Purus Project

Distinctive features

The Purus Project is located in the Southwestern Brazilian State of Acre alongside the Purus River. The total project area is 34,702 hectares, which is divided amongst two contiguous parcels of land that are under private ownership and has "forest without protection" status. The major agents of deforestation are the 18 communities living on the project property. They clear forest for subsistence agriculture and cattle ranching. The paving of two primary roads has greatly increased the conversion of forest to cattle pastures.

The three project proponents are CarbonCo, Carbon Securities and Moura & Rosa, the latter of which is an Acre based organization created by the landowners, and is primarily responsible for implementation of project activities and day-to-day project management.

The overarching objective of the Purus Project is to generate sustainable economic opportunities for the local communities and to implement social projects, while mitigating deforestation and preserving the project's rich biodiversity. Activities implemented as part of the project to reduce deforestation include: community outreach and education; employment of local community members as project forest guards or other project staff; agricultural extension training; reforestation and planting woodlots (to provide alternative sources of fuelwood); and sharing a portion of carbon related revenue with communities (replacing other sources of income associated with deforestation and land use). An important element of the project strategy is that Moura & Rosa will voluntarily recognize whatever area is currently deforested and under productive use by each family living on the property. On signing an MoU with the project, each family will be supported to gain legal title to a minimal parcel of land of 100 ha. Under the MoU, the families must assist in stopping deforestation and in return may receive payments for the trees they protect. Carbon revenues will flow after the 5th year of the project and will be tied to the area of forest they protect within their 100 ha.

Heading	Explanation
Locational factors	
Location	Southwestern Brazilian State of Acre, alongside the Purus River
Spatial boundaries	Project area: 34,702 ha Reference area: 2,806,476 ha (reference region for rate of deforestation; excludes project area and leakage belt) Leakage monitoring area: 32,128 ha leakage belt Leakage management area: [Includes leakage mitigation activities but size of area not provided in VCS PD]
Land cover	▪Open Forest with Palm and Bamboo ▪Open Alluvial Forest with Palm
Agents and drivers of forest cover change	Agents: Small scale/subsistence farmers (members of nearby communities and immigrant actors looking for land to convert to pasture) Underlying drivers: Paving of roads Proximate causes: Subsistence agriculture; Cattle ranching
Basic project features	
Objectives	▪Generate sustainable economic opportunities for the local communities; ▪Implement social projects while mitigating deforestation; ▪Preserve rich biodiversity.
Proponent/s	▪CarbonCo, LLC ▪Freitas International Group, LLC ▪Moura & Rosa Investments, LTDA
Tenure and Carbon rights holder/s	**Tenure** The project area (forested land) is privately owned by the proponents. However, this is not the case for all land in the Seringal Itatinga and Seringal Porto Central parcels that contain the project area. Brazilian law allows for the claim of ownership by any individual, who has been living on, and actively utilizing, a given area for at least 10 years. Some individuals have been resident in the parcels for multiple decades. The proponents do not have ownership of these areas. **Carbon rights** Carbon rights were transferred by each concession holder to Carbon Securities through a tri-party agreement.
Actors involved in project design and implementation	▪CarbonCo, LLC ("CarbonCo") - responsible for getting the certification and finance of the project; ▪Freitas International Group, LLC ("Carbon Securities") -

and their roles	promoting, encouraging and facilitating the participation and cooperation of landowners; ▪Moura & Rosa Investments, LTDA ("Moura & Rosa") - responsible for management of the project and implementation of activities to mitigate deforestation; ▪TerraCarbon LLC: Develop VCS methodologies; ▪TECMAN LTDA: Perform the Project's forest carbon inventory; ▪Other local consultants ▪Local Communities - participate in the Basic Necessities Survey (BNS); ▪Chico Mendes Institute - provide informal guidance to Moura & Rosa.	
Upfront financing	Carbonfund.org's funding, donations and grants	
Start date	23 May, 2011	
Crediting period	30 years	
	Baseline emissions	
Methodology	VM0007, REDD Methodology Modules, v1.1	
Reference data (unplanned deforestation/degradation)	Reference period: 2000-2010 Imagery: Landsat images used to produce deforestation map layer every year for the 11 years of the reference period. Google Earth imagery was used for accuracy assessment of the 2010 forest/nonforest map	
Reference data (planned deforestation/degradation)	Not applicable	
Stratification of project area	2 forest strata: ▪Open forest with palm and bamboo (FAB + FAP) ▪Open alluvial forest with palm (FAP)	
Deforestation/degradation rate and location	**Historical (unplanned deforestation/degradation):** 1.57% **Projected** 0.3875% **Likely baseline scenario** Portions of the project area are increasingly likely to be deforested and converted to pasture and cropland by small scale farmers. **Modelling procedure** ▪A deforestation map layer at the level of the state is produced annually by UCEGEO using Landsat images. These maps were used, after an accuracy assessment of the 2010 forest/non-forest map was performed using Google Earth imagery and proved satisfactory; ▪The mean area deforested across the historical	

reference period is used for each year in the baseline period as neither linear or nonlinear regressions resulted in a model with an r^2 > 0.25;

▪Dinamica-EGO was used to produce a weighted risk map of the areas within the project area and leakage belt at risk of deforestation;

▪GIS layers were analyzed under a spatially explicit modelling framework to construct future scenarios of how deforestation is best allocated in the Reference Region for Location (RRL);

▪Validation of the model is done by comparing the predicted change to actual change for the period from 2006 to 2010;

▪Multiple risk maps and the corresponding prediction maps were created for the year 2010. Each prediction map is compared to the actual map from 2010 to assess the model's performance. The measure of performance used as mandated by the methodology is the "Figure of Merit" (FOM) that confirms the model prediction in statistical manner;

▪Future deforestation was allocated to pixels on the risk map, with the highest deforestation risk values being deforested first, from which the baseline map of deforestation was produced for the project area and leakage belt.

Carbon pools	**Carbon pools included** ✓ ✗ ▪Aboveground tree biomass (palms and bamboo)✓ ▪Belowground tree biomass ✓ ▪Non-tree woody biomass ✗ ▪Harvested Wood Product✗ ▪Litter ✗ ▪Dead wood (Standing and Lying)✓ ▪Soil ✗ **Estimation method** ▪Inventory conducted to produce biomass stock estimates with a precision level not exceeding +/-15% of the mean with 95% confidence. Aboveground tree biomass is calculated as a function of DBH (cm); minimum DBH = 10cm (also for deadwood). Results are conservatively adjusted downward using a calibration factor of 0.985. Total height (i.e., height to the top of the crown) of the tallest trees in each plot was measured. ▪For palms, height and DBH measurements are used to estimate the aboveground volume of a paraboloid and then mean (species level) Amazonian palm specific gravity of 0.31 g/cm3 estimated by Baker et al., (2004) will be applied. The estimate of biomass for palms is limited to the main trunk (bole) of the palm. ▪Belowground tree biomass (Root) density is estimated at the cluster sample level applying the equation developed by Cairns et al. 1997. ▪The volume of lying dead wood per unit area is estimated from measurements along transects. ▪Estimation of standing dead wood biomass was limited to the main trunk (bole) of the tree, in which case the biomass was calculated converting volume to biomass using dead wood density classes. Volume was estimated as the volume of a cone, as specified in the VM0007 module, "Estimation of carbon stocks in the dead wood pool".
Carbon stock changes	▪Stocks of belowground biomass and dead wood are emitted from the year of conversion/deforestation at a linear rate equal to 1/10 of the initial stock annually, for 10 years. ▪Estimates incorporated into calculations for post-deforestation carbon stocks – 12.8 t C/ha for pasture; 6.0 t C/ha for cropland. 12.8 t C/ha is conservatively used as the post-deforestation carbon stock.
GHG emissions	Non-CO2 GHGs omitted (No nitrogen fertilizer application takes place in the project area in the baseline. Biomass burning and fossil fuel are conservatively excluded from accounting in the baseline).

	Net emissions without project	1,709,253 tCO$_2$e (over first 10 years)

Project GHG emissions reduction strategy	

	Scope	Avoided unplanned deforestation
	Activities	Engagement of local communities; creating project awareness; hire project managers and project staff; acquire agricultural extension services; help communities obtain land rights / delineate family areas; initiate patrols/monitors of deforestation; plant trees; share a portion of profits from sale of carbon credits.
	Leakage mitigation strategy	Project level leakage mitigation activities are largely directed toward helping small scale farmers in the surrounding communities to reduce the need to clear lands in the leakage belt through community outreach and education; potential employment as project forest guard or other project staff (replacing other sources of income associated with deforestation and land use); agricultural extension training will help baseline agents to increase productivity on current lands, (thus reducing the pressure to expand their farms in the adjacent forest); and reforestation of select non-forest areas.
	Non-permanence risk mitigation strategy	Encroachment: The Project employs forest patrols to prevent encroachment by outside actors into the project area.
	Additionality	VCS "Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities" applied. The project is not financially viable without the AFOLU VCS project revenues. There are no privately funded projects on private lands with the aim of stopping unplanned deforestation in Acre state without the aid of carbon finance.

With-project emissions	

	Effectiveness of measures	Assumed 80% effective resulting in an annual deforestation rate with the project case of 0.31%
	Carbon stock changes	Associated with avoided deforestation. Degradation associated with logging is excluded.
	GHG emissions	Emissions from burning associated with deforestation and natural disturbance i.e. forest fire (biomass burning) are included and are calculated using VMD0013, "Estimation of greenhouse gas emissions from biomass burning (E-BB)" of the modular REDD Methodology.
	Leakage	Leakage by local agents of deforestation is quantified in the leakage belt. Activity shifting leakage within the leakage belt is calculated as the with-project emissions in

	the leakage belt minus the baseline emissions in the leakage belt. Immigrant leakage is calculated using a series of equations found in the LK-ASU module. No timber is harvested for sale, so market leakage was not assessed further.
Non-permanence risk	**Buffer** 10%
Ex-ante estimated net greenhouse gas emissions reductions	**Total over crediting period:** 898,679 t CO_2e (First 10 years) **Annual average:** 89,867.9 t CO_2e (First 10 years) **Annual average per ha:** 2.59 t CO_2e (First 10 years)
Monitoring of carbon stock changes and emissions	**Parameters** i. Deforestation area in project and leakage belt ii. Area impacted by natural disturbance iii. Carbon stock in all pools iv. Area potentially impacted by degradation processes v. Biomass carbon of trees cut and removed through degradation process from plots vi. Estimated proportion of baseline deforestation caused by immigrating population etc. **Methods** i., ii. Classified satellite imagery iii. Forest inventory iv. Survey from points of access of illegal harvest v. Plot measurements vi. Survey of communities etc. **Frequency** i., ii. Every < 5 years iii. Every < 10 years. iv. Conducted each time PRA shows potential for degradation (PRA < 2 years) v. Every < 5 years vi. Every < 5 years etc. Note: ▪Forest cover change due to deforestation and natural disturbance is monitored through periodic assessment (prior to each verification) of classified satellite imagery covering the project area; ▪Emissions due to illegal logging will be tracked by conducting surveys in the surrounding areas (every two years). ▪Leakage will be monitored in the 32,128 ha leakage belt via aerial monitoring from a trike, by conducting participatory rural assessments, as well as from

reviewing satellite imagery.

Stakeholder identification and engagement		

	Stakeholders identified	▪Moura e Rosa Empreendimentos Imobiliários LTDA
		▪Communities living within the Purus Project
		▪Carbonfund.org Foundation, Inc. and CarbonCo, LLC
		▪Freitas Group International LLC and Carbon Securities
		▪TerraCarbon
		▪Chico Mendes Foundation
		▪TECMAN LTDA
		▪Professor Antonio Willian Flores de Melo of UFAC
		▪PAV Comércio e Serviços Ltda ("PAV"), particularly Ayri Saraiva Rando
		▪S.O.S Amazônia
		▪Landowners and Communities living around the Purus Project
		▪Maria José Miranda de Souza Noquelli Tenóryo Dias e Alternativa Ambiental
		▪State of Acre, particularly the:
		  o Climate Change Institute of Acre (IMC)
		  o EMBRAPA, ITERACRE and STR
		▪State of California
		  o California Air Resources Board (ARB)
		  o REDD Offset Working Group (ROW)
		  o Governors' Climate and Forest Task Force
		▪Verified Carbon Standard Association
		▪Climate, Community and Biodiversity Alliance

	Identification process	Participatory Rural Appraisal used when identifying all stakeholders. Stakeholders were primarily analyzed based off their influence and importance, and were then categorized according to: Project Proponents, Community and Primary Stakeholders; Secondary Stakeholders; and Other Stakeholders.
Full and effective participation		
	Access to information and consultation	The project proponents visited the Purus Project together and met with the local communities from March 2011. CarbonCo hired the independent group PAV Comércio e Serviços Ltda ("PAV") to visit the communities in October 2012 to more fully consult with them. The Purus Project Proponents continued to engage stakeholders throughout January to December 2014. Attention was given to socially and culturally appropriate methods for stakeholder consultations which were inclusive of gender, inter-generations, and language.
	Participation in design, implementation and monitoring	Community members who wanted to join the Purus Project signed a Memorandum of Understanding (MOU). Under the MoU, communities can stay on the private property, must help to stop deforestation and may be entitled to payments from the sale of carbon credits if trees are protected. To date, the communities have been

| | | involved in the Purus Project by:
▪Acting as guides
▪Providing lodging, food and transportation services
▪Choosing the particular crops and techniques they would like to learn more about from the Centro de Produções Técnicas (Center for Technical Production)
▪Engaging in solving land tenure arrangements
▪Discussing the Project design, benefits of the project, and how they would like to participate.
As the Purus Project proceeds, the communities will eventually be considered for a variety of roles and employment opportunities such as:
▪Local, on-the-ground monitors for deforestation
▪Retrieval of biodiversity monitoring data
▪Participation in cooperative agricultural projects
▪Tour guides for ecotourism
▪Working at the Project site (for example: boat bus driver, a handyman /maintenance person to assist at headquarters, janitor, etc.)
▪Staff health and dental clinics, as well as the school. |
| | **Feedback and grievance redress procedures** | ▪The Purus Project's grievances procedure was designed and communicated to the local communities and also included in the summary report which was printed and hand-delivered to the families throughout the Purus Project.
▪If conflicts or grievances are unable to be resolved by the Project Proponents, the State of Acre's Climate Change Institute will help resolve all reasonable grievances, also the institute is in the process of establishing an Ombudsman (specific person to receive and refer any grievances).
▪The Climate Change Institute's process for hearing, responding to, and resolving reasonable grievances begins with receiving complaint from any person. Then Ombudsman verifies and decides on the acceptance of the complaint. Afterwards, Ombudsman records the compliant and informs the concerned person about the protocol number and the deadline for a response. If the demand is accepted, it will be referred to the specialist, otherwise inform the person along with the reason for rejection. Furthermore, carry out the monitoring process followed by resolution where Ombudsman will contact the person and close the protocol. All complaints received by the Ombudsman are usually answered within five working days.
▪The Ombudsman shall prepare a report and forward it to Board and President of the Climate Change Institute on a monthly basis. All conflicts or grievances will be addressed within a reasonable timeframe, the resolutions will be documented, and publicized to all stakeholders. |

		▪The Landowners are creating a plan of arbitration or mediation in case any rule is broken within the community (for example: illegal logging).
	Worker relations and safety	▪The Purus Project Proponents assessed the situations and particular occupations that could pose risks to worker safety, then continue to inform workers of such risks, explaining how to minimize such risks, and use best work practices. ▪To mitigate potential risks to these workers, there are state requirements which include having the necessary equipment, safety equipment and proper training.

Communities

	Without-project scenario	**Indicators** Occupation, income sources, use of forests, access in the forest, assets and services that are basic necessities, poverty score, poverty index, total assets, and per capita assets, total employed personnel, resident population, enrolment in elementary and high school, number of health institutions, percentage of permanent private housing units. **Assessment methodologies** ▪A total of sixteen communities - thirteen communities within the Purus Project Area and three communities living alongside the Purus River and in the Project Zone - were interviewed as part of a PRA. ▪Basic Necessities Survey (BNS) among the sixteen communities. **Description** ▪There would be continued unplanned, frontier deforestation activities of subsistence agriculture and cattle pastures by the local communities; ▪Significant impacts on the local water cycle and soil quality resulting in potential localized flooding and additional debris from clear-cut could be swept into the river causing increased challenges for boat transportation; ▪The communities could legally be removed from the Purus Project and would need to relocate; ▪Loss of wildlife habitat would reduce the availability of game for the local community.

With-project scenario	**Expected net benefits** Participatory Rural Assessment (PRAs) and the Basic Necessities Survey (BNS) methodology were used to analyze net community benefits. These are: ▪Generation of carbon finance – diversifies incomes of communities and funds social projects and programs; ▪Communities intensify agricultural practices, diversify crops, and increase income generation; ▪Community assets, income and access to basic necessities increase. **Possible negative impacts on other stakeholders and mitigation strategy** *Possible negative impacts*: Increase in cost of land; decrease in value of land; in-migration to areas adjacent to the project zone; out migration of communities into primary forests; community continues to expand into the forest; creates conflict in surrounding areas. *Mitigation Strategy*: ▪Moura & Rosa will discuss the project with adjacent landowners to offer expanding forest conservation projects beyond the project boundaries. ▪To mitigate out-migration, the Project Proponents have held numerous community meetings and seek to implement a variety of social projects and programs. ▪The Project Proponents will monitor deforestation throughout the Project Zone and will seek to minimize deforestation within the Project Zone. ▪Proponents will monitor community benefits throughout the Project Zone. Children from surrounding communities will be allowed to attend school in Purus Project, while surrounding communities will be allowed to visit the dental and health clinic which will be established at the Purus Project.
Impact monitoring	**Indicators** ▪Diversified and increased community income ▪Reduced Deforestation ▪Intensified and diversified agricultural practices ▪Implemented rotational cattle pastures ▪Increased communities' owned assets and owned assets per capita ▪Improves poverty figures and poverty scores ▪Increased access to basic necessities ▪Increased access to health and dental clinic **Methodologies** ▪Participatory Rural Appraisal (PRA) ▪Basic Necessity Surveys (BNS)

		▪Theory of Change ▪Review Brazilian Census **Frequency** Every two years

Biodiversity and ecosystem services		
	Without–project scenario	**Indicators** Habitat, landscape, threatened and endemic species, threatened or rare ecosystem, High Conservation Values (HCVs). **Assessment methodologies** Vegetative sampling Literature **Description** ▪Forest dependent species especially flora would have less available habitat; ▪Increase pressure on surrounding intact forests to the South of the Purus Project; ▪Threatened species would likely disappear due to reduction in habitat.
	With-project scenario	**Expected net benefits** ▪Maintaining forest cover and reforesting degraded areas, thus expanding forest cover ▪Maintaining water cycling, filtration and storage ▪Maintaining nutrient recycling and soil quality enhancement ▪Providing foodstuffs for both local communities and wildlife ▪Providing habitat for an extraordinary diversity of flora and fauna **Possible negative offsite impacts and mitigation strategy** *Possible negative offsite impacts*: Increase in deforestation and GHG emissions; reduction of habitat availability; forest fragmentation. *Mitigation strategy*: Extend project activities to communities throughout the Project Zone; Focusing on improving rural livelihoods through a certification program of rural production units.
	Impact monitoring	**Indicators** ▪Habitat availability ▪Deforestation ▪Threatened and endemic species ▪Threatened ecosystems **Methodologies** ▪Satellite imagery

- Aerial Monitoring
- Island biogeography
- Wildlife camera trap
- Deforestation mitigation activities (agricultural extension training, deforestation monitoring, etc.)
- Participatory Rural Appraisal
- Basic Necessity Surveys

Frequency

Variable: E.g. deforestation monitored annually; though about once per week during dry season

Progress		
Validation		VCS validation report issue date: January 2013 CCBA validation report issue date: 16th January 2013 (Gold Level）
Verification		VCS verification period and report issue date: 23 May 2011 – 31 Dec 2012; 10 December 2013 01 January 2013 – 31 December 2013; 20 October 2014 01 January 2014 – 31 December 2014; 11 November 2015 CCBA verification period and report issue date: 23 May 2011 – 31 December 2012;10 December, 2013 1 January 2013 – 31 December 2013; 15 October 2014 1 January 2014 – 31 December 2014; 11 November 2015
Number VCUs issued		Number: 223,617 As of: as of 17 November 2015

Further information
- VCS Project Database: http://www.vcsprojectdatabase.org/#/project_details/963 - CCBA Project: http://www.climate-standards.org/?s=The+Purus+Project

Documents reviewed

- VCS Design Document : http://www.vcsprojectdatabase.org/#/project_details/963

- VCS Validation Report: http://www.vcsprojectdatabase.org/#/project_details/963

- VCS Monitoring Report:
https://s3.amazonaws.com/CCBA/Projects/The_Purus_Project%3A_A_Tropical_Forest_Cons ervation_Project_in_Acre%2C_Brazil/Verification/Purus+Project+VCS+Monitoring+Report.p df

- VCS Verification Report: http://www.vcsprojectdatabase.org/#/project_details/963

- CCBA Project Design Document:
https://s3.amazonaws.com/CCBA/Projects/The_Purus_Project%3A_A_Tropical_Forest_Cons ervation_Project_in_Acre%2C_Brazil/Final+Purus+Project+CCBS+PDD+(English).pdfCCBA validation Report:
https://s3.amazonaws.com/CCBA/Projects/The_Purus_Project%3A_A_Tropical_Forest_Cons ervation_Project_in_Acre%2C_Brazil/CCB_CarbonCo_Purus_ValidationReport_011613.pdf

- CCBA verification Report:
https://s3.amazonaws.com/CCBA/Projects/The_Purus_Project%3A_A_Tropical_Forest_Cons

ervation_Project_in_Acre%2C_Brazil/2014_Verification/022_01_CarbonCo-Purus-CCBA+Verification_Report-Final.pdf