



**Verified Carbon
Standard**

NON-PERMANENCE RISK REPORT

Document Prepared by unique forestinvestment GmbH

Project Title	<i>"Afforestation and restoration of degraded forests in Eastern Paraguay" or Forestal Azul Carbon Project</i>
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1 INTERNAL RISK

Project Management

- a) *Species planted (where applicable) associated with more than 25% of the stocks on which GHG credits have previously been issued are not native or proven to be adapted to the same or similar agro-ecological zone(s) in which the project is located.*

The trees planted in this project comprise non-native species, mainly Eucalyptus spp. and Corymbia spp. Eucalypts have a track record in the region since around 50 years, and they haven't presented limitations in terms of affecting the water balance or invasion into native ecosystems. The management team has experience with similar projects and has not detected invasive behavior to date.

Plantations are established in agricultural fields or implanted pasture areas. Most of the planted area has been originally forest area, deforested decades ago.

- b) *Ongoing enforcement to prevent encroachment by outside actors is required to protect more than 50% of stocks on which GHG credits have previously been issued.*

The FMU belongs to Forestal Azul, who actively protects the area from encroachment, fire, and illegal activities, such as hunting and poaching. The management team is interested in protecting all stocks as it is part of the company's asset. In the area, property rights are clear, and Forestal Azul maintains good relationships with all neighbors to identify and solve any uncertainties in this regard.

- c) *Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project activities (i.e., any area of required experience is not covered by at least one individual with at least 5 years experience in the area).*

UNIQUE (Unique Wood Paraguay S.A. supported by Unique forest investment GmbH) has been contracted for managing forest plantations. The management team has significant experience with managing forest plantations according to IFC and FSC standards. UNIQUE has over 20 years of experience managing natural forests and over 9 years of experience with plantations in Paraguay, both under FSC certification.

The management team includes a forest engineer (Elias Román) permanently located in the FMU as well as a cattle expert with over 10 years experience (Rodrigo Aguilar), overseen by an experienced forest engineer with more than 25 years of experience with managing forest in Paraguay (Rafael Ortiz). In addition, the team includes a community liaison officer (Cecilia Vazquez), who also conducts environmental, social and health and safety monitoring, and an ESG and FSC certification officer supporting the team (Andrea Eisenhut).

The team backstopped by monitoring (Irene Calo, Fernando Rossi, Giannina Alvarez) and ESG experts (Andrea Braun), and the whole administrative structure of UNIQUE Wood Paraguay.

- d) *Management team does not maintain a presence in the country or is located more than a day of travel from the project site, considering all parcels or polygons in the project area*

UNIQUE Wood Paraguay is a Paraguayan company established in the country in 2001. The forest engineer Elías Román is located semi-permanently in the FMU, supported by a team in Fernando de la Mora (Gran Asunción), located 250 km away.

- e) *Mitigation: Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (eg, individuals who have successfully managed projects through validation, verification and issuance of GHG credits) under the VCS Program or other approved GHG programs.*

Forestal Azul contracted UNIQUE land use GmbH to develop this AFOLU project, account for carbon from trees and other GHG sources, report and participate in validation and verification under respective VCS methodology and standard requirements. UNIQUE land use is experienced with carbon project development according to VCS standards.

- f) *Mitigation: Adaptive management plan in place*

The project has adaptive management (operations plan, monitoring plan, roll out plan, feedback plan, supervisors, and internal control system) in place. The project is subject to regular reporting to investors, and its progress is supervised in quarterly Board Meetings by the investors, who monitor the project according to IFC Performance Standards. In addition, the project is FSC certified and subject to annual auditing by external third parties.

Project Management		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Species planted (where applicable) associated with more than 25% of the stocks on which GHG credits have previously been issued are not native or proven to be adapted to the same or similar agro-ecological zone(s) in which the project is located	0
b)	Ongoing enforcement to prevent encroachment by outside actors is required to protect more than 50% of stocks on which GHG credits have previously been issued	0
c)	Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project	0

	activities (i.e., any area of required experience is not covered by at least one individual with at least 5 years experience in the area)	
d)	Management team does not maintain a presence in the country or is located more than a day of travel from the project site, considering all parcels or polygons in the project area	0
e)	Mitigation: Management team includes individuals with significant experience Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (eg, individuals who have successfully managed projects through validation, verification and issuance of GHG credits) under the VCS Program or other approved GHG programs	-2
f)	Mitigation: Adaptive management plan in place	-2
Total Project Management (PM) [as applicable, (a + b + c + d + e + f)]		-4
Total may be less than zero.		

Financial viability

Forestal Azul has developed a business plan for the plantations, including all supporting aspects necessary to conduct business according to the investors' expectations and standards (IFC Performance Standards and FSC Principles and Criteria). The break-even point is expected to be reached by year 2027. All funds for the project are secured until de Fund's exit.

Financial Viability		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Project cash flow breakeven point between 4 and up to less than 7 years from the current risk assessment	1
b)	Project has secured 80% or more of funding needed to cover the total cash out before the project reaches breakeven	0
j)	Mitigation: Project has available as callable financial resources at least 50% of total cash out before project reaches breakeven	-2
Total Financial Viability (FV) [as applicable, ((a, b, c or d) + (e, f, g or h) + i)]		0
Total may not be less than zero.		

Opportunity Cost

In order to assess the opportunity cost comparing the plantations with the most profitable land use activity, the Forestal Azul business model was compared to an alternative scenario, in which it is assumed that the project area is used for mechanized soy production, which is the most common and profitable land use alternative in the region. The analysis was conducted for 30 years.

Agriculture presents an IRR of 96%, needed investments of 0.4 M USD, and a payback period of 3 years. Under the same conditions, forestry offers an IRR of 21 %, needs investments of nearly 4.6 M USD, with a payback period of 11 years.

This analysis clearly shows that the financial hurdles are high to invest in forestry. While the initial investment for forestry is much larger than for agriculture, and the payback period is much longer, the average annual income over a period of 30 years is 45 % higher. This means that, once forestry investments are established, and enter a permanent rotation, they are competitive compared to alternative land uses. In other words: Only in the first rotation when land use is changed back to forestry, there is a gap of economic competitiveness between forestry and agriculture. However, most landowners expect short-term returns, and there is a lack of credits and funding options for these long-term productive models.

Forestal Azul's business plan was compared to the most profitable land use, mechanized soy production, under the same circumstances. Using a discount rate of 10 %, the NPV for forestry is 26 % higher than agriculture in 2023.

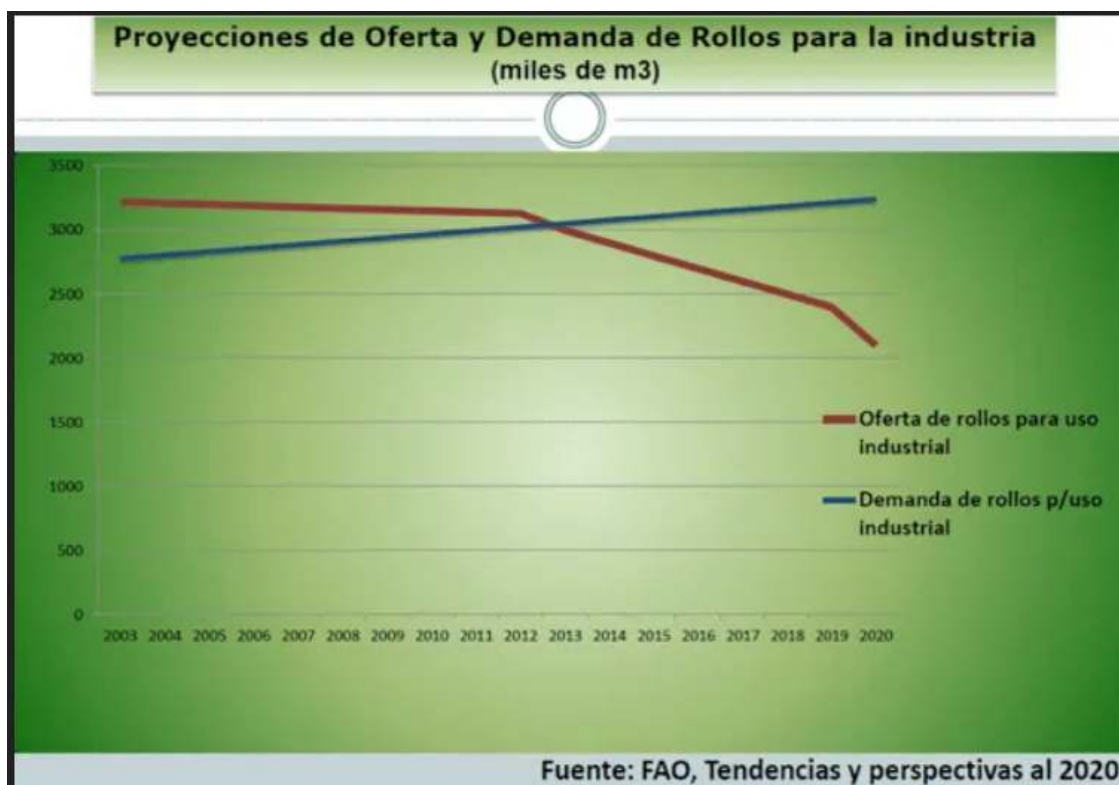
Opportunity Cost		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
d)	NPV from the most profitable alternative land use activity is expected to be between 20% more than and up to 20% less than from project activities; or where baseline activities are subsistence-driven, net positive community impacts are demonstrated	-2
g)	Mitigation: Project proponent is a non-profit organization	0
h)	Mitigation: project is protected by legally binding commitment to continue management practices that protect the crediting period (see project longevity)	0
i)	Mitigation: Project is protected by legally binding commitment to continue management practices that protect the credited carbon stocks over at least 100 years (see project longevity)	0
Total Opportunity Cost (OC) [as applicable, (a, b, c, d, e or f) + (g + h or i)]		-2

Total may be less than 0.

Project Longevity

The investors investing in Forestal Azul will ensure project development and establishment, until a planned exit after at least 15 years, with the possibility of extension. Since all establishment and silvicultural costs will have been covered, the hurdles for project establishment are removed by the secure investment by the Fund. After this period, the profitability of the plantations is expected to ensure a second rotation, as it is shown to be more profitable than other land uses. This is aligned to the proven need for more forest plantations in the country.

The Paraguayan National Forest Inventory identified in 2015 approximately 16.7 million of ha of natural forest and 53,000 ha of plantations. According to the FAO, roundwood in Paraguay has a steady but continuous increase in the demand, not relatable with the current offer in the country. According to a study conducted in 2015, it would be necessary to plant 10,000 ha/year to cover the demand in 2020¹. In line with this, the National Reforestation Plan established by Decree N° 10,147 of 2012, seeks to establish 450,000 ha of forest plantation in Paraguay until 2027. Therefore, we assume that after one rotation, it will still be interesting for landowners to continue doing forestry in their areas indefinitely.



¹ <https://www.gatewaytosouthamerica-newsblog.com/la-plantacion-forestal-en-paraguay-una-gran-oportunidad/?lang=es>

Project Longevity		
Q)	Does the project have a legally binding agreement that covers at least a 100 year period from the project start date	No
Q)	What is the project Longevity in years?	30
Q)	Legal Agreement or requirement to continue management practice?	15
a)	Without legal agreement or requirement to continue the management practice	0
Total Project Longevity (PL) May not be less than zero		15

Internal Risk	
Total Internal Risk (PM + FV + OC + PL) Total may not be less than zero.	9

2 EXTERNAL RISKS

Land Tenure and Resource Access / Impacts

Forestal Azul is currently established in one FMU purchased by the company, who is the legal owner of the land. Before the investment was conducted, property titles and ownership issues were assessed during a thorough legal Due Diligence. No claims for land, conflicts over land or informal uses have been identified. In case of project expansion, a thorough Due Diligence will be conducted to rule out any land disputes.

Mitigation: Where disputes over land tenure, ownership or access/use rights exists, documented evidence is provided that projects have implemented activities to resolve the disputes or clarify overlapping claims

Land Tenure and Resource Access/Impacts

Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
Q)	Are the ownerships and resource access/use rights held by the same of different entities	Same
a)	Ownership and resource access/use rights are held by same entity(s)	0
b)	Ownership and resource access/use rights are held by different entity(s) (eg, land is government owned and the project proponent hold a lease or concession)	0
c)	In more than 5% of the project area, there exist disputes over land tenure or ownership	0
d)	<i>There exist disputes over access/use rights (or overlapping rights)</i>	0
e)	WRC projects unable to demonstrate that potential upstream and sea impacts that could undermine issued credits in the next 10 years are irrelevant or expected to be insignificant, or that there is a plan in place for effectively mitigating such impacts	0
f)	Mitigation: Project area is protected by legally binding commitment (eg, a conservation easement or protected area) to continue management practices that protect carbon stocks over the length of the project crediting period	0
g)	Mitigation: Where disputes over land tenure, ownership or access/use rights exists, documented evidence is provided that projects have implemented activities to resolve the disputes or clarify overlapping claims	-2
Total Land Tenure (LT) [as applicable, ((a or b) + c + d + e + f + g)]		0
Total may not be less than zero.		

Community Engagement

Political risks in Paraguay are considered low. Property rights are secure, and the political system is stable. Nevertheless, bureaucracy before public authorities for issuing licenses can hamper efficient business procedures.

Also, the project is established for the Private Market, not depending on any jurisdictional program to function.

Community Engagement		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Less than 50 percent of households living within the project area who are reliant on the project area have been consulted	0
b)	Less than 20 percent of households living within 20km of the project boundary outside the project area, and who are reliant on the project area, have been consulted	0
c)	Mitigation: The project generates net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area	-5
Total Community Engagement (CE) [where applicable, (a + b + c)]		-5
Total may be less than zero.		

Political Risk

Political risks in Paraguay are considered low. Property rights are secure, and the political system is stable. Nevertheless, bureaucracy before public authorities for issuing licenses can hamper efficient business procedures.

Also, the project is established for the Private Market, not depending on any jurisdictional program to function.

Political Risk		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
Q)	What is the country's calculated Governance Score?	-0.377
a)	Governance score of less than -0.79	
b)	Governance score of -0.79 to less than -0.32	4
c)	Governance score of -0.32 to less than 0.19	
d)	Governance score of 0.19 to less than 0.82	
e)	Governance score of 0.82 or higher	

f)	Mitigation: The Country has an established DNA under the CDM and has at least one registered CDM A/R project.	-2
Total Political (PC) [as applicable ((a, b, c, d or e) + f)]		2
Total may not be less than zero.		

External Risk	
Total External Risk (LT + CE + PC)	0
Total may not be less than zero.	

3 NATURAL RISKS

Fire	
Significance	Fire is a high risk in <i>Eucalyptus</i> plantations, which might lead to the loss of several hectares and the complete carbon stock of them. Rural communities often use fire to renew pastures, that spreads out and leads to forest fires during the dry period. Paraguay has lost over 22 million of hectares of vegetation in the last 19 years due to fires, most of them, man-caused². Nevertheless, the management team has extensive experience with fire prevention and control in other projects. Using mitigation measures such as firebreaks, training, and early warning during the dry season, fires can be successfully controlled. The total loss of a significant part of the asset by fire is considered very unlikely. The fire risk significance is rated as 'minor' (5% to less than 25% loss of carbon stocks)."
Likelihood	Fires are a common problem in Paraguay and it is expected to happen less than every 10 years.
Score (LS)	5
Mitigation	The plantation area is always divided into compartments (smaller areas, 20-50 ha with similar characteristic, such as age and planted

² <https://www.ultimahora.com/paraguay-perdio-22-millones-hectareas-incendios-los-ultimos-19-anos-n2840027.html>

	species), divided by roads or artificial firewalls which are established to minimize the risk of fire spread. At least once annually before the dry season, trainings take place with the operative staff for fire prevention and firefighting. Also, the company cooperates with neighbors to ensure early warning and cooperation. Appropriate tools and equipment for fire prevention and firefighting have been acquired. M = 0.25
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Pest and Disease Outbreaks	
Significance	Eucalyptus sp. In the region are vulnerable to pests and diseases such as the gall wasp <i>Lectocybe invasa</i>, the beetle <i>Costalimaita ferruginea</i>, and a fungal disease caused by the canker <i>Teratosphaeria zuluensis</i>, also known as <i>Coniothyrium zuluensis</i>. These pests affect mostly the quality of the timber and sometimes, to a certain degree, tree development. However, to date a significant growth stagnation or loss has not been detected and is considered unlikely to be conservative (5% to less than 25% loss of carbon stocks). In cases of significant pests and disease outbreaks, the management team reacts quickly and seeks control the infestation.
Likelihood	For the same reason areal outbreaks of significant pests and diseases are assumed to be very unlikely (every 25 to less than 100 years).
Score (LS)	2
Mitigation	Plantations are established with high density of trees and thinning is strong during the whole production cycle. This allows to select the most promising trees and reduce the risks of losing the expected biomass. Also, the genetic material is continuously selected. Clones that have shown to be particularly vulnerable to certain pests are not employed anymore. Acute infestations are controlled chemically, when such method is effective. In cases of pests where no control method exists, silvicultural interventions are introduced, such as a more intense thinning regime. M=0.25

Natural Risk (e.g., Fire, Pest and Disease outbreaks, Extreme Weather)	
Significance	In the region droughts and floods or storms might occur in different moments of the year. Floods are unlikely to affect the plantations, as lower areas prone to flooding are excluded from the production area. Droughts do affect the development of plantations, however mostly younger plantations during the first months of planting. Most plants that are affected by drought during the first months of planting still show an acceptable development after a few months, meaning that the effect is unlikely to be very high. Storms might cause damages in the trees, but usually in a relatively small area and affecting individual trees, that usually are compensated during thinnings. However, trees included in carbon verifications are at least one year old, meaning they are more resistant and less likely to be significantly affected by extreme weather events. Therefore the risk is consider to occur every 10 to less than 25 years.
Likelihood	Droughts are expected relatively often, while floods are less likely to affect plantations, storms are usually not a relevant risk for the carbon stock. Therefore the risk is consider to occur every 10 to less than 25 years.
Score (LS)	2
Mitigation	Areas affected by flooding are not planted. Clone selection is conducted carefully and adapted to the site. Clones with more resistance to extreme weather are introduced in the areas more likely to be affected. Also, the trees included in the carbon monitoring are always at least 1 year old, and according to the experiences in the region, extreme weather does not affect to older management units. However, increasingly measures to ensure the survival of younger trees to extreme weather as irrigation during droughts have been proven to be highly effective. M = 0,5

Score for each natural risk applicable to the project
(Determined by $(LS \times M)$)

Fire (F)	1.25
Pest and Disease Outbreaks (PD)	0.5
Extreme Weather (W)	1.00
Geological Risk (G)	
Other natural risk (ON)	
Total Natural Risk (as applicable, F + PD + W + G + ON)	2.75

4 OVERALL NON-PERMANENCE RISK RATING AND BUFFER DETERMINATION

4.1 Overall Risk Rating

Risk Category	Rating
Internal Risk	9
External Risk	0
Natural Risk	2.75
Overall Risk Rating (a + b + c)	12

4.2 Calculation of Total VCUs

According to the Non-Permanence Risk tool, the total risk rating shall not be greater than 60. The minimum risk will always be 10. The numbers of buffer credits to be deposited in the AFOLU pooled buffer account results from converting the risk rating into a percentage and multiplying this value by the net change in the project's carbon stock. The carbon stock change for the second verification in this project is 77,834 tCO₂e, therefore the number of buffer credits is 9,340 tCO₂e. The number of GHG credits eligible to be issued as VCUs for the first project instances of this monitoring period is 68,494 tCO₂e.