Paraguay Forest Conservation Project – Reduction of GHG Emissions from Deforestation and Forest Degradation in the Chaco-Pantanal Ecosystem

Distinctive features

This project is located in north-eastern Paraguay in the Department of Alto Paraguay. The project zone comprises the transition zone between the Pantanal wetlands of the Paraguay River and the extensive dry and humid Chaco of the interior of northern Paraguay. About 288,000 ha of the northern project zone (Agua Dulce area) had already been converted into cattle ranches by 2009, while the remainder retained natural cover. Land use change is concentrated on the forested lands with richer, less sandy soils that are less prone to wind erosion when cleared and more suitable for establishing exotic pasture grass. The deforestation pattern in the project area is planned and undertaken by cattle ranchers.

The project goal is to conserve the natural and cultural qualities of forest lands in the Chaco-Pantanal transition zone of Alto Paraguay that are of high conservation value but threatened with transformation to cattle ranching. Private holdings that are legally available for ranching development are targeted, particularly those that help maintain ecological connectivity in the general context of on-going fragmentation and isolation at a landscape level.

The strategy is to purchase available properties in partnership (co-ownership and management) with local communities, with legal safeguards to ensure permanence of the conservation management regime. This is a grouped project with an initial project instance consisting of the purchase of a 4,745 ha property, undertaken in partnership with the Union of the Communities of the Yshir Nation (UCINY) representing the Yshir indigenous community.

	Heading	Explanation
Locational factors		
	**Location**	Located in the Department of Alto Paraguay, including parts of the Districts of Bahia Negra and Fuerte Olimpo
	Spatial boundaries	Project area: 4,745 ha Reference area: none Leakage monitoring area: 1,137,063 ha Leakage management area: [leakage management activities to be conducted by size of area not specified in VCS PD]
	Land cover	Dense mesoxerophytic woodland, transitional dense mesoxerophytic woodland, seasonally-flooded woodland, palm savannah
	Agents and drivers of forest cover change	Agents: Cattle ranchers Underlying drivers: Economic drivers (annex that explains the drivers was not available on VCS website Proximate causes: Cattle ranching
Basic project features		
	**Objectives**	The overall objective is to secure an area of threatened Quebracho forest from planned clearance on the forest frontier. The specific objectives of the project include ▪Make a significant contribution to an overall emissions reduction target of 840,000 tCO2 over 20 years ▪Ensure conservation of an area of a habitat type characteristic of the Chaco-Pantanal transition, along with its biota, that is poorly represented in the protected area system and at risk ▪Meet the aspirations of local communities in regaining influence over activities in areas they have traditionally used
	Proponent/s	Swire Pacific Offshore Operation (Pte) Ltd. (SPO)
	Tenure and Carbon rights holder/s	Tenure: Property holder is Guyra Paraguay (GP) Carbon rights: Held by property owner
	Actors involved in project design and implementation and their roles	▪Guyra Paraguay (GP), a Paraguayan conservation NGO, is responsible for project implementation ▪World Land World Land Trust (WLT), an international conservation NGO, provides technical support to Guyra Paraguay in project design and implementation, and acts as the liaison with Swire Pacific Offshore
	Upfront financing	The purchase of a 4,745 ha property costs about 1,151,000 USD and operating of project activities

		(protected area management and capacity-building to maintain the environmental) costs 1,434,000 USD
	Start date	25 February 2011
	Crediting period	20 years
	Baseline emissions	
	**Methodology**	VCS Methodology VM0007: REDD Methodology Framework (REDD-MF) Version 1
	Reference data (unplanned deforestation/degradation)	Not applicable
	Reference data (planned deforestation/degradation)	▪Proxy areas: Six proxy areas have been identified to establish the rate of deforestation by original data collected by the Guyra Paraguay GIS team using remote sensing analysis ▪Reference period: 1999-2010 ▪Imagery: For Stratification: LANDSAT 5TM images used to give a refined map; Higher resolution images (CBERSA 2B HRC, SPOT5, Quickbird - Google Earth Data Base) were then used to define the ecotone limits more precisely. LANDSAT 5TM and 7 ETM+ images with spectral bands 5, 4 and 3 were then used to differentiate forest types more accurately, producing an initial working classification and map for use on the ground.
	Stratification of project area	Three forest strata: ▪High mesoxerophytic forest ▪Low mesoxerophytic forest ▪Forest in ancient drainages ▪Mesoxerophytic-palm transition ▪Palm savannah
	Deforestation/degradation rate and location	**Historical deforestation** 8.259% for baseline period **Projected** 0.894% **Likely baseline scenario** ▪Under the most likely "no project" scenario, all forest land within the project zone that is not under protective management will be developed for cattle ranching within 20 years **Modelling procedure** ▪Projected annual proportion of land that will be deforested using the equation: $D\%_{planned,i,t} = (\sum_{pn}^{n*} = 1(D\%_{pn}/Yrs_{pn}))/n$

	Where, $D\%_{planned,i,t}$ means projected annual proportion of land that will be deforested in stratum *i* during year *t*; Yrs_{pn} is number of years over which deforestation occurred in land parcel *pn* in proxy area; n is total number of land parcels examined = 6; pn means 1,2,3, … n* land parcels examined in proxy area; 1,2,3, … *M* strata; and $D\%_{pn}$ equals percent of deforestation in land parcel *pn* of a proxy area as a result of planned deforestation $D\%_{pn}$ = (Area of land cleared2001-10/Area available post 2001)x 100
Carbon pools	**Carbon pools included** ✓ ✗ ▪Aboveground tree biomass ✓ ▪Belowground tree biomass ✓ ▪Aboveground non-tree woody biomass ✗ ▪Belowground non-tree woody biomass ✗ ▪Litter ✗ ▪Dead wood ✗ ▪Soil ✗ ▪Wood products ✓ **Estimation method** ▪Number of plots required is determined using the Winrock Terrestrial Sampling Calculator, and taking account of permissible error of 10% and 95% confidence level ▪The design of the permanent plots comprises a 100x100 m (1 ha) lay-out, subdivided into four 50x50 m blocks; Each block is then subdivided into four 25x25 m sub-plots giving a total of 16,625m^2 sub-plots ▪Data is collected sub-plot by sub-plot to facilitate recording and marking of individual trees; Data collection in the initial project instance is limited to trees of 10 cm DBH. ▪Each tree in each sub-plot was identified and measured for height and DBH (i.e. at 1.3 m); The conversion from field parameters to biomass was done by use of allometric equation from published research (Rugnitz et. al., 2008); A root-shoot ration of 0.28 was used to calculate below ground tree biomass; Wood products are not harvested in the project scenario, leaving the pool unaltered, but useful timber may be recuperated during forest clearance in the baseline scenario – the pool must therefore be included.
Carbon stock changes	▪The baseline assumption is of 45% of the project area remains unaffected by clearance. Thus $C_{BSL,post,i,is}$ only quantified for that 55% of the project area that will be deforested; In this area all trees over 10 cm DBH will be cleared and deforestation will be total, resulting in a 100% reduction in carbon stocks in those carbon pools included in the project

	▪The equation for estimating forest carbon stocks in the post-deforestation scenario is: $C_{BSL,post,i} = C_{AB\_tree,i} + C_{BB\_tree,i}$ Where $C_{BSL,post,i}$ = Carbon stock in all pools in the baseline post-deforestation in stratum i; t CO_2-e ha-1 $C_{AB\_tree,i}$ = Carbon stock in aboveground biomass in the baseline in stratum i; t CO_2-e ha-1 $C_{BB\_tree,I}$ = Carbon stock in belowground biomass in the baseline in stratum i; t CO_2-e ha-1 ▪Net carbon stock changes in the baseline are 100% of the pre-deforestation carbon stocks in those areas affected by deforestation and are defined as follows: $\Delta C_{BSL,i} = C_{BSL,i} - C_{BSL,post,i} - C_{BSL,WP,i}$ Where $\Delta C_{BSL,i}$ = Net carbon stock changes in all pools in the baseline in stratum i; t CO_2-e ha-1 $C_{BSL,i}$ = Carbon stock in all pools in the baseline in stratum i; t CO_2-e ha-1 $C_{BSL,post,i}$ = Carbon stock in all pools in the baseline post-deforestation in stratum i; t CO_2-e ha-1 $C_{BSL,WP,I}$ =Carbon stock sequestered in wood products in the baseline post-deforestation in stratum i; t CO_2-e ha-1
GHG emissions	Non-CO_2 greenhouse gas emissions from biomass burning and all greenhouse gas emissions from fossil fuel and fertiliser use are excluded from the baseline estimate
Net emissions without project	614,629 tCO_2e

Project GHG emissions reduction strategy

Scope	Avoided planned deforestation
Activities	Purchase available properties in partnership (co-ownership and management) with local communities, with legal safeguards to ensure permanence of conservation
Leakage mitigation strategy	▪Promoting livestock production approaches and techniques compatible with retention of natural habitat and ecological quality for local communities ▪Promoting forest protection and conservation of natural habitats, particularly involving the local community including (i) Employment and training opportunities for community members in conservation management, (ii) Providing community funds, (iii) Supporting management of national protected areas, and (iv) Running an environmental education centre and community radio service
Non-permanence risk mitigation strategy	Political risk: The country is developing its REDD readiness strategy with UN support and already hosts a CDM project

		Natural risk: Palm savannah habitat is subject to regular grass-fire and can degrade the natural forest edge-. Guyra Paraguay as a national leader in fire management and brings this to bear on project area management
	Additionality	▪Identification of alternative land use scenarios to the proposed project activity: Three alternative scenarios are identified including scenario A: pre-project land use continues, scenario B: land is secured by Guyra Paraguay, and scenario C: sale to a buyer associated with modern ranching development ▪Investment analysis: The project generates no financial benefits other than VCS-related income; Cost associated with the first project instance is US 2,585,000 comprising US 1.151 million in capital expenditure and 1.434 million in operating costs; Without the repayment mechanism based on carbon related financing, the control of the project area could not be secured and the project would have been non-viable ▪Common practice analysis: Preserving forest is not common practice
With-project emissions		
	**Effectiveness of measures**	Assumed that 100% effectiveness of measures to reduce deforestation in project area
	Carbon stock changes	Emissions and removals are assumed to be zero under the project scenario, with the forest carbon stock retained. Fire is not part of project activity and therefore is not accounted. If fire does impact the area, the effects will be assessed as part of the monitoring programme.
	GHG emissions	Emissions from forest fire are included, but fossil fuel emissions are excluded
	Leakage	**Types** Activity shifting: Shifting deforestation from the project area to other sites of equivalent productive potential within north-eastern Paraguay Market leakage: Expansion of cattle ranching into forests **Deduction** 245,852 tCO_2e
	Non-permanence risk	**Buffer:** Following VCS AFOLU Non-Permanence Risk Tool (VT0001)-Module T-BAR, the total overall risk rating for non-permanence is 10%
	Ex-ante estimated net greenhouse gas emissions reductions	**Total over crediting period:** 255,686 tCO_2e **Annual average:** 12,784 tCO_2e **Annual average per ha:** 2.69 tCO_2e
	Monitoring of carbon stock	**Parameters**

	changes and emissions	i. Area of forest land in reference region; project forest cover map ii. Area burnt; Area of recorded deforestation **Methods** i. Remote sensing supplemented by GPS data with ground-truthing and over-flight checking ii. Same as i **Frequency** i. Annually (for project forest cover map, Years 1,2,3,4,5, 10 and as required following any event altering forest cover) ii. Prior to each verification
Stakeholder identification and engagement		
	**Stakeholders identified**	▪Community members affected by the project ▪Other stakeholders include national organisations (i.e. National University of Asuncion, The Rural Association of Paraguay) ▪Local ranchers are another key stakeholder group, who have signalled their support both in writing and in practical measures such as assuring access to the project site across their land
	Identification process	No information
Full and effective participation		
	**Access to information and consultation**	▪Local community have been informed (by writing and verbally) of the activities proposed under the project through direct communication with community elders both as a council and assembled under UCINY ▪In addition to the consultations, the principles have been commented upon and endorsed at a public meeting attended by independent observers ▪Community members will also be informed via UCINY of the opportunities to express comment both directly to the validators/verifiers during their site visits and under the CCBA public comment period ▪All project documentation will be available through the WLT and Guyra Paraguay websites
	Participation in design, implementation and monitoring	▪During the project design phase, experts in social issues have been engaged to organise initial meetings with local community members and their representatives, conducted in the appropriate language ▪Employment and training opportunities for community members in conservation management ▪International conservation community supports maintaining the high conservation values of the region;

		Letters of support from SPECIES and Birdlife International received
	Feedback and grievance redress procedures	▪Grievances and unresolved issues associated with the project may be notified at any time, via UCINY and the local Project Officer representing community members and the project implementers respectively ▪In the first instance, resolution will be sought by negotiation at a formal consultation meeting, which may be called within 10 days by either the community representatives or the project implementer and, if requested, mediated by a mutually acceptable and independent third party ▪The grievance and result of the negotiation, including measures of redress for issues found to have substance, will be included in the records of the meeting; The written record must be disseminated to all interested parties within 20 days (i.e. 30 days of the original notification) ▪Any remedial action must be initiated within 14 days, with results that must be reported (and recorded) in the subsequent consultation meeting
	Worker relations and safety	▪Project actions revolve around protected area management and do not involve substantial risk to worker safety; Health, safety and associated issues are stipulated in the management contract ▪These include formal policies: (i) 'no fire-arms' while engaged on project activity; (ii) 'no drugs or alcohol' while engaged on project activity; (iii) Health and safety codes and regular reporting, to meet the standards used by SPO in its international shipping operations ▪SPO, as project proponent, regards the project as within its international reporting requirements on health, safety and ethical conduct
Communities		
	**Without-project scenario**	Without the project, the community will lose forest resources currently used to supplement their livelihoods as the forestland will be converted to cattle ranching
	With-project scenario	**Expected net benefits** The project has the potential to provide recognition of local community's rights to continue traditional use of land, demonstration of land management capability, capacity building and participation in conservation management, and new source of income **Possible negative impacts on other stakeholders and mitigation strategy** The project does not negatively affect communities
	Impact monitoring	**Indicators** ▪Degree of participation of community members in project-related activity

		▪Level of project-related revenue streams into the community ▪Use of project-generated revenues for general community benefits **Methodologies** ▪Establishing a baseline in the first six months of the project, using quantifiable measurements of set socio-economic indicators under an appropriate methodology ▪Re-measuring annually, to demonstrate and quantify benefits ▪Full review at 5 year interval (i.e. alongside the carbon monitoring programme) ▪ Use of project-generated revenues for general community benefit, 'quality of life' indicator scores and the role of project-generated revenues in reaching those scores **Frequency** Annually and every 5 years
Biodiversity and ecosystem services		
	**Without–project scenario**	From published literature, the biodiversity impacts without the project are thought to be: ▪Extensive loss of native habitats ▪Soil degradation through loss of forest cover and conversion to grazed pasture ▪Loss of water quality ▪Higher incidence of fire
	With-project scenario	**Expected net benefits** ▪Conservation of important forest area as part of the wider context of conservation management in the region **Possible negative offsite impacts and mitigation strategy** No negative offsite biodiversity impacts are identified
	Impact monitoring	**Indicators** Native habitat and wildlife, including Lowland Tapir *Tapirus terrestris* and Giant Armadillo *Priodontes maximus* **Methodologies** ▪Use methodology developed by Birdlife International for its IBAs (Cartes,2008); Appropriate methodologies are used to conduct a forest inventory, locating and marking mature specimens of tree species of conservation concern; Recruitment and mortality will be monitored as a basis for appropriate management approaches. ▪Monitoring of bird species will take place during the critical migration period

		▪For areas meeting the definition of rare or threatened ecosystems, the project will establish permanent monitoring plots ▪Water level and water quality: Monitoring will include periodic field measurement and using fixed instruments combined with the tracking of land-use change through remote imagery **Frequency** All variables will be monitored continuously at 5 year intervals
Progress		
	**Validation**	VCS validation report issue date: 24 November 2012 CCBA validation report issue date: 11 July 2012
	Verification	VCS verification period and report issue date: 25 February 2011 – 24 February 2012; 13 March 2013
	Number VCUs issued	Number: 7,601 As of: 22 April 2013
Further information		
	▪VCS Project Database: http://www.vcsprojectdatabase.org/#/project_details/953 ▪CCBA Project Database: http://www.climate-standards.org/?s=Paraguay	
Documents reviewed		
	▪CCBA project design document: https://s3.amazonaws.com/CCBA/Projects/The_Paraguay_Forest_Conservation_Project-Reduction_of_GHG_emissions_from_deforestation_and_forest_degradation_in_the_Chaco-Pantanal_ecosystem/Chaco_PDD__CCBA_Validation_Final_Version_October_2011%5B1%5D.pdf ▪CCBA validation report: https://s3.amazonaws.com/CCBA/Projects/The_Paraguay_Forest_Conservation_Project-Reduction_of_GHG_emissions_from_deforestation_and_forest_degradation_in_the_Chaco-Pantanal_ecosystem/Swire+Pacific+Offshore+CCB+valid+12.pdf ▪VCS project description: http://www.vcsprojectdatabase.org/services/publicViewServices/downloadDocumentById/11318 ▪VCS validation report: http://www.vcsprojectdatabase.org/services/publicViewServices/downloadDocumentById/11320	