal logging – regardless of whether it is for a local, national or international market.</p>	<p>capture the shifting of practices by users in the baseline, illegal encroachment and market impacts on commodities derived or potentially derived from the forest.</p> <p>Our focus is on national and international markets as local market effects can be more directly captured through the forest guards and through the alternative livelihoods.</p>
D		<p>For that very first question – I would possibly suggest “Is the legal tenure of the forest area clear and uncontested”.</p> <p>Then I would ask “Is there a RECOGNISED land use planning process underway to define use rights for the forest by communities inside and within 1km of the forest” I have highlighted the term RECOGNISED as this in itself is contested – recognised by who? Generally the Govt.</p> <p>To further complicate this, there are distinctions in most countries between protected areas (under Min. Natural Resources), Protected Forest (under Dept Agric and For), Special Use Forest and Production Forest. While this may actually not play out in this simple decision support tool and particularly on question of tenure – it becomes a little more difficult when talking about guarding and livelihoods.</p>	<p>We realize the complexity when specific on-the-ground scenarios are encountered. We have changed the language to be land tenure/land use rights so that the focus is not specifically on fully defined legal land tenure.</p>
D	3	<p>A strange little sentence. What about simply “Reforestation and agroforestry projects can be less effective than anticipated due to....”</p>	<p>Edited text: “Reforestation and agroforestry projects can be less effective than anticipated due to planting less than the original plans, or through subsequent damage or mortality of planted trees.”</p>

D	3	<p>But this addition is based on planted seedling stock. Natural regeneration in a forest restoration program will be different. Therefore you may have to adjust this question to pick up natural regeneration projects as well.</p>	<p>Edited text: "Has the entire area been planted and 100% seedling survival rates been achieved? For forest areas restored through natural regeneration, is 100% of the restored area regenerated?"</p>
D	3	<p>I think you need to break this down into 2 sub questions:</p> <ol style="list-style-type: none"> 1. Has the area been planted? 2. What are seedling survival rates at end of year 1? <p>The incremental values provided could equally apply to both questions.</p> <p>Again I have difficulty in articulating a question based on natural regeneration in a forest restoration program.</p>	<p>We did attempt to do this. The first question is planting/natural regeneration, the following questions look at survival either due to natural or anthropogenic causes.</p>
D	3	<p>I don't believe you need to provide a scale for this question. It is easy to assess – What percentage of trees have died after the natural disturbance: 0-25%, 25-50%, 50-75%, 75-100%.</p> <p>This is a simple assessment and therefore makes the scoring very simple.</p>	<p>The scale makes things more simplistic, and avoids potential subjectivity.</p>
D	3	<p>I have added the term 'inappropriate' because an agroforestry plantation is meant to be harvested or coppiced or managed as some stage. This 'correct' management should be factors into the baseline – it is the 'incorrect' management we want to pick up (I assume).</p> <p>Livestock incursions may also be part of the agroforestry management system as well. I like the original question better for the heading: "Have human or livestock trespasses decreased the potential for carbon sequestration?"</p> <p>Because I have also asked about survival after the end of year 1 (Question 1), you may want to distinguish that this question refers to activities after year 1.</p>	<p>Thank you for this addition</p>
D	3	<p>Another important issue in assessing against an expected baseline is management practices. There are hundreds</p>	<p>Component added.</p>

		<p>of thousands of hectares of plantations scattered across Asia that will not achieve their potential growth rates and therefore potential for carbon sequestration because of no/poor management. To an extent the above questions pick this up, but I would also be more explicit about management practices.</p> <p>Q4. “Have management practices been sufficient to achieve full growth rates and full carbon sequestration potential?” Issues to consider are essentially weeding (early years management), thinning (mid years management).</p> <p>But in having said this, maximum biomass (maximum carbon values) doesn’t always equal maximum crop potential. Plantations for pulp – this link stands. Plantations for sawlogs – this link doesn’t stand. However I think it important a management question is asked.</p>	
D	Annex 1	<p>There is quite a big difference here. There are many good examples where land tenure is not allocated to communities but land/forest use rights are.</p> <p>Can I therefore please suggest that “land rights” is changed to “land and forest user rights”. I also think this sentence needs to be re-thought because of the important of use rights and the incentives that flow from these rights – which don’t always equal legal land tenure.</p>	Changed to “land tenure and/or land and forest user rights”
D	Annex 1	<p>Please note comment above that in a National Park, USAID projects (LEAF!) won’t be trying to secure legal land tenure for communities residing in those parks.</p> <p>Recognition and agreement of user rights is far more important.</p>	All references to “land tenure” have been changed to “land tenure and/or land and forest user rights” to indicate that both are important for protecting forests.
D	Annex 1	<p>A bit of narrative here on case study:</p> <ul style="list-style-type: none"> - Would be interesting to know what the total area of the Sierra Nevada de Santa Maria is? 3,000 	<p>The total area of the park has been added to the case study. Text has been added emphasizing that securing tenure/use rights for</p>

		<p>acres (1,200ha) is a small area.</p> <ul style="list-style-type: none"> - Interesting case study and I don't actually think it highlights what it needs to say. The PIP purchased 3,000 acres and set up a new reserve – great, but the case study doesn't highlight how tenure and use rights in and around the existing Sierra Nevada de Santa Marta National Natural Park reduced deforestation. - The conservation agreement seems to be in effective a land and forest use agreement. Therefore for me it is not so much legal land tenure but recognized and codified land and forest use rights. 	<p>indigenous communities mitigates deforestation: "Securing legal tenure for indigenous communities prevents colonization by immigrants and provides an incentive for good land management practices to conserve resources for future use. To ensure good land management, the land transfer was accompanied by a conservation agreement..."</p> <p>I disagree with the last comment – I think that transfer of legal land rights to the indigenous groups is critical to preventing outside groups from colonizing and also enables the conservation agreement.</p>
D	Annex 1	Last sentence in above case study needs a bit of work	Edited sentence. Text now reads: "Following the increase in patrols, the annual rate of deforestation dropped from 1.95% to 0.6% by 2010, resulting in 3,780 ha of forest saved.
D	Annex 1	I don't think this is the best example – in many of the remote areas we are dealing with employment opportunities are few. Improved agricultural opportunities are however plentiful.	Changed "provision of employment" to "improved agricultural opportunities"
D	Annex 1	This needs a bit of work. In the document we have argued that providing legal land tenure and use rights will reduce pressure on forest. Here we are saying that with land tenure pressure on forest resources will continue.	Added text: "Even if land tenure or land/forest user rights are secure, providing an incentive to conserve forest resources, socio-economic pressures may prevent forest dependent communities from meeting their needs without exploiting forest resources."
D	Annex 1	It would be really nice to also read a case study on "Would the process of deforestation have led to the production of a commodity (e.g. timber, fuel wood or agricultural produce) that would have supplied national or international markets?" – Mainly because I am still a little confused by this criteria in assessing/predicting forest protection effectiveness.	This question is getting at "market leakage" – there is nothing a project can do to mitigate market leakage caused by project activities, but it must be accounted for. Have added text to further explain market leakage in Section 2.

ANNEX 2 – BACKGROUND AND EXAMPLES OF USAID FOREST PROTECTION

The main drivers of deforestation addressed by USAID forest protection projects are described below. A case study follows the description of each driver, providing an example of the types of measures implemented by USAID to address these drivers. The effectiveness tool is applied to each case study to demonstrate how the AFOLU-CC user would input information into the tool to determine an effectiveness rating for a forest protection or agroforestry/reforestation activity. As we had access to only basic information about these projects, we used best judgment regarding certain inputs. However, project managers would be able to answer these questions easily and accurately with access to detailed information about the project

Securing Legal Land Tenure or Legal Land Rights

Many of the world's remaining forests are located in remote or previously remote areas. As a result of the distance from centers of government, land tenure and land use rights may be poorly defined or poorly enforced in remote forests. In addition, forest lands may be subject to overlapping claims to land tenure and land use rights. Infrastructure improvements increase access to forests, development of industrial-scale land uses, population growth, and conflict may further complicate the establishment of legal land tenure and land use rights by individuals and communities. When land tenure and/or land and forest user rights are not guaranteed, there is no incentive for individual forest users and communities to conserve forest resources over the long-term. Unsustainable use of forest resources and conversion of forests to land uses that are more profitable in the short-term such as agriculture or livestock production may be the result. As well, unclear land tenure and/or land and forest user rights may lead to increased encroachment and colonization by outside groups. Establishing clear legal land tenure or land or forest user rights provides an incentive for the sustainable use of forests and may prevent the unregulated exploitation and conversion of forests by outsiders. Therefore, assisting individuals and communities to secure legal land tenure and/or land or forest user rights is an important first step in many USAID projects aimed at protecting forests. This process involves delineation and legal recognition and protection of territories and land use rights. Such is the case in the Sierra Nevada de Santa Marta National Natural Park project in Colombia (Box 1)¹.

¹ Sierra Nevada de Santa Marta National Natural Park. 2008. The Nature Conservancy. <http://www.parksinperil.org/wherewework/southamerica/colombia/protectedarea/sierra.html>

Box 1. Parks in Peril: Sierra Nevada de Santa Marta National Natural Park, Colombia

With land cover varying from rainforest to snow-capped mountains, the Sierra Nevada de Santa Maria includes examples of all biomes found in Colombia and overlaps multiple indigenous ancestral lands. The main threat to the natural and cultural heritage of the Sierra Nevada de Santa Marta is deforestation for agriculture and livestock production. Since the 1950s, roughly 85% of forest in the region has been cut down, resulting in loss of biodiversity and negative impacts on water quantity and quality in watersheds originating in the Sierra Nevada.

The Nature Conservancy's USAID supported Parks in Peril (PIP) program has been working to improve management of the 383,000 ha Sierra Nevada de Santa Marta National Natural Park since the early 1990s. Recognizing the critical role of the Sierra Nevada in local livelihoods, health, and government structures, PIP identified priority conservation areas using maps overlaying critical areas for biodiversity with areas of cultural significance. PIP succeeded in purchasing 3,000 acres of priority conservation areas and in 2009 these protected lands were transferred to members of the Kogi, Arhuaco, Wiwa, and Kankuamo communities to create legally recognized indigenous reserves. Securing legal tenure for indigenous communities prevents colonization by immigrants and provides an incentive for good land management practices to conserve resources for future use. To ensure good land management, the land transfer was accompanied by a conservation agreement that ensures the ongoing protection of biodiversity within the reserves, based on a traditional system of conservation that maintains 70% of lands under forest cover with 30% of lands utilized for subsistence crops such as coffee, yucca, corn, potatoes, plantains, and fruit. Now that the indigenous reserves have been established, local monitoring systems will be designed to protect forest lands that have been designated for conservation.

Application of effectiveness tool:

The Sierra Nevada de Santa Marta Project is focused on securing legal land tenure for participating communities, therefore the AFOLU-CC user would bypass questions two and three in the effectiveness tool, and the project receives a score of 1 for inputs A and B by default. In regards to question four, we assume that the main drivers of deforestation in the absence of secure land tenure in the project area would have been subsistence agriculture and any surplus would have been sold in local markets, and thus deforestation would not have led to the production of a commodity that would have supplied national or international markets. Therefore the project receives a score of 1 for input C. The product of inputs $A \times B \times C$ is equal to $1 \times 1 \times 1 = 1$ and the AFOLU-CC user would input an effectiveness rating of 100% for the project.

More information may be found at <http://www.parksinperil.org>

Surveillance and Enforcement

Surveillance and law enforcement is an important step in protecting forest lands once legal land tenure and land rights have been established. In legally recognized properties, community lands and indigenous territories, and in lands with legal protected status such as parks and reserves, rapid detection of encroachment at key access points prevents illegal colonization and deforestation by outsiders. Therefore, capacity building to develop human resources, technology, and infrastructure to design and implement locally appropriate monitoring systems is an important component in USAID forest protection projects. Project activities aimed at improving local capacity to protect forests from encroachment from outside groups may include training of forest guards and establishment of participatory surveillance systems. Increasing forest surveillance in Tanjung Puting National Park in Central Kalimantan, Indonesia under the USAID Orangutan Conservation Services Program has effectively reduced the rate of deforestation and protected important orangutan habitat (Box 2)^{2,3}.

² USAID. 2008. Orangutan Conservation Services Program 2008 Annual Report. Development Alternatives, Inc. USAID Contract No 497-C-00-07-00016-00.

³ USAID. 2010. Orangutan Conservation Services Program Final Report. Development Alternatives, Inc. USAID Contract No 497-C-00-07-00016-00.

Box 2. Management of Tanjung Puting National Park, Central Kalimantan, Indonesia

Tanjung Puting National Park on the island of Borneo in the Indonesian province of Central Kalimantan includes dryland diptocarp forest, peat swamp forest, heath forest, mangrove, and coastal beach forest. The park is an important habitat for orangutans.

Although the primary objective of improved management of Tanjung Puting National Park under the USAID Orangutan Conservation Services Program (OCSP) is to protect threatened orangutan populations, improved patrolling, development of alternative livelihood opportunities for communities and suppression and management of wildfires to conserve orangutan habitat ultimately protects forests. Increased surveillance and enforcement in Tanjung Puting park has reduced the destruction of orangutan habitat by reducing the rate of deforestation in the park. USAID partner Orangutan Foundation International (OFI) conducts regular and intensive patrolling for illegal hunting, logging, and occurrence of fire inside and outside of the park buffer zone utilizing 16 enforcement posts. Routine patrols are implemented twice a week, though in areas adjacent to oil palm development on the park's eastern and northern borders monitoring is conducted almost daily. By 2008 the area of the park covered by patrols has increased from 50% to 70% under the OSCP program. Following the increase in patrols, the annual rate of deforestation dropped from 1.95% to 0.6% by 2010, resulting in 3,780 ha of forest saved.

Application of the effectiveness tool:

The Tanjung Puting Project is implemented in an area that has been designated as a National Park and the project does not involve securing legal land tenure or land use rights for forest users, therefore the AFOLU-CC user would move to question two. We assume that with 16 enforcement posts, guards are present within three hours of all access points to the protected area, and thus the project would score 1 for input A. We assume that employment or alternative livelihood development programs are in place in at least half of the communities around the protected area and therefore the project would score 0.5 for input B. As for the Santa Marta project, we assume that the main driver of deforestation in the project area is subsistence agriculture and the project would receive a score of 1 for input C. The product of inputs $A \times B \times C$ is equal to $1 \times 0.5 \times 1 = 0.5$ and therefore the AFOLU-CC would enter an effectiveness rating of 50% for the project activity. However, if employment or alternative livelihood development programs are actually implemented in a majority of the communities around the protected area the project would receive a higher effectiveness rating

Alternative Livelihood Programs

The implementation of alternative livelihood programs in communities in and around protected forest areas, such as improved agricultural opportunities, may be important for reducing pressure on forest resources from populations with legal land tenure or land and forest user rights as well as from outside

groups. Even if land tenure or land/forest user rights are secure, providing an incentive to conserve forest resources, socio-economic pressures may prevent forest dependent communities from meeting their needs without exploiting forest resources. In addition, the valuation of non-timber forest products and ecosystem services increases the worth of standing forests providing a disincentive for conversion of forest to other uses. Expansion of economic opportunities through programs that offer training in employment such as handicraft, ecotourism, and agroforestry, enhance the long-term sustainability of improved territorial and resource management. Alternative livelihood programs implemented under the USAID Central African Regional Program for the Environment (CARPE) have demonstrated that support to livelihoods is a necessary precondition for forest conservation (Box 3)⁴.

⁴ Yanggen, D. "The Role of Alternative Livelihoods in Achieving a People-Centered Approach to Conservation: Lesson Learned from the CARPE Program." Landscape-Scale Conservation in the Congo Basing: Lessons Learned from the Central Africa Regional Program for the Environment (CARPE). Eds. David Hanggen, Kenneth Angu, Nicodeme Tchamou. USAID. 169-179

Box 3. Alternative Livelihood Programs in the Salonga-Lukenie-Sankuru Landscape, Central Africa

The USAID Central African Regional Program for the Environment (CARPE) is a regional initiative launched in 1995 with the aim of reducing the rate of forest degradation and associated loss of biodiversity in nine Central African countries. The program works at the level of Landscapes to achieve its three main goals: the implementation of sustainable natural resource management practices, improvement of environmental governance in the region, and strengthening of natural resource monitoring capacity.

In the Salonga-Lukenie-Suruku Landscape located in the Democratic Republic of Congo and in other Landscapes targeted by CARPE activities, support to livelihoods is a necessary precondition for forest conservation. A threat based analysis of environmental degradation conducted by USAID partner PACT identified slash-and-burn agricultural as a principal conservation threat in the Salonga-Lukenie-Suruku Landscape. Communities cannot engage in forest conservation before addressing their basic socio-economic needs. Therefore PACT promoted groundnut cultivation to increase livelihood alternatives and reduce pressure on forests. The nitrogen-fixing legume was found to have high potential to grow in fallow areas already deforested, thereby minimizing communities need to deforest new areas. Planned development of small animal husbandry and fishponds programs, while targeted at reducing additional environmental threats of commercial hunting and overfishing will also reduce pressure on forests by diversifying and expanding livelihood opportunities.

Application of effectiveness tool:

The Salonga-Lukenie-Suruku Project activity is focused on the implementation of alternative livelihoods development in communities in and around forests and does not address land tenure or forest use rights therefore the AFOLU-CC user would move to question two in the effectiveness tool. The information on the project does not mention increased patrolling or law enforcement in protected areas. Based on this information the project would receive a score of 0.05 for input A. As the project is focused on alternative livelihood development we assume that alternative livelihood development activities are implemented in over 95% of the communities in and around the protected area and the project would receive a score of 1 for input B. As for the other case studies described above, we assume that the main drivers of deforestation in the project area is subsistence agriculture and the project would receive a score of 1 for input C. The product of inputs $A \times B \times C$ is equal to $0.05 \times 1 \times 1 = 0.05$ and therefore the AFOLU-CC would enter an effectiveness rating of 5% for the project activity.

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