

---

# Jari/Amapá REDD+ Project

*Project Description presented to Climate, Community and  
Biodiversity Standard*



*Document Prepared by Biofílica Investimentos Ambientais*

*Contact: [projetos@biofilica.com.br](mailto:projetos@biofilica.com.br)*

*+55 11 3073 0430*

*Auditor: DNV GL, [shuruthi.poonacha@dnvgl.com](mailto:shuruthi.poonacha@dnvgl.com), +1 (510) 891 0461 ext 44212*

---

**Project Title**

Project REDD+ Jari Amapá

**Project Location**

Brazil, State of Amapá, Region of the Valley of Jary, Municipalities of Laranjal and Vitória do Jari

**Project Proponents**

- Biofílica Investimentos Ambientais<sup>1</sup>, Plínio Ribeiro, plinio@biofilica.com.br, +55 11 3073-0430
- Jari Florestal S.A., João Prestes, jprestes@grupoJari.com.br, +55 11 4689-8700
- Jari Celulose S.A., Vinícius Garcia, vmgarcia@grupoJari.com.br, +55 11 4689-8700

**Auditor**

DNV GL, Shuruthi Bachama, shuruthi.poonacha@dnvgl.com, +1 (510) 891 0461 ext 44212

**Start Date**

February 14th of 2011

**GHG Accounting Period**

From February 14th of 2011 to February 14th of 2041

**Duration of the Project**

30 years

**CCB Project Design Document Version**

Second Version

**CCB Project Design Document Date of Completion**

July 31, 2015

**Type of Validation**

Complete Validation

**Status on the CCB**

First validation attempt

**Reference Edition**

CCBS Third Edition

**Brief Description of the expected benefits**

- **Climate** – mitigation of global climate changes through the avoided emission of 3.450.278,8 tCO<sub>2</sub>e through deforestation and forest degradation throughout the 30 years of the Project, as well as reduce the occurrence and risks associated to extreme weather events.
- **Communities** – improvement of social welfare, income generation and poverty reduction, increase of agricultural productivity, improvement of access to markets, reduction of rural exodus and of marginalization of cities, knowledge generation and empowerment, increase of community cohesion, improvement of relations with stakeholders, improvement of access to public policies and basic services and reduction of the vulnerability to extreme weather events.

---

<sup>1</sup> Biofílica is the main project proponent for certification proposes, which means Biofílica is the focal point of contact with auditors, CCBS and VCS.

- **Biodiversity** – conservation of biodiversity, including endangered species, generation of knowledge through the development of related scientific research and the maintenance of an ecological corridor and buffer zone to neighboring conservation units. Regarding flora species the Projects aims to conserve 7 species considered Endangered (EN), 19 in the category Vulnerable (VU) and specially 3 considered Critical Endangered (CE): *Aniba Pedicellata* Kostem, *Couepia joaquinae* Prance and *Voucupa americana* Aubl. In the Project Area there are also 6 species of fauna considered vulnerable (VU), 4 near threatened (NT) and 1 endangered (EN): *Aratinga solstitialis*.

#### **Gold Level**

Attendance to the criteria of “Exceptional Benefits to Biodiversity”: The REDD+ Jari/Amapá Project Zone has a very important role in biodiversity conservation as well as being the integrand of the Shield Endemic Area of the Guianas fulfills the vulnerability criteria described by CCBS. The Project area has occurrence of globally endangered species according to the Red List of Endangered Species of IUCN, including 3 species of flora considered “Critically Endangered”, 8 species of flora considered “Endangered” and 2 fauna species considered “Endangered. To monitor the Exceptional Benefits to Biodiversity three trigger species were selected: *Voucupa Americana* Aubl. (CE), *Bertholletia excelsa* Bonpl. (VU) and *Aratinga solstitialis* (EN).

#### **Verification Schedule**

Every 2 (two) years

**INDEX**

<b>G1. PROJECT GOALS, DESIGN AND LONG-TERM VIABILITY .....</b>	<b>9</b>
G1.1 PROPONENTS AND PARTNERS	10
G1.2. CLIMATE, COMMUNITY AND BIODIVERSITY OBJECTIVES	13
G1.3. PROJECT LOCATION	14
G1.4. BRIEF OVERVIEW OF THE BASIC PARAMETERS	15
G1.4 BOUNDARIES OF THE PROJECT AREA AND PROJECT ZONE	21
G1.5 AND 6 STAKEHOLDERS IDENTIFICATION AND LISTS OF STAKEHOLDERS	22
G1.7 RELEVANT BOUNDARIES AND LOCATIONS	29
G1.8 BRIEF DESCRIPTION OF EACH PROJECT ACTIVITIES	30
G1.9 PROJECT START DATE, LIFETIME, ACCOUNTING PERIOD AND IMPLEMENTATION SCHEDULE	57
G1.10 IDENTIFICATION OF LIKELY NATURAL AND HUMAN-INDUCED RISKS	59
G1.11 MAINTENANCE OF BENEFITS BEYOND THE PROJECT LIFETIME	63
G1.12 FINANCIAL MECHANISMS ADOPTED	64
<b>G2. SCENARIO AND ADDITIONALLY OF LAND USE IN CASE OF PROJECT ABSENCE .....</b>	<b>67</b>
G2.1 ALTERNATIVE SCENARIOS OF LAND USE IN CASE OF PROJECT ABSENCE	67
G2.2 PROJECT ADDITIONALITY	69
<b>G3. STAKEHOLDER ENGAGEMENT .....</b>	<b>75</b>
G3.1 ACCESS TO PROJECT INFORMATION AND DOCUMENTS	75
G3.2 RELEVANT AND ADEQUATE INFORMATION TO COMMUNITIES	76
G3.3 COMMUNICATION OF CCBS VALIDATION/VERIFICATION PROCESS	77
G3.4 COMMUNITY GROUPS AND OTHER STAKEHOLDERS CONSULTATION	77
G3.5 PARTICIPATORY PROCESS	88
G3.6 PARTICIPATION IN DECISION-MAKING AND IMPLEMENTATION	91
G3.7 ANTI-DISCRIMINATION	91
G3.8 FEEDBACK AND GRIEVANCE REDRESS PROCEDURE	92
G3.9 ORIENTATION AND TRAINING	94
G3.10 EQUAL EMPLOYMENT OPPORTUNITIES	95
G3.11 WORKER’S RIGHT LAWS AND REGULATIONS	95
G3.12 WORKER SAFETY	97
<b>G4. MANAGEMENT CAPACITY .....</b>	<b>98</b>
G4.1 GOVERNANCE, ROLES AND RESPONSIBILITIES	98
G4.2 TEAM’S TECHNICAL SKILLS	99
G4.3 FINANCIAL HEALTH OF THE IMPLEMENTING ORGANIZATIONS	103
<b>G5. LEGAL STATUS AND PROPERTY RIGHTS .....</b>	<b>104</b>
G5.1-5 RESPECT FOR THE RIGHT TO LANDS, TERRITORIES AND RESOURCE AND PRIOR CONSENT, FREE AND INFORMED	104
G5.6-9 LEGAL STATUS	110
<b>CL1. WITHOUT-PROJECT CLIMATE SCENARIO .....</b>	<b>116</b>
<b>CL2. NET POSITIVE CLIMATE IMPACTS .....</b>	<b>119</b>
<b>CL3. OFFSITE CLIMATE IMPACTS (‘LEAKAGE’).....</b>	<b>122</b>
<b>CL4. CLIMATE IMPACT MONITORING.....</b>	<b>125</b>

<u>GL1. CLIMATE CHANGE ADAPTATION BENEFITS .....</u>	<u>126</u>
<u>CM1. WITHOUT-PROJECT COMMUNITY SCENARIO .....</u>	<u>127</u>
CM1.1 COMMUNITIES ORIGINAL CONDITIONS	127
CM1.2 HIGH CONSERVATION VALUE ATTRIBUTES 5 AND 6	141
CM1.3. EXPECTED CHANGES UNDER THE WITHOUT-PROJECT SCENARIO	144
<u>CM2. NET POSITIVE COMMUNITY IMPACTS .....</u>	<u>145</u>
<u>CM3. OTHER STAKEHOLDER IMPACTS .....</u>	<u>153</u>
<u>CM4. COMMUNITY IMPACTS MONITORING .....</u>	<u>154</u>
<u>GL2. EXCEPTIONAL COMMUNITY BENEFITS .....</u>	<u>164</u>
<u>B1. BIODIVERSITY WITHOUT-PROJECT SCENARIO .....</u>	<u>165</u>
B1.1. BIODIVERSITY ORIGINAL CONDITIONS	165
B1.2. HIGH CONSERVATION VALUE ATTRIBUTES 1, 2, 3 AND 4	171
B1.3. SCENARIO OF THE USE OF LAND IN THE ABSENCE OF THE PROJECT	172
<u>B2. NET POSITIVE BIODIVERSITY IMPACTS.....</u>	<u>174</u>
B2.1 POSITIVE NET IMPACT ON BIODIVERSITY	174
B2.2 COMPARING THE SCENARIO IN THE ABSENCE OF THE PROJECT AND WITH THE PROJECT	184
B2.3 MITIGATION OF NEGATIVE IMPACT	185
B2.4 HIGH CONSERVATION VALUE	187
B2.5-6 INVASIVE SPECIES	188
B2.7 GENETICALLY MODIFIED ORGANISMS (GMO)	189
B2.8 FERTILIZER USE	189
B2.9 WASTE MANAGEMENT	190
<u>B3. OFFSITE BIODIVERSITY IMPACTS .....</u>	<u>190</u>
<u>B4. BIODIVERSITY IMPACTS MONITORING .....</u>	<u>190</u>
<u>GL3. EXCEPTIONAL BIODIVERSITY BENEFITS .....</u>	<u>197</u>

**INDEX OF TABLES**

Table 1. Identification, responsibility and contact of Jari/Amapá REDD+ Proponents. ....	10
Table 2. Identification, responsibilities and contact of partner organizations. ....	12
Table 3. Forest typology registered in the Project Zone based on the Brazilian Vegetation Classification (IBGE, 2008). ....	15
Table 4. List of rural and urban settlements located in the influence area of the study. Source: DSEA (2011). ....	24
Table 5. Description of actors involved with the Project. ....	27
Table 6. Casual relationships that explain how each project activity will delivery expected climate, community and biodiversity benefits. ....	34
Table 7. Summary of the general REDD+ Project Activities, their implementation status and chronology. ....	40
Table 8. Summary of Jari/Amapá REDD+ Project main activities regarding the FSC-certified Forest Management, their implementation status and chronology. ....	47
Table 9. Chronology of micro activities related to the main activities of REDD+ component. ....	57
Table 10. Chronology of micro activities related with the FSC-certified Forest Management. ....	58
Table 11. Profile of land ownership in the amazon, 2000. ....	72
Table 12. Information from the Laranjal do Jari registry of Deeds. ....	105
Table 13. Information from state of Amapá Environment and Land Planning Institute. ....	105
Table 14. Summary of Land Inspaction Procedure. ....	108
Table 15. Baseline carbon stock change in the Project Area (Table 21b of Methodology VM0015). ....	117
Table 16. Baseline carbon stock change in the leakage belt area (Table 21c of Methodology VM0015). ....	118
Table 17. Total ex ante estimated net carbon stock changes and emissions of non-CO2 gases in the Project Area (Table 29 of the Methodology VM0015). ....	119
Table 18. Ex ante estimated net anthropogenic GHG emission reductions and Verified Carbon Units (Table 36 of Methodology VM0015). ....	121
Table 19. Ex ante estimated total leakage (Table 35 of Methodology VM0015). ....	124
Table 20. IDH-M of Municipalities in the Project Zone. ....	132
Table 21. Proportion between the number of enrollments and population of school age. ....	132
Table 22. Income sources, ratio for each household (%). Source: Cifor (2013). ....	133
Table 23. Identification of potential high conservation attributes 5 and 6. ....	141
Table 24. Project's expected benefits, costs, risks and mitigation measures to the communities. ....	148
Table 25. Monitoring Plan applied to the communities. ....	156
Table 26. Endangerd flora species according to the RED List of Endangered Species of IUCN, and their occurrence. These information was extracted from DSEA Annex. ....	165
Table 27. List of endemic birds species in the Guyana Shield. ....	168
Table 28. Endangered fauna species according to the Red List of Endangered Species of IUCN. ....	170
Table 29. Initial identification of potential High Conservation Value Attributes 1, 2, 3 and 4. ....	171
Table 30. Direct, Indirect, actual and predict impacts on biodiversity resulting from project activitoes on the with-roject scenario. ....	176
Table 31. List of variables selected to monitor project's biodiversity activities and impacts. ....	192
Table 32. Selected Trigger species, their population trend, measures need to be taken and indicators adopted. ....	201

**INDEX OF FIGURES**

Figure 1. Project Location. .... 14

Figure 2. Vegetation types in the Project Zone based on the Brazilian Geography and Statistics Institute (IBGE, 2008). .... 16

Figure 3. Vegetation map with successional stages in the study area. .... 17

Figure 4. Hydrographic characteriation in the Project Zone. .... 18

Figure 5. Map of geological compartments of the Project Zone. .... 19

Figure 6. Boundaries of the Project Area and the Project Zone. .... 22

Figure 7. Location of urban and rural settlements identified located in the Influence Area of the Project. Source: Arvorar-Ipê (2011). .... 23

Figure 8. Communities currently engaged with the Project. .... 25

Figure 9. Cover of the Sustainable Forest Management Plan. .... 32

Figure 10. Annual Production Units (APU) to be explored in the Sustainable Forest Management. .... 33

Figure 11. Technical Board meeting of February 2014. .... 53

Figure 12. Technical workshop on cassava cultivation given by Fundacnao Jari to the farmers of the Project. .... 54

Figure 13. Participative confection of the Property Use Plan. .... 54

Figure 14. Example of a "Future Map" from the Property Use Plan of a farmer assisted by the Project. .. 55

Figure 15. Results of the workshop "Contruccion of REDD+ Concepts", part of the DOP methodology at community "Fé em Deus". .... 55

Figure 16. Participative construction of Community Development Plan, part of DOP methodology on "Fé em Deus" community. .... 56

Figure 17. Picture of part of Xeloteque archive. .... 56

Figure 18. Example of deforested area for deployment of subsistence agriculture in areas of one of the communities in the Project. .... 68

Figure 19. Jari/Amapá REDD+ project area and its borders with the area managed by Grupo Jari and FSC certified since 2014, in the state of pará, with an emphasis on unplanned deforestations caused by external agents despite surveillance, spetial operations and the physical presence of the Group. .... 70

Figure 20. Detected deforestation in Legal Amazon accumulated up to 2010, occurred ina systematic and spread way throughout the region. .... 71

Figure 21. Authorized vs. Unauthorized deforestation in municipalities of Amapá between 2002 and 2009. Source: IBAMA apud GTPPCDAP (2010) and INPE (2011). .... 72

Figure 22. Project Proponents, partners and government agencies from the state of Amapá meet to discuss the Project. .... 79

Figure 23. Project proponents, partners and local government agencies representatives meet to discuss the Project. .... 80

Figure 24. Project proponents, partners and Fé em Deus and França Rocha community residents meet to discuss the Project. .... 81

Figure 25. Project proponents, partners and Tira Couro, Sombra da Mata and Valdorimro/Barbudo residents meet to discuss the Project. .... 82

Figure 26. project proponents, partners and Nova Conquista and Iguarapé das Pacas Communities residents meet to discuss the Project. .... 83

Figure 27. Project proponents, partners and Água Azul community residents meet to discuss the Project. .... 84

Figure 28. Consultation meeting regarding SFM activities carried out close to São Pedro community in July 2014. .... 85

Figure 29. Consultation meeting regarding SFM activities carried out close to Cajari community in November 2014. .... 86

Figure 30. Activities selected by each farmer during the Family Assessment. .... 89

Figure 31. "Fale Conosco" Feedback Channel been exposed on Project CD Room. .... 93

Figure 32. Stakeholders Comment Form. .... 93

Figure 33. Property location considering properties Santo Antônio da Cachoeira and Porto Salvo. .... 106

Figure 34. Location of Reference region, project Area, Leakage Management Area and Leakage Belt of Jari/Amapá REDD+ Project. .... 123

Figure 35. Main profesional occupation of men interviewed by CIFOR. Source: CIFOR (2013). .....	134
Figure 36. Main professional occupation of women interviewed by CIFOR. Source CIFOR (2013). .....	135
Figure 37. Origin of assisted farmers by state. Source: Family Assessment Jari/Amapá REDD+ Project. ....	136
Figure 38. Age class of farmers assisted by the Project. Source: Family Assessment Jari/Amapá REDD+ Project. ....	136
Figure 39. For how many years each farmer assisted by the Project Lives in the Region. Source: Family Assessment Jari/Amapá REDD+ Project. ....	136
Figure 40. Gender distribution of farmers assisted by the Project. Source: Family Assessment Jari/Amapá REDD+ Project. ....	137
Figure 41. Average size in hectares of properties from farmers assisted by the Project. ....	137
Figure 42. Main crops developed by producers assisted by the Project. Source: Family assessment Jari/Amapá REDD+ project. ....	138
Figure 43. Farmers assisted by the Project that receive visites of health agents. Source: Family Assesment Jari/Amapá REDD+ Project. ....	138
Figure 44. Type of sanitation in each farmers home. Source: Family Assessment Jari/Amapá REDD+Project. ....	139
Figure 45. Most reported diseases by farmers assisted by project. Source: Family Assessment Jari/Amapá REDD+ Project. ....	139
Figure 46. Water source of families assisted by the Project. Source: Family Assessment REDD+ Jari/Amapá REDD+ Project. ....	140
Figure 47. Water treatment of producers assisted by the Project. Source: Family Assessment Jari/Amapá REDD+ Project. ....	140
Figure 48. Location of the identified “castanhais” by Grupo Jari, potential HCV. ....	143
Figure 49. Brazil Nut, the final non-timber product managed by communities. ....	144
Figure 50. Location of the sample plots used on Jari/Amapá REDD+ forest inventory (D-LJ). ....	167
Figure 51. Photos of Castanheira-do-brasil (Brazil Nut) to teh left and a community member collecting the Brazil Nur ouriços on the right. ....	168
Figure 50. Respectively one Guariba monkey and a parrot, part of the daily life of the communities in teh region. ....	170
Figure 53. Photo of a Yellor Conure (Aratinga solstitialis), threatened and endemic species in the Guyana Shield. ....	170
Figure 54. Example of biodiversity monitoring report already conducted on the Pará side. ....	196
Figure 55. Monitored dung beetle. Source: Federal University of Lavras. ....	196
Figure 56. Box describing criterion, sub-criteria and provisional thresholds for triggering KBA status. Source: Langhammer et al, 2007. ....	199



# General Section

## G1. Project Goals, Design and Long-Term Viability

The initial causes of deforestation in the Brazilian Amazon are connected to occupation policies and infrastructure investments initiated in the 1960s. As a result of these policies was the implementation of large infrastructure projects subsidized by the Brazilian government. These projects were accompanied by opening of roads, colonization projects, livestock and agriculture, moment when Project Jari was idealized by Daniel Ludwig in 1967. In 2000, Grupo Jari acquired a significant portion of the Valley of Jari in an auction conducted by federal government, leading the region to economic and social restructuring.

Valley of Jari has an important role as home to more than two thousand rural families and serves as an ecological corridor connecting several protected areas. Its rich biodiversity includes eight types of forest vegetation and non-forest and species of extreme ecological importance (54 flora species are considered endangered) and cultural (extractive communities utilize the diversity of flora and fauna as a source of income and food). Regarding the fauna there are also about two thousand species of animals, of which around 100 are considered endangered.

Large portion of the deforestation occurred in the Amazon is related to the implementation of large infrastructure projects, population migration, human settlements and agricultural and livestock activities. In Valley of Jari you can see that in recent years there has been an increase in the diffuse deforestation. Over the years, this pattern of deforestation mainly caused by shifting cultivation of settlers who settled in the area due to historical processes is subsequently replaced and consolidated in medium and large batches of deforestation ranchers who buy areas of the settlers with financial difficulties and production. Thus, the demand for opening new areas is driven by small-scale agriculture and livestock, with a number of underlying causes related to political, economic and social issues that contribute to the total pressure from deforestation observed in the region.

In this context the project proposes the development of activities aimed at mitigating climate change by reducing emissions of greenhouse gases from deforestation and forest degradation, local income generation and promotion of social welfare, the reduction of the rural exodus and urban social marginalization, biodiversity conservation and promotion related scientific research.

The risks were identified and managed to generate and maintain the benefits of the project during and beyond the project duration, and are described in the specific sections to climate, community and biodiversity, as well as risk analysis tool attached.

## Project Overview

### G1.1 Proponents and Partners

The proponents of the Project and contact information are described on **Table 1**. Information about the main partner is described on **Table 2**.

**Table 1. Identification, responsibility and contact of Jari/Amapá REDD+ Proponents.**

ORGANIZATION	DESCRIPTION
<p><b>Biofilica Investimentos Ambientais S.A.</b></p>	<p>Biofilica Investimentos Ambientais is a Brazilian Company that promotes the management of forest areas in the Amazon biome. The company was created in 2008 aiming to create pioneering alternatives and to turn environmental preservation into an economically attractive activity for forest owners, communities and investors. Biofilica’s mission is to reduce deforestation and carbon emissions into the atmosphere, to preserve biodiversity and hydric resources, to promote social inclusion and the development of the communities living in the Amazon biome through the trade of environmental services credits and to promote and finance scientific researches and the development of sustainable business chains.</p> <p><b>Responsibilities in the Project:</b> general coordination of the socioeconomic and environmental assessment (DSEA) and baseline studies and carbon stock; PD (Project document) development and financing; credits validation/checking and trading; Project co-management throughout the Project lifetime.</p> <p><b>Contact:</b> Plínio Ribeiro  <b>Phone:</b> +55 11 3073-0430  <b>E-mail:</b> plinio@biofilica.com.br  <b>Website:</b> www.biofilica.com.br</p>

ORGANIZATION	DESCRIPTION
<p><b>Jari Florestal S.A.</b></p>	<p>Jari Florestal S.A.<sup>2</sup> is a Grupo Jari company, which commercial focus is the production of FSC-certified tropical sawn wood. As a result of having its own and private management area and a sawmill, it can ensure a perfect control of its chain of custody: from the inventory to the client, providing total certainty regarding the origin of the wood. Constant investments in technology and production as well as efficient logistics structure have made Jari Florestal one of the main green stamped Brazilian companies. Founded in 2003, located in the Valley of Jari in Pará, Jari Florestal turned into a global reference for developing sustainable forest management (FSC-certified Management) in 745 thousand hectares in the Amazon using low impact techniques to match the use of the forest to its conservation.</p> <p><b>Responsibilities in the Project:</b> Jari Florestal is responsible for the co-management of the Project, for operating the sustainable forest management, as well as all related activities such as the environmental and social management of the Project to reduce negative impacts and generate positive ones.</p> <p><b>Contact:</b> João Antônio Prestes  <b>Phone:</b> +55 11 4689-8700  <b>E-mail:</b> joao.prestes@grupojari.com.br  <b>Website:</b> www.grupojari.com.br</p>
<p><b>Jari Celulose S.A.</b></p>	<p>Jari Celulose S.A.<sup>3</sup> is a Grupo Jari company with two divisions: the Cellulose Division, which produces bleached eucalyptus pulp and is the only Brazilian company and the first in the world to receive the FSC Pure Label certificate for its whole chain of custody; and the Paper and Packaging Division, the second largest integrated industry, which supplies to almost all economic segments.</p> <p><b>Responsibilities in the Project:</b> Jari is the landowner. It is responsible for title and land tenure regulation, security and land surveillance.</p> <p><b>Contact :</b> Vinícius M. Garcia  <b>Phone:</b> +55 11 4689-8700  <b>E-mail:</b> vinicius.garcia@grupojari.com.br  <b>Website:</b> www.grupojari.com.br</p>

<sup>2</sup> Jari Florestal is the very recent name of the former Orsa Florestal company.

<sup>3</sup> Jari Celulose is the very recent name of the former Jari Celulose, Papel e Embalagens company.

**Table 2. Identification, responsibilities and contact of partner organizations.**

ORGANIZATION	DESCRIPTION
<p><b>Fundação Jari</b></p>	<p>Fundação Jari is a non-profit organization belonging to Grupo Jari that, together with a large network of partners, develops programs and projects on education, health, and human rights guarantee, environment, culture and employment and income generation. Its main source of financing is the fixed contribution of 1% gross revenue of Grupo Jari. Since 1994, the foundation has assisted over 6.8 million people in Brazil. In relation to the implementation of the social activities of Project REDD+ Jari Amapá, Fundação Jari receives additional contributions directly from Project proponents and also operationalizes the Environmental Fundo f the Project.</p> <p><b>Responsibilities in the Project:</b> development of social activities; Project's social management.</p> <p><b>Contact:</b> Jorge Rafael Almeida</p> <p><b>Phone:</b> +55 93 3735-1140 <b>E-mail:</b> jorge.almeida@fundacaojari.org.br <b>Website:</b> www.fundacaojari.org.br</p>
<p><b>Instituto do Homem e Meio Ambiente da Amazônia – IMAZON</b></p>	<p>Imazon is a nongovernmental organization that has been promoting the development of the Amazon for the last 20 years through its studies, public policies formulation, broad dissemination of information and construction capacity.</p> <p><b>Responsibilities in the Project:</b> development of baseline studies and carbon stock.</p> <p><b>Contact:</b> Carlos Souza Jr.</p> <p><b>Phone:</b> +55 91 3182-4000 <b>E-mail:</b> souzajr@amazon.org.br <b>Website:</b> amazon.org.br</p>
<p><b>Instituto de Pesquisas Ecológicas – IPÊ e Arvorar</b></p>	<p>IPÊ is currently one of the largest NGOs in Brazil, and it takes on an integrated action model developed over years of experience combining research, environmental education, habitats restoration, social involvement and sustainable development, preservation and preparation of policies. Arvorar is an IPÊ company subsidiary that innovates solutions for current environmental challenges using modern forest restoration techniques.</p> <p><b>Responsibilities in the Project:</b> Technical coordination of the socioeconomic module and development of environmental and socioeconomic assessment.</p> <p><b>Contact:</b> Angela Pelin</p> <p><b>Phone:</b> +55 11 4597-1327 <b>E-mail:</b> angela@ipe.org.br <b>Website:</b> www.ipe.org.br</p>

ORGANIZATION	DESCRIPTION
<p><b>Centro Internacional de Pesquisa Florestal (CIFOR)</b></p>	<p>CIFOR is a non-profit research organization located in Bogor, Indonesia whose mission is to promote human well-being, environmental preservation and equity by conducting research to inform practices and policies affecting forests in developing countries.</p> <p><b>Responsibilities in the Project:</b> Evaluation of the socio-economic impacts in the long-term; Carrying out Global Comparative Study on REDD+.</p> <p><b>Contact:</b> Amy Duchelle  <b>Phone:</b> +55 21 2285-3341  <b>E-mail:</b> a.duchelle@cgiar.org  <b>Website:</b> www.cifor.org/</p>

## G1.2. Climate, Community and Biodiversity Objectives

The Project has as main goals:

- **Climate** – mitigation of global climate changes through reduction of emission of greenhouse gas caused by deforestation and forest degradation. It is expected that the emission of 3.450.278,8 tCO<sub>2</sub>e will be avoided within the 30 years of the Project, with an annual average of 115.009,3 tCO<sub>2</sub>e avoided; reduce the occurrence and risks associated to extreme weather events. These goals will be achieved through monitoring the forest cover via satellite image, asset monitoring and mitigation and leak prevention activities.
- **Communities**– Promote the improvement of social welfare and generate income through the improvement of agricultural productivity, in order to secure the people living in the countryside decent living conditions and harmonious coexistence with the forest. The goals will be achieved through the implementation of activities based on rural technical assistance, coordination with stakeholders, trainings on organizational aspects, facilitation of market access and development of profitable activities that promote economic and sustainable alternatives to deforestation will be encouraged.
- **Biodiversity** – Conservation of biodiversity, including endemic species of plants and animals in the Red Lists IUCN, CITES and IBAMA. This conservation will be through the maintenance of forest cover, which constitutes an ecological corridor and buffer zone to neighboring conservation units, monitoring of impacts caused the sustainable forest management activities, the promotion of scientific research on the biodiversity and sustainable practice among the proponents, partners and engaged communities.

All projects benefits take into account positive and negative impacts and are relative to conditions under the without-project land use scenario, they description may be seen in **Section G2** of this document.

### G1.3. Project Location

Project REDD+ Jari Amapá is located in the Valley of Jari, in the municipalities of Laranjal do Jari and Vitória do Jari, on the left margin of the Jari river, south of the State of Amapá and on the border of the state of Pará, north of Brazil (Figure 1).

The Project area can be accessed by the following ways:

- By land – from Macapá (AP), through BR-156 southwest towards Laranjal do Jari (AP)
- By water – from Belém (PA) or Macapá (AP) through the Amazonas and Jari rivers, traveling time varies from 12 to 36 hours on commercial line boats.
- By air – daily flights to Monte Dourado (PA) from Belém (PA) ± 1 hour, Santarém (PA) ± 40 min and Macapá (AP) ± 30 min.

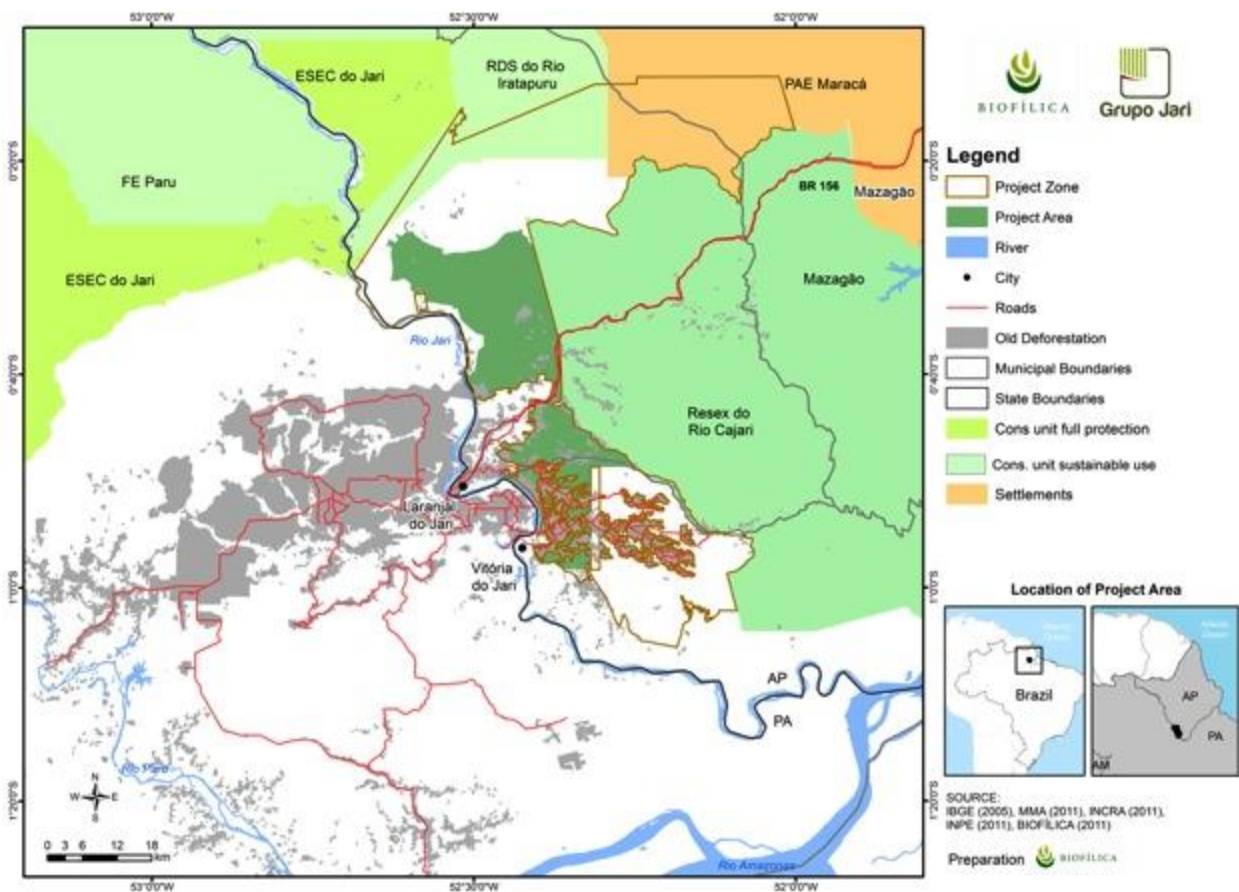


Figure 1. Project Location.

## G1.4. Brief overview of the Basic Parameters

### Vegetation and flora

The Project Zone vegetation is composed by different physiognomies, such as the floodplains vegetation and freshwater swamp vegetation along the rivers and, especially, the dryland forest, which practically dominates the whole landscape (ALVES; MIRANDA, 2008) and forms the main type of existing vegetation: the sub perennial equatorial forest (PIRES and PRANCE, 1985) – with diverse vegetation including eight forest and non-forest formations.

Upon applying the vegetation classification from the Brazilian Geography and Statistics Institute (IBGE, 2008) and VELOSO et al. (1991) the vegetation of the Project Zone can be considered, at a macro level, as formed by Dense Sub montane Ombrophilous Forest and Dense Lowland Ombrophilous Forest in its vast majority, (83.6%) and the rest is Seasonal Wooded Savanna, river influenced Pioneer Formation and/or lacustrine herbaceous without palm trees and Open Ombrophilous Forests with vines (Table 3).

**Table 3. Forest typology registered in the Project Zone based on the Brazilian Vegetation Classification (IBGE, 2008).**

VEGETATION CLASS	ÁREA (ha)
Open Sub montane Ombrophilous forest with vines	36.902
Dense Sub montane Ombrophilous forest - emerging canopy	70.090
Dense Sub montane Ombrophilous forest – uniform canopy	75.334
Dense Lowland Ombrophilous forest	246
Dense Lowland Ombrophilous forest – emergent canopy	55.575
River-influenced Pioneer Formation and/or lacustrine-herbaceous without palm trees	1.526
Wooded Savanna without riparian forest	799
Savanna Parkland without riparian forest	224
<b>TOTAL</b>	<b>240.696</b>

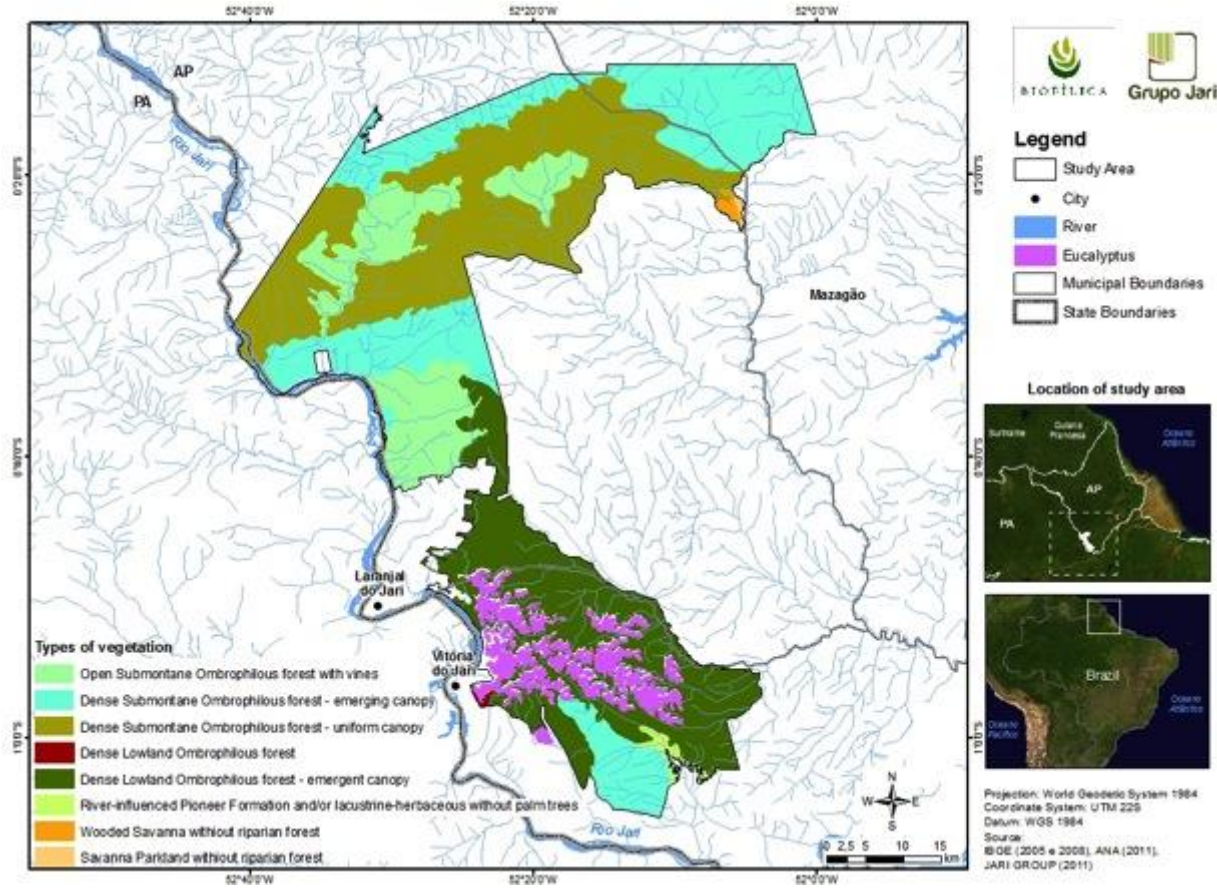


Figure 2. Vegetation types in the Project Zone based on the Brazilian Geography and Statistics Institute (IBGE, 2008).

Based on analyzed satellite images, three main phytophysionomies have been identified: pasture, secondary forest and primary forest. Primary forest area represents 97.6% of the total area coverage, while pasture coverage (clean pasture, dirty pasture and in recovery pasture) makes for 0.85% of the total, and secondary forest areas makes for 1.55% of total coverage (Figure 3).



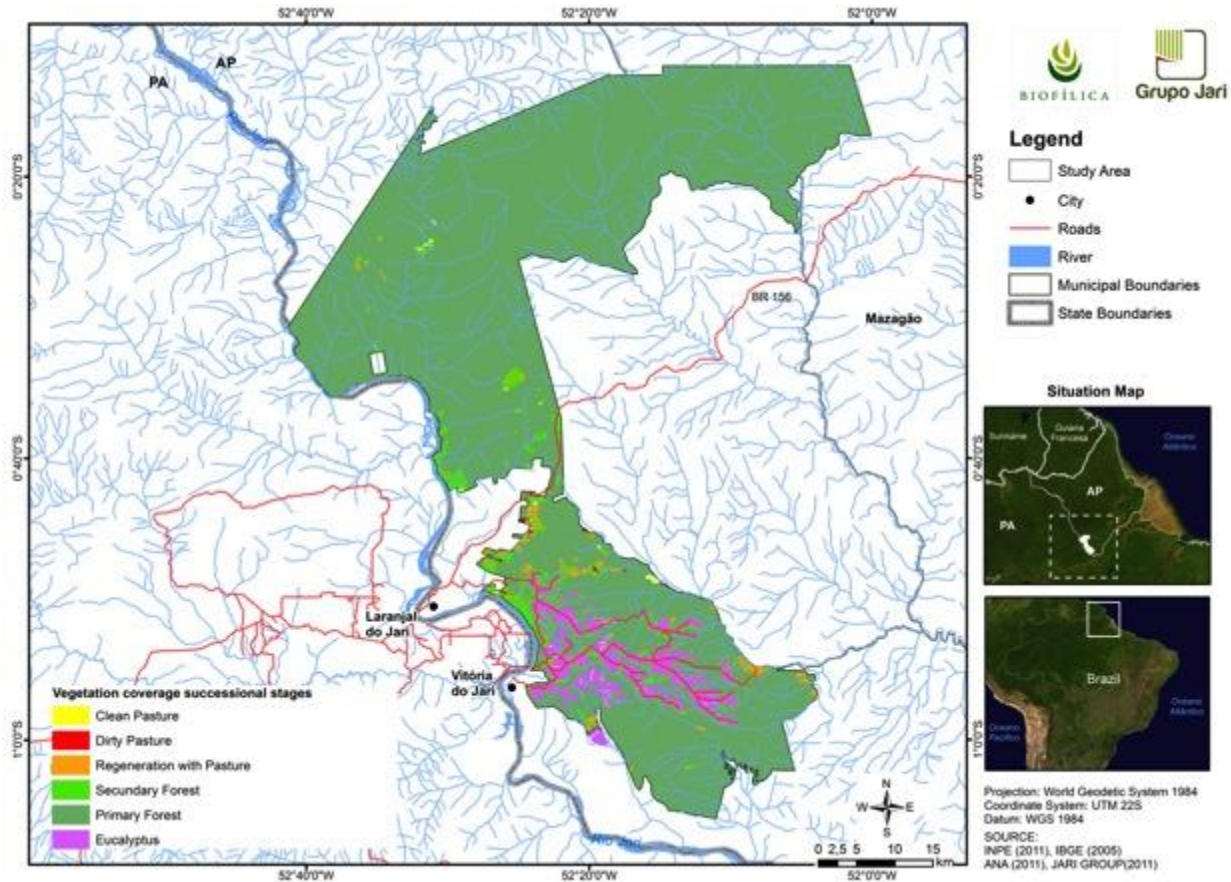


Figure 3. Vegetation map with successional stages in the study area.

Information on species diversity and endangered species can be found on Section B1. Biodiversity Scenario in the Absence of the Project.

## Fauna

The Valley of Jari area presents a diversified fauna including 2,069 recorded species. In studies conducted by the proponents based in broad bibliographic research on the Socioeconomic and Environmental Diagnosis (ARVORAR-IPÊ, 2011) were discovered, up to now, 144 species of mammals (flying and non-flying), 516 species of birds, 88 species of amphibians, 32 species of lizards, 27 species of snakes, ten species of chelonians and jacarés (alligators), 277 species of fish, 129 species of butterflies, 335 species of moths, 44 species of grasshopper, 68 species of dipterous, 22 species of bees (euglossina), 176 species of ants, 85 species of dung beetles and 116 species of arachnids. More information on species diversity and endangered species can be found on Section B1. Biodiversity Scenario in the Absence of the Project.

### Climate

The state of Amapá is located in an area where the main element of the climate dynamics is the Intertropical Convergence Zone (ITCZ), which most important characteristics are the displacements caused by trade winds.

The climate dynamics in the area is characterized for having two distinct periods: the drier period occurring from September to November and having precipitation below 200 mm in the period, and the rainy period occurring from March to May with an average precipitation of more 1,000 mm in the period.

Annual average precipitations in the south of the state are on average 2,100 mm, while north/northeast/southeast areas with more than 2,600 mm annual rainfall.

The average monthly temperatures in the state vary between 25°C and 29°C.

### Hydrography

The study area plays an important role in the preservation of the springs of tributary rivers of three important river basins in the south of Amapá: Jari river basin, Cajari river basin and Maracá river basin (Figure 4).

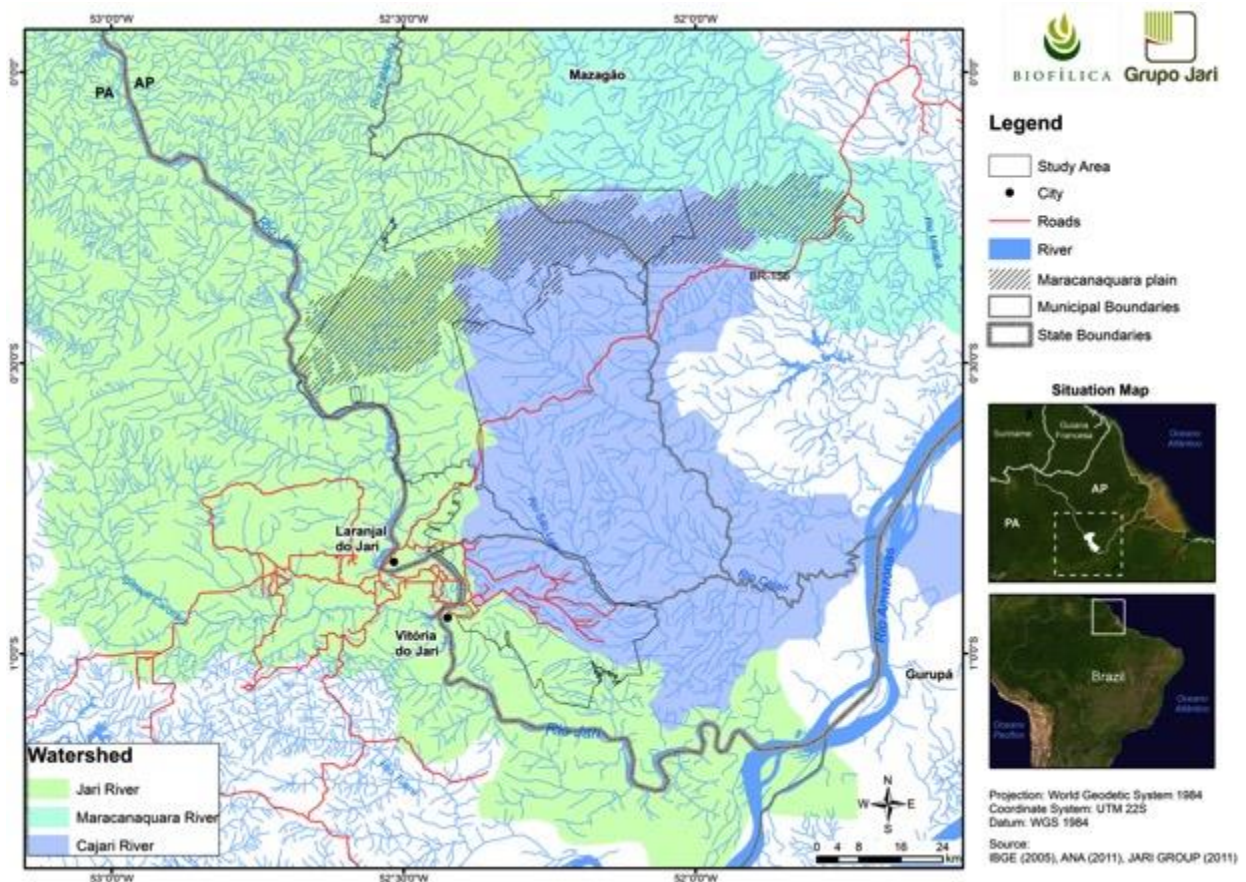


Figure 4. Hydrographic characterisation in the Project Zone.

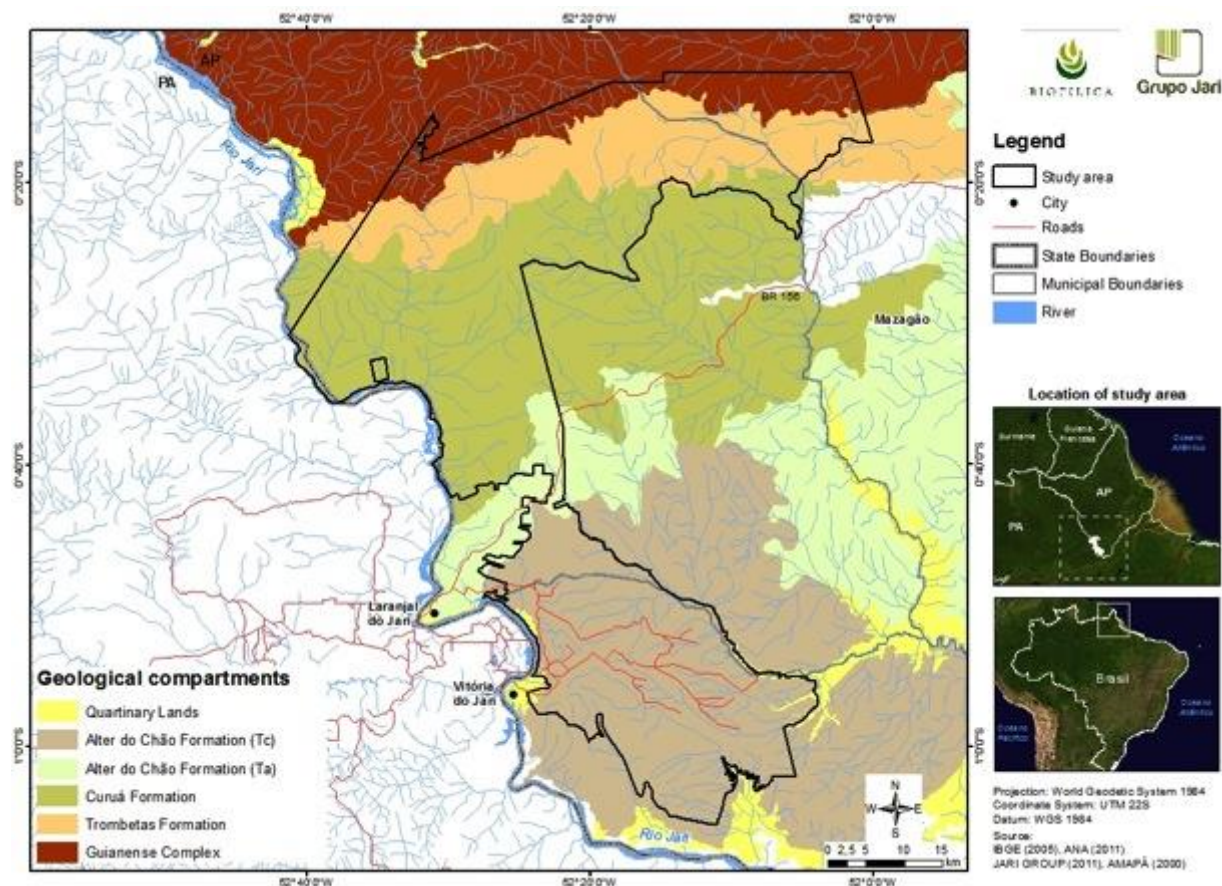
The Jari river basin encompasses 80% of the drainage network inside the DSEA study area. The Jari River starts on the Tumucumaque Mountains, as a typical plain's river running mostly on crystalline basement. The rugged terrains, or highly rugged areas, cause rapids along the river, the main one called Santo Antônio.

On the outer border of the Maraquanacara plain, where the rugged area is located, the Jari river channel forms deep gorges sculpted on cliff walls formed on the left margin (Amapá side) and right margin (Pará side).

Outflow varies from 200 m<sup>3</sup>/s in the months of less rain and 2,000 m<sup>3</sup>/s in rainy months.

## Geology

The geological environment of the Project area encompasses a mosaic of terrains where geotectonic formations of Phanerozoic platform cover prevail over approximately 90% of the Project management area. These formations go from the south limit to the north border of the Amazon plain, which coincide with the rugged landscape locally called rock wall (Figure 5).



**Figure 5. Map of geological compartments of the Project Zone.**

## **Geomorphology**

Over 90% of the Project management area is formed by low plains and plateaus. Thus, one of the basic units of the model to be considered as fundamental in the physical dynamic is the slope. In the historical time, the slopes are modified by the current climate dynamic through the transportation of material on slopes and the anthropic actions. In the historical time erosion process on the slopes is, therefore, highly connected with human intervention.

The model of the relief in the study area as well as in the entire south extension of the state of Amapá can be compared with an extensive ramp whose surface flows are directed to the lower part of the large Amazon plain.

## **Soil**

In almost 90% of its area, the state of Amapá is dominated by soils with large aluminum content; besides that, these soils are extremely acidic and present different levels of fertility.

The area has two predominantly large soil types groups: podzolic and latosols, the latter being the predominant in the state of Amapá.

Podzolic soils inside the Project area are distributed both on high declivity landscapes and on softly waved and plain landscapes. It is on podzolic soils of average fertility (PVa4, PVa3) located between the road BR 156 and Muriacá river floodplains that the Jari Celulose silviculture project was implemented on the Amapá side. These soils resulting from tertiary sedimentary rocks, although located in plain, softly waved and waved landscape areas are not good for traditional agriculture.

The highest concentration of small rural producers is located between Igarapé Mané Preto in BR 156, Igarapé Maicá and the Jari River because of the fertility of the very clayey latosols on plain and softly waved landscape. In these soils there are banana and manioc (cassava) plantations together with nut collecting.

## **Socioeconomics**

The State of Amapá has recorded the highest annual average population growth, compared to all other states in the country (5,77% between 1991 and 2000 and 3,17% between 2000 and 2007). The state is also the one with the biggest growth in urban concentration in the Legal Amazon. The development of new fronts related to activities such as agriculture, forestry and infrastructure works causes large displacement in search of employment. As observed in PAS (2008), in the last decade there was a positive net migration in Amapá, constituting an attraction pole for people of other states. Through field visit, it was found that the migrants in the referred region are mainly from the states of Maranhão and Pará. Often they come for temporary work and remain in the region becoming squatters or smallholders of small farms.

The economy is based on vegetable and mineral extraction activities, especially the chestnut, palm and wood, among the vegetal extraction, and manganese, gold, kaolin and granite from mineral

extraction. Agricultural production is limited, highlighting the rice crops and cassava, although these are the main source of livelihood and income among the rural communities living on the edge and adjacencies of the Project Area; livestock is predominated by buffalo and cattle raising; in the industrial sector the main activities are related to the processing of the main raw materials of the state, in other words, mineral, wood and fish (GTPPCDAP, 2009).

According to a study conducted by Grupo Jari and Action Center for Sustainable Development - POEMA (POEMA, 2005), circa 71.032 people live in the Valley of Jari (in 2001), with 74% living in urban areas of Laranjal do Jari (AP), Vitória do Jari (AP) and Almeirim (PA). In pursuit of temporary work, migrants from other states end up settling in the region part in urban areas and part in rural areas. The regional migration and the rural exodus contribute with the population growth in cities. The high rate of urbanization in the cities of Laranjal do Jari together with the inability of the government to meet social demands results in various urban social conflicts. These migrants go to the rural area and cut the forest for land tenure establishment.

## *Project Design and Boundaries*

### **G1.4 Boundaries of the Project Area and Project Zone**

Two distinct space limits were drawn for the Project: Project Zone and Project Area (**Figure 6**).

The Project Zone is defined as the area where the activities of the Project are implemented. The spatial limits of the Project Zone is the potential area under management of the Proponents of the Project, that is, is the area of the property of Jari Celulose, with a total of 246.247 hectares. The Project Zone includes the Project Area.

The Project Area is where the activities of the Project designed to generate climate benefits are implemented. This limit corresponds to an area of 65.980 hectares under the control of Jari Group and is embedded within the limits of the Project Zone.

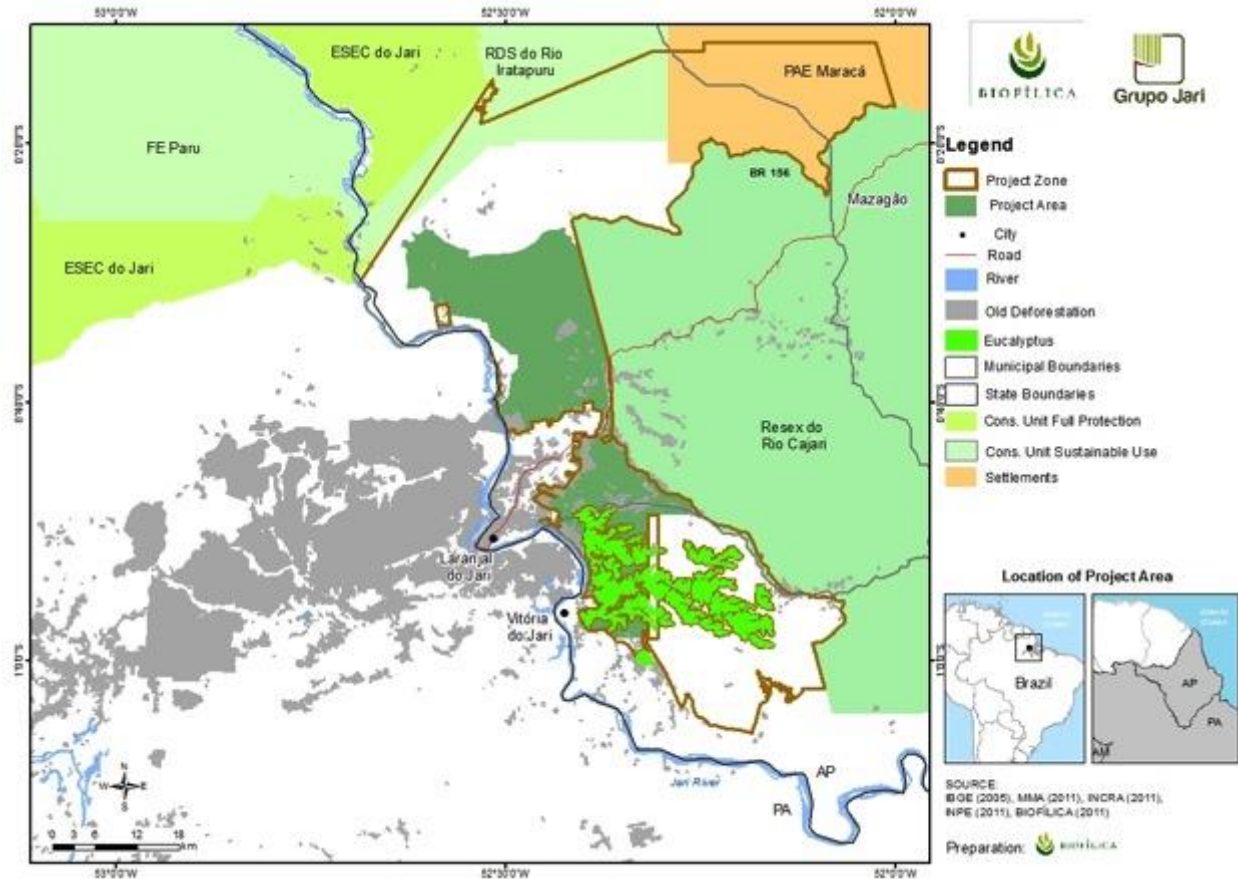
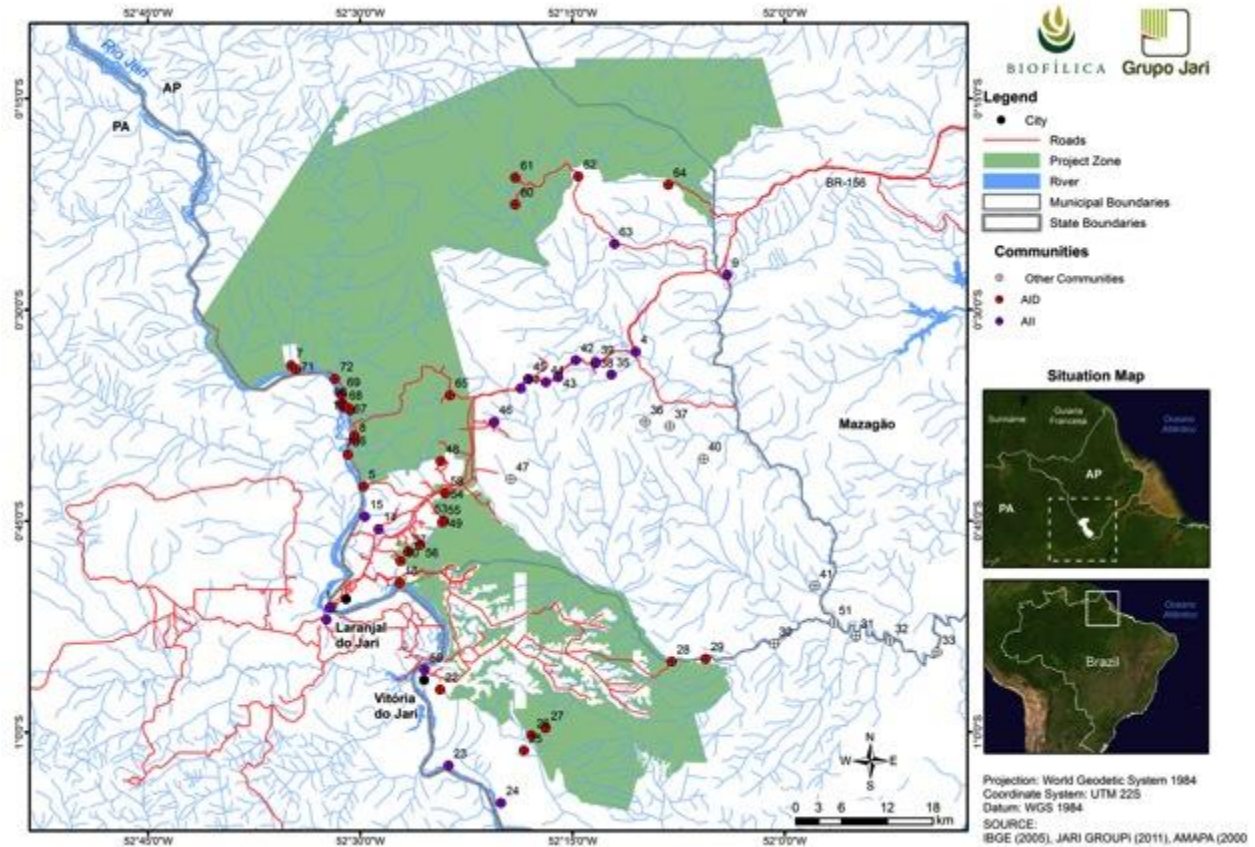


Figure 6. Boundaries of the Project Area and the Project Zone.

## G1.5 and 6 Stakeholders Identification and Lists of Stakeholders

In order to identify the actors and communities, the processes of occupation and deforestation, as well as to characterize the physical and biotic environment in the Project region, Biofílica has developed a study called Socioeconomic and Environmental Diagnosis in the Study Area of Project Jari/Amapá along with entities ARVOAR-IPÊ, held in 2011 (ARVORAR-IPÊ, 2011). The social module of the study was based on systematic information available in literature.

The demographic data were obtained from IBGE database in a period of forty years, except the restrictions imposed by the unavailability of data. The perimeters of the study include the municipalities of Laranjal do Jari, Mazagão and Vitória do Jari, and were divided into two areas: Direct Influence Area (DIA), which includes human occupations, rural or urban, inserted in the Project Zone or located within its immediate limits, and Indirect Influence Area (IIA) which includes human occupation located in the near surroundings and linked to the Project by highways, trails and/or river/streams (Figure 7). It is valid to point that the total area of the study (Influence Area – IA) is broader than the area of the Project REDD+ Jari/Amapá.



**Figure 7. Location of urban and rural settlements identified located in the Influence Area of the Project.** Source: Arvorar-Ipê (2011).

Several other studies were used to identify actors, highlighting the Human and Sustainable Development Plan of the Valley of Jari (FUNDAÇÃO ORSA, 2014) and the *Socioenvironmental Diagnosis of rural communities of the Valley of Jari* (POEMA, 2005). In addition to secondary research including photographic and video graphic documentation and information from federal, state and municipal governments and non-governmental organizations, POEMA held 13 Community Workshops on Research and two Intermediate Seminars, involving 127 locations and 1,087 rural workers and leaders (without repetition) during 330 hours of effort in the field. The study from Fundação Orsa (2014) contributed with valuable information about the rural and urban communities of the Valley of Jari and the challenges faced by them.

The study made by POEMA (2005) identified 19 locations in the Indirect Area of Influence of the study. Of these, two are municipal centers of Laranjal do Jari and Vitória do Jari, and it is in Monte Dourado, district of Almeirim. The other 16 locations are rural communities located on the surrounding and connected to the Project by highways, trails and/or river/streams.

In the Direct Influence Area of the study, 33 locations were identified. Of these, 25 are inserted in the area of the project and 8 are in neighboring areas to the project. **Table 4** lists all rural and urban settlements identified located in the influence area of the Project.

**Table 4. List of rural and urban settlements located in the influence area of the study. Source: DSEA (2011).**

Direct Influence Area				Indirect Influence Area					
ID	Community	Situation	Municipality	ID	Community	Situation	Municipality	ID	Community
5	Padaria	Rural	Laranjal do Jari	Surrounding	1	Laranjal do Jari	Urban	Laranjal do Jari	Surrounding
6	Santo Antônio	Rural	Laranjal do Jari	Interior	2	Monte Dourado	Urban	Almeirim	Surrounding
7	Iratapuru	Rural	Laranjal do Jari	Surrounding	4	Água Branca do Cajari	Rural	Laranjal do Jari	Surrounding
8	Nova Santo Antônio	Rural	Laranjal do Jari	Interior	9	Santa Clara	Rural	Mazagão	Surrounding
1	Porto Paiol	Rural	Laranjal do Jari	Interior	14	Tira Couro	Rural	Laranjal do Jari	Surrounding
1	Arapiranga	Rural	Laranjal do Jari	Interior	15	Moçambique	Rural	Laranjal do Jari	Surrounding
2	Nova Conquista	Rural	Vitória do Jari	Surrounding	23	Paraguai	Rural	Vitória do Jari	Surrounding
2	Assentamento Marapi	Rural	Vitória do Jari	Surrounding	24	Tuchaua	Rural	Vitória do Jari	Surrounding
2	Água Azul	Rural	Vitória do Jari	Interior	34	Ramal do Muriacá	Rural	Laranjal do Jari	Surrounding
6	Marapí	Rural	Vitória do Jari	Interior	35	Marinho	Rural	Laranjal do Jari	Surrounding
7	Aterro Muriacá	Rural	Vitória do Jari	Interior	38	Martins	Rural	Laranjal do Jari	Surrounding
8	Santa Helena	Rural	Vitória do Jari	Surrounding	39	Açaiza	Rural	Laranjal do Jari	Surrounding
9	Ramal França Rocha	Rural	Laranjal do Jari	Interior	42	Retiro	Rural	Laranjal do Jari	Surrounding
4	Balneário Arapiranga	Rural	Laranjal do Jari	Interior	43	Zé da Anta	Rural	Laranjal do Jari	Surrounding
5	Sombra da Mata	Rural	Laranjal do Jari	Interior	44	Igarapé do Meio	Rural	Laranjal do Jari	Surrounding
5	Cawboy	Rural	Laranjal do Jari	Interior	45	Alto Bonito	Rural	Laranjal do Jari	Surrounding
3	Valdomiro	Rural	Laranjal do Jari	Interior	46	Bacia Branca	Rural	Laranjal do Jari	Surrounding
5	Miton	Rural	Laranjal do Jari	Interior	59	Vitória do Jari	Urban	Vitória do Jari	Surrounding
5	AC Diniz	Rural	Laranjal do Jari	Interior	63	Arrependido	Rural	Laranjal do Jari	Surrounding
6	Jorge Manejar	Rural	Laranjal do Jari	Surrounding					
5	Barbudo	Rural	Laranjal do Jari	Interior					
8	Região de Pinquara	Rural	Laranjal do Jari	Interior					
5	Centro Novo	Rural	Laranjal do Jari	Interior					
6	Centro dos Macacos	Rural	Laranjal do Jari	Interior					
6	Criminoso	Rural	Laranjal do Jari	Surrounding					
6	São José do Aningal	Rural	Laranjal do Jari	Surrounding					
4	Retiro	Rural	Laranjal do Jari	Interior					
6	Região de Porto Sabão1	Rural	Laranjal do Jari	Interior					
6	Região de Porto Sabão2	Rural	Laranjal do Jari	Interior					
7	Região de Porto Sabão3	Rural	Laranjal do Jari	Interior					
6	Região do Moreno	Rural	Laranjal do Jari	Interior					
8	Vila de São José	Rural	Laranjal do Jari	Interior					
6	Vila de São Francisco do Iratapuru	Rural	Laranjal do Jari	Interior					
7									



Among the rural communities identified, 8 were selected as communities that were acting in the project on its starting date. These small communities show to have similar patterns of social organization and livelihoods, which justify the identification of them as one group of communities, as described in Section CM1.1.

They are listed below and represented on the map. In the future other rural communities may be covered by project activities, depending on the resource input and ability to perform the activities in the field.

**Communities of the municipality of Laranjal do Jari:** Tira Couro, Sombra da Mata, Valdomiro/Barbudo<sup>4</sup>, França Rocha, Fé em Deus and Igarapé das Pacas.

**Communities of the municipality of Vitória do Jari:** Nova Conquista and Água Azul.

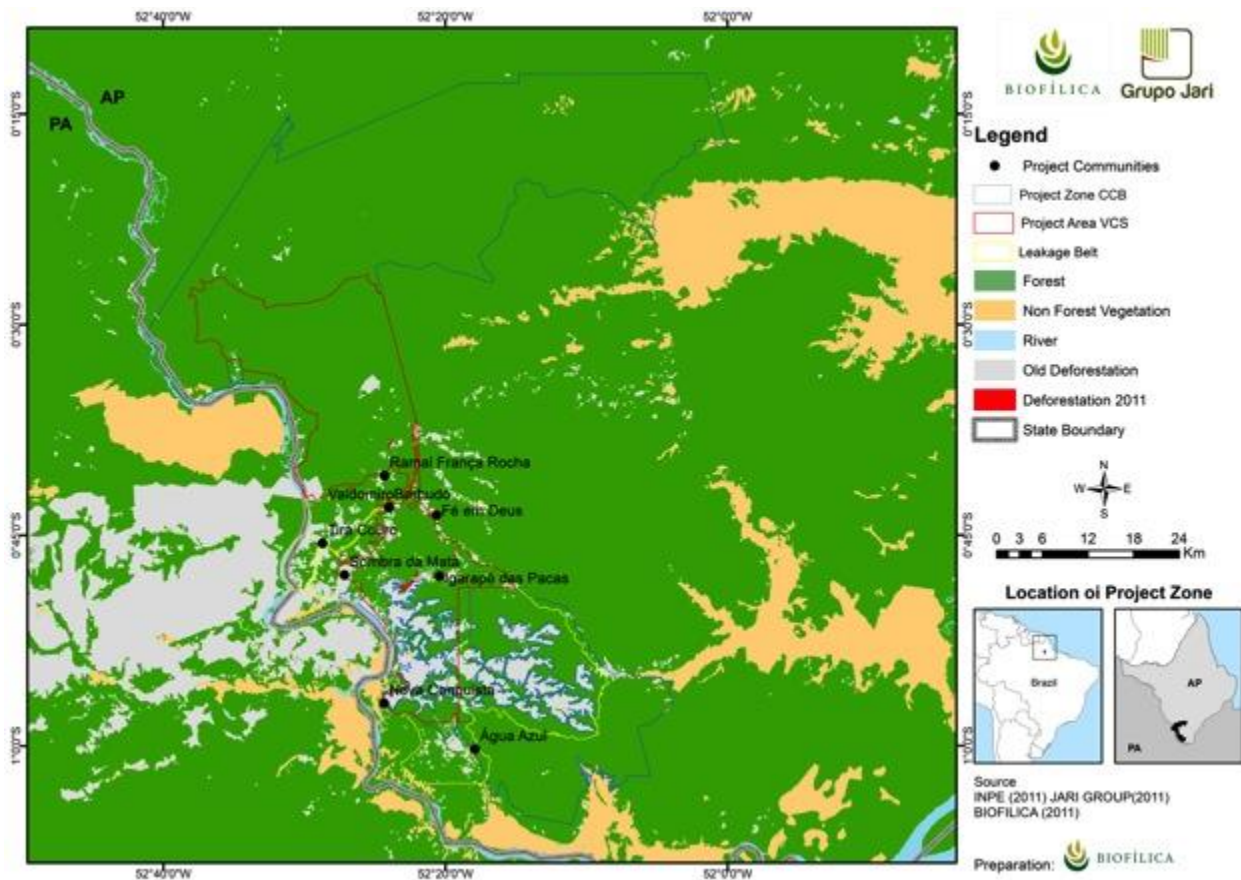


Figure 8. Communities currently engaged with the Project.

The criteria for choice of communities criteria are:

<sup>4</sup> Community Valdomiro/Barbudo, consisting of only two families (Mr. Valdomiro and Mr. Barbudo), freely decided to leave the project in 2013.

**Geographical Location:** Communities within the Project area or immediate surroundings and with easy access and preferably with easy road access. Excluded are those under the influence of the hydroelectric plant of Santo Antonio, recently built in the region, because they suffered and suffer from specific mitigation impacts from the new facility, and the communities from the Extractive Reserve from the Cajari River, which are under specific political influence for the Conservation Units and have their own Management Plan.

**Relation to natural resources and Project Area:** communities that develop subsistence farming or small-scale commercial agriculture and maintain continuous and integral presence in the area, being dependents of the Project Area for these purposes. Are excluded from this category medium and large producers residents of urban centers and with agro pastoral production of commercial scale in the vicinity of the Project Area.

**Predisposition to social organization:** communities with initiative or interest in establishing communitarian organizations, associations, cooperatives and other social centers;

**Existence of others institutional intervention initiatives:** communities with activities of public and/or related institutions. Examples are the Institute for Rural Development (RURAP), Department of the Environment, and Prosecution among others;

**Productive potential:** communities that develop economic activities connected to the sustainable use of land focused on extraction and agriculture, or that have interest and potential to develop them.

These communities have been consulted before being inserted in the activities of the Project and on one of the first activities performed, the DOP workshops (Diagnóstico Organizacional Participativo), the same communities helped us identify other governance stakeholders through a methodology based on the Venn Diagram (activity described on Section G3.1). The diagrams identify public, private or non-governmental institutions and their relation to the communities.

In addition to communities identified and in compliance with CCBS criteria G1.6, other stakeholders identified are:

- Jari Florestal
- Jari Celulose
- Fundação Jari
- Biofílica Investimentos Ambientais
- State Forestry Institute (IEF)
- State Department of the Environment (SEMA)
- Rural Development Institute of Amapá (RURAP)
- Department of Industry, Commerce and Mining (SEICOM)
- Union of Workers and Rural Workes of Laranjal do Jari (STTR)
- Union of Workers and Rural Workes of Vitória do Jari (STTR)

- Institute of Environment and Territorial Planning of the State of Amapá (IMAP)
- Municipal Department of Agriculture of Vitória do Jari (SEMA - Vitória do Jari)
- Municipal Department of Agriculture of Laranjal do Jari (SEMA - Laranjal do Jari)
- Rural Development Institute of Vitória do Jari (RURAP - Laranjal do Jari)
- Rural Development Institute of Laranjal do Jari (RURAP - Vitória do Jari)
- Municipal Department of Environment and Tourism of de Laranjal do Jari (SEMMATUR)
- Federal Institute of Amapá (IFAP)

These institutions were invited to be a part of the Technical Board of Project REDD + Jari Amapá. The Technical Board (better described on Section G3.1) is the space of articulation and communication with communities and stakeholders of the Project. The evaluation of rights, interests and relevance of each group of actors is made regarding the Technical Board, this being the space of alignment for these different groups, and its explained in the table below:

**Table 5. Description of actors involved with the Project.**

Actors Classification	Group of Actors Involved in the Project	Rights to the Project	Interest in its Participation in the Project	Relevance of Participation
<b>Proponents</b>	<b>Proponents (private sector)</b>	Holders with the rights to credits, responsible for investments, development and implementation of the Project. Responsible for bearing the validation costs, maintenance and Project implementation. Responsible also for coordination the activities to climate, communities and biodiversity.	Interest in preserving forest cover loss and developing a local economy that protects the forest.	<i>High.</i> From this group of actors depends the initial investments and maintenance of the Project.
<b>Other Stakeholder</b>	<b>Fundação Jari (third sector)</b>	Execution and local management of local social activities. It is also the institution responsible for the management of the resources of the Socioenvironmental	Ensure inclusion of communities in the activities of the Project and that the activities from Technical Assistance and Rural Extension (TARE) also	<i>High.</i> Due to its history of operation in the region and expertise in the design and implementation of socioeconomic

		Fund.	incorporate questions such as education, health, human rights guarantee, environment, culture and income and jobs generation.	development activities.
<b>Communities</b>	<b>Communities</b>	Beneficiary of the social activities and participants on the distribution of benefits from the Socioenvironmental Fund of the Project.	Access alternatives for rural and socioeconomic technical assistance services, to improve their living conditions.	<i>High.</i> They are essential components of the social activities, deforestation control and development of a local economy model based on sustainable practice in harmony with the forest.
<b>Other Stakeholder</b>	<b>Public agent managers</b>	Articulate with other actors in order to improve the implementation and permeability of public policies.	Understand the demands of the communities and other actors to adapt and improve existing policies or create new ones. Join forces with other actors in the implementation and execution of public policies in pursuit of greater resource efficiency. Monitor the development of private and voluntary initiatives of REDD+.	<i>High.</i> They are the actors officially responsible for developing and implementing public socio-environmental and economic policies. They are essential to potentiates the actions of the Project, give scale and make them sustainable in the long-term.
<b>Other Stakeholder</b>	<b>Unions</b>	Articulate with other actors and in particular with the community to expose and defend their rights.	Understand, explain and defend community rights and rural workers and an equalitarian dialogue among the parts.	<i>Medium.</i> They are not executors of policies neither structure them. Considering an extreme scenario where they do not participate, with the Technical Board it would still be possible to develop

mechanisms that would secure an equal dialogue among the parts.

<p><b>Other Stakeholder</b></p>	<p><b>Research Institutions</b></p>	<p>Conduct studies and research regarding the Project interventions and sustainable forest management and its impacts. Provided that these studies are processed and their results are returned to the local/regional society and actors involved.</p>	<p>Understand the impacts of sustainable forest management and initiatives of REDD+ in the socio-environment and local and regional biodiversity. Produce and disseminate knowledge. Develop and publish scientific papers. Have an area of socioeconomic and environmental rich context to produce long-term studies and lead students to classes and practical experiences.</p>	<p><i>Medium.</i> They are important for providing an impartial opinion of the activities and to feed the adaptive management of the Project, making it more sustainable. Considering an extreme scenario where they were not part of the Project, it would still be possible to implement the activities of the Project and, with help from the Technical Board, guarantee the adaptive management of the project.</p>
---------------------------------	-------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## G1.7 Relevant Boundaries and Locations

The location of communities identified is shown at **Figure 7** and the boundaries of Project Area and Project Zone is shown at **Figure 6**, other relevant location is any High Conservation Value Areas identified.

Jari Amapá REDD+ High Conservation Value areas and attributes are described in Sections CM1 and B1 and were identified based on the reference “*Assessment, management and monitoring of High Conservation Value Forest: A Practical Guide for Forest Managers*”, a guide developed by ProForest. The **potential HCV area** identified were the “Castanheiras”, possible meeting HCV criteria number 5<sup>5</sup> due to its as source of income to the communities. Other **potential HCV attribute** identified was related with HCV

<sup>5</sup> HCV attribute 6 refers to “forest areas critical to local communities’ traditional cultural identity”.

criteria number 1<sup>6</sup> due to the amount of endemic and endangered species present within the Project Zone.

Since potential HCV 1 identified is an attribute present all over the project zone a specific area was not delimited for this attribute. The potential HCV 5, may have a delimited location, however, a validation should be carried out with communities and other stakeholders participation in order to determined which “castanhais” are to be considered as HCVs. The map showing “castanhais” already identified (yet not as a HCV) is presented in **Section CM1, Figure 47**.

## G1.8 Brief Description of Each Project Activities

The project activities are closely related to main causes of deforestation in the project area. As described in Section G1, the project context is in an increase and diffuse deforestation and it requires a set of measures to improve this scenario.

### Main focal issue problems

- “Slash and Burn” practices of settlers focal issue: slash and burn agriculture with low profitability and productivity causes the demand for opening new forest areas. If there is technical assistance and rural extension service, workshops and training in agro-extractive techniques improvement, social inclusion and socioeconomic development are improved, then there will be the promoting of rural development and the reduction of the rural exodus and urban social marginalization, with no need for opening new forest areas. By the maintenance of the small farmers on their land with fair socio-economic conditions, they won’t need to sell the land to medium farmers (that may be environmentally more aggressive).
- External invasions focal issue: if there are efficient rounds and patrolling of property surveillance team to identify sensible spots to external invasions and field check of new deforestation points by monitoring deforestation, then there will be a reduction of the occurrence of unplanned deforestation within the Project Area and consequently a reduction of GHG emissions.
- Access to public policies focal issue: a number of underlying causes are related to political, economic and public policies implementation issues that contribute to total pressure of deforestation observed in the region. If we implement regular articulation meetings with stakeholders of the Project (government agencies, communities and project proponents), then communities will be empowered to access public policies and programs, give feedback and suggestions from stakeholders, improving life quality of the community.
- Forest cover maintenance focal issue: if there is a low impact harvesting system implemented, then the physical presence in the area and the economic use will dissimulated invasions with

---

<sup>6</sup> HCV attribute 1 is related with “forest areas containing globally, regionally or nationally significant concentrations of Biodiversity values (e.g. endemismo, endangered species, refugia)”.

unplanned and decontrolled deforestation, maintaining forest cover and its ecological balance. Besides that environmental responsibility and economic and financial efficiency of the sustainable forest use would be guaranteed. It also generates benefits for the local communities by generation of employment and fostering regional social-economic growth, decreasing the pressure on the project area.

- Biodiversity conservation focal issue: if the conservation of fauna and flora species is applied through a set of planned activities (monitoring of Project environmental impacts and implementation of sustainable forest management, maintenance of a seedling nursery of native species from the region such as those are endangered and useful for local communities), then we shall be able to evaluate how efficient to biodiversity conservation the project can be in a long-term, besides de regular impact evaluation of the sustainable forest management activities.
- Communication focal issue: if communication is strengthening among stakeholders the project will have greater transparency, then the complaints will be easily answered and addressed, the project will implement more accurate measures and there will be a increased satisfaction of stakeholders towards the project.
- Environmental education focal issue: if the preservation and dissemination of biodiversity samples, through the scientific research results dissemination, seedling nursery and the existing wood samples in Xylotheque, keeps going, then society will more likely build awareness about biodiversity importance and relevance, specially of the rich variety of tree species of the Valley of Jari, being concerned about their conservation.
- Resources and wiliness available to boost local socioeconomic development and biodiversity conservation focal issue: With the begging of the results from the carbon credits sale flow being reinvested into project's activities with communities, biodiversity and forest protection, then it will boost local socio-economic development and biodiversity conservation through new cash flow.

Taking the above into account Jari/Amapá REDD+ Project aims to reconcile two highly synergistic activities: FSC certified forest management and complementary activities of REDD+.

**Sustainable Forest Management, FSC Certified:** Under the responsibility of Grupo Jari, the FSC Management objectives the exploitation of forest resources rationally, through the use of low impact harvesting systems, associating the sustainability of the forest, maintenance of ecological balance, environmental responsibility and economic and financial efficiency.

The methodology used in the planning and execution of FSC-certified management abides by the requirements included in all applicable regulations and legislations. The planning is based on the information on structure and composition of the forest and on the demand for raw material. The FSC-certified Management development and methodological base is based on a previously done forest inventory, allowing the extraction does not exceed the capacity of natural recovery of the forest.

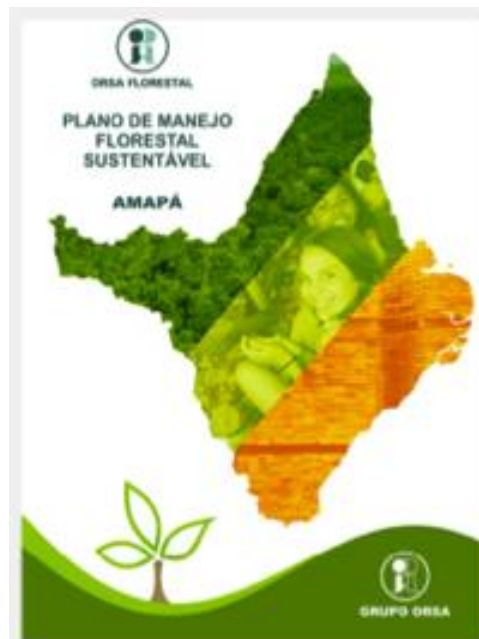
The total FSC-certified management area is 200 thousand hectares of native forest in the Valley of Jari region in the state of Para, of which 65,980 thousand hectares comprise the Jari/Amapá REDD+ Project.

For operational purposes the area was divided in 25 large Annual Production Units (APU) representing the potential forest areas managed each year for the next 25 years (operation cut cycle). Therefore, the APU 01, whose management is planned for 2014, will be managed again in 2039 and after that in 2064 and so on ensuring the perpetuation of the forest cover and the Amazon ecosystem.

Due to delays in licensing procedures with public body, the beginnings of the management operations is delayed, set to start in 2016.

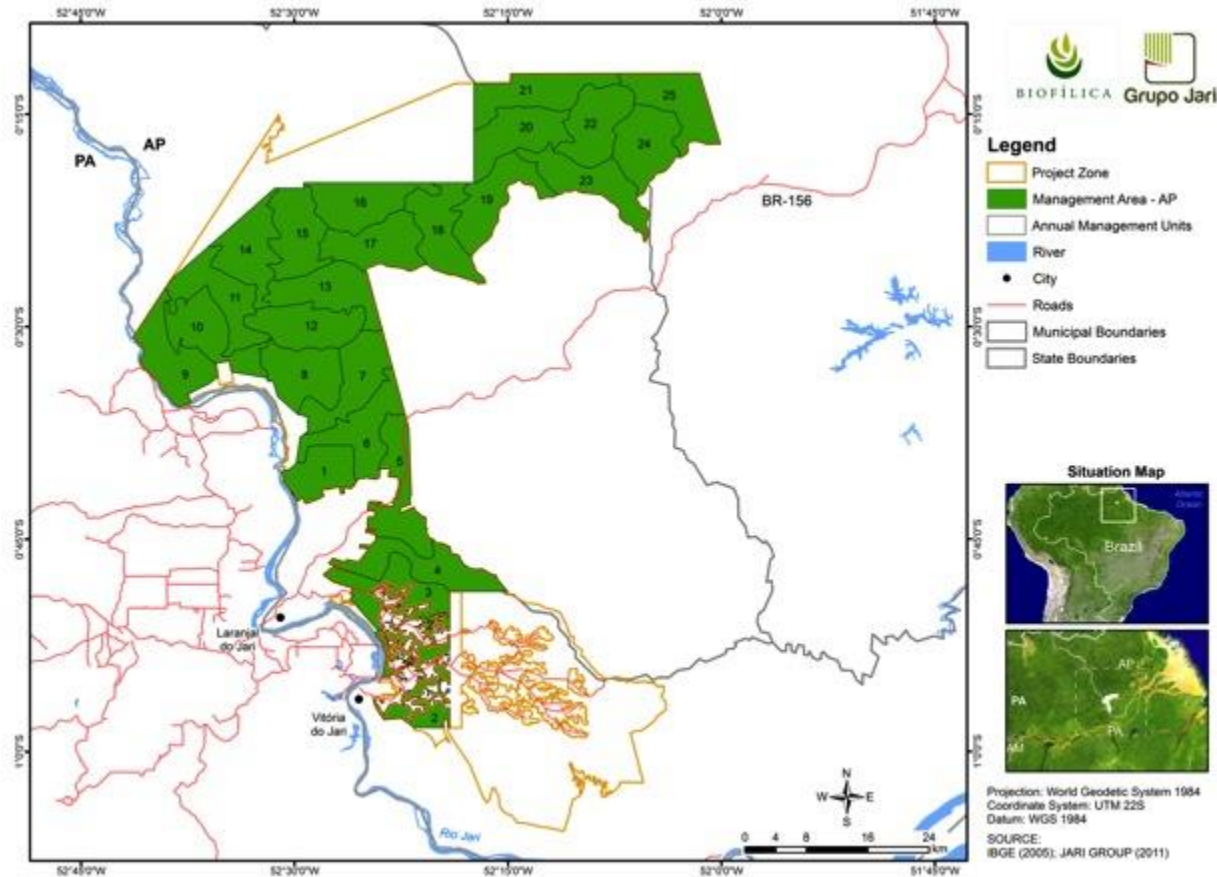
In order to obtain the certification is necessary to comply with the 9 FSC Principles and their respective Criteria and Indicators are met (FSC Certification Standards for Forest Management in “Terra Firme” in the Brazilian Amazon; FSC International Standard – FSC Principles and Criteria for Forest Stewardship). These principles incorporate requirements addressing: 1 – Compliance with laws and FSC principles; 2 – Tenure and use rights and responsibilities; 3 – Indigenous people’s rights; 4 – Community relations and workers’ right; 5 – Benefits from the forest; 6 – Environmental impact; 7 – Management plan; 8 – Monitoring and assessment; 9 - Maintenance of high conservation value forests.

This means that the development of forest management not only generates the conservation of the forest and its resources, but also generates benefits for the local communities, fostering regional social-economic growth. Besides that, the FSC Certification ensures the origin of forest products through a tracking system called Chain of Custody (CoC). For such, Jari Florestal has an information management system, which proves that all sold timber come from a well-managed forest.



**Figure 9. Cover of the Sustainable Forest Management Plan.**





**Figure 10. Annual Production Units (APU) to be explored in the Sustainable Forest Management.**

**Activities of REDD+:** Under Biofílica Investimentos Ambientais responsibilities on the REDD+ activities are the effective reduction of the occurrence of unplanned deforestation within the Project Area and consequent reduction of emissions of GHG from these activities, the social inclusion and socioeconomic development, the conservation of the biodiversity, the monitoring of the deforestation and forest degradation, the improvement of forest degradation, improvement of land tenure security and property security and the generation of REDD+ credits certified by VCS and traded in carbon markets. Reducing deforestation is important not only to the mitigation of global climate change, the avoided deforestation is important to the maintenance of other environmental services provided by the standing forest, the maintenance of biodiversity, hydric flow and water quality regulation, climate regulating, biodiversity gene flow maintenance, nutrients cycling, soil protection, fauna sheltering, supply of food, fiber and other products, scenic beauty, maintenance of the ecological corridor and connectivity to the neighboring conservation units, among others.

Table 6 shows the casual relations that explain how the activities will achieve the benefits set in the Project for the climate, community and biodiversity.

**Table 6. Casual relationships that explain how each project activity will delivery expected climate, community and biodiversity benefits.**

Type of Benefit			Activities	Expected Output	Expected Outcome	Expected Impacts
Climate	Community	Biodiversity				
X			<p><b>Sustainable Forest Management, FSC-certified</b></p> <p>DESCRIPTION: Design, implementation and monitoring of sustainable extraction activities of tropical timber in accordance with the best FSC practices.</p>	<p>Managed forest with techniques that minimize impacts on the environment and communities; M3 of logs certified for commercialization; % Of skilled labor arising in the region; Physical presence of the company on the property.</p>	<p>Maintenance of forest, biodiversity and HCVs after the harvesting; Entry of revenue from timber sale; income generation in the region; inhibition of illegal deforestation.</p>	<p>Maintenance of forest cover, HCVs and conservation of biodiversity over time; Financial Sustainability of the Project in the long-term; Improvement of income in the region; Mitigation of global climate changes.</p>
X			<p><b>Monitoring of Deforestation</b></p> <p>DESCRIPTION: Evaluation of new deforestation areas through satellite images and generation of Annual Reports of deforestation.</p>	<p>Number of generated reports; Registration of new deforestation; Professional training in remote sensing.</p>	<p>Comparison of the predicted with the actual deforestation. Better understanding of the dynamic of the deforestation and adaptive management of the activities; mitigation and prevention of deforestation; Professionals trained in deforestation monitoring.</p>	<p>Maintenance of forest cover and conservation of biodiversity; Mitigation of global climate changes; Presence of trained professionals in matters related to the mitigation of climate changes.</p>
X			<p><b>Property Surveillance</b></p> <p>DESCRIPTION: Rounds of property surveillance to identify spots sensible to external invasions and field check of the spots by monitoring deforestation.</p>	<p>Number of rounds performed; Agents and drivers of deforestation properly identified; Positive relationship with “former squatters” while preventing further invasions.</p>	<p>Comparison of the predicted with the actual deforestation. Better understanding of the dynamic of the deforestation and adaptive management of the control activities; Improvement of relationship with “old communities”.</p>	<p>Maintenance of forest cover, HCVs and conservation of biodiversity; Mitigation of global climate change; Positive relationship between proponents and local communities.</p>

X	<p><b>Technical Board Meetings</b></p>	<p>DESCRIPTION: Regular articulation meetings and decision making with stakeholders of the Project, regarding the social activities. These meetings aim to discuss general questions on the implementation of the project and can also deal with special themes, such as land issues and TARE; Are members of the Technical Board the proponents, Fundação Jari, the engaged communities, public agencies and other interested parties.</p>	<p>Conducting at least two annual meetings of the Board; Stakeholders informed about REDD+ Project.</p>	<p>Greater confidence of all stakeholders in the actions taken by the Project. Adaptive management of the Project to incorporate the concerns of different stakeholders; facilitating access of communities to public policies and programs; Feedback of doubts, questions and suggestions from/to stakeholders.</p>	<p>Improvement of the quality of life of the community through greater access to existing public policies; Stakeholders aware of the Project and educated about the REDD+; Greater confidence of stakeholders regarding project's activities; Communities empowerment.</p>
X	<p><b>Technical Assistance and Rural Extension (TARE)</b></p>	<p>DESCRIPTION: Technical assistance and rural extension service aims to work directly with producers to improve their technical and agro-extractive practices. In addition to production issues (directly linked to income questions) TARE is also concerned with the "social functions" of the land (directly linked to the well being of the rural family).</p>	<p>Team involved capacitated on agro-extractive techniques; Number of families assisted; frequency of assistancy per family.</p>	<p>Expansion of knowledge of the producers on their property and cultivation techniques. Increase of productivity and agricultural efficiency. Improvement of the quality of food products produced. Reduction of deforestation. Sustainable management of rural property.</p>	<p>Income improvement. Increase of self-esteem and confidence. Settlement of families in the countryside and reduction of the rural exodus and urban marginalization. Risk mitigation of extreme weather events. Increase of food security. Respect to the social and environmental function of rural property. Mitigation of global climate change. Biodiversity conservation.</p>
X	<p><b>Workshops and training in agro-extractive techniques</b></p>	<p>DESCRIPTION: Associated to TARE practices, courses and training on specific topics can be taught according to the demands of producers. These activities focus mostly on productive issues, such as courses of açaí seedlings and cassava planting techniques.</p>	<p>Number of courses and trainings implemented by Fundação Jari and TARE partners, especially RURAP; Number of participant families trained in productive crops of their interest.</p>	<p>Improvement of agro-extractive techniques and practices. Improvement of productivity and improvement of production efficiency. Better relationships between families and technicians.</p>	<p>Income improvement. Increase of self-esteem and confidence. Settlement of families in the countryside and reduction of the rural exodus and urban marginalization. Risk mitigation of extreme weather events. Increase of food security</p>

X	<p><b>Development of Property Use Plans</b></p>	<p>DESCRIPTION: Participatory methodology of mediation for the design of a Strategic Property Planning customized for each family. It allows the producer to incorporate "future plans " in the management of the property and encourages rural entrepreneurship. In these plans are observed other features of the property, besides the productivity, such as social welfare and environmental conservation through the "zoning of the property". It allows a "customized "action from TARE to be promoted by the project, adapting to dreams and vocation of the producers and the reality of their property. They are also integrated with an "analysis of soil quality" that identifies the best soil management practices and appropriate cultures.</p>	<p>Realization of a Property Use Plan for each Family assisted by the Project. Monitoring of the Plans of Use every two years.</p>	<p>TARE promoting the participative rural development. Producers developing rural entrepreneurship. Rational and sustainable use of the rural property to meet in a better way different objectives. Better efficiency of land use and greater agro-extractive productivity. Improvement of the wellbeing of families living in the countryside.</p>	<p>Income improvement. Increase of self-esteem and confidence. Settlement of families in the countryside and reduction of the rural exodus and urban marginalization. Risk mitigation of extreme weather events. Increase of food security. Respect to the social and environmental function of the rural property. Conservation of biodiversity.</p>
X	<p><b>Community Level Workshops (Participatory Organizational Workshops, Community Development Plans and Risks and Impacts Assessment)</b></p>	<p>DESCRIPTION: Participatory Organizational Diagnosis (DOP) participative maps community's relation with other stakeholders in order to facilitate coordination with public bodies in the Technical Board. Community Development Plans aim to identify communities' most important needs and demands, to orient projects activities and Technical Board discussion topics. Workshops of risks and impacts assessment aim to identify from communities' perspective potential risks and negative impacts of project activities.</p>	<p>Identification of relevant actors for each community; Identification of main demands for social and economic development; Identification of potential risks and negative impacts of project's activities to communities.</p>	<p>More efficient articulation in the Technical Board. Consciousness by the community of their main problems and socioeconomic demands. Consciousness by the community and proponents of Project's potential risks and negative impacts.</p>	<p>Greater access to public policies and programs. Improving income and quality of life. Settlement of families in the countryside and reduction of the rural exodus and urban marginalization. Avoidance and mitigation of potential risks and negative impacts of projects activities.</p>

X	<p><b>Family Assessment</b></p>	<p>DESCRIPTION: Survey of major socioeconomic information and welfare on a Family level conducted through direct interviews with the families in order to monitor the impacts of the Project.</p>	<p>Family assessment carried out with each family assisted by the project. Establishment of a socioeconomic baseline at the household level.</p>	<p>Understanding the socioeconomic reality of each Family. Measurement of the benefits and impact of the Project on the families. Implementation of adaptive management. Awareness of the families regarding their reality and changes achieved over time. Implementation of adaptive management.</p>	<p>Improvement of the quality of life and socioeconomic parameters of the families, more sustainability of project's intervention; Communities empowerment.</p>
X	<p><b>Structuring of the socio-environmental Fund REDD+ Jari</b></p>	<p>DESCRIPTION: 80% of all revenue of the carbon credits sales will be donated by the proponents and directly reinvested in environmental activities of the Project. The Socio-environmental Fund of the Project REDD+ Jari is a transparent financing mechanism that enables direct investments in social and environmental activities.</p>	<p>Structuring of a transparent financial instrument.</p>	<p>Boost of the project actions and benefits. Investments in the socioeconomic development of families. Investments in research and monitoring of the biodiversity.</p>	<p>Income improvement. Increase of self-esteem and confidence. Settlement of families in the countryside and reduction of the rural exodus. Increase of food security. Respect to the social and environmental function of the rural property. Risk mitigation of extreme weather events. Conservation of biodiversity and socioeconomic development.</p>
X	<p><b>Improvement of communication channels</b></p>	<p>DESCRIPTION: There are already a number of mechanisms and communication channels such as newsletters from Grupo Jari and the "Acontece", from Fundação Jari. These information channels take several themes such as environmental education, fire control, water purification, waste management are discussed. There are also receiving feedback and complaint mechanisms implemented due to FSC certification. The project aims, other than using the same practice already used by Grupo Jari, adapt them to specifics of Project REDD+ Jari.</p>	<p>Communication channels adapted to the public, stakeholders and specifics of REDD + Jari project.</p>	<p>Strengthening communication among stakeholders. Greater transparency. Resolution of complaints. Increased satisfaction of stakeholders towards the project. Increase in the number of participants benefiting from the Project. Adaptive project management.</p>	<p>Increase of self-esteem and confidence of actors and stakeholders. More efficiency and sustainability of the actions of the Project.</p>

X	<p><b>Identifying and maintaining High Conservation Values related to community wellbeing</b></p> <p>DESCRIPTION: Although the potential High Conservation Values related to community wellbeing was identify, it should be participatory validated with the communities, along with the measures taken to maintain and monitor the HCV.</p>	<p>Workshops with the communities to identify High Conservation Values to them and validate strategies to maintain them.</p>	<p>Participative and effective decision in regard of identification of High Conservation Value related to community wellbeing. Participative and effective decision in regard of measures needed to maintain High Conservation Values related to community wellbeing.</p>	<p>Maintenance of High Conservation Values related to community wellbeing.</p>
X	<p><b>Biodiversity Monitoring and Scientific Research</b></p> <p>DESCRIPTION: It consists in the long-term monitoring of Project impacts and sustainable forest management in the regional biodiversity, particularly through partnership with universities and research institutions.</p>	<p>Monitoring the regional biodiversity, its dynamics and changes in the long-term. Monitoring of the Sustainable Forest Management Environmental Impacts. Production of papers and scientific and academic research. Training students on the regional biodiversity.</p>	<p>Establishment of adaptive measures and adjustments to the Project activities. Measurements of the Sustainable Forest Management impacts. Production and dissemination of knowledge on regional biodiversity.</p>	<p>Conservation of regional biodiversity. Mitigation of Project activities' and SFM' impacts on biodiversity. Increased awareness and knowledge of biodiversity of the Jari Valley region.</p>
X	<p><b>Seedling Nursery</b></p> <p>DESCRIPTION: The proponents maintain a seedling nursery of native species from the region. Among them are endangered species and of economic use by local communities, such as Brazil nuts and açai. And even species used in forest restoration of degraded environments.</p>	<p>Production of native species seedlings. Distribution of seedlings of native species for restoration of degraded lands and for comercial use, to the local community.</p>	<p>Preservation of genetic resources of the forest. Promotion forest restoration in degraded lands within the community. Income generation. Generation of knowledge on seedling production techniques, forest restoration and the importance of native species.</p>	<p>Conservation of biodiversity. Increase of forest cover. Income generation.</p>

<b>X</b>	<p><b>Xylotheque (Wood Collection)</b></p> <p>DESCRIPTION: The wood collection of Jari Xylotheque was created in 1968 in order to preserve and increase knowledge on the Amazon forest heritage. It has 620 samples of wood from the area, a herbarium with 3,513 botanical samples and a collection of insects with 2,322 samples, which makes the Jari Xylotheque one of the largest in the world. The samples are collected by the botanical species identifiers and later catalogued under their common and scientific names and including some specifications such as density and size.</p>	<p>Preservation of existing samples; Education of people about the biodiversity of species of the Jari Valley.</p>	<p>Preservation and dissemination of knowledge about the biodiversity of the region.</p>	<p>Awareness of society to the importance of the biodiversity on Jari Valley</p>
<b>X</b>	<p><b>Identifying and maintaining High Conservation Value related to Biodiversity</b></p> <p>DESCRIPTION: Although the potential High Conservation Values related to Biodiversity was identify, it should be participatory validated with experts and stakeholders, along with the measures taken to maintain and monitor the HCV.</p>	<p>Consultation with experts and stakeholders to identify High Conservation Values to them and validate strategies to maintain them.</p>	<p>Participative and effective decision in regard of identification of High Conservation Value related to Biodiversity. Participative and effective decision in regard of measures needed to maintain High Conservation Values related to Biodiversity.</p>	<p>Maintenance of High Conservation Values related to Biodiversity.</p>

**Table 7. Summary of the general REDD+ Project Activities, their implementation status and chronology.**

ACTIVITY	DESCRIPTION	STATUS/ CHRONOLOGY
<b>1. Planning Activities</b>		
1.1 Activities Planning Meeting	Proponents meeting for Project activities planning from its conception to validation and first verification.	Finished (concluded in 2011)
1.2 Survey of institutions and identification of partners	Survey and identification of local partners such as consultants, researchers and institutions to develop the Project.	Finished (concluded in 2011)
<b>2. Development Activities</b>		
2.1 Conducting Socioeconomic and Environmental Assessment (DSEA)	Study developed together with Arvorar Soluções Florestais and Instituto de Pesquisas Ecológicas (IPÉ) and 10 specialized researchers. The objective of the DSEA was to characterize the Project and surrounding areas in 4 modules (socio-economy, flora, fauna, and physical environmental aspects) and to conduct a preliminary assessment of possible impacts of the Project on local socio-economic and environmental context, as well as suggest monitoring measures based on scientific reports and articles already developed in the area.	Finished (concluded in 2012)
2.2 Carbon stock estimate	Study developed in partnership with Imazon aiming at estimating the forest carbon stock and producing a map of the carbon stock for the Project area based on data of forest inventories carried out in the FSC-certified Management component.	Finished (concluded in 2012). To be reassessed every 10 years (2021 and 2031), in order to revalidate Project's baseline.
2.3 Determination of the baseline and the carbon credits generation potential	It was also developed in partnership with Imazon aiming to determine the Project baseline and estimate the amount of REDD+ credits to be potentially generated by the Project.	Finished (concluded in 2012). To be reassessed every 10 years (2021 and 2031), in order to revalidate Project's baseline.
<b>3. Management and conception design activities</b>		
3.1 Carrying out a workshop to plan and design the Project.	Proponents and partners of the Project meet up to present the results of previous studies, identification of potential social and environmental activities to be developed throughout the Project as well as definition of the Project monitoring actions.	Finished (concluded in 2012)
3.2 Carrying out stakeholder consultations	Meeting between project proponents and partners and State and local government agencies and other stakeholders (Instituto Estadual de Florestas, Secretaria de Estado do Meio Ambiente, Instituto de Desenvolvimento Rural do Amapá, Secretaria de Estado da Indústria, Comércio e Mineração, Secretaria Municipal de Agricultura de Vitória do Jari, Instituto de Desenvolvimento Rural, Secretaria Municipal de Meio Ambiente e Turismo, Instituto Federal do Amapá, Center for International Forestry Research), as well as the communities involved by the Project (Comunidades Fé em Deus, França Rocha, Tira Couro, Sombra da Mata, Ramal Valdomiro/Barbudo, Instituto de Desenvolvimento Rural, Nova Conquista, Igarapé das Pacas and Água Azul) to present the Project design and its planned activities, collect	Finished (concluded in 2012)



	suggestions, align expectations, open a communication channel and understanding of possible partnerships to be established.	
3.3 Consolidation of the Project management plan	The Project management plan consolidates the results of the studies carried out and the information on Project operation such as planning, management and monitoring.	Finished (concluded in 2012)
<b>4. Validation/verification Activities</b>		
4.1 Definition of applicable standard and methodology	Selection of the standard and methodology to be used for Project validation/verification.	Finished (concluded in 2011)
4.2 Preparation of the Project VCS description document	From the management plan the Project description document (Project Description) was prepared according to the criteria established by the VCS.	Finished (concluded in 2012)
4.3 Selection and contracting of validation agency and registration platform	Survey of validation/verification institutions accredited by the VCS and definition of the Project validation/verification bodies (VVB).	Finished (concluded in 2012)
4.4 Follow up of the audit process for validation/verification VCS	Audit to be conducted by the selected VVB.	Finished (concluded in 2011)
4.5 Preparation of document describing the Project on CCBS	From the management plan, it was prepared the Project description document (Project Description), according to the criteria established by CCBS.	Planned (started in 2015)
4.6 Selection and hiring of the validation body	Lifting validators institutions/verifiers accredited by CCBS, and definition of the validator organ and Project verifier (VVB).	Finished (concluded in 2014)
4.7 Support of the audit process for CCBS Validation	Audit to be conducted by the selected VVB.	Planned (started in 2015)
<b>5. Activities Implementation</b>		
5.1 Sustainable Forest Management, FSC-certified (Climate Benefits)	Design, implementation and monitoring of sustainable extraction activities of tropical timber in accordance with the best FSC practices. To be better explained in the following table (Table 8). There are 25 Annual Production Units (or UPA) planned to be harvested, one unit per year, until 2041. To every a UPA is to be harvested, the activities described in Table 8 shall be implemented in its area.	Planned to start in 2016. The SFMP proposed activities are to be developed during the entire project lifetime. Milestone: There are 25 Annual Production Units (or UPA) planned to be harvested, one unit per year, until 2041.
5.2 Monitoring of Deforestation	Evaluation of new deforestation areas through satellite images and generation of Annual Deforestation Bulletins. The deforestation monitoring is carried out every years according with the methodology described in the VCS Project Description. Biofilica evaluates every year the land use and land use changes within the monitored area (Project Area and Leakage Belt), based on PRODES/INPE data. Biofilica identifies every new deforestation polygon and send the coordinates to Grupo Jari (Surveillance department) that check them in the field in regard of area deforested, cause and responsible. Grupo Jari send the results of the field checking back to Biofilica and take the appropriate measures for each case.	In place since 2012. Continuously, during the entire project lifetime. Milestone: To be carried out every year.

<p>5.3 Property Surveillance</p>	<p>The property surveillance program is based on terrestrial and fluvial regular patrolling. It aims to regularly and upon request monitor the areas under Grupo Jari responsibility and to watch the occurrence of illegal activities, such as invasions, illegal deforestation, illegal hunting, coming of outsiders and others. The program is prepared to receive denounce or surveillance request from any employee, community member or third-party. The surveillance will send a team to the area and check the situation. If any illegal activity, especially environmentally, is acted the surveillance team take coordinates and photos of it and communicates the Surveillance Manager and, depending on the case, the environmental responsible agency, through occurrence bulletins, reports an/or legal process, depending on the gravity of each case.</p>	<p>In place since 2003, but adapted in 2012 to incorporate REDD+ specific demands. Continuously, during the entire project lifetime. Milestone: To check on the field every deforestation polygon. Identified by the annual deforestation bulletin. Excepting a few identified cases.</p>
<p>5.4 Technical Board Meetings</p>	<p>Regular articulation meetings and decision making with communities and stakeholders of the Project, regarding the social activities. These meetings aim to discuss general questions on the implementation of the Project and can also deal with special themes, such as land tenure issues and TARE. The proponents, Fundação Jari, the engaged communities, public agencies and other interested parties are members of the Technical Board.</p>	<p>In place since 2013. Continuously, during the entire project lifetime. Milestone: At least twice a year.</p>
<p>5.5 Technical Assistance and Rural Extension (TARE)</p>	<p>Technical assistance and rural extension service aims to work directly with producers to improve their technical and agro-extractive practices. In addition to production issues (directly linked with income generation). TARE is also concerned with the “social functions” of the land (directly linked to rural family welfare). TARE may incorporate several others sub-activities or work methodologies, such as workshops and trainings in agro-extractive techniques, development of property use plan (both explicated as different activities due to their importance), implementation of demonstrative units (DUs), and others.</p>	<p>In place since 2013. Continuously, during the entire project lifetime. Milestone: To attend at least 50 farmers every year. To attend personally each family at least once a month. Every 5 years, depending on the resources availability, attend 50% more farmers and additional 3 communities in the Project Zone (the 50% additional farmers may be located on already attended communities or in the recently included communities).</p>
<p>5.6 Workshops and training in agro-extractive techniques</p>	<p>Associated with TARE practices, courses ad training on specific topics can be taught according to the demands of producers. These focus mostly on productive issues, such as courses of açai seedling and cassava planting techniques.</p>	<p>In place since 2013. Continuously, during the entire project lifetime. Milestone: At least, to carry out one training per community per year.</p>
<p>5.7 Development of property Use Plans</p>	<p>Participatory methodology of mediation for the design of a strategic plan of use costumed for each family. It allows the producer to incorporate their “future plans” in the management of the property and encourages rural entrepreneurship. In this plans besides de rural productivity others aspects are also taken into account, such as social welfare and environmental conservation through the zoning of the property. It allows TARE to implement</p>	<p>In place since 2014. Continuously, during the entire project lifetime. Milestone: To develop a property Use Plan for every farmer attended, and to review it every 5 years.</p>

	<p>costumed actions, adapting alternative techniques to dreams and vocation of each producers and each property reality. The Property Use Plan is also integrated be analysis of the soil quality, in order to identify the best soil management practices and appropriate cultures.</p>	
<p>5.8 Community Level Workshops (Participatory Organizational Diagnosis – DOPs –, Community Development Plans and risks and impacts assessment)</p>	<p>Participatory Organizational Diagnosis (DOP) methodology aim to facilitate coordination with public bodies in the Technical Board. DOPs Workshops participative map communities relation with others institutions and organizations in order to understand their relation and need and to provide tactical inputs in the Technical Board (who should be necessarily invited or have the invitation reinforced, for instance).</p> <p>Community Development Plans are also made through a participative methodology and aims to identify communities' most important needs and demands, developing and action plan to orientate Technical Board discussions topics.</p> <p>Workshops to fully identify project's potential risks and negative impacts from the communities' perspectives workshops on the community level will be carried out by community. Measures to monitor the potential risks and negative impacts identified will also be participative discussed and implemented by the Project Proponents.</p>	<p>Carried out with the currently engaged communities during 2013.</p> <p>Continuously, during the entire project lifetime.</p> <p>Milestone: To develop DOP and Community Development Plan for every new community engaged in the project and to participatory review them every 5 years.</p> <p>To carry out workshops of risks and impacts assessment in every community already engaged by the project in 2016. To adjust measures to monitor potential risks and negative impacts until 2017. To carry out workshops of risks and impacts assessment with every new community engaged in the project and review them every 5 years.</p>
<p>5.9 Family Assessment</p>	<p>Survey of major socioeconomic information and welfare on a family level, conducted through direct interviews with families in order to monitor the impacts of the Project. Although it is a monitoring activity it is considered a Project Activity because for its execution Project staff has to designate appropriate resources, such as time, financial means and human resources, and it also has determined durability on time and milestones to be reached.</p>	<p>First carried out during 2014.</p> <p>Continuously, during the entire project lifetime.</p> <p>Milestone: To be carried out with all families attended by the Project, every 2 years.</p>
<p>5.10 Structuring of the socio-environmental Fund REDD+ Jari</p>	<p>After the selling out of the first credits vintage generated under the VCS GHG Program, at the end of 2014, an important strategic workshop was carried out between the project proponents and Fundação Jari to discuss how the resources should be invested. During this workshop it was deliberated that 80% of the results would be reinvested in the project itself through guidelines and governance structure to be defined.</p> <p>During 2015 several meetings and workshops were realized with different departments of Grupo Jari (Surveillance and Infrastructure Department, Quality, Environment and Certification Department, Institutional Relations, Forestry Department, Research Department), Fundação Jari and the engaged communities.</p> <p>The main strategic lines of investments were defined as being Activities for Climate, Social Activities and Conservation, besides investments on project management and account maintenance. Those strategic lines contemplate all</p>	<p>To be implemented during 2016.</p> <p>Milestone: To be developed during 2015, first tested in 2016 and to have its final structure consolidated and under ongoing operation until 2017.</p>

	<p>activities here described. Regarding governance it was established that the bank account should be hold by Fundação Jari, as an NGO, with the management of an executive committee formed by different departments of the proponents and the Technical Board as consultative/monitoring council of the executive committee decisions and actions implementations.</p> <p>A few operational details still need to be determined and approved by the involved parties. It is expected to be first tested in 2016, improved in 2017 and to be under ongoing operation after that.</p>	
<p>5.11 Improvement of communication channels</p>	<p>There are already a number of mechanisms and communication channels such as newsletters from Grupo Jari and the “Acontece”, from Fundação Jari. These information channels discuss several themes such as education, fire control, water purification and waste management. There is also in place a feedback and grievance procedure implemented due to the FSC certification. The technical Board itself has also a very important communication importance. The project aims to adapt the communication practices already in place to the specificities of the REDD+ project, in order to develop a more efficient and broad communication mechanism.</p>	<p>Continuously, during the entire project lifetime.</p> <p>Milestone: To be more intensively thought, restructured and implemented during 2016 and 2017.</p>
<p>5.12 Identifying and maintaining High Conservation Values related to community well-being</p>	<p>Although the potential High Conservation Values related to community-wellbeing was identify, it should be participatory validated with the communities, along with the measures taken to maintain and monitor the HCV. In that manner workshops will be carried out with the communities in order to validate the High Conservation Values to community and the measures needed to maintain the values.</p>	<p>The workshops with the communities will be carried out along 2016 and the suggestions of measures needed to maintain HCVs will be adopted until 2017. Measures to maintain and monitor HCVs relate to community will be continuously implemented during the project lifetime.</p> <p>Milestone: To have all the workshops carried out and all the adjustments on the measures taken to maintain HCVs related to community well-being implemented until 2017.</p>
<p>5.13 Biodiversity monitoring and scientific research</p>	<p>It consists in the long-term monitoring of Project impacts and sustainable forest management in the regional biodiversity, particularly through partnership with the universities and research institutions. Although it is a monitoring activity it is considered a Project Activity because for its execution Project staff has to designate appropriate resources, such as time, financial means and human resources, and it also has determined durability on time and milestones to be reached. It's also an important tool to monitor the environmental impacts the sustainable forest management activities. Regarding the Biodiversity strategy no active intervention is expected other than the monitoring of the ecosystem balance and the presence of endangered species, in order to compare the results with the without-project scenario.</p>	<p>Continuously, during the entire project lifetime.</p> <p>Milestone: Start in 2016. Assessment of species diversity and richness regarding flora, birds, mammals and dung beetle, to be realized at least once every two years.</p>

5.14 Seedling nursery	It is maintenance of a seedling nursery of native species from the region. Among them are endangered species and species of economic use by local communities, including Brazil nut, acai and cupuaçu. Besides conservation and production ends, those seedlings are also used to restore degraded lands.	Continuously, during the entire project lifetime. Milestone: To supply 100% of seedlings used by the project until 2021.
5.15 Xylotheque (wood collection) maintenance.	The wood collection of Jari Xyloteque was created in 1968 in order to preserve and increase knowledge on the Amazon forest heritage. It has 620 samples of wood from the area, a herbarium with 3,513 botanical samples and a collection of insects with 2,322 samples, which makes the Jari Xyloteque one of the largest in the world. The samples are collected by the botanical species identifiers and later catalogued under their common and scientific names and including some specifications such as density and size.	Continuously, during the entire project lifetime. Milestone: To have all its collection digitalized until 2021.
5.16 Identifying and maintaining High Conservation Value related to Biodiversity	Although the potential High Conservation Values related to Biodiversity was identified, it should be participatory validated with experts and stakeholders, along with the measures taken to maintain and monitor the HCV. In that manner consultation with experts and stakeholders will be carried out in order to validate High Conservation Values related to biodiversity and the measures needed to maintain their values.	Consultation with experts and stakeholders will be carried out along 2016 and the suggestions of measures needed to maintain HCVs will be adopted until 2017. Measures to maintain and monitor HCVs related to biodiversity will be continuously implemented during the project lifetime. Milestone: To have all the consultation carried out and all the adjustments on the measures taken to maintain HCVs related to biodiversity implemented until 2017.
<b>6. Management and Monitoring Activities</b>		
6.1 Social and Environmental Management	Implementation of actions to generate positive social and environmental impact as described in the corresponding sections.	Started in 2011. Continuously throughout Project lifetime.
6.2 Permanent quality control	Monitoring of the implementation, efficiency and efficacy of social and environmental management. Includes periodical meetings with proponents, partners and people involved in the Project, as well as the continuous institutional articulation to identify and establish partnerships.	Started in 2011. Continuously throughout Project lifetime.
6.3 Monitoring of deforestation and emissions	The monitoring of benefits of the Project to climate, communities and biodiversity allows the establishment to use adaptive measures and adjust the activities of the Project.	Started in 2011. Continuously throughout Project lifetime.
6.4 Follow up of audit processes for verification	Audit to be periodically conducted by the selected VVB.	First verification performed in 2013; following verifications every 2 years.
6.5 Updating and complementation of the studies	Carrying out the necessary technical studies to develop Project activities throughout its duration and subsequent verification such as: review of	Started in 2011. Continuously throughout Project lifetime and at least every 10 years

baseline study, complementation of DSEA using current and/or primary data, updating of carbon stock estimate through new inventory data from the FSC certified Management, among other actions whenever necessary.

(2021and 2031).

**Table 8. Summary of Jari/Amapá REDD+ Project main activities regarding the FSC-certified Forest Management, their implementation status and chronology.**

ACTIVITY	DESCRIPTION	APPLICABLE PROCEDURE	STATUS / CHRONOLOGY
<b>1. Exploitation sizing activities</b>			
1.1 Pre-harvest inventory	100% Pre-harvest inventory conducted in sample plots throughout the 200 thousand hectares of forest management area in order to support forest management planning by quantifying and qualifying forest resources determining the wood potential of the area through statistical sampling techniques.	PA-MFS 016 - Inventário Diagnóstico	Finished (concluded in 2011)
1.2 Property zoning	Macro and micro zoning of the forest management area for Forest Management Units (UPA, in portuguese) delimitation, identification, classification and delimitation of the different classes of soil use, hydrography, landscaping, operational and non-operational areas, vines and other environmental aspects, and definition of the areas for the 100% Pre-harvesting Inventory.	Elaboração e revisão de plano de manejo florestal	Finished (UPA 01 macrozoning and micro zoning concluded in 2011; micro zoning of other UPA to be carried out throughout the operation cycle)
1.3 Definition of Forestry System and Production Regulation	Definition of forest management operational planning (cutting cycle, number of UPAs, volume of wood to be extracted, protected species to be managed and other operational aspects).	Elaboração e revisão de plano de manejo florestal	Finished (concluded in 2011)
<b>2. Pre-management activities</b>			
2.1 Implementation and mapping of the plots	Delimitation of permanent preservation, operation and non-operational areas. Determining the location of the plot for the 100% pre-harvest inventory.	PA-MFS 001 - Implantação e Mapeamento de Parcelas	Finished/ To be revalidated (concluded in 2011 for UPA 01 but to be revalidated after the SFMP approval; for other UPAs it will be carried out throughout the operation cycle)
2.2 100% pre-harvest inventory or forest census	Field measurement, identification, classification and location of the trees in the UPA for later processing of such information and defining the species and volume to be cut. It is the main instrument for the preparation of the Annual Operation Plans (POA, in portuguese).	PA-MFS 002 - Inventário Florestal 100%	Finished/ To be revalidated (concluded in 2011 for UPA 01 but to be revalidated after the SFMP approval; for other UPAs it will be carried out throughout the operation cycle)

2.3 Implementation and measurement of permanent sample plots	Implementation and collection of data regarding the permanent plots, taking into consideration the relation of the existing species, number of trees per species and the quality of the species, in order to assess the impact on the forest by monitoring its regeneration.	PA-MFS 003 - Parcelas Permanentes	Finished/ To be revalidated (concluded in 2011 for UPA 01 but to be revalidated after the SFMP approval; for other UPAs it will be carried out throughout the operation cycle)
2.4 Training and qualification of workers	Training courses to qualify workers on the operational and environmental procedures related to their area of work, as well as other subjects such as Sustainable Management, Certification and Safety at Work.	Sistemática de Treinamento	Finished/ To be revalidated (first activities concluded in 2011 but to be revalidated after the SFMP approval; it will be continuously carried out throughout the operation cycle)
<b>3. Management Activities</b>			
3.1 Planning, opening and maintenance of forest roads and bridges	Planning and execution of activities related to the opening and management of roads, bridges and manholes in the forest management area.	PA-Planejamento, Abertura e Manutenção de Estradas Florestais	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)
3.2 Guided felling of the trees pre-selected for cutting	Guided felling of the pre-selected trees for cutting using tree felling techniques to diminish the risk of accidents, the formation of large clearings in the forest and the decrease of environmental impacts.	PA-MFS 004 - Derruba Direcionada de Madeira Nativa  PA-MFS 012 - Formação de Grandes Clareiras	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)
3.3. Logging of trees	Logging of trees to make their skidding to storage patios easier and using felling techniques to decrease the risk of accidents and reduce the impacts on the environment.	PA-MFS 005 - Traçamento de Madeira Nativa	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)



3.4 Planning of skidding trails and storage patios	Planning of skidding trails and storage patios in the forest management operational areas based on felling techniques to decrease the risk of accidents and reduce the impacts on the environment.	PA-MFS 006 - Planejamento de trilhas de Arraste	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)
3.5 Skidding the cut logs to the storage patios	Skidding and piling the logs in the forest management operational areas based on techniques to decrease the risk of accidents and reduce the impacts on the environment.	PA-MFS 007 - Arraste de Madeira Nativa	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)
3.6 Manipulation and transportation of forest biomass (forest management residues)	Manipulation and transportation of forest biomass (forest management residues) from forest management operational areas to other areas and later use in energy generation using techniques to reduce environmental impact.	PA-MFS 008 - Preparo e Arraste de Biomassa Florestal	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)
3.7 Transportation of logs and forest biomass	Loading, unloading and road transportation of logs and forest biomass.	PA-MFS 009 - Transporte de Madeira Nativa	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)
<b>4. Post-management activities (operational monitoring)</b>			
4.1 Measurement of permanent plots	Measurement of trees and collection of data from the permanent plots taking into consideration the existing relationship between the species, number of trees per species and quality of the species in order to assess the impacts of the operation on the forest by monitoring its regeneration.	PA-MFS 003 - Parcelas Permanentes	Planned (start in 2017 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)

4.2 Selection and distribution of the plots for operational monitoring	Distribution and systematizing of the plots where the monitoring of forest management operations will take place.	PA MFS 017 - Monitoramento da Derruba	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)
4.3 Monitoring of the 100% pre-harvest inventory or forest census	Execution of the monitoring activities of the 100% pre-harvest inventory.	PA MFS 015 - Monitoramento do Inventário Florestal 100%	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)
4.4 Monitoring of the storage patios and forest roads opening	Execution of the monitoring activities of the operational quality of storage patios and forest roads opening.	PA MFS 021 - Monitoramento da Abertura de Estradas de Colheita	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)
4.5 Monitoring of felling of trees	Execution of the monitoring activities of the operational quality of the felling of selected trees.	PA MFS 017 - Monitoramento da Derruba	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)
4.6 Monitoring of the logging, measurement and marking of the logs.	Execution of the monitoring activities of the operational quality of the logging, measurement and marking of the logs.	PA MFS 018-Monitoramento do Traçamento, Medição e Marcação de toras	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)

4.7 Monitoring of skidding trails and storage yards planning	Execution of the monitoring activities of the operational quality of skidding trails and storage yards planning.	PA-MFS 016 - Monitoramento do Planejamento de trilhas de Arraste	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)
4.8 Monitoring log skidding to storage yards	Execution of the monitoring activities of the operational quality of log skidding to storage yards.	PA MFS 019 -Monitoramento do Arraste de Toras	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)
4.9 Monitoring of the manipulation and transportation of forest biomass (forest management residues)	Execution of the monitoring activities of the operational quality of the manipulation and transportation of forest biomass (forest management residues).	PA MFS 019 -Monitoramento do Arraste de Toras rev 4.doc e POMFS 019 -Monitoramento do Arraste de Toras	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)
4.10 Monitoring of logging and forest biomass transportation	Execution of the monitoring activities of the operational quality of logging and forest biomass transportation.	POMFS0022 - Monitoramento do Carregamento e Transporte de Madeira	Planned (start in 2016 for UPA 01; for other UPAs it will be carried out throughout the operation cycle)

Regarding the Surveillance Program, due to its relevance, a better description is worthy mention.

The Surveillance Program, as mentioned in the table 7 is based on regular patrolling of Grupo Jari's property. To carry out the patrolling The Surveillance Department publishes every year a Work Instruction detailing the organization of the patrolling for each year, e.g. detailing number of patrolling teams, area to be cover by each team, frequency and other information. These details cannot be turned public because they are sensitive information and the efficiency and efficacy of the activity is depending on this information being confidential. This information is made available to the auditor team upon request.

In the procedure it is also described their way of action:

- When seen and/or informed through employees, communities or third parties any invasion case, illegal deforestation or environmental aggression the Surveillance department will send teams to check the situation and take proper actions;
- All relevant information about the situation will be assessed and analyzed. The situation and the information will be passed to the Surveillance Management;
- In case that it is required, in the act of surveillance, the need of any immediate action the surveillance team is oriented just to call the responsible governmental agencies and forwarded them the case;
- When it is proved to be an invasion case, all relevant information will be raised and passed to Jari Cellulose Directory, governmental responsible agencies and the legal department, in order for them to study the case and take the proper measures. The surveillance team is oriented to wait for following instructions. In this case an Occurrence Bulletin will be opened on the police station in order to formalize, registry and evidence de case.
- If any potential conflicting situation is identified the surveillance team is oriented not to stay in the area but just to report the governmental agency responsible.

The following recommendation in regard of monitoring of illegal activities is set out:

- When detected by the surveillance the occurrence of illegal activities, such as predatory hunting, collection or trapping of biologic material (flora and/or fauna), predatory fishing, illegal deforestation or any other type of environmental aggression the Surveillance team will collect GPS points of the aggression and/or identify the local in a map and take the proper measures by passing the situation of the environmental agency responsible. In this case an Occurrence Bulletin is also formalize in the environmental agency.

The surveillance patrolling has also an important role in the overseen of forest fires and training on fire prevention and control techniques:

- During the patrolling the team is oriented to consider opening of crops and other human actions the may contribute to the risk of forest fires. If such case is seen the team will orient the responsible about proper measures to prevent and mitigate the risk. This location will be reported to the forest department, just as a preventive measure;

- Every year a schedule of trainings on techniques and measures to prevent and control fire is planned among the communities, specially those that more likely (and more frequently) would use fire to clean their agricultural lands.

Below is a diagram elucidating the process of Deforestation Monitoring activity.



**Biofílica:**

- Identify new deforestation areas;
- Generates maps and coordinates to support ground-thruthing;
- Consolidates the Annual Report on Deforestation

**Grupo Jari:**

- Verify new deforestation areas based on the generated coordinates;
- Returns it with causes evaluation.

**Biofílica:**

- Design the monitoring report to verification;
- Emissions reductions credits are generated.



Figure 11. Technical Board meeting of February 2014.



Figure 12. Technical workshop on cassava cultivation given by Fundacnao Jari to the farmers of the Project.



Figure 13. Participative confection of the Property Use Plan.



Figure 14. Example of a "Future Map" from the Property Use Plan of a farmer assisted by the Project.



Figure 15. Results of the workshop "Construction of REDD+ Concepts", part of the DOP methodology at community "Fé em Deus".



Figure 16. Participative construction of Community Development Plan, part of DOP methodology on "Fé em Deus" community.



Figure 17. Picture of part of Xeloteque archive.



## G1.9 Project Start Date, Lifetime, Accounting Period and Implementation Schedule

### Project Start Date

The Jari/Amapá REDD+ Project starting date is February 14th, 2011, which is the date when the first socioeconomic and environmental assessment planning meeting was held.

### Project Lifetime

The Project lifetime is 30 years, from the Project start date, on February 14<sup>th</sup>, 2011, until February 14<sup>th</sup>, 2041.

### GHG Accounting Period and Biodiversity and Community Benefits Assessment

The Project accreditation period is from February 14th, 2011 through February 14th, 2041. Biodiversity and Community benefits will be constantly monitored and subjected to verification by the CCBA, ideally every two years along the project lifetime.

### Implementation Schedule

The implementation timeline with key dates and milestones in the development of the project can be seen in **Table 7 and 8**. The chronology of micro activities related to the main activities of Project REDD + Jari/Amapá in REDD + component is shown in **Table 9**. The following table, **Table 10** presents the chronology of microactivities related to the FSC-certified Forest Management.

**Table 9. Chronology of micro activities related to the main activities of REDD+ component.**

1 TO 1,5 YEAR BEFORE THE VALIDATION AND FIRST VERIFICATION
Activities planning meeting
Coordination of institutions and identification of partnerships
Consolidation of activities time schedule
Carrying out the socioeconomic and environmental assessment
Carbon stock estimate
Determination of baseline and carbon credits generation potential
Feasibility studies of other environmental services
Workshop to plan and design the Project
Consultation meetings with stakeholders
Consolidation of Project design
Consolidation of management plan and drawing of Project description
Review and translation of Project description
Preparation of monitoring reports
VALIDATION AND FIRST VERIFICATION YEAR

Selection and contraction of validation and verification body and registry platform
Confection of verification and monitoring report
Support to field auditing
Registry and issuance of VCUs
<b>YEARS 2 TO 30</b>
Development, implementing and monitoring of social and environmental activities according with the milestones described in <b>table 7</b> .
Expansion of the Non-FSC project activities to other communities in the Project Zone every 5 years, at least 3 new communities.
Regular meetings between project proponents, communities and others stakeholders
Monitoring of deforestation and GHG emissions
Development of scientific research and monitoring of biodiversity
Verification of GHG emissions reduction under VCS and implemented social and conservation activities under CCBS (selection and contracting verification body; writing of follow-up bulletins, follow-up of the field audit, registration of credits)
Reinvestment of Projects financial results

**Table 10. Chronology of micro activities related with the FSC-certified Forest Management.**

<b>1 TO 2 YEARS BEFORE MANAGEMENT</b>
Delimitation of Forest Management Unit (UPA, in Portuguese)
Delimitation of Work Units (subdivision of the UPA in blocks of 1,600 ha and plots of 10 ha)
Opening of trails
Micro zoning (creeks, vine areas, rocky formations, topography, among other aspects of the landscape)
100% pre-harvest inventory or forest census – data collection
Cutting of vines
Implementation and measurement of permanent plots
Processing of 100% pre-harvest inventory data
Preparation of the Annual Operation Plan (POA, in Portuguese) – Forest Management Planning
Planning of forest roads
Location of the gravel beds
Opening of main and secondary roads
<b>IN THE YEAR OF MANAGEMENT</b>
Review of operational procedures
Training of workers involved in the operations (forest management, reduced impact, certification, operational procedures)
Construction of tertiary roads
Preparation of tree cutting maps (felling)
Cutting (felling) and logging of trees
Pre-planning of storage patios
Preparation of harvest maps including storage patios and skidding trails
Planning of storage patios and skidding trails
Skidding
Chain of Custody Control

Forest transportation (data bank daily supply)
Harvesting of forest residues (forest biomass)
<b>1 YEAR AFTER MANAGEMENT</b>
Silviculture treatment after harvest (when necessary)
Measurement of permanent plots to assess growth (forest recovery)
Maintenance of permanent infrastructure (roads, bridges and others)
<b>2 YEARS AFTER MANAGEMENT</b>
Maintenance services will take place every 5 years, or whenever necessary
<b>3 YEARS AFTER MANAGEMENT</b>
Measurement of permanent plots to assess growth (forest recovery)
<b>5 YEARS AFTER MANAGEMENT</b>
Measurement of permanent plots to assess growth (every 5 years after that)
<b>24 YEARS AFTER MANAGEMENT – 1 YEAR BEFORE THE SECOND CYCLE</b>
Maintenance of roads and patios
100% pre-harvest inventory (forest census)
<b>25 YEARS AFTER MANAGEMENT – START OF THE SECOND CYCLE</b>

## *Risk Management and Long-term Viability*

### **G1.10 Identification of Likely Natural and Human-induced Risks**

The risk assessment was carried through the application of the VCS approved tool “AFLOU Non-Permanence Risk Tool, v. 3.2”. The result from this risk tool is presented as a CCB PDD Annex and represents risks to climate, community and biodiversity benefits expected by the Project. Additionally, other risks for the benefits of the project were identified, as well as its respective mitigating measures. These risks are listed below.

**Risk:** Lack of interest from stakeholders, specially communities and government agencies to participate in the activities of the Project.

**Risk from the community’s perspective:** Great part of the expected improvement in the family wellbeing depends on the political will. The project aim to creates dialogue and articulation spaces to mediate communities’ demands with the government responsible agencies for each sector. The lack of interest on participating on the proposed spaces could be a risk for project’s expected benefits.

**Mitigating measures:** Integrating them during Project’s design and decision-making process concerning activities of their interest, for example, Workshops DOP and Technical Board on REDD+ (more information on Section G3) as a strategy to empower them and instigate a sense of belonging. The improvement and dissemination of existing reporting mechanisms already among proponents and other stakeholders, such as Internal Ombudsman, Information Channels and Feedback and Grievance Procedure, it is also extremely important.

**Risk:** Difficulties commercializing the verified carbon credits.

**Risk from the community's perspective:** No success on selling the emissions reductions generated would affect the availability of cash flow to boost project's activities with the communities.

**Mitigating measures:** Biofíllica has a commercial sector responsible exclusive for the development of promotional materials of the Project, attendance to national and international events related to REDD+ and carbon credits in order to promote the Project, establish and amplify the networking of commercial contacts with possible interest in buying carbon credits. Biofíllica is always searching for financing alternatives, such as donations and partnership for direct implementation of Project activities (not necessarily linked with the sale of credits).

**Risk:** New land invasions by squatters compromise through the infrastructure built for the sustainable forest management operation, causing new unplanned deforestation and competing with local communities for resources (land, hunting and non-timber forest products).

**Risk from the community's perspective:** In general the opening of infrastructure to the SFM activities has a positive impact on the communities for them to better access their properties. However it may also be favorable to the coming of outsiders that could compete with them for land and natural resources, such as hunting and non-timber forest products.

**Mitigating measures:** One of the activities of the Project is property surveillance and land security in order to avoid invasion events and deforestation and the implementation of activities of sustainable forest management that, through physical presence in the area, aim to inhibit new invasions. In addition, it is valued a good relationship with communities that were in the area before the Project in a way that they are allies on the defense of the forest alerting the surveillance against the coming of outsiders.

**Risk:** Reduced supply of natural resources (hunting and non-forest timber products) due to the SFM (logging) activities.

**Risk from the community's perspective:** With the SFM activities main risk may arise for the communities in regard of natural resources supply: coming of outsiders due to the better access that may compete for the resources (hunting and general non-forest timber products); and possible damage to species important for their livelihood, such as the Brazil Nut tree, copaiba and andiroba.

**Mitigating measures:** As a mitigation measure for the first risk there is the already mentioned property surveillance program in place, to avoid new invasions. And in regard of risk to important tree species to the communities, on its management plan Grupo Jari commits not to explore none of the species with especial interest from the communities and not to restrict their access to this resources. Around the main important "castanhais" (areas with high concentration of Brazil Nut trees were identified with Fundação Jari support) there is no harvesting and during the planning and forest inventory to support every annual operation (POAs – Annual Production Unit), a census is made previously to the harvesting

and every “social interesting tree” is mapped, especially the Brazil Nut tree, copaiba and andiroba. Thus, they can plan the harvesting without damaging the trees, and during the harvesting signs and warnings are distributed in the operation site, and the surrounding communities are warned. The ground mapping of each tree has not happened so far in the Project Area because the forest management hasn’t started yet.

**Risk:** Restriction on land use and land use conversion.

**Risk from the community’s perspective:** Some communities’ members may be concerned about restrictions in the land use and land use conversion that the REDD+ Project may impose to them, even if there is no land use restriction requirement to engage and participate with the Project.

**Mitigating measures:** Fundação Jari staff has direct contact with the communities and is constantly trained and oriented to clarify that the Project cannot impose any land use and land use conservation restriction to them. Project’s approach is to offer alternative production techniques, more productive and efficient, so little by little the communities won’t need clear forest areas to grow crops any more. Along with alternative production techniques (provided by TARE), the project also implements the Property use Plan Methodology, as a mediation approach to strategically think the property land use. With the Property use plan the producer will be encouraged to think on their “future use” of the land considering not just productive aspects but social and environmental function of the land. And even though the producer is free to do whatever he/she desires. The restrictions that exist are towards new invasions, as previously commented but even the land surveillance team doesn’t open charges against families already established, being them engaged with the REDD+ project or not.

**Risk:** Non-inclusion of vulnerable groups such as youth and women.

**Risk from the community’s perspective:** Non-inclusion of vulnerable groups such as youth and women causing conflicts and uneven benefits distribution.

**Mitigating measures:** The technicians from Fundação Jari are constantly trained and oriented to not discriminate women and young people during the mobilizations for the Project activities. It must be noted that due to historical and cultural issues, in most cases men lead productivity issues of the Family and the women take care of the issues linked to welfare. Since the project aims to bring both economic and welfare benefits, it is essential to involve women and Young people in discussions. These groups have representations in the Technical Board.

**Risk:** Risks connected to the management of the Socio-Environmental Fund of the Project.

**Risk from the community’s perspective:** From the communities’ perspective this could rise high expectation regarding what the project can finance or its governance structure

**Mitigating measures:** During the consultations of the fund structuring, the Technical Board was elected as the official space of consultations and accountability of the fund, specially regarding social

activities. In this way there will be greater transparency and monitoring by stakeholders in relation to investments made by the Fund.

**Natural Risk:** Regarding natural risks, as identified through the application of the AFLOU Non-Permanence Risk Tool, v. 3.2”, the Amazon Biome is a quite balanced ecosystem and in the Project Zone the main natural risk is related with forest fire. No occurrence of natural fire (i.e., caused by lightning) was registered in the project area. Scientific research suggests that the occurrence of natural fires is rare in the Amazon (Schroeder et al, 2009), and the large majority of forest fires in the Amazon Biome are caused by human action (Goldammer, 1990). And even considering human caused fires, fire focuses hardly affect more than a couple hectares due to tropical forest humidity. However, human activities close the project area, especially those associated with community agricultural practices, using fire to preparation of their crops, when poorly managed may cause small fire focus.

From the biodiversity and climate point of view this small fire focus with the goal of cleaning land to grow crops have similar risks to the expected benefits as deforestation and fragmentation themselves. In general, according to Neto & Cianciaruso (2012), fire occurring in tropical forests can modify the structure and composition of the vegetation, consecutively affecting the diversity and abundance of native fauna. In their study, however, due to the high species diversity and ecological similarity among different species the functional diversity wasn't affected by the fire occurrence. Cochrane & Laurance (2008) say the fire used for cleaning lands turn the micro clima conditions warmer and potentially drier into the forest remnants, making forests more susceptible to future burning.

In regard of the risks to climate benefits, besides risks of changings in the hydrological cycle due to the land use change, there are the emissions of greenhouse gases, especially carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) (Fearnside, 2005). However, the VCS approved methodology VM0015 CO<sub>2</sub> emissions are already counted as carbon stock change and non-CO<sub>2</sub> emissions from fires used to clear forests in the baseline scenario can conservatively be omitted.

**Risk from the communities' perspective:** Although they use the fire and an agricultural technique to clear the “caopeiras” (forested areas) most of them don't have appropriated training and may lose the fire control.

**Mitigating measures:** Grupo Jari has a plan of emergency response to forest fires since 2009. This plan is ready to be implemented in case of forest fire occurrence, caused by natural causes or human action (criminal fire, slash-and-burn practices, forest management operation, among others), and includes stationary and mobile surveillance, as well as prevention and fire control procedures (see document “Plano de Atendimento a Emergência a Incêndios Florestais”, in English “Emergency Attendance Plan for Forest Fires”).

Additionally, another procedure called “PA – Prevenção e controle de Incêndios Florestais” (in English “Prevention and Controlling of Forest Fires”) that aims to set prevention measures based on two main strategies: Surveillance and Prevention Techniques. Regarding Surveillance the prevention happens through fixed observation towers spread over the operation sites and the surveillance field patrolling. The Prevention Techniques are based on eliminating or reducing the human factor on the fire risk, through implementing and maintaining firebreaks, maintenance of roads and preventive environmental education. This preventive environmental education is a set of activities, mostly informative workshops, aiming to deliver information and necessary instructions to general local population regarding basic knowledge on protecting the forest and avoiding forest fires. Along with the informative workshops there are also written material and audiovisual resources elaborated with this end. Besides all of this the procedures also indicates essential points regarding fire controlling and fighting, such as, necessary equipment, fighting methods, and safety measures.

### **G1.11 Maintenance of Benefits Beyond the Project Lifetime**

To maintain and improve the benefits for the climate, community and biodiversity beyond the project lifetime, the following mechanisms have been established and are applied:

**Technical Board of REDD+:** Official space to communication and decision making of the Project regarding social activities with the communities and different stakeholders. Held at least twice a year, the Board meetings are organized to discuss general issues of the project and, with public agencies, the issues brought upon in the Plan of Communitarian Development. “Extraordinary Boards” to address specific issues may be convened in accordance with the demand of the communities, such as education, health, environmental regulations, logistics to production flow, land tenure and others. The approximation of public and non-governmental entities to communities facilitates the communication and access to these policies and projects that affects them. The engagement of communities also generates empowerment and knowledge of their rights and where to claim them. These relationships should remain beyond the project duration.

**Family Assessment and monitoring of the socioeconomic development:** This tool allows us to understand the socioeconomic reality, needs and challenges that each participant Family of the Project has, allowing us to measure the benefits of the Project and to establish adaptive measures, adjusting the activities according to the need and reality of each Family. At the end of the Project, it is hoped that the best configuration is established for each family.

**Technical Assistance and Rural Extension Service (TARE), workshops and trainings in agroforestry and farming techniques:** Through technical training and capacitation in rural production,

appropriate farming and forestry according to the familiar interest, the rural producer is able to implement appropriate agricultural and forestry techniques, enabling constant production and revenue generation. It is expected that by the Project completion communities are able to conduct their crops effectively and efficiently produce food and generate income without the need for opening new areas, perpetuating the benefits to themselves, to the climate and to the biodiversity.

**Nursery of native forest seedlings and planting in degraded areas:** Local labor is hired to collect seeds and to produce seedlings, generating employment in the region. The knowledge gained can be used even after project completion, generating permanent benefits to the community. Planting seedlings in degraded areas will result in long-term benefits to the climate and biodiversity.

All activities related to forest management should perpetuate with low impact techniques applied beyond the project because there is no intention to discontinue the certified management generating lasting benefits to climate, community and biodiversity.

## G1.12 Financial Mechanisms Adopted

Regarding projects financial analysis and financial mechanisms adopted to provide an adequate actual and projected flow of funds for project implementation and to achieve the project's climate, community and biodiversity benefits there are four aspects that should be explored: The use of VCS approved tool for additionality demonstration; Projected revenues from GHG emissions reductions; Actual revenues from GHG emissions reductions and Project Socioenvironmental "Fund"; and Biofíllica's financial support commitment.

### **VCS Approved Tool for Additionality Demonstration**

To attend VCS requirements Jari/Amapá REDD+ project applied in 2012 the VCS approved *Tool for Demonstration and Assessment of Additionality in VCS Agriculture, Forest and Other Land Use (AFLOU) Project Activities*.

This Tool provided a four-step financial analysis that embraces: 1. Determine the appropriate method of analysis; 2. Carry out an investment analysis; 3. Realize a sensitive analysis; and 4. Develop a common practice study.

In the first step was determined the use of the Net Present Value (NPV) as financial indicator for the analysis of investments, because (i) takes into consideration the time value of money; (ii) the NPV can be added; and (iii) they depend only on the cash flow and cost of capital (LEMES JÚNIOR et al., 2005). Once Jari/Amapá submitted to VCS validation during 2012 the utilized NPV referent to that year.

The investment analysis was made through comparison of the alternative scenarios to the Project, them being: (ii) FSC certified forest management with complementary activities of REDD+, but only with



revenues from the sale of certified tropical wood, and (iii) FSC certified forest management without further activities of REDD+. The analysis revealed a negative NPV of R\$ 802,000 for scenario (ii) and a positive NPV of R\$1,025,000.00 for scenario (iii). Thus it becomes evident that the containment of deforestation and monitoring forest management additional activities jeopardize the financial viability of the Project if there is no additional revenue such as the one resulting from the trading of credits registered in the VCS.

In this analysis, that had the objective to prove additionally VCS credits revenue, it was shown that REDD+ Project activities would not be the most attractive financial scenario, and therefore would not be likely to happen, without the revenue from reduced emissions.

### **Projected Revenues from GHG Emissions Reductions**

To demonstrate that projected revenues from GHG Emissions Reductions provide an adequate flow of funds to project implementation and to achieve expected climate, community and biodiversity, the investment analysis mentioned above was also used with the addition of the projected revenues from GHG Emissions Reductions. To guarantee comparability with the previous analyses the same financial indicator (NPV) was applied and the same base year of 2012 was used.

The analysis revealed that project scenario considering FSC certified forest management (costs and revenue) plus REDD+ project activities (costs and revenue) has a positive NPV of R\$2,159,000.00, even higher than FSC certified forest management alone (scenario iii). It demonstrates that projected revenue from GHG Emissions Reductions is not only adequate to cover for project implementation of REDD+ activities, but also improves the overall profitability of keeping the forest cover on the Project Area. The financial spreadsheet will be available to the validation/verification body under request.

### **Actual Revenues from GHG Emissions Reductions and Project' Socio-environmental "Fund"**

Jari/Amapá REDD+ completed its first verification process under VCS in 2013, after this project's first vintage of GHG Emissions Reductions were put on the market. With resources from the credits sale starting to flow Projects Proponents had to get together and decide how to reinvest the money into project activities.

Project Proponents decided in 2014 to create a specific bank account to allocate all Jari cellulose' share on credits revenue from now on (80% of total revenue) and to establish ground rules to use these resources exclusively on REDD+ activities. Fundação Jari, responsible for project's social activities, will operate the bank account that will function in a similar way of simple fund. Since January 2015 consultations had been carried involving Project Proponents, Fundação Jari and engaged communities in order to establish governance schemes, eligible activities, procedures to access the resources, to monitor and report outcomes, among others.

Although one of the project activities is to refine the fund proposal, test it and adapt, the Fund already have a draft structure. In this draft structure:

- Source of resources: 80% of the revenues from the GHG emissions reductions;
- Destiny of the resources: Project proposed activities to climate, communities and biodiversity, besides basic maintenance and management;
- Guidelines to each strategic investment line (e.g.):
  - Climate: Main costs of the Surveillance Program, which are vehicles and logistics; trainings and workshops with communities in regard of the SFM activities schedule and potential impacts; trainings of the SFM employees to guarantee the best application of the Reduced Impact Logging (RIL) techniques; Forest cover monitoring, through acquisition of satellite images and their processing;
  - Community: logistics and material need by Fundação in order to implement project activities (TARE, Property Use Plan and others); Training and workshops with the communities; investments on their productive system (agricultural inputs and raw material); investments on the communities' infrastructure (communities wellbeing);
  - Biodiversity: Biodiversity monitoring activities, validation and monitoring of HCV attributes, investments on the seedling nursery and maintenance of the Xyloteque.
  - Maintenance and management: technical studies, verification and auditing of the project; logistics and administrative costs, and investments on communication (internally and externally).
- Host of the bank account: Fundação Jari;
- Governance: There will be an executive committee, formed by project proponents and Fundação Jari directories, that will annually discuss the investment strategy considering the resources available and will execute the investments. The technical board will act as a consultative council that will be consulted and monitor the investments proposed and realized.
- Monitoring and reporting: Every year the investment proposal will be discussed with communities in the first Technical Board, the investments already executed and yet to be executed will be monitored in the second Technical Board, and in the first Technical Board of the next year the investments realized in the previous year will be presented and discussed.

It is important to highlight this structure was built according to various meetings with different actors and it should yet be further discussed, tested and adapted. A first proposal of investments coming from the emissions reductions sale revenue was designed until 2021, when the Project completes 10 years.

### **Biofilica's Financial Support Commitment**

As explained above Jari/Amapá REDD+ project has already generated its first vintage of reduced emissions credits, which was entirely sold, and 80% of the revenue generated by this sale is directly invested in socio-environmental activities of the Project, this revenue proved suitable for facilitation and

enhancement of the activities already underway. Even without considering credits sale revenue, Biofíllica has a contractual commitment to contribute with 250,000 reais annually to the project to ensure the operation of its basic activities, such as TARE. Financial spreadsheets will be made available to the auditors upon request.

## *Programmatic Approach*

Jari/Amapá REDD+ project **is not using** a programmatic approach.

It is important to note that all rural communities located within the Project Zone, listed in **Table 4** and presented in **Figure 7**, may be included in the Project's social activities in the future. However, due to its definition this cannot be considered under a programmatic approach (inclusion of new areas to generate climate benefits).

## **G2. Scenario and Additionally of Land Use in case of Project Absence**

### **G2.1 Alternative Scenarios of Land Use in case of Project Absence**

The approved methodology VCS VM0015 version 1.1 was used to determine the scenario for the land use in the absence of the Project together with the approved VCS tool "VT0001 – Tool for the Demonstration and Assessment of Additionally in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities", version 3.0.

The analysis of deforestation, its agents, drivers and underlying causes, as well as probable scenarios of land use in the absence of the Project were made for the spatial limit denominated Region of Reference that covers the Project Zone. The Region of Reference consists in an area of 1,333,931 hectares (one million, three hundred and thirty three thousand and nine hundred and thirty-one hectares) and presents a historical rate of deforestation (between 2000 and 2010) of 29,628 hectares per year (0,27% per year – in relation to the remnant forest area).

For the definition of region spatial limit it was considered the environmental characteristics (hydrographic basins limits) and the deforestation direction driver. The definition of the reference region limit follows the guidelines described in VCS approved methodology VM0015 version 1.1 as well as the interval suggested by Brown et al. (2007) being the final area within the interval suggested in footnote number 9 of Methodology VM0015. The characteristics of Region of Reference meet the requirements of similarity with the Project Area determined by the VCS methodology VM0015 version 1.1.

Among the realistic and credible scenarios for the land use to take place within the limits of the Project, have been considered:

- i) Continuation of the land-use prior to the Project implementation (baseline scenario): deforestation caused by squatters driven by subsistence farming crops, small scale agricultural crops, pastures and demarcation of property boundaries. Between 2000 and 2010 36,204 hectares were deforested in the Project reference region for the implementation of these activities. For the next 30 years, a loss of 79,129 hectares has been projected in this scenario, of which 11,070 hectares are to be deforested within the Project area. In this scenario, beyond the non-mitigation of climate changes, the cycle of “slash and burn”, basis of shifting cultivation, continues to reproduce. The small farmer with no access to public policies and programs that encourage improvements in agroextractive practices and good living conditions, eventually decide to abandoned the already deforested land in search of opening new areas. In this context, low socioeconomic development indicators are maintained, as well as the continuous cycle of degradation and deforestation of forest leading to biodiversity loss.



**Figure 18.** Example of deforested area for deployment of subsistence agriculture in areas of one of the communities in the Project.

- ii) Project activity not registered as a VCS AFOLU project: conducting activities of sustainable forest management with an FSC certification and complementary activities to contain and monitor the deforestation caused by the agents of the scenario (i), plus carrying activities to promote socioeconomic development and biodiversity conservation. For the Project to be effective regarding the deforestation containment and monitoring in the region and local socioeconomic development, specific investments for such activities will be necessary, for instance

specialized professionals, purchasing of satellite images, REDD+ specific technical studies, intensified surveillance and property security, social activities and alternative income generation and environmental education with the communities located within the Project area or in the surroundings (VCS PROJECT DESCRIPTION, v3.1). These are non-essential investments and usually not made by the certified forest management. Therefore, the economic viability of the management is reduced without the additional revenue from the trading of credits registered on the VCS, as shown on **item G1.12 Financial Mechanisms**. In this scenario, the anticipated benefits for the climate, communities and biodiversity could happen at first, but would not be sustainable over time, in a way that would tend to be discontinued.

- iii) Sustainable Forest Management only, without additional REDD+ activities: conducting FSC-certified forest management activities without additional activities with the aim of reducing deforestation, such as, but not limited to, specialized professionals, satellite images acquisition, REDD+ specific technical studies, intensification of property security and land surveillance, social activities and alternative income generation and environmental education with the communities located within the Project area or in the surroundings. The Project area is bordered by one of the largest projects of FSC-certified forest management of native species in the world, also operated by Grupo Jari since 2004. In this case, a large part of the benefits to the climate, such as the reduction of deforestation by the physical presence of forest management, would still occur, but not necessarily the other benefits expected for the community and biodiversity would happen. It is likely that for these aspects the trends would still be 'business as usual'. Additionally the operation of sustainable forest management as isolated activity in Brazil faces a series of barriers (as described below), in a way that without the complementary activities that generate co-benefits, the operation itself could not be sustainable over time.

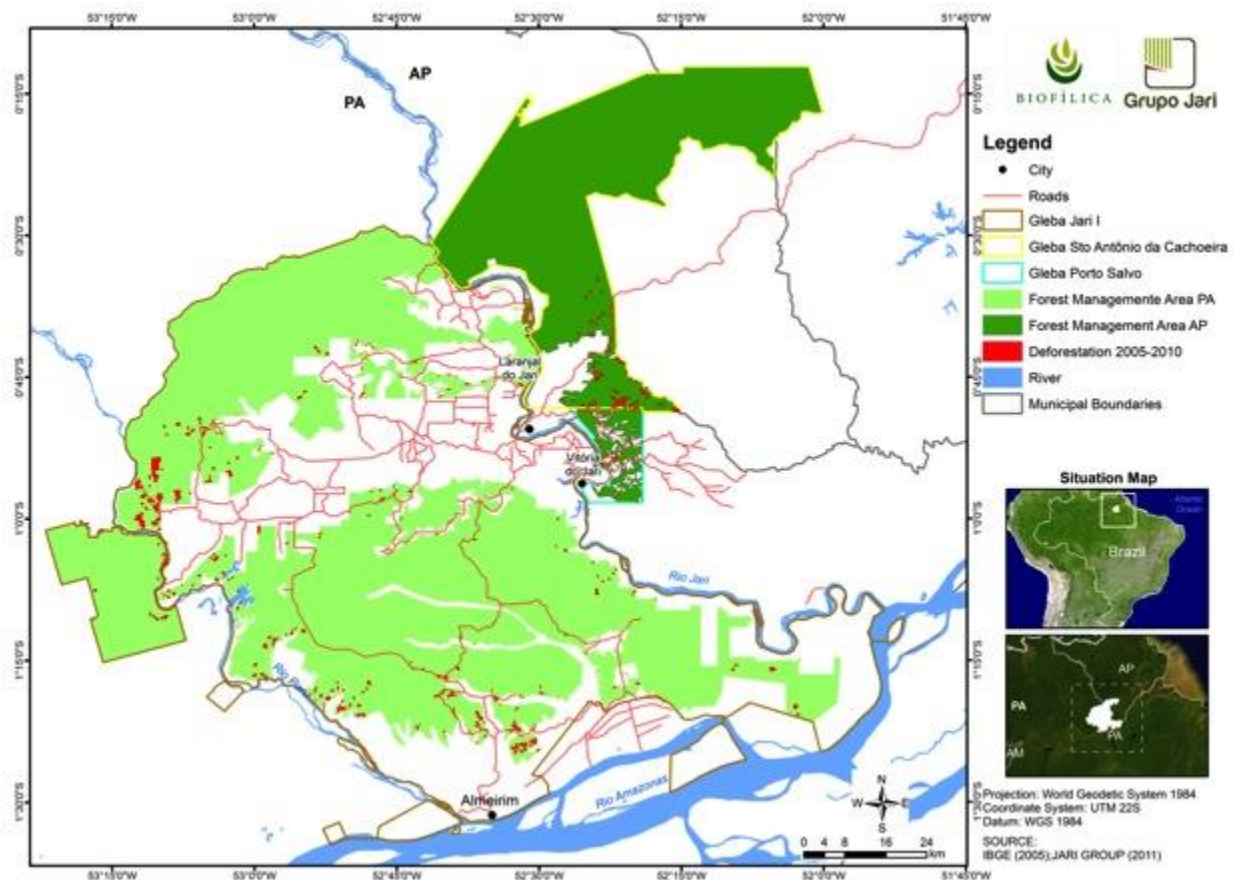
## G2.2 Project Additionality

The sustainable forest management, notably the certified one, is recognized by many specialists as a tool for forest preservation, forest carbon stock maintenance and decrease in the deforestation rates (PORTER-BOLLAND et al., 2012; UNCED, 1992; VERÍSSIMO et al., 1992; SILVA et al., 1997; UHL et al., 1997; BARRETO et al., 1998; HOLMES et al., 2002 apud SABOGAL et al., 2006; PUTZ et al., 2008; SPATHELF et al., 2004). This happens especially because of the use of low impact techniques, continuous monitoring of the forest and the social and environmental impacts of the operation, physical presence, organization of land ownership and generation of economic value for the forests.

However, the complexity and scale of the operation, added to factors such as bureaucratic constraints and fluctuation in the price of wood due to crisis in the buying markets and exchange rates may turn the activity into a costly and risky one. Thus, the investment in some practices additional to what

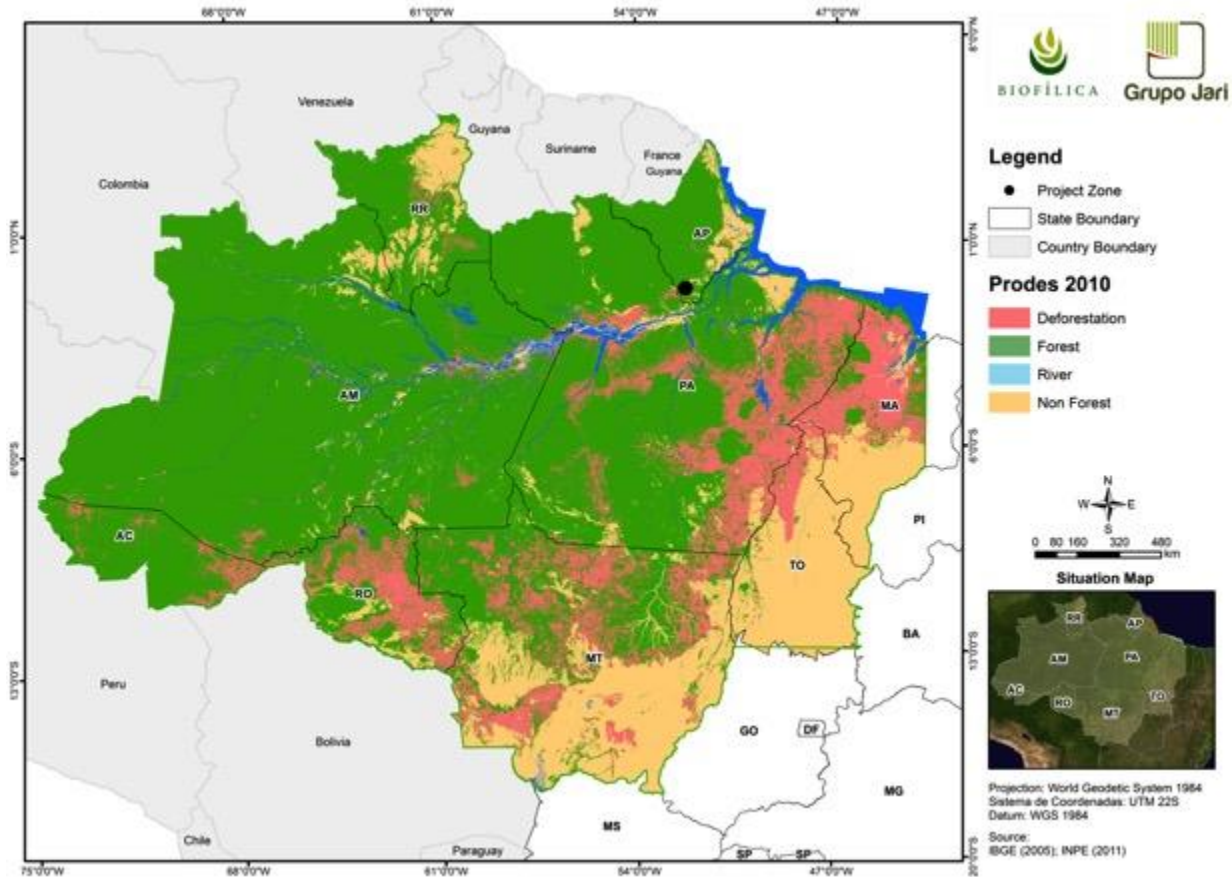
is required by law and certifying agency is jeopardized or becomes secondary to the need of survival of the operation. Among them, there are activities that are complementary to the operation and specific to effectively contain deforestation and to monitor areas of forest management such as those listed in the scenario (ii).

This way, despite the certified forest management contribution to the forest preservation and carbon stock maintenance, the area is subject to unplanned deforestation and loss of carbon stock due to external agents, even if in smaller quantities and in a more timely manner in relation to areas without management. Besides that, the non-containment of deforestation stimulates local population to perform the expansion of agricultural activities with limited or absent planning and technology and low productivity, resulting in continuous necessity of cutting down the forest in order to maintain its production. On the other hand, if supported through, for example, the expansion of Fundação Jari, the communities would have the opportunity to develop activities economically more feasible without needing to perform clearings in the forest.



**Figure 19. Jari/Amapá REDD+ project area and its borders with the area managed by Grupo Jari and FSC certified since 2014, in the state of Pará, with an emphasis on unplanned deforestations caused by external agents despite surveillance, spetial operations and the physical presence of the Group.**

The practices of the scenario (i) continuation of the use of the soil prior to the Project (base line scenario) are not in compliance with applicable mandatory legislation and regulations. However, such practices occur in a systematic and spread way in the Project region, the Legal Amazon, as it can be seen in Figure 21 below.



**Figure 20. Detected deforestation in Legal Amazon accumulated up to 2010, occurred in a systematic and spread way throughout the region.**

According to Higuchi et al. (2009) from 1997 to 2003 the authorized/unauthorized deforestation rate was 19%, that is, from all deforestation carried in the Brazilian Amazon, 81% was not authorized by Public entities.

Similar situation is also found in the state of Amapá, where illegal deforestation has occurred in all of its municipalities in the period between 2002 and 2009 as show in **Figure 22**.

In the specific municipalities that encompass the project area (Laranjal do Jari and Vitória do Jari) 100% of all deforestation monitored in the period was unauthorized.

Serrano and Souza (2012) state that such scenario is the reflection of the historic process of occupation of the state that remains until present, where unused lands belonging to the State were deforested and occupied by people aiming to establish possession, leading to a disorganized settling.

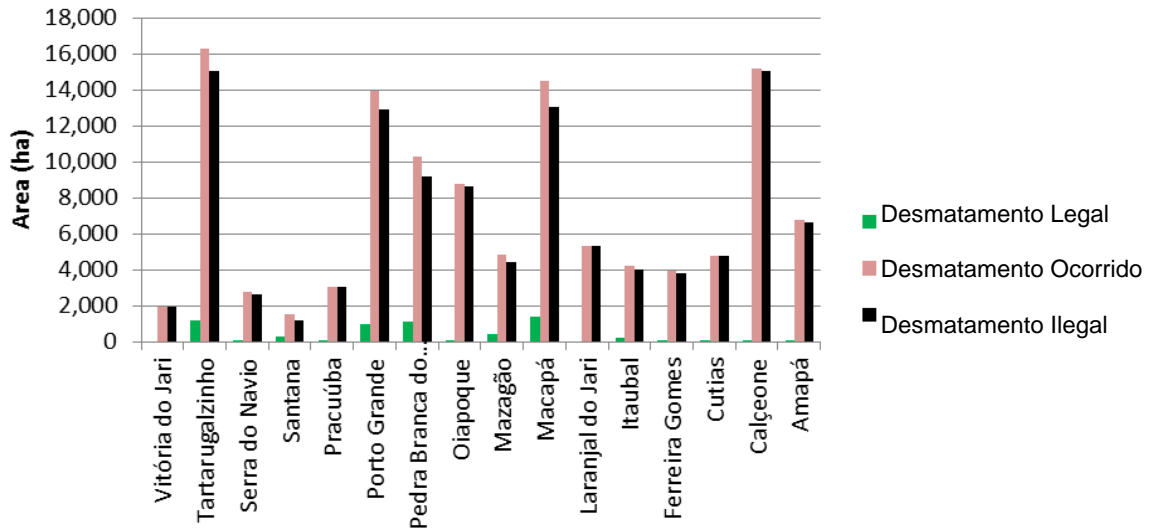


Figure 21. Authorized vs. Unauthorized deforestation in municipalities of Amapá between 2002 and 2009. Source: IBAMA apud GTPPCDAP (2010) and INPE (2011).

With the purpose of avoiding this contributed possession regimen and, at the same time, occupy unused public lands, the Brazilian State created the so-called Lands Law (Lei de Terras), Law # 601/1850, the first of several other regulations created with the same goal to either privatize lands or turning them into protected areas. However, not different from other Brazilian states, conflicts related to land concentration, poverty, misery and rural exodus took place (SERRANO E SOUZA, 2012). In addition, land tenure insecurity turned into a big issue, since squatters would invade private lands, alleging they belong to the state, situation commonly found in the Brazilian Amazon until present.

**Erro! Fonte de referência não encontrada.** shows the high percentage of lands in Amapá with uncertain use or ownership, as 42% are not registered in private ownership and not protected.

Table 11. Profile of land ownership in the amazon, 2000.

State	Type of Ownership		State	Type of Land Use (1996)		State
	Private	Protected		Private	Protected	
Acre	22%	36%	43%	19%	75%	6%
Amapá	5%	53%	42%	35%	59%	6%
Amazonas	2%	34%	64%	16%	72%	12%
Maranhão	38%	11%	51%	42%	39%	19%
Mato Grosso	55%	15%	30%	43%	46%	11%
Pará	18%	28%	54%	33%	58%	9%
Rondônia	38%	45%	17%	33%	60%	7%
Roraima	13%	51%	36%	52%	37%	11%
Tocantins	61%	12%	27%	66%	26%	8%

Source: Sêneca and WRI, 2004 apud Lentini, et al., 2003.



According to Imazon data, deforestation in the Amazon occurs mostly in the land category the Project area is inserted (private, squatter and unclaimed). Between February, 2011 and February, 2012, the monthly deforestation average in this category was of 63.7% in relation to the total deforestation occurred in the period (based on data by HAYASHI et al., 2011; HAYASHI et al., 2011; HAYASHI et al., 2011; HAYASHI et al., 2011; HAYASHI et al., 2011; HAYASHI et al., 2011; HAYASHI et al., 2011; HAYASHI et al., 2011; HAYASHI et al., 2011; HAYASHI et al., 2011; HAYASHI et al., 2012).

Government agencies in both state and federal levels have limited options to enforce compliance with laws and regulations that were issued to prevent deforestation. According to Imazon (2009) using data from the Office of Attorney – General of National Treasury, only 26 out of 48 IBAMA's needed prosecutors within region were hired, indicating a deficit of 54%. This limited number of prosecutors and inefficient allocation of their time leads to inadequate identification and location of infractions by Sicafi12, which then leads to non-compliance with deadlines<sup>7</sup>.

More astonishing is the fact that when people or companies are incriminated of environmental crime impunity reigns. According to a report by the Brazilian Court of Audit (TCU), from all the fines issued by IBAMA for environmental crimes only than 0.6% was actually collected.

Scenarios (ii) and (iii) are in compliance with all applicable legal and regulatory requirements as shown in SectionG5.2.

Thus, the mitigation of global climate change through the avoided emission of 3,450,278.8 tCO<sub>2</sub>e through deforestation and forest degradation, the mitigation os risks associated with extreme weather events, biodiversity conservation and protection of endangered species, the development of scientific research on biodiversity and the maintenance of an ecological corridor and buffer zone to nearby protect areas would not occur without the Project.

Even when it regards the activities of Fundação Jari, the activities developed in partnership with the rural communities would not be happening in the absence of the Project, as well as the related benefits. Fundação Jari, partner of the Project engaged in social activities, has the original mission of “promoting comprehensive training of children and adolescents found in social risk” (FUNDAÇÃO JARI, 2011), and although it is involved in the promotion of the social welfare of the population of the Valley of Jari since 200, it is with Project REDD+ Jari/Amapá that an appropriate look is laid on the rural public in the region on the inside of Amapá.

Although Fundação Jari also takes into consideration the environmental benefits that a Project can bring to the region, its activities are designed with focus on the “economic” development, social development and management”, objectives that have been strengthened during the technical restructureof Fundação Jari in 2010 (FUNDAÇÃO JARI, 2011). Thus, the partnership between Fundação

---

<sup>7</sup> If the State fails in complying the deadlines for enforcement of laws and regulations, the public powers loses the right of punishing the infractor, even if accused guilty (Art. 109 do Código Penal Brasileiro – Decreto-Lei nº. 2.848/1940).

Jari and the proponents of the Project allows the expansion of social activities, which gain a new purpose and were designed specifically to leverage the reduction of deforestation and promotion of social welfare.

In addition to expanding its focus and including the reduction of deforestation and improvement of social welfare, the area of operation of the Fundação Jari is also amplified, benefiting an even wider range of communities. Although Fundação Jari is involved with the promotion of social and economic development since 2002, its geographic focus is determined by the operations of Grupo Jari, resulting in much greater attention to the Pará at the expense of severe social issues of Amapá.

The previous prioritization of Pará on Amapá is related to the criteria of Fundação Jari in selecting sites which will receive investments, which are in line with the national policy on Social Assistance, which classifies users and establishes criteria and procedures, services and access modes and assistance users as described below:

- Regions with greater number of communities and more inhabited communities: when implementing a project or program in a more populated location, Fundação Jari optimizes its financial and human resources reaching greater number of people. Furthermore, involving more people from a location for participating in the same projects or programs is a strategy for establishing social cohesion for guaranteed results.
- Local population's social condition: Valley of Jari is a poor region where the population faces difficulties related to access to basic services, such as housing, food, water, sewerage, electricity, education and others. Although such conditions are widespread throughout the region, they are more pronounced in the state of Pará. As per Project de Eletrificação Rural no Vale do Jari, available to validation/verification body, the monthly average income in Pará is lower (R\$ 460) than in Amapá (R\$ 662) and opportunities for education is also lower in Pará state, since schools in such state only attend elementary level. Because supporting people found in conditions of higher vulnerability is a premise adopted by Fundação Jari, Pará is high priority in receiving social assistance. However, with the partnership between Project proponents and Fundação Jari, rural communities from Amapá, who are also in need for assistance, can be benefited from Project activities.

When it comes to benefits for biodiversity, most, if not all, scientific studies on the regional biodiversity were driven by "Projeto Jari" and gained even more strength with the acquisition of land by the former Gupo Orsa. During the history of the now Grupo Jari in the region, various partnerships with research groups and universities were established, especially EMBRAPA (Brazilian Company of Agriculture), of Belém and Macapá, UNIFAP (Federal University of Amapá), Federal University of Lavras and University of Lancaster.

However, due to the great economic importance for the Grupo Jari, the fact that sustainable forest management operations had already started and being the largest area of continuous native tropical forest under the group management meant that the areas of Pará were prioritized for the realization of

scientific studies. That is because, on one hand, Grupo Jari was aiming the FSC already in 2004 for the management that began and had interest in promoting a research in the areas of Pará, and on the other hand, it was also interesting to study a great continuous area (545 thousand hectares of FMU in Pará vs 220 thousand hectares in Amapá). And because the MFS operations had already begun a series of infrastructure projects such as roads and extensions had already been established facilitating access and the installation of study plots.

These factors, associated with the bureaucratic obstacles to the start of MFS in Amapá makes REDD+ Jari/Amapá initiative the main vector to boost the making of studies and research on biodiversity on the side of the state of Amapá. One of the lines of investment from the Socio-environmental Fundo f the Project intends to invest directly in activities with biodiversity in the Project Area.

The analysis of different scenarios between the states of Pará and Amapá brings an understanding of the barriers that Grupo Jari faces when deploying activities in Amapá, and also makes clear the importance of the Project REDD+ to contain deforestation, to the social development in the state and to the conservation of the biodiversity.

## G3. Stakeholder Engagement

### *Information Access*

#### G3.1 Access to Project Information and Documents

In order to ensure that all project stakeholders have access to documents and project information, three communication paths were established: writing, virtual and verbal.

**Writing:** a printed version of each document related to the Project, such as a document of the conception of a Project, monitoring report, validation report, verification report and Project summary will be available for consultation at the headquarters of Fundação Jari. Information and News about the Project are also conveyed through two newspapers of the Gupo Jari: Circular Fundação Jari and Circular of the Grupo Jari.

**Virtual:** the documents related to the Project are available to the public through access to the VCS and Biofílica websites. The Circular Fundação Jari and Circlular of the Grupo Jari can also be accessed digitally. Relevant News will also be conveyed on Biofilica newsletter through its pages on social media.

**Verbal:** information and news about the Project will also be conveyed verbally in events of the Technical Board about REDD+, though direct meetings and call between communities and agricultural technicians, as well as other contact opportunities between stakeholders and Project proponents.

### G3.2 Relevant and Adequate Information to Communities

Prior to the implementation of social activities that directly involve the communities, Participative Organizational Diagnosis Workshops (from Portuguese “Oficinas de Diagnóstico Organizacional Participativo – DOP”) were conducted by project proponents and partner Fundação Jari, through which information about the Project have been linked with appropriate language and teaching methodologies of mediation.

The DOP workshops are an instrument of collaborative construction between proponents and communities. Individually applied in each community or groups of small communities, smallholder members and technicians discuss the theme REDD+ identifying opportunities and project risks, strengths, opportunities, weakness and threats within their communities. They have also established goals and means, period, representatives and partners to address identified problems and, at last, evaluated the workshop and Project actions. The content of each workshop with discussions, opinions and conclusions was documented and used on the conception of project activities, as well as the forwarding of actions as decided during the workshop.

Relevant and appropriate information on potential costs, risks and benefits to the communities were provided during meetings of presentation and consultation, as described in Section G3, during meetings of the Technical Board on REDD + and for the DOP workshops. In addition, participation in the project is voluntary and the decision to participate or not in the project is not definitive or results in any kind of restriction.

During the first meetings (those hold in 2012) the main risks discussed were about the high complexity of REDD+ initiatives, lack of official regulation (nationally and jurisdictionally), difficulties of articulation with local communities, difficulties of articulation with state and local governmental agencies, high development costs (to be cover by the project proponents) and uncertainty of return, and high flotation on carbon prices.

After that others costs and risks to communities started to came out more explicitly with project’s building-up and were clarified verbally, specially during the Technical Board, DOP workshops and TARE visits. The main concerned passed to the project proponents by the communities is in regard of restriction on the land use and deforesting and about maintenance of roads so they can have better access to their lands. Every time this topics are brought up they are clarified, especially that the project doesn’t impose any restriction on the land use.

A few new risks and impacts were brought to light recently, which indicates the need of a particular discussion with communities’ members in regard of costs and impacts. These additional workshops are planned to be implemented with each communities in order to specifically discuss costs and risks, according with the schedule presented in **section G1.8 table 7**.

Regarding risks of the Sustainable Forest Management to be carried out in the Project Area some consultation has been done in 2013 as part of the SFM Plan preparation, during this meetings the goal was to present basic concepts of the SFM operations. The main concern raised by the communities’ members was in regard of possible damage to the Brazil Nut tree, new roads for them to have better

access to the area and the risk of access restrictions. There were explained the Brazil Nut is protected by law and no damaged is expected, as well as no restriction to the area will be imposed and that they will be able to use de SFM roads net. After the SFM Plan approval before the beginning of the operation the Project proponents commits to carry deeper workshops embracing SFM basic concepts, costs and risks to the communities to the communities surrounding every UPA to be managed every year, prior to the SFM activities start.

### **G3.3 Communication of CCBS Validation/Verification Process**

The participant communities of the project and other stakeholders will be informed about the validation and verification of the CCBS and on the possible visit of an independent auditor to their community or residence through the Technical Board of REDD+ preceding these events and through technicians of Fundação Jari during their periodic visits. Virtual channels, for instance, Biofilica's newsletter and site, will also be used to inform general stakeholder and public.

## *Consultation*

### **G3.4 Community Groups and Other Stakeholders Consultation**

Aiming at assuring the participation of stakeholders who act in the area of the Jari/Amapá REDD+ Project, the Project proponents held meetings with representatives from state and local government agencies, communities influenced by the Project and local class organizations. In these meetings the stakeholders showed interest in knowing more about REDD+, thus creating the REDD+ Technical Board. REDD+ Technical Board was, therefore, the channel chose through consultations to continue communication between the project proponent and Communities.

The specific common goals of the meetings were:

- Discussion of Project design, location, place and deadlines;
- Discussion of project activities, duration, deadlines, expected risks and impacts;
- Alignment of expectations;
- Opening of a communication channel between the Project proponents and stakeholders;
- Recognition of the Project by the stakeholders; and
- Presentation of the Global Comparative Study on REDD+ to be developed in the Jari/Amapá REDD+ Project by the CIFOR (Center for International Forestry Research)

The meetings occurred on separate occasions, and here will be presented the participating agencies and main results of the first Project meetings with stakeholders. It is noteworthy that the discussions and dialogues have become constant and regular after the first meetings, not restricted to Board meetings.

## 1. State of Amapá government agencies

Venue: State Forests Institute, Macapá – AP

Date: June 27 2012

Agencies represented:

- Grupo Jari
- Biofilica Investimentos Ambientais
- Instituto Estadual de Florestas – IEF (Forests State Institute)
- Secretaria de Estado do Meio Ambiente – SEMA (State Department of Environment Conservation)
- Instituto de Desenvolvimento Rural do Amapá – RURAP (Rural Development Agency for the state of Amapá)
- Secretaria de Estado da Indústria, Comércio e Mineração – SEICOM (State Department of Industry, Commerce and Mining)

Main results:

The agencies represented in the meeting recognize the Jari/Amapá REDD+ Project as an important tool to decrease deforestation and forest degradation, carbon stock conservation, sustainable use of forest resources through best practices in forest management, as well as its importance for the local social-economic development. Thus, they offer institutional support for the development and maintenance of the Project activities. As support from the state government to REDD+ Projects in the private sector, a legal milestone to regulate public-private relationship in this kind of business is under construction by the State Attorney General, according to the IEF director.

Project proponents, in turn, provide support to other initiatives in the State of Amapá that, similarly to the Jari/Amapá REDD+ Project, seek socioeconomic and environmental development.

The results of this meeting was published in the Instituto Estadual de Florestas (IEF) website and it is presented as an annex of this document.



**Figure 22. Project Proponents, partners and government agencies from the state of Amapá meet to discuss the Project.**

## **2. Regional government agencies**

Venue: Fundação Jari, Monte Dourado - PA

Date: July 09 2012

Agencies represented:

- Fundação Jari
- Jari Florestal
- Biofílica Investimentos Ambientais
- Center for International Forestry Research – CIFOR
- Secretaria Municipal de Agricultura de Vitória do Jari – (Vitória do Jari Municipal Agricultural Department)
- Instituto de Desenvolvimento Rural – RURAP (Laranjal do Jari Unit) (Rural Development Agency)
- Instituto de Desenvolvimento Rural – RURAP (Vitória do Jari Unit) (Rural Development Agency)
- Secretaria Municipal de Meio Ambiente e Turismo - SEMMATUR (Tourism and Environment Municipal Department)
- Instituto Federal do Amapá - IFAP (Amapá Federal Agency - environment coordination)
- Community representatives

Main results:

The institutions represented in the meeting recognize the Jari/Amapá REDD+ Project as an important tool to decrease deforestation and forest degradation, as well as its importance for the local social-economic development. Thus, they offer institutional support for development and maintenance of Project activities. In order to broaden their knowledge on REDD+ Project, discuss concepts and increment institutional synergies for the implementation of the Project, **a Technical Board on REDD+ was created to occasionally gather together the Project proponents, government agencies and community representatives.**

The presence list of this meeting is provided as an annex of this document.



**Figure 23. Project proponents, partners and local government agencies representatives meet to discuss the Project.**

### **3. Communities in the Project area of influence**

Consultations in the communities in the Project area of influence were carried out in four different meetings so as to group neighboring communities. Invitations were made by Fundação Jari to all residents through local radio announcements and letters delivered personally to one or more residents..

#### Meeting 1

Venue: Balneário do Hiara

Date: 10/07/2012

Agencies represented:

- Fundação Jari
- Biofíllica Investimentos Ambientais



- Center for International Forestry Research – CIFOR
- Secretaria Municipal de Agricultura e Abastecimento de Laranjal do Jari Municipal Department of Agriculture and Supply
- Fé em Deus Community
- França Rocha Community

The presence list of this meeting is provided as an annex of this document.



**Figure 24. Project proponents, partners and Fé em Deus and França Rocha community residents meet to discuss the Project.**

Meeting 2

Venue: Senhora Socorro's farm – Tira Couro Community

Date: 11/07/2012

Agencies represented:

- Fundação Jari
- Biofílica Investimentos Ambientais
- Center for International Forestry Research – CIFOR
- Secretaria Municipal de Meio Ambiente e Turismo de Laranjal do Jari (Tourism and Environment Municipal Department)
- Tira Couro Community

- Sombra da Mata Community
- Valdomiro/Barbudo Residents

The presence list of this meeting is provided as an annex of this document.



**Figure 25. Project proponents, partners and Tira Couro, Sombra da Mata and Valdorimro/Barbudo residents meet to discuss the Project.**

### Meeting 3

Venue: Ms. Antônia's home –Nova Conquista Community

Date: 12/07/2012

Agencies represented:

- Fundação Jari
- Biofílica Investimentos Ambientais
- Center for International Forestry Research – CIFOR
- Instituto de Desenvolvimento Rural - RURAP (Unity of Vitória do Jari) Rural Development Institute
- Nova Conquista Community
- Igarapé das Pacas Community

The presence list of this meeting is provided as an annex of this document.



**Figure 26. project proponents, partners and Nova Conquista and Iguarapé das Pacas Communities residents meet to discuss the Project.**

Meeting 4

Venue: Água Azul Community school

Date: 12/07/2012

Agencies represented:

- Fundação Jari
- Biofílica Investimentos Ambientais
- Center for International Forestry Research – CIFOR
- Instituto de Desenvolvimento Rural - RURAP (Unidade de Vitória do Jari) Rural Development Institute • Água Azul Community

The presence list of this meeting is provided as an annex of this document.



**Figure 27. Project proponents, partners and Água Azul community residents meet to discuss the Project.**

**Main results of the meetings with the communities:**

Project proponents exposed the REDD + Project Jari / Amapá, objectives, duration and terms, possible activities, affected area and expected impacts. It was clarified that activities involving communities would be drawn together and according to family self-interest, and that the involvement of individuals is voluntary.

The residents of the communities exposed the challenges to keep quality of life together with the preservation of the forests and see the Jari/Amapá REDD+ Project as a tool to reduce deforestation and forest degradation, and to bring social, economic and environmental development to their communities. A representative of each community was also sent to compose the Technical Board on REDD+ so as to bring to the community knowledge on the subject or increase the knowledge they may have on that, as well as to keep an open dialog about REDD+ and the Jari/Amapá REDD+ Project with the Project proponents. They also accept to take part in the Global Comparative Study on REDD+ made by CIFOR.

The presence lists and the publication on IEF's website presented as an annex are supportive evidence of the meetings described in **section G3.4** above, that represents the first contact with communities and other stakeholders regarding project design and implementation. The most meaningful of them is probably the Technical Board, a result of the meeting with regional agencies, demonstrating the influence of those meeting in the Project design and implementation.

These meetings suffice, including section G5.2, because: the participation on project activities is *free*, each community or member within the community was and is able to decide if they want to participate; it was *prior* to the development of any activity with the communities; it was *informed* once all the information was timely appropriated provided, including nature, size, pace, reversibility and scope of the proposed activities, the reason and the purpose of the Project, its duration, areas that would be affected, potential risks and benefit sharing, procedures of the project and personnel that would be involved, considering that some of these issues are being further and deeper explored with the project maturity; and the participation on the project is voluntary meaning that they need to *consent* and they can withdraw the project activities at any moment if they want to.

It is important to note that, even after this first consultation a participatory process and continuous consultation is in place, as described in **section G3.5**. With the evolving of project activities, more and more information is discussed, exchanged and created with the communities and other stakeholders, consolidating a continuous participatory process. Additionally according with **table 7 section G1.8** more workshops with the communities are planned to cover deeper some topics already discussed and to better and more appropriately approach others.

Regarding Project's Sustainable Forest Management activities workshops were carried out in July 2014 and November 2014 with communities close to the first UPA (Annual Production Unit). The main topics discussed were activities developed by Grupo Jari, sustainable forest management concepts and planned activities; potential risks and communities' demands regarding SFM planned activities and the grievance and stakeholders communication procedure. The memories of these consultations are also presented as an annex. It is important to note that prior to the further workshops with the communities regarding SFM activities, its risks and impacts on communities' livelihood and biodiversity conservation, including HCV, are planned according with **table 7 section G1.8**.



**Figure 28. Consultation meeting regarding SFM activities carried out close to São Pedro community in July 2014.**



**Figure 29. Consultation meeting regarding SFM activities carried out close to Cajari community in November 2014.**

### **Communication Plan**

A communication Plan was developed in order to continue communication and consultation between the project proponents and the communities to continue communication and consultation between the project proponents, the communities and other stakeholders.

#### Main Communication Channel:

The main communication tool is the **Technical Board**, created during the meeting of July 9<sup>th</sup> 2012. The Technical Board is Project's official space of dialogue and articulation between communities and other stakeholders, that happens at least twice a year. All information and demands regarding projects activities and impacts can be discussed during the meetings and a resolution should be collectively made. The results of all other project activities will also be divulged and discussed through this space, facilitating the collection of feedbacks and comments that should also be addressed. In that manner the Technical Board is the more direct tool of adaptive management proposed by the Project.

#### Members of the Technical Board:

The members of the Technical Board are representatives of the institutions identified in **section G1.5 and 6** along the representatives of the communities engaged. There fore the current members are the following institutions:

- Jari Florestal – **Proponent**
- Jari Celulose – **Proponent**
- Fundação Jari – **Partner**
- Biofílica Investimentos Ambientais – **Proponent**
- State Forestry Institute (IEF) – **Stakeholder**

- State Department of the Environment (SEMA) – **Stakeholder**
- Rural Development Institute of Amapá (RURAP) – **Stakeholder**
- Department of Industry, Commerce and Mining (SEICOM) – **Stakeholder**
- Union of Workers and Rural Workers of Laranjal do Jari (STTR) – **Stakeholder**
- Union of Workers and Rural Workers of Vitória do Jari (STTR) – **Stakeholder**
- Institute of Environment and Territorial Planning of the State of Amapá (IMAP) – **Stakeholder**
- Municipal Department of Agriculture of Vitória do Jari (SEMA - Vitória do Jari) - - **Stakeholder**
- Municipal Department of Agriculture of Laranjal do Jari (SEMA - Laranjal do Jari) – **Stakeholder**
- Rural Development Institute of Vitória do Jari (RURAP - Laranjal do Jari) – **Stakeholder**
- Rural Development Institute of Laranjal do Jari (RURAP - Vitória do Jari) – **Stakeholder**
- Municipal Department of Environment and Tourism of de Laranjal do Jari (SEMMATUR) – **Stakeholder**
- Federal Institute of Amapá (IFAP) – **Stakeholder**
- Communities of the municipality of Laranjal do Jari: Tira Couro, Sombra da Mata, França Rocha, Fé em Deus and Igarapé das Pacas. – **Engaged communities**
- Communities of the municipality of Vitória do Jari: Nova Conquista and Água Azul – **Engaged Communities**

Meetings Frequency: At least twice a year. The first meeting of the year aims mainly to discuss activities implemented on the previous year and to discuss the work plan for the year beginning. The second one, generally in the second semester, aims mainly to monitor the implementation of the proposed work plan for the year and the perspectives until it end.

Invitation Strategy: All the stakeholders and proponents are invited through e-mail and direct phone call. The community representatives are invited through phone calls and direct contact. A recurrent situation, due to local political instability, is the intense turnoff of public agencies representatives. This causes a break in the communication flow. Thus, every time a representative is changed Jari/Amapá REDD+ Project will be presented again to the new person in charge, in order to mitigate the break in the communication and facilitate a good receiving of the Technical Board invitation by the new person in charge.

Meetings' Agenda: As already mentioned the first meeting of the year aims mainly to discuss activities implemented on the previous year and to discuss the work plan for the year beginning. The second one, generally in the second semester, aims mainly to monitor the implementation of the proposed work plan

for the year and the perspectives until it end. Besides these main objectives all meetings' agendas are adapted to the current demand, that may be to discuss TARE activities, or the property Use Plans implementation, the land tenure issues, discussion of communities Development Plans and articulation of their demands with governmental agencies representatives. Any part involved can propose a topic to be discussed. The technical board will also acts as a consultation council of the Socio-environmental Fund investments and performance.

Feedback of the Meeting: After every Technical Board meeting the minute will be prepared, with everyone's signature and contact (e-mail and or phone number). The minute will be mailed to the stakeholders' representative, and also printed to be delivered to every family attended on the next meeting with Fundação staff responsible for TARE implementation. This measure helps to mitigate another recurrent break in the communication flow: it has been seen that frequently the information don't flow from the representatives to others communities' members or to the governmental institution, or that in the next meeting it has been forgotten the discussion had in the previous one.

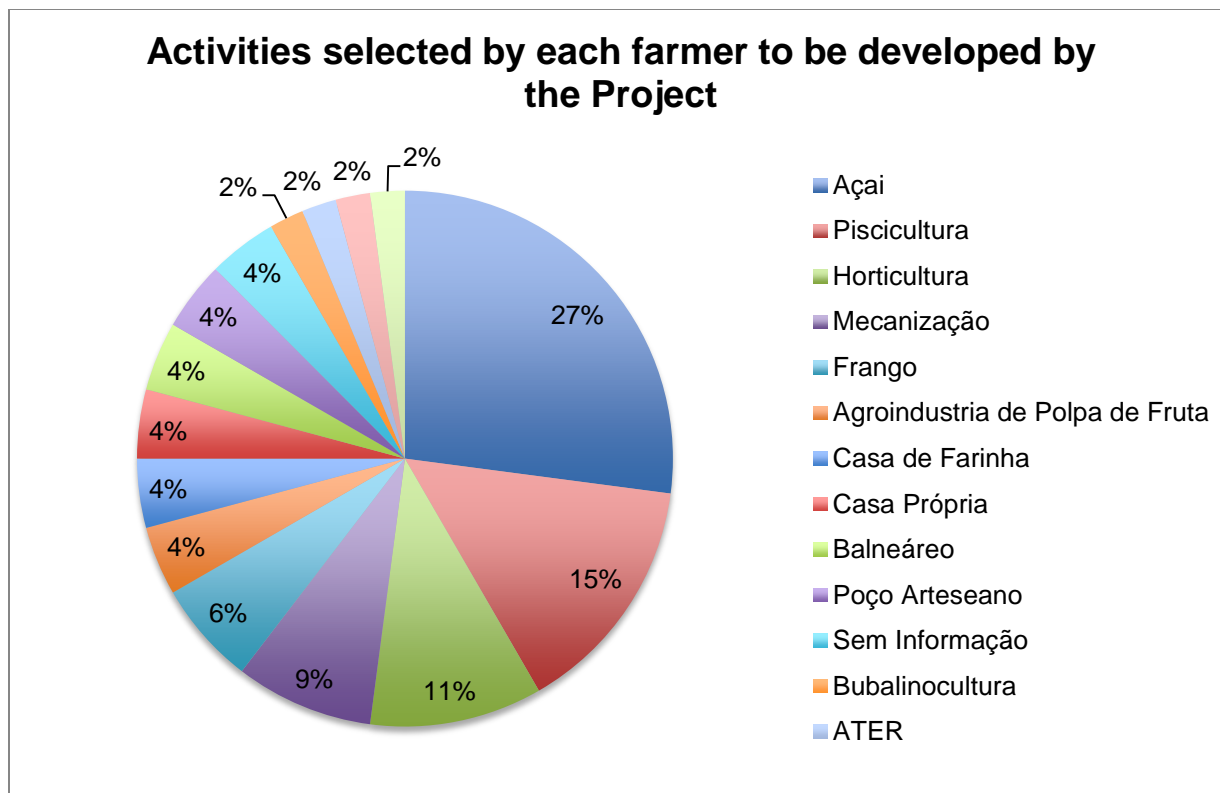
Complementary Channels: Complementary channels described in section **G3.8 Feedback and Grievance Redress Process** shall also be used as communication channels to enable adaptive management.

### G3.5 Participatory Process

The activities of the project are conceived and implemented taking into consideration the learning presented by stakeholders in events of the **Technical Board on REDD+**, the characteristics and vocations of each community as defined during **DOP workshops**, the **Property Use Plan** and **Technical Assistance and Rural Extension Service (TARE)** (described on **table 6**).

The very approach on how the project would develop the TARE service has changed a few times since 2012, according to feedback provided by stakeholders and community members. The initial proposal was a closed package of courses and training based on the regional market demands and expertise from Fundação Jari. After the presentation of this proposal, along with the DOP workshops in 2013, many community members showed dissatisfaction with the presentation of a closed package of coursed. This issue was discussed and then came out the idea of carrying out an assessment on the family level that not only would provide a socioeconomic baseline, but also work as a direct query to each family about what would their interests be on. One of the results of this **Family Assessment** is presented below.





**Figure 30. Activities selected by each farmer during the Family Assessment.**

In addition to the identification of priority interests, the activities execution of TARE still seemed scattered and exact, without necessarily a strategic direction for family. Thus, in 2014 it was discussed with the producers the proposal of implementation of a methodology called “Property Use Plan”.

The Plan of the Use of the Property is held individually with each family and collaboratively with rural producer and agricultural technician. It is searched for the male and female presence, if that is the family setting. Information is raised about current land use, total production flow and buyer’s market, costs and revenues on the sale and other relevant information. Based on a future scenario of five years idealized by the Family, technician and community members conduct a zoning of the property, properly allocating the residence, production lot of varied cultures, are of preservation among others. This methodology. Before being implemented, this methodology was introduced and discussed on the First Meeting of the 50 (Technical Board with only proponents and producers to discuss operational questions that happen once a year), in February of 2014. In this Meeting of the 50 conducted in February of 2015, the composition of the final Plan of the Use of Property, based in meeting between the technician and each of the producers, was presented to producers for last suggestions and ratification.

This communication and opened to discussion about the progress of the project activities between stakeholders and proponents will occur continuously throughout the duration of the project through various channels: Technical Board on REDD+, visits of technicians as part of the Technical Assistance and Rural Extension Services (TARE), information channels and Feedback and Resolution of Complaints and Internal Ombudsman. Special Technical Boards can also be called by any stakeholder to discuss

topics that are not directly related to the project, but are related to the interests and social welfare of the community, such as land issues, school transportation, sanitation and others. These channels allow the adaptive management through the duration of the project.

The meetings of presentation and consultation, the DOP Workshops, the Property Use Plan and Technical Assistance, Rural Extension Services (TARE) and the Family Assessment involved or have involved directly all of community members interested in participating. Prior to these events, Fundação Jari invited all residents of the communities, through communication through the local radio and invitation letter delivered in person to one or more residents. During the presentation and consultation meeting, communitarian members indicated a representative to attend the Technical Board on REDD+; the representative is responsible for transmitting what was discussed and/or decided to all other residents. To ensure that the information really gets to the other rural producers participating on the project, rural technicians also transmit the relevant information discussed on the last Technical Board during regular visits to the communities.

Therefore those activities are not just a way of achieving project's objectives, but also integrates a process of learning and adapting the activities themselves, instigating adaptation on the approach, the resources and the management structure it self. Those activities integrate Project's adaptive management process, because they establish conditions for receiving participatory inputs and information to future adapt the activities themselves and to improve management success.

In a more explicit way each of the activities mentioned above collaborates with the adaptive management in the following aspect:

Technical Board Meetings: As Project's official space of dialogue and articulation between communities and other stakeholders any demand can be discussed during its meetings and a resolution should be collectively made. The results of all others project activities will be divulged and discussed through this space, facilitating the collection of feedbacks and comments that should also be addressed. In that manner the Technical Board is the more direct tool of adaptive management proposed by the Project.

DOP Workshops (and Community Development Plans): According with the presented in **Table 7**, these workshops aims to identify communities relation with other stakeholders and they main socioeconomic development demands in order to conduct the Technical Board as much efficient as possible. Since they are expected to happen every 5 years on each engaged communities, they will allow the continuous adaptation of the Technical Board over the project lifetime.

Property Use Plan (PU): Together with TARE activities, the Property Use Plan allows the project to look to specific demands of each family and to adapt TARE activities to each farmer desires and vocation

and not just implement “one size fits all land use solution”. It is to be reviewed every 5 years, allowing continuous adaptation of TARE approach for each family over the project lifetime.

Technical Assistance and Rural Extension (TARE): Even being one of the Projects main activities it represents Projects most regular contact with families and communities. Each family is to be visited by Fundação Jari staff at least once a month. With this frequency spontaneous demands can more quickly be addressed or directed to a future discussion or solution. Or if an request regarding TARE activities itself is made Fundação Jari staff is oriented to adapt their work and approach in the field. It allows continuous “micro adaptation” of project activities.

Family Assessment: Once this activity will monitor engaged families socioeconomic aspects, it results will allow proponents, communities and stakeholders (through the Technical Board) to discuss changes and appropriate adaptation on project’s scope and approach. Additionally, the family assessment is also interested on understanding families demands for the project.

## *Participation in Decision-Making and Implementation*

### **G3.6 Participation in Decision-Making and Implementation**

As previously described, all communities of the project that wish to engage on the activities have the opportunity to get involved in the conception, implementation, monitoring and evaluation of the Project through the meetings of presentation and consultation, DOP workshops, Plan of the Use of the Property, Technical Assistance and Rural Extension Services(TARE), Technical Board on REDD+, Informative Channels and Feedback and Grievance Redress Procedure.

It was verified that the female and youth participation on decision-making regarding productive issues of the family is still modest, given the historical and cultural context. To promote a greater participation of women in these decisions and project activities, the rural technicians are always oriented to involve both man and woman – when this is the family configuration – in all activities, including TARE. As for the young public, Fundação Jari has started in the last years a work called “Young Agroextrativist Agent”, which aims precisely in co-opt the youth of rural areas so that it has expertise in issues relevant to their daily lives.

## *Anti-discrimination*

### **G3.7 Anti-discrimination**

The Human Rights and Social Responsibility Policy of the Grupo Jari describes how the group respects, protects, preserves and promotes human rights and social responsibility, in addition to listing internal rules, such as the Code of Conduct and the Integrated Policy of GrupoJari.

The code of conduct described in the document Principles and General Rules of Conduct brings together principles and values that should guide the attitude of every employee of the Grupo Jari in their relations with the workforce, external public and community. In it are discussed ethics and the law, human rights, conflicts of interest, practices in the workplace, the environment, external public and it is based on principles guided by ethics and transparency, local state and federal laws, international treaties and conventions, such as the UN Convention, the International Labor Organization, the Universal Declaration of Human Rights. In this way are addressed, among others, issues such as discrimination of any kind and moral and sexual harassment.

To ensure that the Human Rights and Social Responsibility Policy of the Grupo Jari, as well as the guidelines outlined in the code are followed and that human rights are respected, Grupo Jari provides a communication channel called Internal Ombudsman, through which demonstrations on issues code-related and labor relations can be performed. In addition, Fundação Jari has technical responsibility in identifying abuses of human rights and to deal with them appropriately.

## *Feedback and Grievance Redress Procedure*

### **G3.8 Feedback and Grievance Redress Procedure**

Grupo Jari has a methodology to manage opposite interests related to the existing rural communities on the outskirts or surrounding areas of Grupo Jari, described in the document called Conflict Management. In it are described the procedures in case of complaints, dissatisfaction, disagreement and confrontation of opinions regarding land, environmental or social issues.

Complaints are dealt by a committee of representatives from Fundação Jari and from the sections of institutional relations, land management and legal department of the Grupo Jari, and include determining the accuracy of the information, classification of the conflict, check on recurrence of the complaint and raising the possible or future impacts to the operations of the Grupo or communities. The case is analyzed by the committee, that makes a decision on referrals and strategy definition for solving the occurrence. The search for a consensus is always the main goal. If no agreement is achieved between the parties, the demanded will be recorded for later verification of new negotiation opportunities. If the case is still not settled, the conflict is redirected to the court or arbitration.

Conflicts and demands from other stakeholders are treated as described on the Procedure of Communication with Stakeholders, created in the Quality and Environmental Management Department of the Grupo Jari, and registered on the form "Communication with the Community". The forms are analyzed and redirected to the appropriate actions, and then return to the communities.

The Feedback and Grievance Redress Procedure (“Conflict Management Procedure”) is available on the Quality and Environmental Management Department, upon request. Also, at the end of every Technical Board, Fundação Jari and Biofilica Members review verbally the Conflict Management Procedure and explain how any community member and stakeholder may submit comments, suggestions and complains, through communications channels described in **section G3.1** and through the feedback channel called “Fale Conosco” (in English would be “Speak With Us”), that works through email our telephone – verbal and virtual channels-, and through the “Stakeholders Comment Form”, available at Fundação Jari headquarters and carried with every TARE Staff during their field activities – written channel - .



Figure 31. “Fale Conosco” Feedback Channel been exposed on Project CD Room.

Nome: _____
Nome da comunidade: _____
Data: ____/____/____
O que você deseja falar?

Figure 32. Stakeholders Comment Form.

The Procedure already in place was adapted to the Jari/Amapá REDD+ Project, provided as an annex of this document and was uploaded in Biofilica’s webpage ([www.biofilica.com.br](http://www.biofilica.com.br)), in local language (Portuguese), in order to be public available to communities an order stakeholders. The procedure, as well as the Stakeholders comment form, will be distributed and recalled every Technical Board meeting.

As mentioned in the procedure all comments and grievances received (through form, direct communication or virtual communication) will be made public available, as well as the project responses and redress, in Biofilica's webpage ([www.biofilica.com.br](http://www.biofilica.com.br)).

## *Worker Relations*

### **G3.9 Orientation and Training**

The Technical Board on REDD+ and the DOP workshops has as goals to educate the stakeholders about the theme REDD+ and to stimulate the participation in the decision making of the Project. The rural technical assistance, technical workshops and training in agroforestry and agricultural, the micro-zoning of the property and development of a use plan for the family property and the maintenance of a nursery of native forest seedlings generate knowledge and local useful abilities.

With exception to the Technical Board on REDD+, where the community is represented by one (or more) member nominated, all other activities are open to participation of all residents of the communities where the project is, still every person that goes to the Technical Board is welcome. The technical personnel of Fundação Jari are oriented to incentivize the participation of youth, women and marginalized people.

Jari Florestal also adopts a system of annual training aiming to capacitate their employees and third parties that work with forest management. According to company rules, after hiring and before starting activities of forest management, all employees must be trained on operational and environmental procedures related to their work area, among other themes such as Sustainable Management, Certification and Work Security, which is known by them as the "Integration Training".

Fundação Jari has other programs and projects aimed at the professional qualification of young people, women and vulnerable people, making them able to compete equitably to selective hiring process of Grupo Jari. Among them, the following projects are highlighted:

- Project Canteiro Escola: Youth and adults are qualified to execute construction services and general maintenance.
- Project Escola da Madeira: Youth and adults receive professional and entrepreneurship training to the infrastructure and services; the entrepreneurship practice is made within the school during professional training.
- Project Geração Aprendiz: aims the qualification of teens and young people for the labor market. The young people selected for the program participate in training in the areas of computer, administrative assistant, electrical, mechanical and agricultural technician. Many of the participants are hired by Grupo Jari and its services providers at the end of the program.

- Project Magia de Tupã: Leverages talent in the area of culture and art, strengthening the artistic productions and general cultural skills for the work world and artistic professionalism.
- Project Social Interaction: Teenagers, youth, adults, elderly and disabled people are trained in digital tools.

With the support from Fundação Jari, many projects led and composed by women were created, such as Agulhas Versáteis, focused on the production of professional uniforms for companies sold to Grupo Jari and to other companies of the region; production of bio jewels by the Association of Artisans Women of Valley of Jari, receiving training for crafts and organized themselves in association to produce bio jewels with the use of forest seeds.

### G3.10 Equal Employment Opportunities

Grupo Jari provides equal employment opportunities to the surrounding communities, including management positions, if the job requirements are met. Currently the majority of Grupo Jari employees are from the Jari Valle Region. The workers are selected through recruitment processes announced largely in the region, and carried by Grupo Jari. Inclusion of vulnerable groups, such youth and women, are ensured through training and qualification programs described on the above item (**G3.9 Orientation and Training**). Project Geração Aprendiz and Project Escola da Madeira are the social programs that better prepare youth from the communities to be absorbed as skilled labor by Grupo Jari.

Grupo Jari's Human Resources Program includes four (4) important procedures: "Internship Program", "Admission and Integration Procedure", "Internal Recruitment Program" and "Systematic Training". These procedures aim to regulate and standardize selection of workers, including youth ("Internship Program"), new employees ("Admission and Integration Procedure") and old employees to assume new positions ("Intern Recruitment Program").

### G3.11 Worker's Right Laws and Regulations

All employees from Biofíllica, Grupo Jari and service providers are legally contracted in compliance with Brazilian labor laws.

In addition to complying with the prevailing Brazilian labor laws, listed below, Jari Florestal and Jari Celulose meet all FSC principles, including the ones regarding the welfare issue of the worker, as well as international agreements ratified by Brazil.

Compliance with all applicable laws and regulations is guaranteed through independent audit processes that Jari Florestal and Jari Celulose go through to obtain FSC certification.

Principle 4 regards community relations and workers' right and determines that the activities of forest management must maintain or amplify the economic and social welfare of the long-term of the forest workers and local communities. The credibility of the certification process of FSC is enhanced by its

transparency. All information related to audits of certified companies, including Jari Florestal, is available for viewing and download on the certifying body site, SCS.

Biofilica, being an S.A. company, undergoes an annual audit that verifies the compliance of all rules and labor laws. Its financial statements are published on the internet page of JusBrasil, the most open and legal community in Latin America.

During the “Integration Training”, regular training carried out after hiring and before starting activities of forest management (see **G3.9**), employees are also empowered regarding their rights and applicable legislation. The “Integration Training” happens every year and aims to inform new workers about health, safety and security instructions (most of them regulated by some law) and their rights and applicable law. Longstanding workers also participate on the “Integration Training” in order to recycle and update them about those same issues. When they are hired they are also oriented to affiliate on their respective Workers Union, institution responsible to defend workers rights. “Integration Training” general agenda and content was provided to the auditor team, although it is annually updated.

Relevant laws and regulations covering worker's rights in Brazil, as well as international agreements on labor issues ratified by Brazil are listed below.

#### **Legislation and Federal regulation**

- Decree-Law n5, 452, from 05/01/1943: Approves the Consolidation of Labor Laws.
- Law 6,514, from 12/22/1977: Amends Chapter V of Title II of the Consolidation of Labor Laws on safety and occupational medicine and other measures.

#### **International Agreements Ratified by Brazil**

- Convention of the International Labor Organization No. 29 of 1930, ratified by Brazil in 04/25/1957 : Disposes on the abolition of forced labor .
- Convention of the International Labor Organization No. 87 of 1940: Provides for freedom of association.
- Convention of the International Labor Organization No. 97 of 1949, ratified by Brazil on June 18th, 1965: provides on migrant workers.
- Convention of the International Labor Organization No. 98 of 1949, ratified by Brazil on November 18th, 1952: provides on the right to organize and collective negotiation.
- Convention of the International Labor Organization No. 100 of 1951, ratified by Brazil on April, 25<sup>th</sup> of 1957: provides for equal pay for men and women.
- Convention of the International Labor Organization No105, ratified by Brazil on June 18<sup>th</sup>, 1965: provides for the abolition of forced labor.
- Convention of the International Labor Organization No 111 of 1958, ratified by Brazil on March 1<sup>st</sup> of 1965: provides for discrimination in respect of employment and occupation.



- Convention of the International Labor Organization No 131 of 1970, ratified by Brazil on May 4th, 1983: provides for the fixing of the minimum wage, especially in developing countries.
- Convention of the International Labor Organization No 138 of 1973, ratified by Brazil on June 28<sup>th</sup> of 2001: Provides for the minimum age for admission.
- Convention of the International Labor Organization No 142 of 1975, ratified by Brazil on November 24th of 1981. It provides for the development of human resources.
- Convention of the International Labor Organization No 143 of 1975: provides for immigration made in abusive conditions and the promotion of equal opportunities for migrant workers.
- Convention of the International Labor Organization No 155 de 1981, ratified by Brazil on May 18<sup>th</sup>, 1992: provide for health and security of workers.
- Convention of the International Labor Organization No 169 de 1989, ratified by Brazil on July 25<sup>th</sup> of 2002. Provides on indigenous and tribal rights.
- Convention of the International Labor Organization No 182, ratified by Brazil on February 2<sup>nd</sup> of 2000: It provides for the prohibition of the worst forms of child labor and immediate action for their elimination.

### **G3.12 Worker Safety**

The project activities which might offer risks to the health and security of employees are related to the FSC-certified forest management. Jari Florestal has a complex system of quality management in which all activities carried out by the company are described through the operational procedures, work instructions and environmental procedures. The procedures are rigorously reviewed and updated annually.

All activities are evaluated (parallel operations) and their compliance with FSC principles and Criteria and the quality required by the company. This monitoring of risks to workers safety is carried by a specialized team. Quality and Environmental Management Department team assesses the activities in their operational, environmental and occupational securities aspects with specific proceedings for the monitoring of each activity. For this, experts actively circulating in the areas during time of operations and intervenes notifying any irregularity and non-compliance.

The company also adopts annual training system aimed at training their own employees and third parties that at in sustainable forest management activities. According to company policy, after hiring and before starting the activities in the forest management area, all employees should be trained and trained on operational and environmental procedures related to their fields, and other topics such as management sustainable, certification and safety. During this “Integration Training” workers are informed of potential risks and trained on how to minimize and avoid them. In addition to training, all personnel

involved receive for mandatory use personal protective equipment (helmets, boots, leggings, gearing protection, gloves, etc.). The team maintain two mobile satellite phones to contact the headquarters office in Monte Dourado, and a vehicle in the work front to support and for emergency situations.

All situations and occupations that might represent occupational risks were comprehensively accessed, avoided or mitigated through internal rules and best practices of occupational health and safety, the “Workers Safety and Security Management Plan” and the “Risks Management Procedure”. Other relevant procedures and manuals are described below:

- Safety and Occupational Health for Third Parties Manual
- Handling and Transportation of Dangerous Goods
- Plan for Emergency Response
- Task Risk Analysis (TRA)
- CIPA Integrated
- Planned Observation of Unsafe Acts – POUA (OPAI)
- Security Inspection - SI
- Security Dialogue
- Dangers and Risks
- Safety Meetings
- Procedure for emergency assistance
- Vehicles and mobile and semi-mobile equipment
- Safety Management Plan and Occupational Health
- Operation with Chainsaw
- Transportation of Rural Workers
- Equipment Calibration
- Risk Management
- Occupational Rehabilitation Program
- Work at Height PCMSO - Control Program Occupational Health
- Experience Areas

In addition to the manual, procedures and standards, the Grupo discloses information with security alerts relevant to the climate and time, such as insects and venomous animals.

## **G4. Management Capacity**

### **G4.1 Governance, Roles and Responsibilities**

The project has human and financial resources adequate to the effective implementation of the activities. On **Section G1.1.1** proponents and partners are specified on papers, responsibilities and governance structure of each entities involved in the design and implementation of the Project.

## G4.2 Team's Technical Skills

Every areas of knowledge and technical skills required to successfully implement the project and activities described in **Table 1** and **2**, as well as the professional responsible for each area. Team engaged with Project implementation activities and their expertise and technical skill are described on the **VCS Risk Tool**, provided as an annex of this document. For transparency purposes, this information is also explicit bellow.

### **Team members' experience and location description:**

**Proponent:** João Prestes – Grupo Jari (Project and business management)

Business Manager, he is post graduated in Business Management by Fundação Armando Álvares Penteado – FAAP, in Controllership by Fundação Escola de Comércio Álvares Penteado – FECAP and has MBA Controller by Universidade de São Paulo – USP. He works for Grupo Jari, former Grupo Orsa, since 1992, where he has already led the Corporate Director of Management Control and also the Cost and Budget Management. Currently, he is Director of Natural Resources and Forestry Business at Grupo Jari, being responsible for the management of the Forestry Assets of the Group. The forestry area is composed by three business: Marquesa: Reforestation of Pine and Eucalyptus in São Paulo for the production of cellulose and lumber industry; Jari Cellulose, eucalyptus at Vale do Jari for the production of cellulose; and Jari Florestal that is responsible for one of the most important projects of Sustainable Tropical Forest Management in the World, that reaches an area of 745,000 hectares in Vale do Jari, the Amazon region.

**Proponent:** Augusto Praxedes Neto – Grupo Jari (Sustainability and institutional relations)

Augusto Praxedes has a degree in Business Administration and graduation in Expertise in Auditing and Environmental Management. He has 30 years of experience in agroforestry activities in the Amazon, specifically in the Valley of Jari. He works with Institutional and Governmental Relations for Grupo Jari since the Group assumed control of Jari Celulose's shares, in 2000. He is responsible for the management of the certifications ISO 9001, ISO 14001 and FSC for Jari Florestal and Jari Celulose forest activities, as well as licensing and environmental monitoring. For two years he has been a member of the economic chamber of FSC Brasil, he is president of the Certified Producers Association from Amazon and representative of Grupo Jari in the Sustainable Amazon Forum (FAS, in Portuguese).

**Proponent:** Paulo Roberto da Silva – Grupo Jari (Patrimonial security and land tenure)

Business manager, he is post graduated in Corporate Security Management by Universidade Gama Filho and has MBA in Environmental Survey, Auditing and Management by Faculdade Oswaldo Cruz. He

works for Jari Celulose, Papel e Embalagens since 1984, where he has been leading the Corporate and Land Tenure Security area. Currently, he is the Manager of Forest Control, Land Tenure and Security of Grupo Jari in the Jari region, being responsible for the areas of industrial operations, natural forests and plantations within a total of 1,300,000 hectares, in Para and Amapá States.

**Proponent:** Plínio Ribeiro – Biofílica (Executive Director)

Plínio Ribeiro has a degree in Business Administration from Instituto de Ensino e Pesquisa - INSPER and a Master's degree in Public Administration and Environment from Columbia University and the Earth Institute (USA). He participated in several conservation projects on the lower Rio Negro, through the Instituto de Pesquisas Ecológicas – IPÊ since 2005, and was one of the producers of Jean Michel Cousteau's documentary "Return to the Amazon". He works for Biofílica since 2008, where he has already led Project, Operations and Business Management. Currently, he is the Executive Director and shareholder of the company.

Location: São Paulo, São Paulo – Brazil.

**Proponent:** Cláudio Pádua – Biofílica (Scientific Director)

Cláudio Pádua has a degree in both Business Administration and Biology, a Master's degree in Latin American Studies and a PhD in Ecology from the University of Florida in Gainesville (USA). A retired professor from the University of Brasília, Pádua is currently the dean of the Escola Superior de Conservação e Sustentabilidade and the vice-president of the Instituto de Pesquisas Ecológicas (IPÊ). He is also a Senior Associate Researcher at the Center for Environment and Conservation Studies at Columbia University (USA) and an International Conservation Director at the Wildlife Trust Alliance, as well as an advisor to the Brazilian Biodiversity Fund (FUNBIO) and WWF Brazil. Pádua represents Brazil before the International Advisory Group (IAG) of the G7 Pilot Program. In 2003, together with his wife, Suzana Pádua, he was appointed by Time Magazine a "Hero of the Planet" for his activities on behalf of biodiversity conservation. Between 1997 and 2007, he won six conservation awards, and three national and three international ones. Pádua has published two books and over 30 papers in scientific journals, both national and international. Since 2008 directs the involvement and scientific production of Biofílica as Scientific-Director and advisor.

**Mariama Vendramini – Biofílica (Financial Director)**

Mariama holds a bachelor degree in public administration from Fundação Getúlio Vargas – FGV/EAESP and has an MBA degree with focus on Sustainability Management from the same institution. She has been working with finance since 2005. Prior to her current position, she was management consultant, leading projects on strategic planning, sustainability and branding at the Vallua Consulting Firm. Also worked on private equity fund management and mergers & acquisitions projects at Itaú Unibanco, as a

buy side stock analyst at Credit Agricole Brasil and as an investment-banking analyst at Planner Corretora. She is the current Financial and Commercial Manager of Biofilica.

**Rebeca Lima - Biofilica (Project Coordinator)**

Forest Engineer graduated from Escola Superior de Agricultura "Luiz de Queiroz" - ESALQ – University of São Paulo. Her experience in Brazil includes Afforestation/Reforestation projects under the Clean Development Mechanisms (CDM) scope, voluntary carbon markets focus on AFOLU projects, silviculture practice and forest inventory. She has also been part of research projects with Payment for Environmental Services at CATIE in Costa Rica and REDD+ at University of Florida in Gainesville (USA). She works for Biofilica as Project Coordinator of REDD+ projects since 2013. She collaborated with Jari/Amapá REDD+ project Validation and verification under VCS and coordinated its activities implementation and MRV. She also coordinated conception, implementation and validation/verification process of Maisa REDD+ project under VCS and CCB.

Location: São Paulo, São Paulo – Brazil.

**Thais Hiramoto - Biofilica (Social specialist)**

Environmental Manager with a degree from the Escola Superior de Agricultura "Luiz de Queiroz" – ESALQ – University of São Paulo, Thais Hiramoto had a CNPq scholarship for Scientific Initiation while doing research on socio-environmental certification in the agricultural and forestry sectors. As a trainee at Imaflora, she provided support to agricultural certification processes and to Quality Management System activities. At Biofilica, since 2011, Thais Hiramoto is responsible for social activities and certification processes. Currently is project coordinator REDD+ Project Rio Preto – Jacundá and collaborates with social aspects of Biofilica's projects in general.

Location: São Paulo, São Paulo – Brazil.

**Proponent: Caio Gallego - Biofilica (Trainee)**

Caio is a senior student at Escola Superior de Agricultura "Luiz de Queiroz" – ESALQ, from University of São Paulo, with his major on Forestry. He focused his entire academic experience on learning geoprocessing and remote sensing applied to biodiversity conservation and forest fragmentation dynamics.

**Proponent: Rogério Marinho - Biofilica (UFAM Professor and Biofilica's consultant)**

Rogério Marinho has a degree in geography from Federal University of Amazonas (UFAM) and Master's degree in Remote Sensing from Instituto Nacional de Pesquisas Espaciais – INPE. He had scientific initiation by Instituto Nacional de Pesquisas na Amazônia (INPA), participated in fieldwork in riverside towns of the river channel Solimões-Amazonas and was a fellow of geoprocessing of the Project PIATAM/Petrobrás. He worked of Biofilica, tracked REDD+ Project Jari/Amapá from conception to

validation and verification under VCS playing key role in the modeling baseline deforestation and in the calculation of reduced GHG emissions and REDD+ Project Maísa. Currently, he is professor at the Federal University of Amazonas and collaborates with the project as external consultant.

**Implementation Partner:** Jorge Rafael de Almeida – Fundação Jari (Social management)

Rafael holds a full degree in Pedagogy from Universidade Federal do Pará and initiated his post graduation in Cooperative Production Management from Universidade Federal Rural de Pernambuco. He works for Grupo Jari since 2007 as the Coordinator of Social Operations of Fundação Jari, former Fundacao Orsa, at Jari Unit, leading the management of corporate social responsibility programs of Grupo Jari in the Jari region.

**Development partner:** Carlos Souza Jr. – Imazon (Carbon stock, emissions accounting and land-use and land-change modeling)

Carlos holds an undergraduate degree in Geology from Pará State Federal University, a M.Sc. in Soil Science from Penn State University and Ph.D. in Geography from University of California. He has been working at Imazon since 1992. He is also member of the Global Observation of Forest Change and Land Cover Dynamics (GOF-C-GOLD) and Leader of Avina Foundation since January 2008. In 2010, he was granted the Skoll Award on Social Entrepreneurship, and had his biography included in the book *Who's Who in Science and Engineering*, among other awards such as the Chico Mendes Award in 2008. He has over 100 studies published, including peer review journals, book chapters, symposiums, annals of congresses and reports, several related to forest carbon stocks and mapping deforestation and forest degradation. He is currently engaged in the development of open access Geo-Web platforms to promote collaborative networking to monitor and protect forests, particularly SAD Earth Engine and ImazonGeo. Regarding to REDD+, despite scientific studies. Carlos has contributed to the Project Design Document (PDD) for the Cikel VCS approved project, located in the eastern Brazilian Amazon region, and contributed to the REDD Sourcebook produced by GOF-C-GOLD.

**Development partner:** Márcio Sales – Imazon (Carbon stock and emissions accounting)

Márcio Sales has a BSc. in Statistics from the Universidade Federal do Pará and a MA in Geography with emphasis in Geostatistics at the University of California at Santa Barbara. His Master's thesis focused on the mapping of forest biomass and estimates of uncertainty in emissions inventories and C for the Amazon. He is a researcher at the Instituto do Homem e do Meio Ambiente da Amazonia – Imazon since 2002, and conducts research on geostatistical modeling applied to mapping biomass, and deforestation risk forecast His most recent works include the modeling of uncertainty in CO<sub>2</sub> emissions and estimates of the annual risk of deforestation in the Amazon. He also collaborates on several projects with statistical analysis applied to several research lines at the Institute.

**Development partner:** Amintas Brandão Jr. – Imazon (Land-use and land-use change modeling)

Amintas Brandão Jr. is an Environmental Engineer that graduated from Universidade Estadual do Pará. He also specialized in Statistics from Universidade Estadual do Pará and received his Masters degree in Geographic Information System for the Development and Environment from Clark University (USA). Since 2003 he holds a position of researcher for Imazon and he is a member of the Centre of Geo-technologies of Imazon (CGI). In CGI his researches are focused on environmental modeling, spacial analysis and systems for decision support. His most recent studies include the deforestation modeling in the north stream of the Amazonas river in the State of Pará (master dissertation), as well as indirect deforestation modeling caused by the construction of the Hydroelectric Power Plant Belo Monte (State of Pará). Besides those activities, he collaborates with several Imazon projects on spacial analysis, raises financial resources and qualifies people in geo-technology tools.

**Development partner:** João Daniel Macedo Sá – Montenegro Duarte Advogados S.S. (Legal aspects)

Lawyer (OAB/PA n. 12.989) and Environmental Engineer, he is a doctoral candidate in Agrarian Law by Universidade Federal do Pará since 2011, where also concluded his Master's degree in Environmental Law in 2009, with a specialization in environmental services. He has also a specialization in Environmental Survey, Auditing and Management by Faculdade Oswaldo Cruz concluded in 2007. In 2005, he enrolled in an Environmental Responsibility Program of FIPSE/CAPES at Pace University. Currently, he works with agro-environmental law focused on land tenure regularization in rural properties, and on environmental services.

### G4.3 Financial Health of the Implementing Organizations

Bioflica is a Brazilian company recognized by its first management and conservation. Its management capacity made possible the expansion of a triple-core business for the past two years, and a team increased by 175% over the past five years.

Annual financial audit guarantee that its resources will be allocated in a responsible, corruption-free manner. Financial statements and meetings minutes are posted on the site JusBrasil, most open and legal community in Latin America.

Bioflica also has the contractual commitment of investing R\$250 thousand on the Project, and will assist in the management of funds transferred by Jari Celulose and Jari Florestal to Fundação Jari via the Socio-environment Fund, described in Table 5.

The history of Grupo Jari demonstrates its excellent management capacity and financial health. Its area of expertise has expanded since its creation in 1981. Recently, in 2014, the Group completed the conversion of its pulp mill for the production of Dissolving Wood Pulp (DWP), a commodity that has significantly higher market price than pulp paper, ensuring continuity of success.

Grupo Jari has a Human Rights and Social Police Policy: passive and active corruption inside and outside of the company that does not tolerate any kind of corruption, such as nepotism, kickbacks, bribes, favors, gifts, tax evasion, Money laundering, among others. In such situations, the facts will be established, those responsible immediately disconnected from the company and operated legally.

The internal Ombudsman, among other functions, facilitates allegations of corruption to be carried out. The channel is confidential and free, working through a 0800 number. The complaints and denunciations are routed internally and properly resolved.

## G5. Legal Status and Property Rights

The project is based on a legal structure accepted internationally, complies with the relevant statutory and customary requirements and has the necessary approvals from the appropriate state, local and indigenous authorities. The project recognizes, respects and supports the right to land, territories and resources, including statutory and traditional rights of indigenous peoples and from others within the community and other actors.

The Prior Consent, Free and Informed of the due property rights holders and other interested parties was achieved in every project stage. The activities of the project do not lead to removal or involuntary reallocation of the Holders of the Rights of the Property and lands or territories or force them to reallocate activities important to their culture or ways of life. Any removal or reallocation proposed takes place only after Prior Consent, Free and Informed of the relevant Property Rights Holders.

### G5.1-5 Respect for the Right to Lands, Territories and Resource and Prior Consent, Free and Informed

Jari Celulose S/A, company controlled by Grupo Jari, after the acquisition in an auction held by the federal government, is the beneficial owner of the property where Project REDD+ Jari/Amapá is located, divided in two titles:

**1) Property - Santo Antonio da Cachoeira**, corresponding to Land Title Deed n. 12/2006, granted by the State of Amapá on August 30, 2006 regarding registration n. 20, pages 16/62 of book 3-A of the Mazagão/AP municipality Registry of Deeds. As the Santo Antonio da Cachoeira property is located in the Iratapuru terrain whose largest part is located in the Laranjal do Jari municipality, a new registration was done in the Laranjal do Jari/AP Registry of Deeds under n. 1.887 pages 038 of book 2-H on May 5, 2008<sup>8</sup>.

<sup>8</sup> The municipality of Mazagão was created by Law 226, on November 28, 1890. It is bordered by the municipalities of Santana, Porto Grande, Pedra Branca do Amapari, Laranjal do Jari and Vitória do Jari. The municipality of Laranjal do Jari was created by Law 7.639 of December 6, 1987. It is bordered by the municipalities of Oiapoque, Pedra Branca do Amapari, Mazagão and Vitória do Jari, the state of Pará and also Suriname and the French Guiana. Available on: <http://www.ibge.gov.br/cidadesat/topwindow.htm?1> Accessed on May 10, 2012.



**2) Property - Porto Salvo**, corresponding to Land Title Deed n. 02/2009, granted by the state of Amapá on March 05, 2009, regarding registration n. 08, pages 08 of book 2-A of the Mazagão/AP municipality Registry of Deeds. Although the largest part of the Porto Salvo property is located in the current municipality of Vitória do Jari7 , which does not have a Registry of Deeds, a new registration was open in the Laranjal do Jari/AP Registry of Deeds under n. 1.947, pages 099 of book 2-H on July 13, 2009

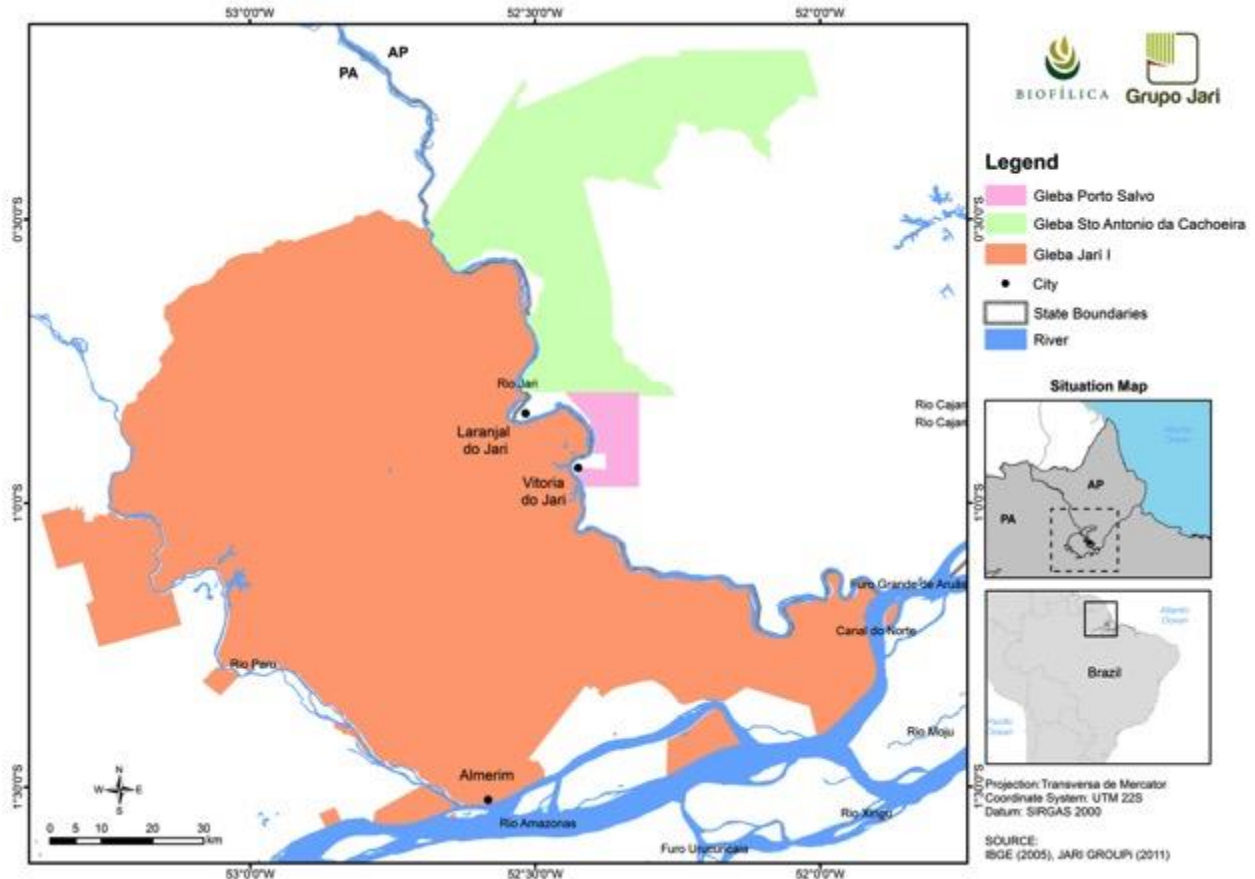
Proof of title deed ownership is available and can be requested, if necessary, to the Laranjal do Jari Registry of Deeds and to the state of Amapá Environment and Land Planning Institute in Brazil as presented in **Table 10** and **Table 11**.

**Table 12. Information from the Laranjal do Jari registry of Deeds.**

Title	Size of the Area (ha)	Project Area (ha)	a (ha) Registration	Registration	Date of Deed (survey)
Title Deed n. 12/2006	246,247	56,743	1.887	05/05/2008	08/03/2012
Title Deed n. 02/2009	18,269	9,237	1.947	13/07/2009	30/03/2012
<b>Total (Ha)</b>	<b>264,516</b>	<b>65,980</b>			

**Table 13. Information from state of Amapá Environment and Land Planning Institute.**

Process	Property	Title	Requested Information	Date of Deed (survey)
4.000.664/95	Santo Antônio da Cachoeira	Title Deed n. 12/2006	Certificate of Authenticity and Legitimacy	20/12/2011
4.000.653/95	Porto Salvo	Title Deed n. 02/2009	Certificate of Authenticity and Legitimacy	20/12/2011



**Figure 33. Property location considering properties Santo Antônio da Cachoeira and Porto Salvo.**

Document survey showed that there are no encumbrances over the previously mentioned properties and there are no impediments for the Jari/Amapá REDD+ Project such as locks, liens, mortgages or foreclosures.

Biofílica Investimentos Ambientais has a contract agreement with Grupo Jari and the Jari Celulose S.A. to carry out the Jari/Amapá REDD+ Project. Therefore, Biofílica Investimentos Ambientais is the sole and exclusive developer of the Jari/Amapá REDD+ Project, in partnership with Jari Florestal and Jari Celulose S.A., and holds part of the REDD+ credits to be generated in the property.

Regarding external risks that may affect the right of property or rights of use and access to the natural resources, the following points have to be taken into consideration:

- Jari Celulose S.A., as per the Brazilian Federal Constitution and Civil Code is the owners of the properties where the Jari/Amapá REDD+ Project is to take place; it holds the rights of use and economic management of the properties as well as the right to the natural resources therein.
- There are no disputes with third parties over Jari Celulose S.A. ownership of the area object of the Jari/Amapá REDD+ Project, nor traditional squatters claiming recognition of ownership of their pieces of land. There are also no disputes over the natural resources therein or over the use of the property.

- Although there are no disputes over the ownership of the land, property or rights of use/access, some measures have been implemented to solve any possible disputes or juxtaposition of claims as well as to provide support to solve any land issues in designated public offices. For such, Jari Celulose S.A. has entered an Agreement Commitment, a Protocol of Intentions, a Cooperation Agreement and a Compromise Term sheet with the state of Amapá in order to create a large partnership program to, PROJECT DESCRIPTION: VCS Version 3 v3.1 38 if necessary, solve any possible occupation of traditional communities by exchanging areas that may be of interest to Jari Celulose S.A. as well as promote activities that may be necessary to foster the social-economic development of the area.
- It is also important to highlight that Jari Celulose S.A. has a land surveillance team in the area that monitors the properties and, upon the occurrence of an invasion, it makes an official complaint to the police informing of the invasion of the private property, which is sent to the company legal department for applicable measures, and also denounces environmental crimes to the Brazilian Environment and Renewable Natural Resources Institute (IBAMA).

Proving the legitimacy of the right of use of the Project area is also a requirement to get the FSC forest management certification, as stated in Section G5.2 The compliance with FSC principles and criteria is an evidence of the proponents' commitment to respecting the rights of ownership and use of the land as well as the engagement of the company in resolving conflicts and disputes related to the use of the Project area.

Among the FSC principles and criteria we can highlight Principle 2, which establishes the "Land tenure and property and use rights and responsibilities", which requirement is that "long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established". It is also important to highlight the following criteria:

- **Principle 2 – Criterion 1:** Clear evidence of long-term right of use of forest resources (e.g. land title, customary rights, or lease agreements) shall be demonstrated.
- **Principle 2 – Criterion 3:** Appropriate mechanisms shall be employed to resolve disputes over tenure claims and use rights. The circumstances and status of any outstanding disputes will be explicitly considered in the certification evaluation. Disputes of substantial magnitude involving a significant number of interests will normally disqualify an operation from being certified; and
- **Principle 2 – Criterion 4:** The land tenure of local communities with rights of customary possession or use of the land in the management unit must be normalized through documented agreements which ensure their presence in harmony with the forest management activities, or which promote their relocation in a participate and planned manner, or which foresee fair remuneration.

The property area in the property of Jari Florestal Santo Antônio da Cachoeira and Porto Salvo widely surpass the Project area, and the Project does not intend to develop any activity in people’s private property, indigenous and traditional community or the government. Even as social activities and monitoring the biodiversity, no activity is carried out without prior consent, free and informed of the interested parties.

The project will not lead to removal or involuntary relocation of any party, and important activities to culture and ways of life of the community living within the Project area are respected and supported by the Project. As mentioned before, Grupo Jari offers support to the regularization of land tenure of the communities acting in the project along the designated public institutions.

As shown on **Section G2**. Scenario and Additionality of the Use of the Land in the case of Absence of the Project, illegal deforestation is caused by squatters to subsistence farming facilities (“roça”) and by small farmers to small-scale agricultural crops, pasture and demarcation of boundaries of the property. Between 2000 and 2010 36,204 hectares were deforested in the Project reference region for the implementation of these activities. For the next 30 years, a loss of 79,129 hectars has been projected in this scenario, of which 11,070 hectares are to be deforested within the Project área.

Serrano e Souza (2012) affirm that such scenario is reflection of the historical process of occupation of the state that remains to the present, where unused land belonging to the state (public land) were deforested and occupied by people who wanted to establish ownership leading to a disorderly settlement. This illegal deforestation characterized by slash and burn generate negative impacts on climate, community and biodiversity.

The necessary measures and adopted to reduce these activities are social inclusion and socioeconomic development by generating economic alternatives to deforestation and the increase of land supervision and property security.

The expected results of social activities are improving the well-being of communities and reducing deforestation. The land and property security inspection to avoid illegal practices of deforestation, extraction of plant species and hunting and trapping of wild animals by others. Land monitoring procedures are summarized in **Table 12**.

**Table 14. Summary of Land Inspection Procedure.**

Inspection of the land	
<b>Objective</b>	To establish the conditions for the inspection of Jari Celulose S.A. properties by road and river.
<b>General conditions</b>	Patrolling: <ul style="list-style-type: none"> <li>• To carry out regular patrols in order to ensure the protection of Jari premises;</li> <li>• To prevent deforestation, forest fires, or other acts of aggression against the environment;</li> <li>• To prevent the extraction and illegal trading of wood and other forest products and predatory hunting and fishing;</li> <li>• To keep a good relationship with squatters and existing communities;</li> <li>• To promote social actions;</li> </ul>

	<p>To render support to police and inspection authorities whenever necessary;</p> <ul style="list-style-type: none"> <li>• River patrolling will be carried out by speedboats covering the main river basins in the area;</li> <li>• Road patrolling will be carried out in two regions of Jari Celulose: Dourado and Miguel.</li> </ul> <p>How to proceed:</p> <ul style="list-style-type: none"> <li>• Sending team to the place of occurrence to check and apply the necessary measures;</li> <li>• Asking the judicial department area to take the necessary measures;</li> <li>• Registering the occurrence in the police station by the Premises Security Coordinator in cases involving invasion and damages to the property and illegal extraction of forest products;</li> <li>• Occurrences involving aggressions to the environment shall be informed to the environmental agencies (IBAMA, Environmental policy, etc.) by the Premises Security Coordinator;</li> <li>• Confrontation of the parties shall be avoided in all situations that involve conflicts over land, respecting country laws.</li> </ul>
<p><b>Specific conditions</b></p>	<ul style="list-style-type: none"> <li>• Patrolling itinerary is prepared according to the Monthly Inspection Plan;</li> <li>• Jari receives daily information generated by NOAA-12 satellite from the IBAMA Monitoring Management and Risk Assessment;</li> <li>• Occurrences not detected by road or river patrol may be detected by the aerial inspection.</li> </ul>
<p><b>Records</b></p>	<ul style="list-style-type: none"> <li>• Events recording protocol at IBAMA;</li> <li>• Police report;</li> <li>• Photographic record of events;</li> <li>• Monthly inspection program;</li> <li>• Land inspection activity report.</li> </ul>

As described earlier in the objective area of Project REDD+ Jari/Amapá, there are no conflicts, ongoing disputes or unresolved over rights to lands, territories and resources, as well as disputes were resolved with third questioning the right of ownership of Jari Celulose S/A, or with traditional squatters claiming the regularization of their possessions. Also there are no disputes over access to natural resources or the use of real estate.

Although there are no disputes over the ownership of the land, property or rights of use/access, some measures have been implemented to solve any possible disputes or juxtaposition of claims as well as to provide support to solve any land issues in designated public offices. For such, Jari Celulose S.A. has entered an Agreement Commitment, a Protocol of Intentions, a Cooperation Agreement and a Compromise Term sheet with the state of Amapá in order to create a large partnership program to (VC PROJECT DESCRIPTION), if necessary, solve any possible occupation of traditional communities by exchanging areas that may be of interest to Jari Celulose S.A. as well as promote activities that may be necessary to foster the social-economic development of the area. In addition, the infrastructure management of the Grupo has a cooperative dialogue with the government agencies responsible for land regularization.

Still, in compliance with FSC certification, the Grupo has records of all related events for at least ten years.

Thus, no activity is performed by the Project that could prejudice the outcome of an unresolved dispute relevant to the Project on lands, territories in the Project area.

## G5.6-9 Legal Status

The compliance with laws, statutes and other regulatory frameworks by the Project is linked to the forest management activity. In the state of Amapá the activities of Jari Celulose S.A. is being licensed by IBAMA (Brazilian Environmental and Natural Renewable Resources Agency), thus the federal legislation is applicable.

State legislation can be applied subsidiary to federal legislation.

Beyond compliance with Brazilian forest legislation, the Forest Stewardship Council (FSC) for forest management of Jari Group that exists in Pará since 2004 , it has been extended to the Amapá in 2012 .

The FSC certification is an international certification system used to assess performance standards of companies that process forest products in order to state that they respect the environmental, social and economic characteristics of the area where they operate, as well as that they comply with national and international legal and regulatory aspects. The compliance with FSC principles and criteria is an evidence of the Project proponents' commitment to respect the laws, statues and other regulatory structures among which we can highlight Principle 1 – Criteria 1: “Forest management shall respect all national and local laws and administrative requirements”.

### Federal Legislation

- **Law n. 6.938, of 08/31/1981:** Establishes the National Environmental Policy, its objectives and mechanisms to formulate and enforce, and other related matters.
- **Law n.12.651, of 05/25/2012:** Establishes provisions on the protection of native vegetation; alters Laws n. 6.938, of August 31, 1981; n. 9.393, of December 19, 1996; and, n. 11.428, of December 22, 2006; revokes Laws n. 4.771, of September 15, 1965; and n. 7.754, of April 14, 1989 and Provisional Law n. 2.166-67, of August 24, 2001; and other related matters.
- **Complementary Law n. 140 of 12/08/2011:** Establishes rules to the items III, VI and VII of the caput and paragraph unique of the article 23 of the Federal Constitution, to the cooperation between the Federal Government, the States, the Federal District and the Municipalities on administrative actions arising from the practice of the common competence relative to the protection of the natural landscape, to the protection of the environment, to the fight against any type of pollution and to the protection of forests, fauna and flora; and alter the Law nº 6.938 of 08/31/1981.
- **Provisional Law n. 571 of 05/25/2012:** alters Laws n. 12.651, of May 25, 2012, which establishes provisions on the protection of native vegetation; alters Laws n. 6.938, of August 31, 1981; n. 9.393, of December 19, 1996; and n. 11.428, of December 22, 2006; revokes Laws n. 4.771, of September 15, 1965; and n. 7.754, of April 14, 1989; and Provisional Law n. 2.166-67, of August 24, 2001.

- **Decree n. 58.054, of 03/23/1966:** promulgate the Convention for the protection of the flora, fauna and scenic beauty of the American countries.
- **Decree n. 96.944, of 10/12/1988:** creates the Legal Amazon Ecosystems Complex Defense Program, and other related matters.
- **Decree n. 2.661, of 07/08/1998:** regulates the single paragraph of article 27 of Law n. 4.771, of September 15, 1965 (Forest Code), establishing precautionary regulations regarding the use of fire in agricultural and cattle raising practices, and other related matters.
- **Decree n. 2.959, of 02/10/1999:** establishes provisions on measures to be implemented in the Legal Amazon for monitoring, prevention, environmental education and fighting forest fires.
- **Decree n. 5.975, of 11/30/2006:** regulates articles 12 - final part, 15, 16, 19, 20 and 21 of Law n. 4.771, of September 15, 1965; article 4, item III, of Law n. 6.938, of August 31, 1981; article 2 of Law n. 10.650, of April 16, 2003; alters and adds provisions to Decrees n. 6.514/08 and 3.420/00, and other related matters.
- **CONAMA Resolution n. 16, of 12/07/1989:** institutes the Legal Amazon Assessment and Environmental Control Integrated Program.
- **CONAMA Resolution n. 237, of 12/19/1997:** Establishes guidelines, procedures and criteria to the environmental licensing process, competences, and other relative matters.
- **CONAMA Resolution n. 378, of 10/19/2006:** defines the enterprises with potential to cause national and regional environmental impacts regarding the provisions in item III, § 1, article 19 of Law n. 4.771, of September 15, 1965, and other related matters.
- **CONAMA Resolution n. 379, of 10/19/2006:** creates and regulates the data and information system related to forest management regarding the Environment National System - SISNAMA.
- **IBAMA Administrative Rule n. 218, of 05/04/1989:** establishes provisions on the cutting and management of native forest and the formation of Atlantic Forest successor native forests, and other related matters.
- **IBAMA Administrative Rule n. 37-N, of 04/03/1992:** recognize as the Official List of the Brazilian Flora Endangered Species the list presented in the Administrative Rule.
- **MMA Administrative Rule n. 103, of 04/05/2006:** establishes provisions on the implementation of the Forest Origin Document – DOF, and other related matters.
- **MMA Administrative Rule n. 253, of 08/18/2006:** institutes, from September 1, 2006, with regard to IBAMA (Brazilian Environmental and Natural Renewable Resources Agency), the Document of Forest Origin – DOF in replacement of the Forest Products Transportation Authorization – ATPF.
- **MMA Normative Instruction n. 1, of 09/05/1996:** establishes provisions on the Mandatory Forest Recovery and the Forest Integrated Plan.
- **MMA Normative Instruction n. 07, of 04/27/1999:** establishes provisions on the authorization for deforestation in Legal Amazon states.

- **MMA Normative Instruction n. 02, of 05/10/2001:** establishes provisions on the economic management of forests, in rural properties located in the Legal Amazon including areas of Legal Reserve and except for areas of permanent preservation established in the legislation in force, to be carried out through sustainable forest management practices of multiple uses.
- **IBAMA Normative Instruction n. 30, of 12/31/2002:** regulates the calculation of standing tree volume through specific volume equation, and other related matters.
- **IBAMA Normative Instruction n. 112, of 08/21/2006:** regulates o Document of Forest Origin - DOF, instituted by Administrative Rule /MMA/ n. 253, of August 18, 2006; (altered by IBAMA Normative Instruction n. 134, of 22/11/2006).
- **MMA Normative Instruction n. 06, of 12/15/2006:** establishes provisions on forest recover and the consumption of forest raw material, and other related matters.
- **IBAMA Normative Instruction N. 178, of 06/23/2008:** defines the IBAMA's guidelines and procedures to assess and grant the issuance of authorization for the suppression of forests and other forms of native vegetation in areas larger than two thousand hectares in rural properties located in the Legal Amazon and one thousand hectares in rural properties located in other areas of the country

#### State Legislation

- **Law n. 702, of 06/28/2002:** establishes provisions on the State Policy regarding Forests and other forms of vegetation in the state of Amapá, and other related matters.
- **COEMA Resolution n. 0001/99:** establishes guidelines to characterize enterprises with the potential to cause environmental degradation; for environmental licensing; and other related matters.
- **Complementary Law n. 005, of August 18th, 1994:** institutes the Environmental Protection Code of the State of Amapá, and other related matters.

According to the National Environmental Policy, Law nº 6.938, article 10 “the construction, installation, expansion and operation of activities that manage natural and environmental resources, effectively or potential cause of impacts, of any sort, being able to cause environmental degradation will depend on environmental license to happen.”

The CONAMA Resolution nº 237 on its article 5 states that “It is just the Federal Agency of the Estate Environmental Agency that have jurisdictional power to provide license or regulate environmental activities and initiatives on the following conditions:

- I – Located or developed across more than one municipality or inside conservation units (...);
- II – Located or developed on forested and other types of natural vegetation (...).”

Additionally, the Complementary Law nº140 states on its article 5 that the a higher governmental entity only an delegate the competence of execution any administrative action in regard of the National



Environmental Policy if the entity receiving the power is properly capacitated, with own technical team properly qualified and in adequate number to the demand.

In this manner Grupo Jari's and Projects' activities, due to their size and scope are regulated and controlled by federal or state government level. In practice the institution responsible to license, enforce and control Grupo Jari's activities, specially the Sustainable Forest Management, is the Brazilian Institute of Environment and Natural Resources (IBAMA) being applicable the Federal Law. Regarding some Project activities, for instance the activities with the small farmers, the institution responsible is Amapá's Environment and Land Planning Institute (IMAP), a State level institution. IMAP is still the responsible for license, enforce and control environmental, land use and territorial planning in small farmers property (regional and local level). This happens because nether Laranjal do Jari or Vitória do Jari has competency (proper capacity and qualified technical team) to license, enforce and control environmental and land use regulation.

Regarding the existing applicable law of **Laranjal do Jari** Municipality, according with direct consultation with staff of Laranjal do Jari Environmental Secretariat, Laranjal do Jari has an Environmental Code dated from 2006, composed by the following laws:

- **Municipal Law nº 261, of 07/22/2005:** Institute the Environmental Code of Laranjal do Jari Municipality, among others providences.
- **Municipal Law nº 184, of 12/07/2001:** Creates the Laranjal do Jari Municipal Council of Environmental Defense – COMDEMA, set its composition and competence, and creates the Special Fund of Resources to the Municipal Environment - FERMAM, among other providences.
- **Municipal Law nº 237, of 11/14/2003:** Regulates the law of inspection, control and monitoring of environmental activities effective or potential cause of environmental degradation on Laranjal do Jari Municipality, among other providences.
- **Municipal Law nº 238, of 11/14/2003:** Regulates the licensing of environmental activities effective or potential cause of environmental degradation on Laranjal do Jari Municipality, among other providences.
- **Municipal Decree nº150, of 08/22/2005:** Regulates the Title V of Municipal Law nº 261, of 07/22/2005, that institutes the Environmental Code of Laranjal do Jari Municipality, among others providences.

Besides the environmental code the Municipalities should also have a Directive Plan, which Laranjal do Jari Municipality has since 2008, and regulates about the Zoning, land use and urban and rural activities of the Municipality.

Regarding the existing applicable law of **Vitória do Jari** Municipality, according with direct consultation with staff of Laranjal do Jari Environmental Secretariat staff, Vitória do Jari Environmental Secretariat staff and Fundação Jari staff, Vitória do Jari Municipality initiate the process of composing its Environmental Legal Code and its Directive Plan, by due to changes in the Government they are still unfinished and not approved. In this case only Federal and State Laws are applicable.

Through meetings of presentation and consultation with the formal and traditional authorities described in **Section G3**, as well as the meetings of the Technical Board of REDD + project proponents gained recognition and approval to project implementation. Although there is not still an official REDD+ policy on an national level or jurisdictional, the proponents of the Project are Always present in the discussions forums and consultations from federal and state government with the objective of cooperating to the creation of such policies and regulations and, once they take effect, immediate action to adequate the Project to the processes and rules officially established.

As described in this document **section G3.4** in July 27<sup>th</sup> 2012 a meeting was carried out among Project proponents and Instituto Estadual de Florestas (IEF – Amapa Forest State Institute), Secretaria do Estado do Meio Ambiente (SEMA – Amapa State Environment Department), Instituto de Desenvolvimento Rural do Amapa (RURAP – Rural Development Agency for the Amapa State) and Secretaria de Estado da Industria Comercio e Mineracao (SEICOM – State Department of Industry, Commerce and Mining).

The outputs of this meeting was not just the recognize of Jari/Amapa REDD+ Project but also to seek for synergies between Amapa States initiatives and project proponents. The outputs of the meeting was also posted at IEF website (provided as an annex of this document).

After this meeting and due to Amapá government intention of developing an legal framework to deal wit environmental services in the state, and further on to develop a REDD+ Jurisdictional Program (both not approved yet) Biofilica and Grupo Jari were invited to be members of Amapá State Forum on Environmental Services, that aim to support the built of the legal framework. This invitation was based not only in the recognition of Jari Amapá REDD+ Project but once the project was the first official initiative in the state, the proponents could share their experience, challenges and outcomes with governmental intuitions on Amapá and help them on the legal framework development.

The minutes of all the meetings of the Amapá State Forum on Environmental Services and the signed invitation from Amapá Environmental Secretary are provided as annex of this document. Besides the documents mentioned in **section G3.4**.

It is important to highlight that there is no signed official approved once there is still no approved jurisdictional program or system in place for Amapá State that could regulate the approval and the registration of the project, however Biofilica intense participation and collaboration (invited by the government) of Biofilica in the State Environmental Forum and other efforts to develop the legal framework demonstrate Jari/Amapá REDD+ Project acceptance by the Authorities.

As described in **Section G5.1**, Jari Celulose S/A, company controlled by Grupo Jari, is the legal owner of the property where Project REDD+ Jari/Amapá is located. A contract signed between proponents of the project establishes responsibilities and rights on the project, as well as a percentage of carbon credit verified to which each applicant is entitled.

Project REDD+ Jari/Amapá generates benefits for the climate, communities and biodiversity, but only GHG emission reductions, issued by VCS according with VCS approved methodology VM0015, will be tradable after being duly registered in the Market platform.

In addition, the Project REDD+ Jari/Amapá does not do double account because: Brazil is a non-attached I country in the Kyoto Protocol and therefore has no commitment with reduction of GHG under the Convention; The Project does not participate in a compliance mechanism nor intends to be registered under any other voluntary market platform than Markit, nether under other offsetting voluntary standard than VCS Program; and Jari/Amapá Project does not intend to generate any other environmental credit related to reduction of GHG emission reductions within the VCS program. The limits of the Project Area boundaries were georeferenced and are publicly available on the Internet.

# Climate Section

## CL1. Without-Project Climate Scenario

According with the Third Edition of the CCB Standards, the Climate section was waived for projects that use a recognized program of Greenhouse Gases. As Jari/Amapá REDD+ Project was validated by the Verified Carbon Standard (VCS), this section will be used only to demonstrate the net positive climate benefits of the project. More information is available on the description of the VCS Project Document.

The total emission of GHG in the Project Area in the scenario of use of land in the absence of the Project is of 5,536,218.6 tCO<sub>2</sub> during the duration period of the project. Emissions were estimated based on the methodology approved of the VSC VM0015 version 3.0, as described in the Project Decryption Document validated under the VCS standards.

The steps for calculating greenhouse gas emissions within the Project area in the baseline scenario consisted of:

1. Definition of the Component of Use and Land Cover Change Baseline

- Calculation of the data of baseline activity for forest class
- Data calculation of baseline activity for forest class post- deforestation.
- Data calculation of baseline activity for class use and land cover

2. Estimated Changes in Carbon Emissions and Non-CO<sub>2</sub> stock in Baseline

- Estimation of changes in carbon stock in the baseline
- Estimation of average stock of carbon per class of use and change in land cover
- Calculation of change factors of carbon stock
- Calculation of change factors in the stock of carbon in the baseline

3. Non-CO<sub>2</sub> emissions by forest fires at baseline: these emissions were not considered and accounted for the Project.

Erro! Fonte de referência não encontrada. portraits the total change in the carbon stock in the aseline of the Project Area, and **Table 14** shows the change in the carbon stock on the leakage belt.

Table 15. Baseline carbon stock change in the Project Area (Table 21b of Methodology VM0015).

Carbon stock changes per initial forest class icl		Total carbon stock change of initial forest class in the project area		Carbon stock changes per post-deforestation zone z		Total carbon stock change of post-deforestation zones in the project area		Total net carbon stock change of the project area	
ID <sub>icl</sub> >	1	ΔCBSLPA <sub>icl,t</sub>	ΔCBSLPA <sub>icl</sub>	ID <sub>iz</sub> >	1	ΔCBSLPA <sub>z,t</sub>	ΔCBSLPA <sub>z</sub>	ΔCBSLPA <sub>t</sub>	ΔCBSLPA
Nome>	Forest	annual	cumulative	Nome>	Zona 1	annual	cumulative	annual	cumulative
Ano do Projeto t	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	Ano do Projeto t	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e
2011	260,731.0	260,731.0	260,731.0	2011	3,676.3	3,676.3	3,676.3	257,054.8	257,054.8
2012	256,111.5	256,111.5	516,842.6	2012	7,162.9	7,162.9	10,839.2	248,948.6	506,003.4
2013	218,065.7	218,065.7	734,908.2	2013	9,995.0	9,995.0	20,834.2	208,070.6	714,074.0
2014	287,772.7	287,772.7	1,022,680.9	2014	13,714.1	13,714.1	34,548.4	274,058.6	988,132.6
2015	400,389.8	400,389.8	1,423,070.7	2015	18,895.2	18,895.2	53,443.5	381,494.6	1,369,627.2
2016	359,472.0	359,472.0	1,782,542.8	2016	23,323.8	23,323.8	76,767.3	336,148.2	1,705,775.4
2017	390,064.3	390,064.3	2,172,607.1	2017	28,033.8	28,033.8	104,801.2	362,030.5	2,067,805.9
2018	391,398.2	391,398.2	2,564,005.3	2018	32,603.2	32,603.2	137,404.3	358,795.1	2,426,601.0
2019	350,312.9	350,312.9	2,914,318.2	2019	36,438.5	36,438.5	173,842.8	313,874.4	2,740,475.4
2020	334,795.8	334,795.8	3,249,114.0	2020	39,925.1	39,925.1	213,767.9	294,870.7	3,035,346.1
2021	346,487.6	346,487.6	3,595,601.6	2021	39,906.8	39,906.8	253,674.7	306,580.8	3,341,926.9
2022	277,052.5	277,052.5	3,872,654.2	2022	39,093.2	39,093.2	292,767.9	237,959.3	3,579,886.2
2023	238,927.5	238,927.5	4,111,581.6	2023	38,402.0	38,402.0	331,169.9	200,525.5	3,780,411.7
2024	217,784.1	217,784.1	4,329,365.7	2024	36,579.2	36,579.2	367,749.1	181,204.9	3,961,616.6
2025	199,917.0	199,917.0	4,529,282.8	2025	33,153.7	33,153.7	400,902.8	166,763.3	4,128,380.0
2026	176,144.0	176,144.0	4,705,426.7	2026	30,235.9	30,235.9	431,138.7	145,908.1	4,274,288.0
2027	168,894.5	168,894.5	4,874,321.2	2027	27,042.9	27,042.9	458,181.6	141,851.6	4,416,139.6
2028	155,490.1	155,490.1	5,029,811.4	2028	23,904.9	23,904.9	482,086.5	131,585.2	4,547,724.8
2029	128,459.0	128,459.0	5,158,270.4	2029	21,201.2	21,201.2	503,287.8	107,257.8	4,654,982.6
2030	119,332.4	119,332.4	5,277,602.8	2030	18,797.3	18,797.3	522,085.1	100,535.1	4,755,517.8
2031	117,052.0	117,052.0	5,394,654.8	2031	16,277.1	16,277.1	538,362.2	100,774.9	4,856,292.7
2032	96,011.5	96,011.5	5,490,666.3	2032	14,497.1	14,497.1	552,859.3	81,514.4	4,937,807.0
2033	102,124.9	102,124.9	5,592,791.2	2033	13,377.7	13,377.7	566,237.0	88,747.2	5,026,554.3
2034	86,575.5	86,575.5	5,679,366.7	2034	12,313.4	12,313.4	578,550.3	74,262.1	5,100,816.4
2035	96,938.2	96,938.2	5,776,304.9	2035	11,567.1	11,567.1	590,117.4	85,371.1	5,186,187.4
2036	86,189.3	86,189.3	5,862,494.1	2036	10,930.9	10,930.9	601,048.4	75,258.3	5,261,445.8
2037	89,418.9	89,418.9	5,951,913.0	2037	10,355.9	10,355.9	611,404.3	79,062.9	5,340,508.7
2038	80,868.5	80,868.5	6,032,781.5	2038	9,762.6	9,762.6	621,166.9	71,105.9	5,411,614.6
2039	70,619.1	70,619.1	6,103,400.6	2039	9,334.4	9,334.4	630,501.3	61,284.7	5,472,899.3
2040	72,311.2	72,311.2	6,175,711.8	2040	8,991.9	8,991.9	639,493.2	63,319.4	5,536,218.6

**Table 16. Baseline carbon stock change in the leakage belt area (Table 21c of Methodology VM0015).**

Carbon stock changes per initial forest class icl		Total carbon stock change of initial forest class in the leakage belt area		Carbon stock changes per post-deforestation zone z				Total carbon stock change of post-deforestation zones in leakage belt area		Total net carbon stock change of the leakage belt area	
ID <sub>icl</sub> >	1	ΔCBSLLK <sub>icl,t</sub>	ΔCBSLLK <sub>icl</sub>	ID <sub>iz</sub> >	1	ΔCBSLLK <sub>z,t</sub>	ΔCBSLLK <sub>z</sub>	ΔCBSLLK <sub>i</sub>	ΔCBSLLK		
Nome>	Forest	annual	cumulative	Nome>	Zona 1	annual	cumulative	anual	cumulative		
Ano do Projeto t	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	Ano do Projeto t	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e		
2011	334,915.7	334,915.7	334,915.7	2011	4,722.3	4,722.3	4,722.3	330,193.5	330,193.5		
2012	476,405.7	476,405.7	811,321.4	2012	11,279.6	11,279.6	16,001.9	465,126.1	795,319.5		
2013	358,101.2	358,101.2	1,169,422.6	2013	15,946.8	15,946.8	31,948.7	342,154.4	1,137,473.9		
2014	448,701.0	448,701.0	1,618,123.6	2014	21,733.4	21,733.4	53,682.1	426,967.6	1,564,441.5		
2015	397,090.4	397,090.4	2,015,214.0	2015	26,596.4	26,596.4	80,278.4	370,494.1	1,934,935.6		
2016	375,798.7	375,798.7	2,391,012.7	2016	30,994.4	30,994.4	111,272.9	344,804.3	2,279,739.9		
2017	371,611.2	371,611.2	2,762,624.0	2017	35,184.5	35,184.5	146,457.4	336,426.7	2,616,166.6		
2018	391,218.7	391,218.7	3,153,842.7	2018	39,509.2	39,509.2	185,966.5	351,709.5	2,967,876.1		
2019	418,958.3	418,958.3	3,572,801.0	2019	44,078.5	44,078.5	230,045.1	374,879.8	3,342,755.9		
2020	404,770.3	404,770.3	3,977,571.3	2020	48,293.1	48,293.1	278,338.1	356,477.3	3,699,233.2		
2021	388,800.8	388,800.8	4,366,372.1	2021	47,577.4	47,577.4	325,915.5	341,223.4	4,040,456.6		
2022	321,938.7	321,938.7	4,688,310.8	2022	44,170.3	44,170.3	370,085.8	277,768.4	4,318,225.0		
2023	278,383.1	278,383.1	4,966,693.9	2023	42,090.5	42,090.5	412,176.3	236,292.6	4,554,517.6		
2024	260,721.7	260,721.7	5,227,415.7	2024	38,750.7	38,750.7	450,927.0	221,971.1	4,776,488.7		
2025	231,925.9	231,925.9	5,459,341.6	2025	36,010.3	36,010.3	486,937.3	195,915.6	4,972,404.4		
2026	249,887.7	249,887.7	5,709,229.3	2026	34,065.1	34,065.1	521,002.4	215,822.6	5,188,226.9		
2027	232,700.6	232,700.6	5,941,929.9	2027	32,144.4	32,144.4	553,146.8	200,556.2	5,388,783.1		
2028	223,860.0	223,860.0	6,165,789.9	2028	30,034.1	30,034.1	583,180.8	193,826.0	5,582,609.1		
2029	208,226.0	208,226.0	6,374,015.9	2029	27,538.4	27,538.4	610,719.2	180,687.6	5,763,296.7		
2030	182,694.2	182,694.2	6,556,710.2	2030	25,109.9	25,109.9	635,829.2	157,584.3	5,920,881.0		
2031	183,868.9	183,868.9	6,740,579.0	2031	22,981.3	22,981.3	658,810.4	160,887.6	6,081,768.6		
2032	168,666.0	168,666.0	6,909,245.0	2032	21,537.7	21,537.7	680,348.1	147,128.3	6,228,896.9		
2033	167,418.2	167,418.2	7,076,663.2	2033	20,669.1	20,669.1	701,017.1	146,749.1	6,375,646.0		
2034	173,912.7	173,912.7	7,250,575.9	2034	20,057.4	20,057.4	721,074.5	153,855.3	6,529,501.3		
2035	124,633.4	124,633.4	7,375,209.3	2035	19,084.8	19,084.8	740,159.3	105,548.6	6,635,049.9		
2036	140,592.7	140,592.7	7,515,802.0	2036	18,051.0	18,051.0	758,210.3	122,541.7	6,757,591.6		
2037	136,815.4	136,815.4	7,652,617.3	2037	17,176.3	17,176.3	775,386.6	119,639.1	6,877,230.7		
2038	124,868.7	124,868.7	7,777,486.1	2038	16,215.9	16,215.9	791,602.6	108,652.8	6,985,883.5		
2039	122,032.5	122,032.5	7,899,518.6	2039	15,384.0	15,384.0	806,986.6	106,648.4	7,092,531.9		
2040	109,445.5	109,445.5	8,008,964.0	2040	14,680.6	14,680.6	821,667.2	94,764.9	7,187,296.8		

## CL2. Net Positive Climate Impacts

The emissions of GHG expected from the activities of the use of the land inside the Project area in the scenario of use of the land with the Project were estimated following the approved methodology from VCS VM0015 version 3.0.

Such emissions are related to the planned opening of areas for the installation of management infrastructure for forest management, and for the unplanned deforestation inevitable in the project area.

The planned emissions were calculated based on the estimated area of the planned deforestation for every Annual Management Unit – AMU- (from Portuguese “Unidade de Produção Anual” or “UPA”) and the impact on the carbon stock, although are not expected emissions by unplanned deforestation, it was assumed that the Project will be able to contain 50% of emissions in the baseline of the first four years of implementation of the Project, adopting a conservative approach. After that period, it was considered that the implementation of project activities will gradually increase the Effectiveness Index until it reaches the number of 90% in 2022.

**Table 15** shows the estimative ex ante the actual net changes of the carbon stock and emissions of non-CO<sub>2</sub> gases in the Project Area. During the development of the activities of the Project, will be monitors and reported the occurred emissions to verify if there will be no increase in emissions under the Project scenario.

**Table 17. Total ex ante estimated net carbon stock changes and emissions of non-CO<sub>2</sub> gases in the Project Area (Table 29 of the Methodology VM0015).**

Project Year t	Total ex ante carbon stock decrease due to planned activities		Total ex ante carbon stock increase due to planned activities		Total ex ante carbon stock decrease due to unavoided unplanned deforestation		Total ex ante net carbon stock change		Total ex ante estimated actual non-CO <sub>2</sub> emissions from forest fires in the project area	
	annual $\Delta CPA_{PA_t}$ tCO <sub>2</sub> e	cumulative $\Delta CPA_{PA}$ tCO <sub>2</sub> e	annual $\Delta CPA_{PA_t}$ tCO <sub>2</sub> e	cumulative $\Delta CPA_{PA}$ tCO <sub>2</sub> e	annual $\Delta CUD_{PA_t}$ tCO <sub>2</sub> e	cumulative $\Delta CUD_{PA}$ tCO <sub>2</sub> e	annual $\Delta CPSPA_t$ tCO <sub>2</sub> e	cumulative $\Delta CPSPA$ tCO <sub>2</sub> e	annual EBBPS PA <sub>t</sub> tCO <sub>2</sub> e	cumulative EBBPS A tCO <sub>2</sub> e
2011	0.0	0.0	0.0	0.0	128,527.4	128,527.4	128,527.4	128,527.4	0.0	0.0
2012	0.0	0.0	0.0	0.0	124,474.3	253,001.7	124,474.3	253,001.7	0.0	0.0
2013	0.0	0.0	0.0	0.0	104,035.3	357,037.0	104,035.3	357,037.0	0.0	0.0
2014	27,640.0	27,640.0	0.0	0.0	137,029.3	494,066.3	164,669.3	521,706.3	0.0	0.0
2015	49,387.6	77,027.6	0.0	0.0	171,672.6	665,738.9	221,060.1	742,766.5	0.0	0.0
2016	47,004.5	124,032.1	0.0	0.0	134,459.3	800,198.2	181,463.8	924,230.3	0.0	0.0
2017	49,795.1	173,827.2	0.0	0.0	126,710.7	926,908.8	176,505.8	1,100,736.0	0.0	0.0
2018	41,372.3	215,199.5	0.0	0.0	107,638.5	1,034,547.4	149,010.9	1,249,746.9	0.0	0.0
2019	43,846.0	259,045.5	0.0	0.0	78,468.6	1,113,016.0	122,314.6	1,372,061.5	0.0	0.0
2020	46,285.6	305,331.1	0.0	0.0	58,974.1	1,171,990.1	105,259.8	1,477,321.2	0.0	0.0
2021	0.0	305,331.1	0.0	0.0	45,987.1	1,217,977.2	45,987.1	1,523,308.3	0.0	0.0
2022	45,436.5	350,767.7	0.0	0.0	23,795.9	1,241,773.2	69,232.5	1,592,540.8	0.0	0.0
2023	47,406.4	398,174.0	0.0	0.0	20,052.5	1,261,825.7	67,458.9	1,659,999.7	0.0	0.0
2024	0.0	398,174.0	0.0	0.0	18,120.5	1,279,946.2	18,120.5	1,678,120.2	0.0	0.0
2025	0.0	398,174.0	0.0	0.0	16,676.3	1,296,622.5	16,676.3	1,694,796.6	0.0	0.0
2026	0.0	398,174.0	0.0	0.0	14,590.8	1,311,213.3	14,590.8	1,709,387.4	0.0	0.0

2027	0.0	398,174.0	0.0	0.0	14,185.2	1,325,398.5	14,185.2	1,723,572.5	0.0	0.0
2028	0.0	398,174.0	0.0	0.0	13,158.5	1,338,557.0	13,158.5	1,736,731.1	0.0	0.0
2029	0.0	398,174.0	0.0	0.0	10,725.8	1,349,282.8	10,725.8	1,747,456.8	0.0	0.0
2030	0.0	398,174.0	0.0	0.0	10,053.5	1,359,336.3	10,053.5	1,757,510.4	0.0	0.0
2031	0.0	398,174.0	0.0	0.0	10,077.5	1,369,413.8	10,077.5	1,767,587.8	0.0	0.0
2032	0.0	398,174.0	0.0	0.0	8,151.4	1,377,565.2	8,151.4	1,775,739.3	0.0	0.0
2033	0.0	398,174.0	0.0	0.0	8,874.7	1,386,440.0	8,874.7	1,784,614.0	0.0	0.0
2034	0.0	398,174.0	0.0	0.0	7,426.2	1,393,866.2	7,426.2	1,792,040.2	0.0	0.0
2035	0.0	398,174.0	0.0	0.0	8,537.1	1,402,403.3	8,537.1	1,800,577.3	0.0	0.0
2036	0.0	398,174.0	0.0	0.0	7,525.8	1,409,929.1	7,525.8	1,808,103.2	0.0	0.0
2037	0.0	398,174.0	0.0	0.0	7,906.3	1,417,835.4	7,906.3	1,816,009.4	0.0	0.0
2038	0.0	398,174.0	0.0	0.0	7,110.6	1,424,946.0	7,110.6	1,823,120.0	0.0	0.0
2039	0.0	398,174.0	0.0	0.0	6,128.5	1,431,074.5	6,128.5	1,829,248.5	0.0	0.0
2040	0.0	398,174.0	0.0	0.0	6,331.9	1,437,406.4	6,331.9	1,835,580.4	0.0	0.0

Equation 19 was used as suggested by Methodology VM0015 version 1.1 to estimate ex ante net decrease in Project emissions. Result is presented in **Table 16** (Table 36 of Methodology VM0015 version 1.1).



**Table 18. Ex ante estimated net anthropogenic GHG emission reductions and Verified Carbon Units (Table 36 of Methodology VM0015).**

Project Year t	Baseline carbon stock changes		Baseline GHG emissions		Ex ante project carbon stock changes		Ex ante project GHG emissions		Ex ante leakage carbon stock changes		Ex ante leakage GHG emissions		Ex ante net anthropogenic GHG emission reductions		Ex ante VCUs tradable		Ex ante buffer credits	
	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative
	ΔCBSLPA <sub>t</sub>	ΔCBSLPA	ΔEBBB SLPA <sub>t</sub>	ΔEBBB SLPA	ΔCPSPA <sub>t</sub>	ΔCPSPA	EBBPS PA <sub>t</sub>	EBBPS PA	ΔCLK <sub>t</sub>	ΔCLK	ELK <sub>t</sub>	ELK	ΔREDD <sub>t</sub>	ΔREDD	VCU <sub>t</sub>	VCU	VCB <sub>t</sub>	VCB
tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e	tCO <sub>2</sub> -e
2011	257,054.8	257,054.8	0.0	0.0	128,527.4	128,527.4	0.0	0.0	25,705.5	25,705.5	0.0	0.0	102,821.9	102,821.9	80,972.2	80,972.2	21,849.7	21,849.7
2012	248,948.6	506,003.4	0.0	0.0	124,474.3	253,001.7	0.0	0.0	24,894.9	50,600.3	0.0	0.0	99,579.5	202,401.4	78,418.8	159,391.1	21,160.6	43,010.3
2013	208,070.6	714,074.0	0.0	0.0	104,035.3	357,037.0	0.0	0.0	20,807.1	71,407.4	0.0	0.0	83,228.3	285,629.6	65,542.2	224,933.3	17,686.0	60,696.3
2014	274,058.6	988,132.6	0.0	0.0	164,669.3	521,706.3	0.0	0.0	27,405.9	98,813.3	0.0	0.0	81,983.4	367,613.0	63,387.2	288,320.5	18,596.2	79,292.5
2015	381,494.6	1,369,627.2	0.0	0.0	221,060.1	742,766.5	0.0	0.0	34,334.5	133,147.8	0.0	0.0	126,100.0	493,713.0	98,826.1	387,146.6	27,273.9	106,566.3
2016	336,148.2	1,705,775.4	0.0	0.0	181,463.8	924,230.3	0.0	0.0	26,891.9	160,039.6	0.0	0.0	127,792.6	621,505.5	101,496.2	488,642.9	26,296.4	132,862.7
2017	362,030.5	2,067,805.9	0.0	0.0	176,505.8	1,100,736.0	0.0	0.0	25,342.1	185,381.8	0.0	0.0	160,182.6	781,688.1	128,643.4	617,286.2	31,539.2	164,401.9
2018	358,795.1	2,426,601.0	0.0	0.0	149,010.9	1,249,746.9	0.0	0.0	21,527.7	206,909.5	0.0	0.0	188,256.5	969,944.6	152,593.2	769,879.4	35,663.3	200,065.2
2019	313,874.4	2,740,475.4	0.0	0.0	122,314.6	1,372,061.5	0.0	0.0	15,693.7	222,603.2	0.0	0.0	175,866.1	1,145,810.8	143,300.9	913,180.4	32,565.2	232,630.4
2020	294,870.7	3,035,346.1	0.0	0.0	105,259.8	1,477,321.2	0.0	0.0	11,794.8	234,398.0	0.0	0.0	177,816.1	1,323,626.9	145,582.3	1,058,762.6	32,233.9	264,864.2
2021	306,580.8	3,341,926.9	0.0	0.0	45,987.1	1,523,308.3	0.0	0.0	9,197.4	243,595.4	0.0	0.0	251,396.3	1,575,023.1	207,095.4	1,265,858.0	44,300.9	309,165.2
2022	237,959.3	3,579,886.2	0.0	0.0	69,232.5	1,592,540.8	0.0	0.0	4,759.2	248,354.6	0.0	0.0	163,967.6	1,738,990.8	135,284.1	1,401,142.1	28,683.6	337,848.7
2023	200,525.5	3,780,411.7	0.0	0.0	67,458.9	1,659,999.7	0.0	0.0	2,005.3	250,359.9	0.0	0.0	131,061.3	1,870,052.1	108,440.0	1,509,582.0	22,621.3	360,470.0
2024	181,204.9	3,961,616.6	0.0	0.0	18,120.5	1,678,120.2	0.0	0.0	0.0	250,359.9	0.0	0.0	163,084.4	2,033,136.5	135,360.1	1,644,942.1	27,724.4	388,194.4
2025	166,763.3	4,128,380.0	0.0	0.0	16,676.3	1,694,796.6	0.0	0.0	0.0	250,359.9	0.0	0.0	150,087.0	2,183,223.5	124,572.2	1,769,514.3	25,514.8	413,709.2
2026	145,908.1	4,274,288.0	0.0	0.0	14,590.8	1,709,387.4	0.0	0.0	0.0	250,359.9	0.0	0.0	131,317.2	2,314,540.7	108,993.3	1,878,507.6	22,323.9	436,033.1
2027	141,851.6	4,416,139.6	0.0	0.0	14,185.2	1,723,572.5	0.0	0.0	0.0	250,359.9	0.0	0.0	127,666.4	2,442,207.2	105,963.1	1,984,470.8	21,703.3	457,736.4
2028	131,585.2	4,547,724.8	0.0	0.0	13,158.5	1,736,731.1	0.0	0.0	0.0	250,359.9	0.0	0.0	118,426.7	2,560,633.9	98,294.2	2,082,764.9	20,132.5	477,868.9
2029	107,257.8	4,654,982.6	0.0	0.0	10,725.8	1,747,456.8	0.0	0.0	0.0	250,359.9	0.0	0.0	96,532.0	2,657,165.9	80,121.6	2,162,886.5	16,410.4	494,279.4
2030	100,535.1	4,755,517.8	0.0	0.0	10,053.5	1,757,510.4	0.0	0.0	0.0	250,359.9	0.0	0.0	90,481.6	2,747,647.5	75,099.7	2,237,986.3	15,381.9	509,661.3
2031	100,774.9	4,856,292.7	0.0	0.0	10,077.5	1,767,587.8	0.0	0.0	0.0	250,359.9	0.0	0.0	90,697.4	2,838,344.9	75,278.9	2,313,265.1	15,418.6	525,079.8
2032	81,514.4	4,937,807.0	0.0	0.0	8,151.4	1,775,739.3	0.0	0.0	0.0	250,359.9	0.0	0.0	73,362.9	2,911,707.9	60,891.2	2,374,156.3	12,471.7	537,551.5
2033	88,747.2	5,026,554.3	0.0	0.0	8,874.7	1,784,614.0	0.0	0.0	0.0	250,359.9	0.0	0.0	79,872.5	2,991,580.4	66,294.2	2,440,450.5	13,578.3	551,129.8
2034	74,262.1	5,100,816.4	0.0	0.0	7,426.2	1,792,040.2	0.0	0.0	0.0	250,359.9	0.0	0.0	66,835.9	3,058,416.3	55,473.8	2,495,924.3	11,362.1	562,491.9
2035	85,371.1	5,186,187.4	0.0	0.0	8,537.1	1,800,577.3	0.0	0.0	0.0	250,359.9	0.0	0.0	76,834.0	3,135,250.2	63,772.2	2,559,696.5	13,061.8	575,553.7
2036	75,258.3	5,261,445.8	0.0	0.0	7,525.8	1,808,103.2	0.0	0.0	0.0	250,359.9	0.0	0.0	67,732.5	3,202,982.7	56,218.0	2,615,914.5	11,514.5	587,068.2
2037	79,062.9	5,340,508.7	0.0	0.0	7,906.3	1,816,009.4	0.0	0.0	0.0	250,359.9	0.0	0.0	71,156.6	3,274,139.4	59,060.0	2,674,974.5	12,096.6	599,164.9
2038	71,105.9	5,411,614.6	0.0	0.0	7,110.6	1,823,120.0	0.0	0.0	0.0	250,359.9	0.0	0.0	63,995.3	3,338,134.7	53,116.1	2,728,090.6	10,879.2	610,044.1
2039	61,284.7	5,472,899.3	0.0	0.0	6,128.5	1,829,248.5	0.0	0.0	0.0	250,359.9	0.0	0.0	55,156.2	3,393,290.9	45,779.7	2,773,870.3	9,376.6	619,420.6
2040	63,319.4	5,536,218.6	0.0	0.0	6,331.9	1,835,580.4	0.0	0.0	0.0	250,359.9	0.0	0.0	56,987.4	3,450,278.3	47,299.6	2,821,169.8	9,687.9	629,108.5

### **CL3. Offsite Climate Impacts ('Leakage')**

The emissions by leakage were estimated by casting according to the methodology of VCS VM0015 version 1.1.

As described before, deforestation agents are squatters and small farmers living inside or close to the Project area. As the social activities that aim promotional of the welfare of the communities and reduction of deforestation are not imposed to the communities, it is not expected leakage on account of the activities of the project. However, a Leakage Displacement Factor of 10% was conservatively applied for the first 4 years and decreases until reaching 0% in the end of the fixed baseline period. Leakage by increased livestock activity, displacement of forest fires or decrease in carbon stocks due to leakage prevention measures is not expected.

In case of existence of leakage, the most probable areas are those called Leakage Belt, defined using the mobility approach (option II offered by the VCS approved methodology VM0015 version 1.1, page 24). The spatial limits of the leakage belt were defined using a multi-criteria approach combining the deforestation risk map that identifies the areas where deforestation can occur, with data from the Project area and conservation units. Based on this approach it was assumed that the leakage belt is located in regions at high risk of deforestation close to the Project area and out of the conservation units.

**Figure 33** shows the location of the leakage belt. **Table 17** presents the estimative ex ante leakage total.

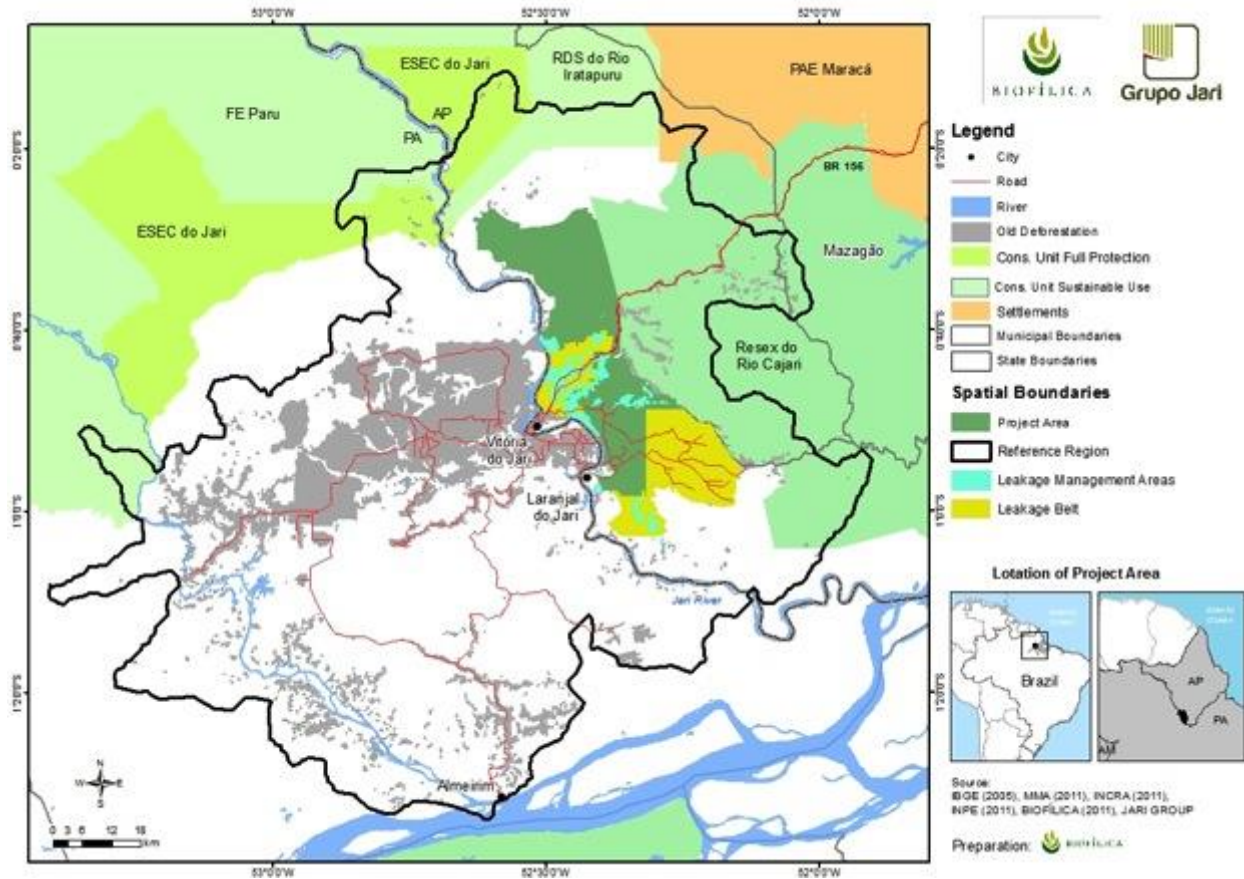


Figure 34. Location of Reference region, project Area, Leakage Management Area and Leakage Belt of Jari/Amapá REDD+ Project.

Table 19. Ex ante estimated total leakage (Table 35 of Methodology VM0015).

Project Year t	Total ex ante GHG emissions from increased grazing activities		Total ex ante increase in GHG emissions due to displaced forest fires		Total ex ante decrease in carbon stocks due to displaced deforestation		Carbon stock decrease due to leakage prevention measures		Total net carbon stock change due to leakage		Total net increase in emissions due to leakage	
	annual EgLK <sub>t</sub> tCO <sub>2</sub> e	cumulative EgLK tCO <sub>2</sub> e	annual EADLK <sub>t</sub> tCO <sub>2</sub> e	cumulative EADLK tCO <sub>2</sub> e	annual ΔCADLK <sub>t</sub> tCO <sub>2</sub> e	cumulative ΔCADLK tCO <sub>2</sub> e	annual ΔCLPMLK <sub>t</sub> tCO <sub>2</sub> e	cumulative ΔCLPMLK tCO <sub>2</sub> e	annual ΔCLK <sub>t</sub> tCO <sub>2</sub> e	cumulative ΔCLK tCO <sub>2</sub> e	annual ELK <sub>t</sub> tCO <sub>2</sub> e	cumulative ELK tCO <sub>2</sub> e
2011	0.0	0.0	0.0	0.0	25,705.5	25,705.5	0.0	0.0	25,705.5	25,705.5	0.0	0.0
2012	0.0	0.0	0.0	0.0	24,894.9	50,600.3	0.0	0.0	24,894.9	50,600.3	0.0	0.0
2013	0.0	0.0	0.0	0.0	20,807.1	71,407.4	0.0	0.0	20,807.1	71,407.4	0.0	0.0
2014	0.0	0.0	0.0	0.0	27,405.9	98,813.3	0.0	0.0	27,405.9	98,813.3	0.0	0.0
2015	0.0	0.0	0.0	0.0	34,334.5	133,147.8	0.0	0.0	34,334.5	133,147.8	0.0	0.0
2016	0.0	0.0	0.0	0.0	26,891.9	160,039.6	0.0	0.0	26,891.9	160,039.6	0.0	0.0
2017	0.0	0.0	0.0	0.0	25,342.1	185,381.8	0.0	0.0	25,342.1	185,381.8	0.0	0.0
2018	0.0	0.0	0.0	0.0	21,527.7	206,909.5	0.0	0.0	21,527.7	206,909.5	0.0	0.0
2019	0.0	0.0	0.0	0.0	15,693.7	222,603.2	0.0	0.0	15,693.7	222,603.2	0.0	0.0
2020	0.0	0.0	0.0	0.0	11,794.8	234,398.0	0.0	0.0	11,794.8	234,398.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	9,197.4	243,595.4	0.0	0.0	9,197.4	243,595.4	0.0	0.0
2022	0.0	0.0	0.0	0.0	4,759.2	248,354.6	0.0	0.0	4,759.2	248,354.6	0.0	0.0
2023	0.0	0.0	0.0	0.0	2,005.3	250,359.9	0.0	0.0	2,005.3	250,359.9	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2034	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2035	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2036	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2037	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2038	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2039	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0
2040	0.0	0.0	0.0	0.0	0.0	250,359.9	0.0	0.0	0.0	250,359.9	0.0	0.0

Leakage prevention measures will take place in the boundaries of the leakage management areas. These areas are located near the communities directly affected by the Project and are areas which were deforested until 2010. The activities to contain the leakage coincide with the social activities of the Project, in which sustainable techniques of agricultural production and extraction of non-timber forest products are promoted.

Will not be implemented activities that promote the significant increase of non-CO<sub>2</sub> emission, such as CH<sub>4</sub> and N<sub>2</sub>O. Therefore, emissions of non-CO<sub>2</sub> are not included on the leakage emissions.

## **CL4. Climate Impact Monitoring**

The monitoring plan includes the shared monitoring of carbon and emissions of the Project.

The monitoring of the carbon stock will be made through forest inventory. The monitoring of the carbon stock for the areas of FSC certified Management Forest will be made through the installation and measurement of the forest inventory 100% of the permanent portion of each AMU. Each monitoring portion will be measured after the harvest in intervals of one, three and five years. The stocks are considered the biomass on top of the soil, biomass under the soil and dead wood.

The monitoring of planned deforestation and non-planned deforestation will be made through forest cover in the Project area using satellite images. The monitoring of deforestation to implement the infrastructure of the FSC certified forest management will be made through specific field forms for the construction of roads, forest trails and courtyards within the Project area and maps and satellite images with information on forest cover areas converted into non-forest cover areas. To give greater flexibility to deforestation mapping process, different techniques of automatic classification and visual interpretation of SAR images using field data and cartographic quality standards can be used.

The data on deforestation events will be compared to the baseline scenario. The emission reduction values for the monitored period will be based on the comparison between the predicted and the real deforestation.

Although non-CO<sub>2</sub> GHG emissions are not expected, methane (CH<sub>4</sub>) emissions and nitrous oxide (N<sub>2</sub>O) from grazing animals will be monitored through Fundação Jari reports and geographic information system.

The leakage monitoring will involve the decrease in carbon stocks and/or increase in GHG emissions associated with leakage prevention measure and forest cover monitoring in the leakage belt through satellite images.

More information available on the Document of Description of the VSC Project.

The monitoring plan, as well as the results from the monitoring conducted are available to the public via internet on the page of Biofilica. Summaries with relevant information are

communicated to the community and interested parts through the Technical Board on REDD+ and technical visits from technicians from the Fundação to rural communities.

## **GL1. Climate Change Adaptation Benefits**

Jari/Amapa REDD+ Project doesn't seek the Climate Gold Level Certification.

# Community Section

## CM1. Without-Project Community Scenario

### CM1.1 Communities Original Conditions

#### Historical social transformation

According to Raminelli (2003), during the XV century European colonizers entered the Amazon, initially inhabited by Amerindian peoples in search of legendary city covered in gold and other riches, the Eldorado.

As originally were not found deposits of minerals or precious stones and the soil was not able to sustain monocultures for exportation, the new inhabitants of the region were dedicated to the export of forest products and the enslavement of indigenous people (ECOLOGY BRASIL 2009). This form of exploitation caused a dramatic reduction of the indigenous population and the region started to be occupied mainly by white, black and caboclos (the last two brought from Africa as slaves), and the miscegenation of them. Wagley (1977) affirms that the miscegenation of colonizers and Indians, more than a contact consequence between these people, was a practice encouraged by the representatives of the metropolis, with the objective to guarantee the Portuguese domain on the territory. Even then elements of the indigenous culture, especially the tupi, remained composing portions of mixed-race culture (ECOLOGY BRASIL, 2009), but were repelled by church missionaries of the Catholic Church (WAGLEY, 1977).

The occupation of the Valley of Jari can be defined by many different moments. The first is related to the indigenous occupation of various ethnicities, such as Waiãpi, Aparaí, Tiriýós, Wayana, Tiriýós, Katxuayana, Karañã, Kastumi (last two are extinct), among others. These people that lived in the region hunted, fished and use the forest resources as a survival mechanism.

The European occupation of the municipality of Almeirim (PA) started between 1634 and 1637, when the Captaincy of Cabo Norte was given to Bento Maciel Parente (MORAES E MORAES, 2000).

Mazagão (AP) was founded in 1977 by 163 families and 103 slaves coming from Africa. These families were derived from Portuguese possession in Mauritania who came fleeing from the wars between Christians and (RABELO, 2005).

In this period, the economic cycle of rubber exploitation, which started from early tom id-nineteenth century, attracted to the Amazon, including the Valley of Jari, farmers, caboclos, ribeirinhos and nordestinos to this economic activity strongly widespread in the region.

To Sousa (2006), these workers arrived to work in the “Xiringais” (expression used by migrants who came to work in the rubber plantations in the Amazon) looking for money and running from the successive droughts from the Brazilian Northeast. These migrants worked in small groups in the colocations (demarcated areas for exploitation by one or more domestic groups) from farmers of the region and kept relations with the remaining indians, with who they learned to survive in that environment through hunting, fishing and agricultural practices.

The work system was the base of the *aviamento*, where workers were dispensed with gully traders (usually people trusted by the “Colonel” or the “Baron”) and worked in small groups in the rubber plantation of their boss and, depending on the necessity, would go in the “free land” (most times occupied by indians) (SOUZA, 2006). About the goodwill, Castelo (1999) points that these mechanism of labor relations was the form of expropriation imposed by farmers to workers. With this system, the farmer was responsible for providing the worker credits on consumer goods, goods that the worker needed and trading tools. The workers had to sell their produce to the farmer’s shed under penalty of severe punishment.

The “bosses” lived on the headquarters and worked in the branches as managers of the landowners. In some cases they became the owners, after a long time working together as managers. They kept a market of products from extractives on the bank of a river, which was materialized by the goodwill of the extractive workers and *ribeirinhos*.

With the rubber crises, at the end of XIX century, many of the rubber farms were either abandoned or sold, and in the region of Valley of Jari at this time there were four social groups: indians (*Waiãpís e Aparais*), riverine (mestizos originating from the colonizing Project of the religion missions), the extractivists workers (rubber workers and *balateiros* who came from northeastern Brazil from the second half of the nineteenth century) and the river bank traders (LINS, 2001). *Balateiros* were those who extracted latex from the *balata* tree, a tree that can grow up to 30 meters, occurring in the section between the left bank of the Amazon river, in a rather large distance north of the river channel, to the right bank of the Jari river. The municipality that benefited more from latex extraction of latex of *balata* tree was in Almeirim (PA), whose production was exported to the USA, where it would serve as raw material to golf balls and for the mix in the making of airplane tires (LINS, 2001).

On this period the northeastern migrant Colonel José Júlio de Andrade arrived at the region and established himself first as an itinerant Merchant, acquiring next the lands and structures of the rubber farms, which he adapted to nut extraction. Colonel José Júlio is considered one of the biggest farmers of the Amazon region and even registered in his name more than three million hectares in the current states of Amapá and Pará. His wealth was founded on land accumulation and on the extractive economy products like rubber, *maçaranduba*, *copaíba*, *andiroba*, beef cattle and gold. Chestnut, its main product was exported to Europe (LINS, 2001).

Changes in the economy of the region favored the migration of thousands of workers, as *balateiros*, nut gatherers and northeastern, who came to the region to work on placements of the land of Colonel José Júlio. In addition to northeastern migrants, laboring was consisted



of caboclos of the region. Thus, the region was consolidated as attractive to migrants mainly from Pará, Maranhão, Ceará, Rio Grande do Norte and Paraíba.

The form of working relationship imposed on the grounds of Colonel was the goodwill, inherited from old rubber plantations. Nonetheless, Sousa (2006) says that this Merchant made some alterations in the original goodwill system to be used on chestnut extraction, stimulating local economic development where the production takes place. The development was made by reinvesting in the place where all lucratively from extractivism was obtained. The development was made by reinvesting in the place where the production takes place. With this strategy, it was assured the dominance over extractivisms products in the region for another four decades.

José Julio's sovereignty lasted 49 years, from 1899 to 1948, when he then sold his lands to five Portuguese businessmen and for one of his old employees (who was Brazilian). This group, called "Portuguese" by the community of the Valley of Jari, created Jari Indústria e Comércio and started to work with exportation of noble woods, chestnuts benefits, in addition to the extraction activities initiated a previous stage. The "Portuguese" also provided the encouragement of agriculture in local communities (Lins, 2001), in which fomented received guidance, inputs and had the right logistics company. This system led to significant changes in production systems of the Valley of Jari communities. (SOUSA, 2006).

According to Sousa (2006), between the end of the 1940s and the beginning of the 1950s, a series of episodes in the area, such as the sale of the company to the "Portuguese", the elevation of Amapá to Federal Territory and the manganese extraction Project in Serra do Navio, in the municipality of Santana by ICOMI, contributed to a new migratory wave In the two biggest cities of Amapá: Macapá and Santana. Another attraction factor in the region was the construction of the railway connecting Serra do Navio to Porto de Santana, 194km long, that had as objective to transport workers and drain ore loads, due to the fact that transportation is not possible by sea with direct destination to domestic and foreign markets.

In the 1960s, the plywood industry BRUMASA-S.A., connected to the Grupo CAEMI, was installed in the region, contributing to the population growth and increased demand for consumption of agricultural products, creating a Market for local production.

Thus, the Portuguese "released" their extractives workers to engage in agriculture in in upland areas with good soil quality for agriculture and weak in extractive resources (SOUSA , 2006). However, due to the favorable location of coastal communities to the flow of production, families began to give preference to the markets that best remunerated.

Land conflicts caused by land use by agricultures and farmers who have to refuse the possibility of selling their products to the company of the "Portuguese" contributed to the crisis process in the administration of the "Portuguese". Sousa (2006) reports that the final blow to the administration of the "Portuguese" was the entry of other chestnut buyers in the region, such as Grupo Mutran that "offered conditions and more attractive price, represented a competition that "Portuguese! Did not know how to manage.

In 1967, the “Portuguese” sold their lands to the north-American Daniel Ludwig, who bought it for about US\$ 3 million a great land extension on the border of Pará and Amapá. According to Lins (2001), Ludwig received an area of 1,632,121 ha, being 1,174,391 ha in the state of Pará, municipality of Almeirim and the rest in the Federal Territory of Amapá, in the municipality of Mazagão.

Project Ludwig, called Projeto Jari, included the production of cellulose, livestock, agriculture of rice and other cultures such as banana, dendê, kaolin deposits and an industrial area. Moreover, other projects of infrastructure were implemented, such as the construction of the district of Monte Dourado, roads, harbors and trapiches, aviation field and electrical network. (ECOLOGY BRASIL, 2009).

According to Sousa (2006), the businessman had as goal agricultural and forest production in large scale to attend the exportation demand of large Brazilian and international cities, markets willing to pay a satisfactory price for the products that would be produced by the company. By considering the possibility of cellulose shortage from the 1980s, Ludwig aimed his production in large-scale and for that he transported a factory and a plant that traveled 25,000km until his final destination, in the Valley of Jari. In 1978, the two floating platforms built in Japan stepped into the Amazon and Jari rivers, giving birth to today's activities of Jari Celulose (ECOLOGY BRASIL, 2009).

According to Lins (2001), the investments made by Ludwig promoting big socio-economical transformations in the region and in the neighboring municipalities, extending this influence to Macapá and Belém. The first activities concerned the opening of roads, cultivation and breeding buffaloes (LINS, 2001). It was also the beginning to the replacement of native forest for *Gmelina arborea*, commonly known as Melina, an Asian species that fostered the production of cellulose.

Lins (2001) reports that according to the older residents of the place, on this period started the occupation from what would become the municipality of Laranjal do Jari. At this time, the place was best known as “Beiradão”, because the first houses were built on the margins of the Jari River. And to this day, the main trading point is in the margins of the rivers, therefore, in the “Beiradão”. Another municipality that has a similar name is Vitória do Jari, which is known as “Beiradinho”, for being smaller than Laranjal do Jari.

With the implementation of Projeto Jari, many residents of the region who alternated chestnut harvest in the winter time were hired to work in the factory for a certain time, which contributed to the subsistence of these workers and allowed the implementation of crops and on the hiring of workers of neighbors and relatives. (SOUSA, 2006).

However, as the job opportunities were temporary and there was a considerable increase of migration to the region, many workers were laid off from the factory, and the work options that were already scarce activity of chestnut harvest and rubber extraction. As an alternative, it was left to the families of those locations to seek each time more in the agricultural activities means to guarantee their subsistence and occupational of their available work (SOUSA, 2006).

AS observed by Sousa (1982) apud Sousa (2006), Projeto Jari also attracted to the region other actors, especially merchants and liberal professional, who started to apply their incomes to buy land (some possession) to implement activities connected to livestock.

The consolidation of agriculture by the local communities of the region was strengthened with the construction of roads BR 156 in 1986 by the state government of Amapá and by the availability of official credit lines to eliminate forests to create plantations and perennial crops, formation of artificial pastures, infrastructure and livestock, as well as forestry and diesel processing for gas, a power generation plant in Project Jari (SOUSA, 2006).

Another important change on the economical reorganization of the population was the fact that with a considerable improvement of the accesses, especially to Macapá due to the opening of the highway BR156, the areas occupied by agriculture were expanded, contributing with the local communities of the south of Amapá to better their techniques. What was at first just an activity of subsistence ended up becoming the main economic activity for some families.

At the end of the 1981, facing internal challenges to the company and the difficulty in to formalize the final possession of the lands, Ludwig abandoned Projeto Jari. The federal government then convened a consortium of 23 Brazilian businessmen, led by the Grupo CAEMI, to continue the Project. With financing from Banco do Brasil and BNDES, the consortium continues the Works in the region.

### **Contemporary characteristics of Valley Jari's Communities**

With the project's nationalization process, with definitively occurred in 1982, the federal government has developed a broad change in the community life of the region, creating the district of Monte Dourado, destined to house the employees and families of the Projeto Jari. Historically, its occupation occurred in an ordered way, with all infrastructure system appropriate to the provision of quality of life, including housing, sanitation, recreation and education, structures that remain today (ECOLOGY BRASIL, 2009).

In contrast to the district of Monte Dourado, the municipalities of Vitória do Jari and Laranjal do Jari remained poor and not ordained, this last becoming known as the biggest river slum of the world. The recent wave of colonization of Jari brought temporarily hired migrants and with no labor rights, who were left to their own luck at the end of the contract. These workers gathered on the river banks suffering from problems due to lack of sanitation, fires caused by poor electrical installations in combination with stilts and floods that periodically leave the municipalities in this dire situation (MORAIS & MORAIS, 2000).

Other challenges faced by the municipalities of the Valley of Jari are, according to DSEA (2011), are economic disadvantage, vulnerable organizations, lack of entrepreneurial culture, influence of welfare culture, extraction and subsistence agriculture, lack of structural policies, difficulty in accessing funding, rudimental production techniques, low quality and

productivity, informal contractual relations, land tenure irregular, poor infrastructure, access, communication and transport and influence of illegal logging. DSEA (2011),

The 2000 and 2010 censuses (IBGE) demonstrated that the population of the mentioned municipalities is rising, with Laranjal do Jari accounting 39,942 residents (third most populated of the state), and Vitória do Jari, accounting 12,428, which represents an increase of 40% and 45%, respectively in 10 years. The larger concentration of residents is in the urban zone of the municipality, being a little over 90%. The rural population of the communities of Laranjal do Jari and Vitória do Jari is approximately 6 thousand residents.

The Demographic Census also shows a predominance of Young population (until their 20s) and economically active, mostly male, a sign that the wave of migration still occurs, which corroborates the thesis that the main attraction of the region are the pulp and mining projects.

In relation to HDI-M in the municipalities where the Project is found, it is possible to say that they are in the class of Medium Human Development, highlighting the significant increase of this indicator for municipalities in recent years.

**Table 20. IDH-M of Municipalities in the Project Zone.**

Municipality	HDI-M - 1991	HDI-M - 2000	Change in the Period - 1991/2000(%)
Laranjal do Jari	0,635	0,732	15,28
Vitória do Jari	0,551	0,659	19,60
<b>State of Amapá</b>	<b>0,691</b>	<b>0,753</b>	<b>8,97</b>
<b>Brazil</b>	<b>0,696</b>	<b>0,766</b>	<b>10,06</b>

Source: FJP, IPEA & PNUD ([S.d.])

The education sub index is the one with the best performance, although this happens because most of the population is of school age, which increases the rate of enrollment.

**Table 21. Proportion between the number of enrollments and population of school age.**

Municipality	N of Registration from pre-school to High school (A)	Population from 5 to 19 years (B)	A/B (%)
Almeirim	11.145	11.734	94,98
Laranjal do Jari	12.443	14.224	87,48
Mazagão	6.507	6.905	94,24
Vitória do Jari	4.838	4.771	101,40
Amapá	200.053	225.071	88,88
Pará	2.142.418	2.404.923	89,08

Source: Ministry of Education National Institute of Studies and Educational Research - INEP – Educational Census 2009; IBGE – Demographic Census of 2010.

The educational net of the area of the study consists of pre-school to high school. In general, for all municipalities, most of the establishments are geared towards elementary school, while high school has lowest rate of establishments in all municipalities.

In terms of access to health services, presents the indicator number of beds/1000 inhabitants (B/Inh). Laranjal do Jari presents 1,42 B/Inh, half of the recommended by the Ministry of Health, and Vitória do Jari has zero beds. These data and number of inhabitants show the pressure on health facilities in the Project area. According to information obtained by Ecology Brasil (2009), when a resident identifies some more serious disease and cannot be treated in a hospital in the municipality, the patient is transferred to Macapá or Belém. The same goes for other diseases without treatment in local structure.

In the analysis of HDI income sub index, it appears that between 1990 and 2000 this indicator had a low increase, reaching a negative growth in Laranjal do Jari. According to 2000 Census data, organized by IPEA, on Employed Population (EP) and Economically Active Population (EAP), it is observed that there is a higher proportion of economically active population in rural areas than in urban areas, which showed a ratio of 100%, indicating that all the economically active rural population was in formal or informal work activity during the period of the survey.

### **Contemporary features of engaged communities**

The communities acting on project REDD+, as described on item G1.2.1 Identification of Actors, have as common characteristic the development of small-scale agricultural activities, based mainly in the itinerant system of slash and burn, where the forest is slashed then burned. The ashes from the burn provide nutrients for the crops for one or two years, when the productivity drops dramatically and new areas need to be open to farming. The main culture is cassava for the production of flour, rice, watermelon, corn and beans. Plantation of fruits sometimes occupies no more fertile areas for open grazed, and banana orange and passion fruit, being the main types of permanent crops. Technicians from Grupo Jari detected 2,348 rural families in the region of the Valley of Jari, and it is estimated that each is responsible for the deforestation of 1 ha/year.

**Table 20** shows the sources of income of the families living in communities in the zone of action of REDD+, which corroborated the above.

**Table 22. Income sources, ratio for each household (%). Source: Cifor (2013).**

<b>Atividade</b>	<b>Fé em Deus</b>	<b>Agrup. Laranjal</b>	<b>Água Azul</b>	<b>Igarapé das Pacas</b>	<b>Nova Conquista</b>
<b>Agriculture</b>	81-100%	81-100%	81-100%	81-100%	81-100%
<b>Livestock of small animals</b>	21-40%	61-80%	41-60%	81-100%	0-20%
<b>Livestock of large animals</b>	0-20%	0-20%	21-40%	21-40%	0-20%
<b>PFNM and firewood</b>	81-100%	81-100%	81-100%	81-100%	81-100%
<b>Wood</b>	0-20%	81-100%	81-100%	81-100%	81-100%

<b>Daily rate</b>	0-20%	41-60%	0-20%	0-20%	0-20%
<b>Business</b>	0-20%	0-20%	0-20%	0-20%	0-20%
<b>Wage Employment</b>	0-20%	0-20%	0-20%	21-40%	21-40%
<b>Government Benefit</b>	41-60%	81-100%	81-100%	41-60%	41-60%

CIFOR interviewed 122 families living in communities in the zone of action in August of 2012 (“before intervention”) and in August of 2014 (“after intervention”) using the methodology developed to model 2 of the Global Comparative Study on REDD+. The research of CIFOR, different from the Project Diagnosis, covered producers engaged and not engaged by the Project due to greater availability of time and resources and was also more comprehensive as to the topics studied. Among the main findings, it revealed that the activity of livelihood prevalent among communities are agriculture, livestock (mainly small), collection of NTFPs, timber extraction and government benefits. The main occupation among man (214 respondents) is own agricultural production, and among women (182 respondents) is housewife.

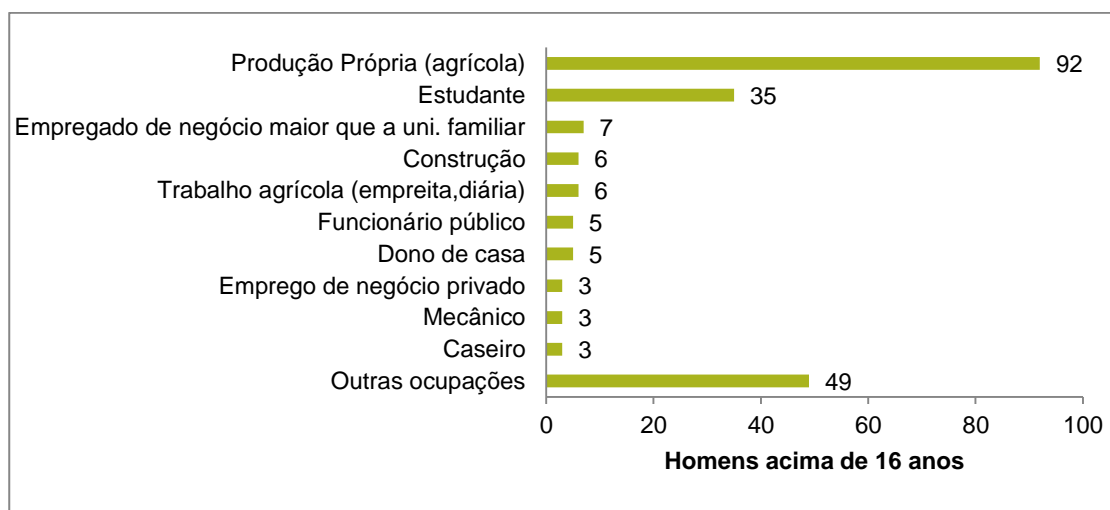
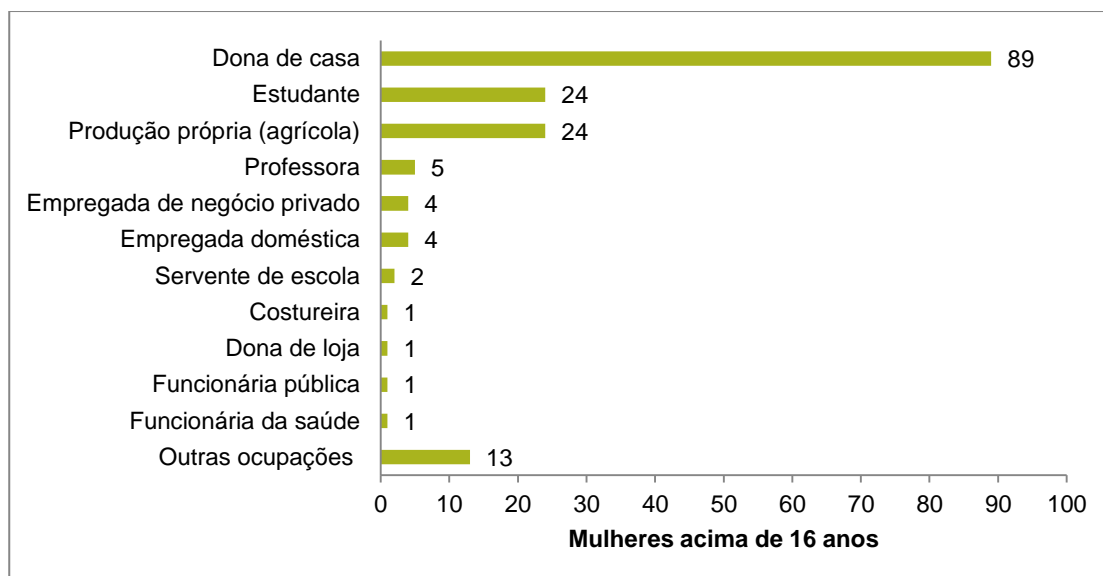


Figure 35. Main profesisonal occupation of men interviewed by CIFOR. Source: CIFOR (2013).



**Figure 36. Main professional occupation of women interviewed by CIFOR. Source CIFOR (2013).**

The agricultural products of higher importance in terms of raw production are the cassava flour and açaí. The average annual wage of the Family is R\$31,470.00, mainly from agriculture, followed by income of a job/day.

Family producers also participate on harvesting of açaí, chestnut and coal. Small scale poultry farming is common. The dynamics commonly performed is the production of wood illegally in medium scale followed by burning and introduction of agriculture of large scale, until productivity becomes insufficient and livestock pastures are introduced. Small and medium producers serve as manpower for this process and aim to have their own cattle ranches. Lack of resources, however, precludes the establishment of own creations and leads producers to sell their land to large landowners.

In order to characterize the role of communities in the begging of the Project in relation to welfare, social, economic and cultural diversity and make possible the monitoring projects to communities, Fundação Jari interviewed 48 producers between 2013 and 2014 through Family Assessment of Project REDD+ Jari/Amapá.

The main results of the Family Assessment conducted by Fundação Jari show that most producers are migrants from Pará and Maranhão, are between 50 and 69 years old and have lived in the area for a maximum of 10 years. It is also noticed that the vast majority of producers met was male by a historical-cultural issue, because they are the ones who self-declare income providers, and women are entrusted with the duty of ensuring welfare of the Family and home operation.

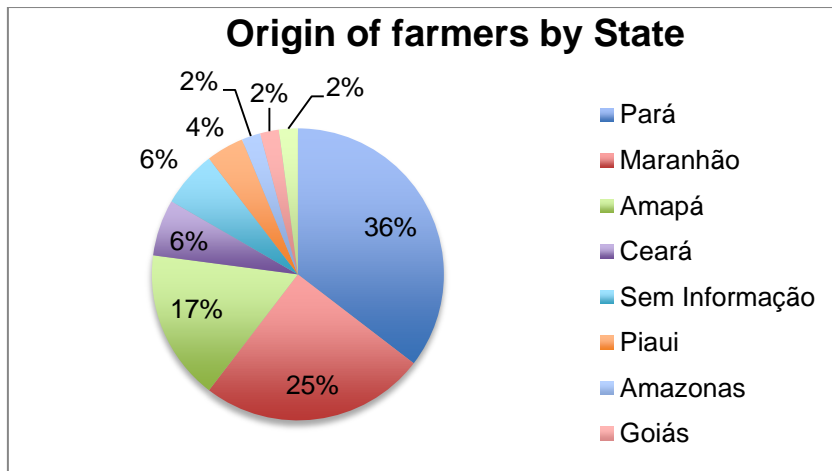


Figure 37. Origin of assisted farmers by state. Source: Family Assessment Jari/Amapá REDD+ Project.

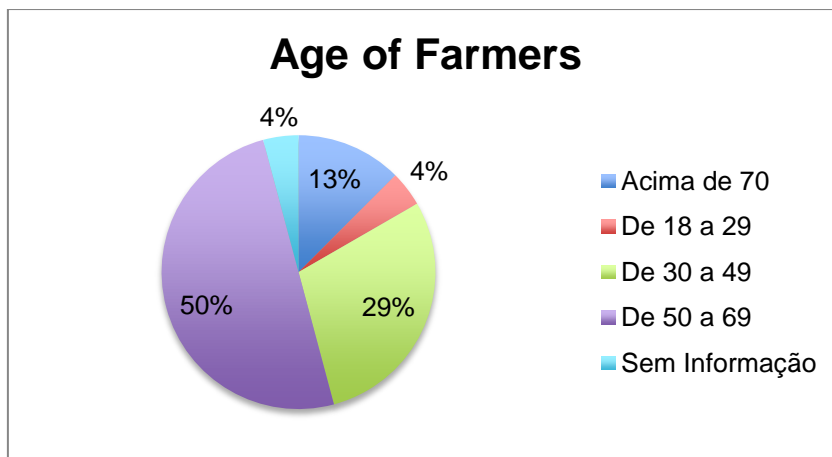


Figure 38. Age class of farmers assisted by the Project. Source: Family Assessment Jari/Amapá REDD+ Project.

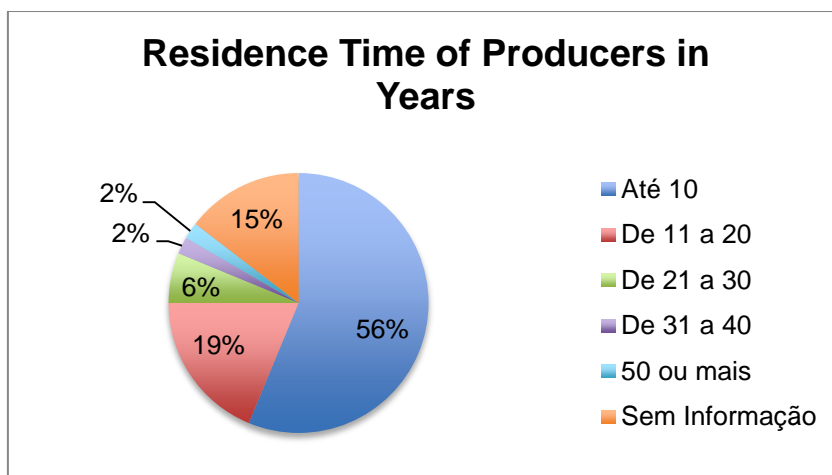


Figure 39. For how many years each farmer assisted by the Project Lives in the Region. Source: Family Assessment Jari/Amapá REDD+ Project.



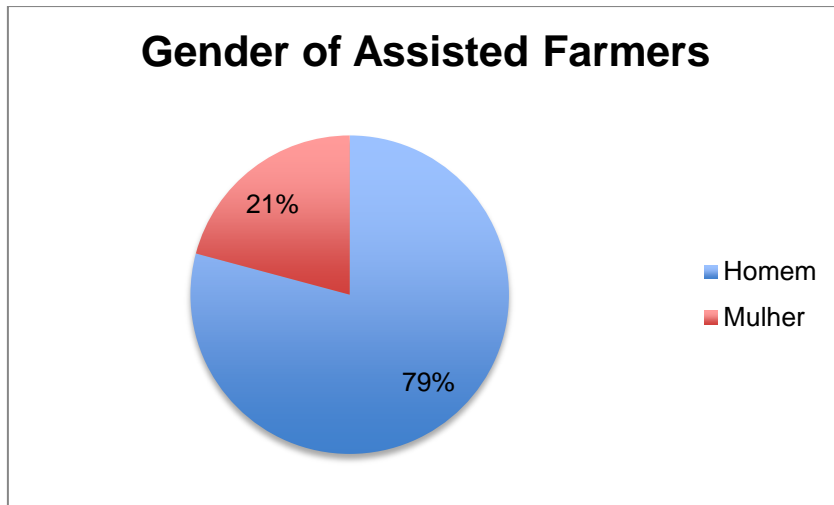


Figure 40. Gender distribution of farmers assisted by the Project. Source: Family Assessment Jari/Amapá REDD+ Project.

Regarding soil occupation, they have an area of 15 to 100ha, having as main principal the agricultural product of cassava flour, harvesting of açai and chestnut. According to them, there is no use of the forest for agriculture nor of fire after slashing, as well as no organic or chemical substrate.

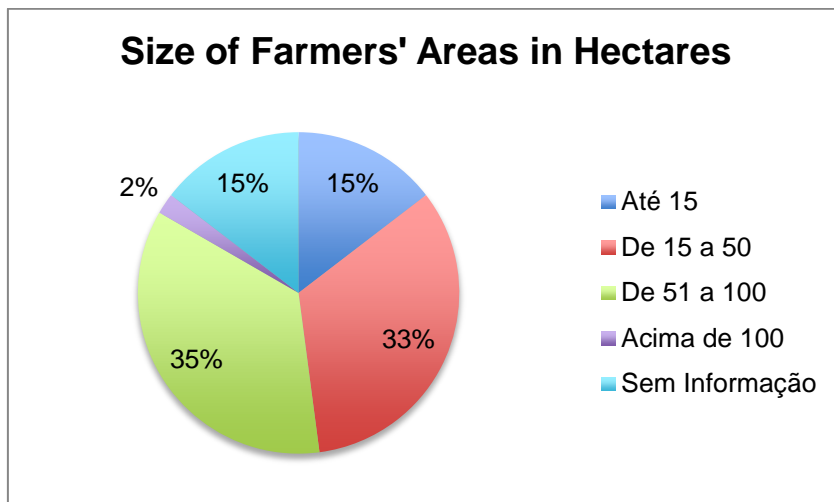


Figure 41. Average size in hectares of properties from farmers assisted by the Project.

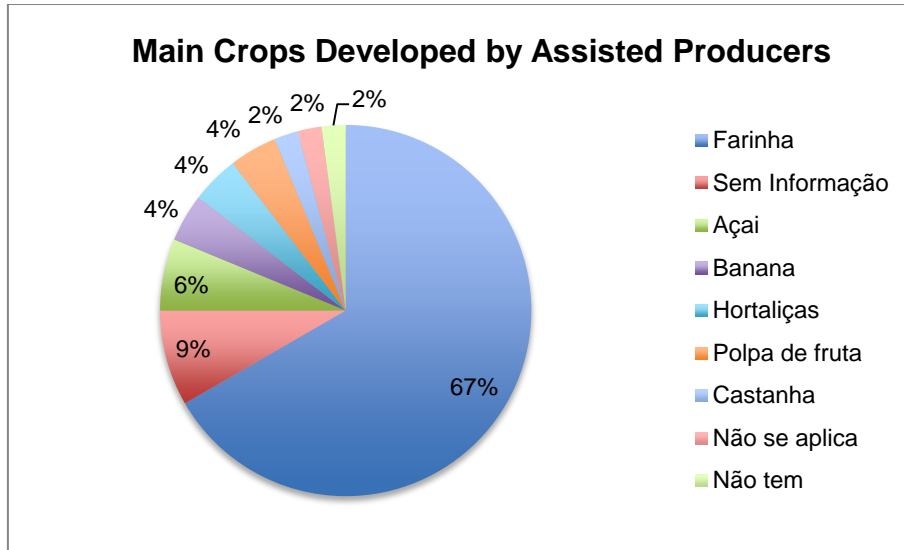


Figure 42. Main crops developed by producers assisted by the Project. Source: Family assessment Jari/Amapá REDD+ project.

On health/sanitary issues, the vast majority of families does not receive visitations of health agents and has as main sanitary installation the cesspit. The most registered diseases in the communities are diarrhea and flu, where could exist a direct connection to the source and drinking water treatment. Familiar residues are usually burnt.

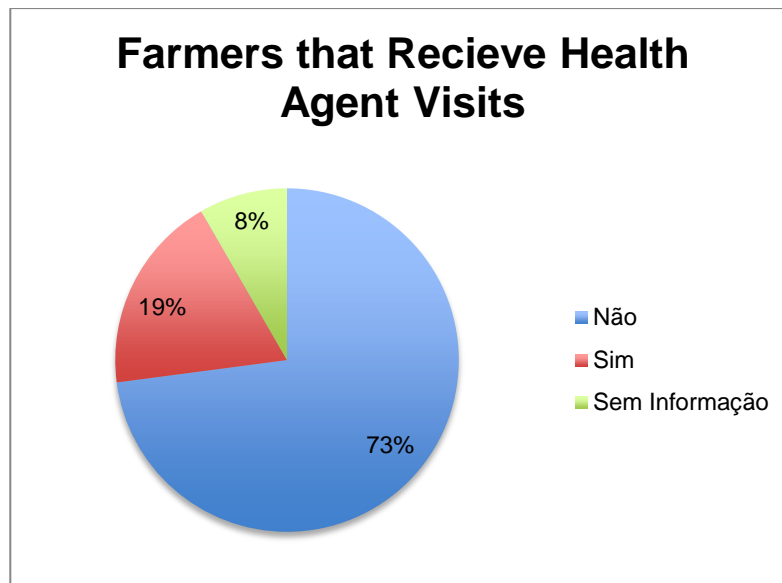


Figure 43. Farmers assisted by the Project that receive visites of health agents. Source: Family Aessment Jari/Amapá REDD+ Project.

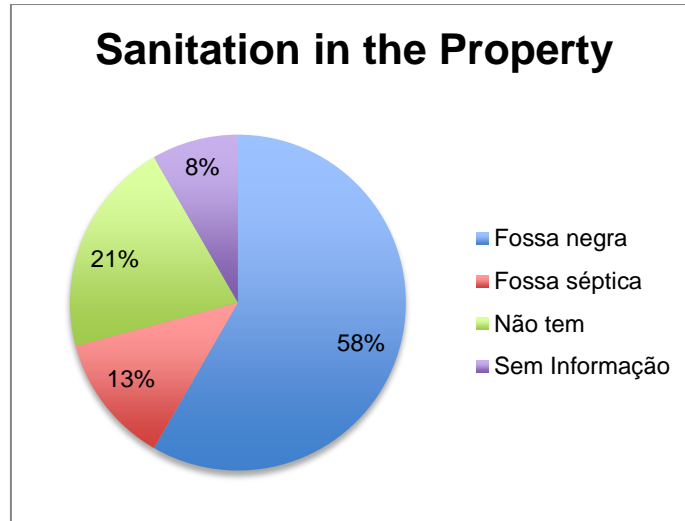


Figure 44. Type of sanitation in each farmers home. Source: Family Assessment Jari/Amapá REDD+Project.

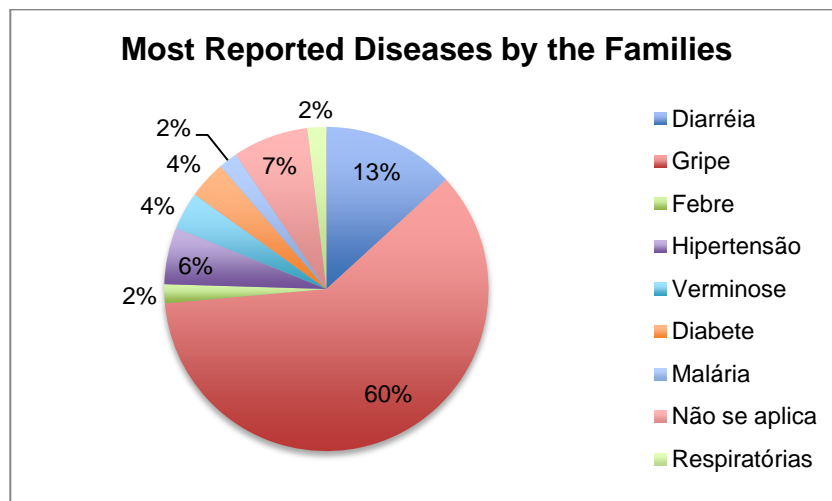


Figure 45. Most reported diseases by farmers assisted by project. Source: Family Assessment Jari/Amapá REDD+ Project.

The issue of water fit for human consumption raises a problem in the region: 56% have a source of water for family consumption stream, and 48% does not perform any treatment prior to consumption.

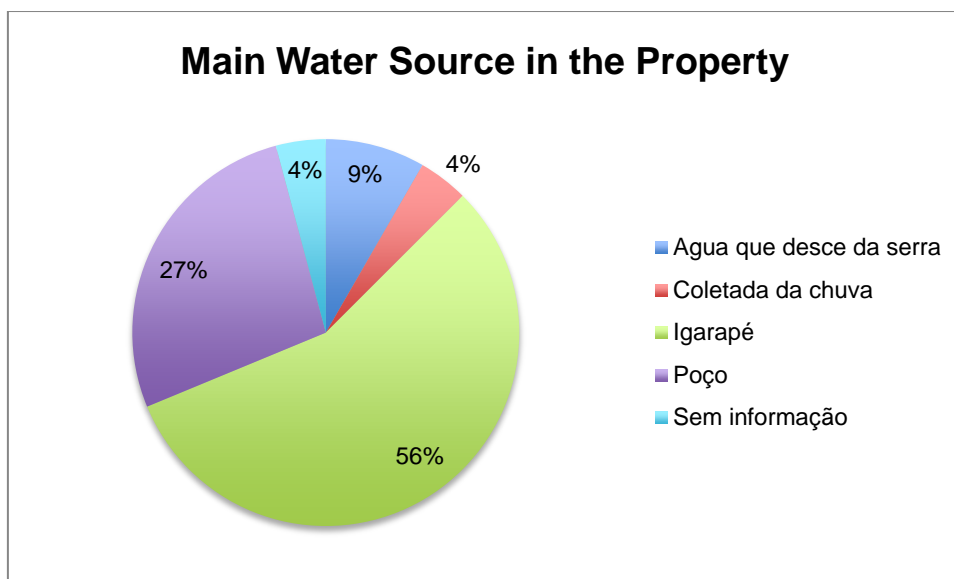


Figure 46. Water source of families assisted by the Project. Source: Family Assessment REDD+ Jari/Amapá REDD+ Project.

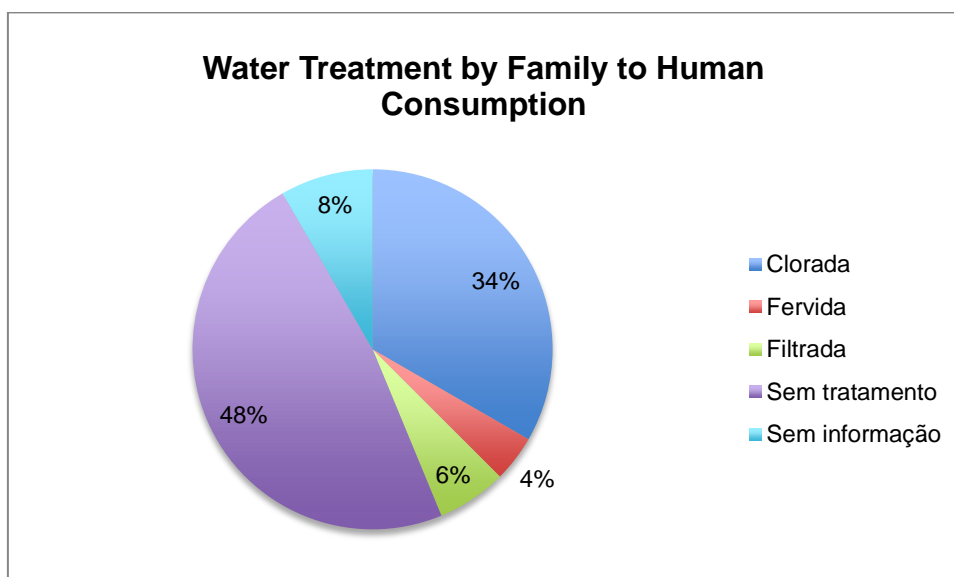


Figure 47. Water treatment of producers assisted by the Project. Source: Family Assessment Jari/Amapá REDD+ Project.

On the conditions of wellbeing in those communities, the comparative study from CIFOR found that in all the perception of well-being increased in recent years, good share attributed to the improvement of the family's economic situation. However, in general welfare perception is associated to the provision of public services such as education, health and transport.

## CM1.2 High Conservation Value Attributes 5 and 6

For a preliminary assessment of High Conservation Value Attributes was used the document " Assessment, management and monitoring of High Conservation Value Forest: A practical guide for forest managers" produced by the Proforest. Given the seriousness of identification and maintenance of HCVA to the validation of the CCBS was held only an initial identification of values. The identification related to values related to social issues are described on the table below.

**Table 23. Identification of potential high conservation attributes 5 and 6.**

Value	Present	Potential	Absent	Justification
<b>HCV 5</b> – Fundamental forest areas to guarantee access to basic needs of local communities (e.g. subsistence, health and etc.)		X		According to socio-economic studies accessed and conducted, large part from the communities are migrants and have a more intimate relation with agriculture than with extractives. Although some communities harvest Brazil Nut tree, the majority of families manages most of the necessary resources for their survival agriculture of public program resources (eg. Bolsa família – Family allowance). However further discussion with Fundação Jari, the Environmental, Quality and Certification department and some community members and special importance of some “castanhais” (Brazil Nut trees conglomerates) for local communities. Grupo Jari already considers “castanhais” as areas of special meaning to local communities and has done a preliminary mapping of “castanhais” location ( <b>figure 47</b> ). During the first two years of the Project this (the inclusion of “castanhais” as HCVs), will be better assessed through participatory methodologies.

**HCV 6** – Critical forest area for the cultural identity of traditional communities (e.g. areas of significant culture, ecological, economical or religious importance.)

Due to the intense historical migration, few natural products have big cultural relevance, with exception to the waterfall of Santo Antonio do Jari. The waterfall is the natural symbol of the Valley of Jari and state of Amapá. The government of the state of Amapá made a decree to decree the falls as “utility area” (Amapá featured)<sup>9</sup>.

Initially it was discussed whether or not this would configure an HCV, and due to the following reasons it was not considered:

X

As part of the Brazilian energy policy several hydroelectric dams were to be built in the past two presidential mandates. Santo Antonio do Jari Waterfall was affected by one the federal government plans. In 2010 there was an auction and the company EDP ([www.edp.com.br](http://www.edp.com.br)) won it. Now EDP has a 30 year concession to build and manage energy created on the Santo Antonio do Jari Dam. Which means that Santo Antonio do Jari Waterfall, as part of the affected area, is now under responsibility of EDF, to be overseen by the federal jurisdiction.

Grupo Jari has a procedure to determine High Conservation Value areas. The procedure, described in the Sustainable Forest Management Plan for operations in Pará, also to be applied in Amapá, has 4 steps:

1. Public consultation: internally and externally, with company’s employees, researchers, environmental agencies and communities;
2. Verification of the authenticity of the information obtained: Through satellite images and/or field checking;
3. Compilation of information available and, if possible, research data collected within/ around the possible HCV area; and
4. Validation of the process through public consultation along with stakeholders affected and appropriated specialists.

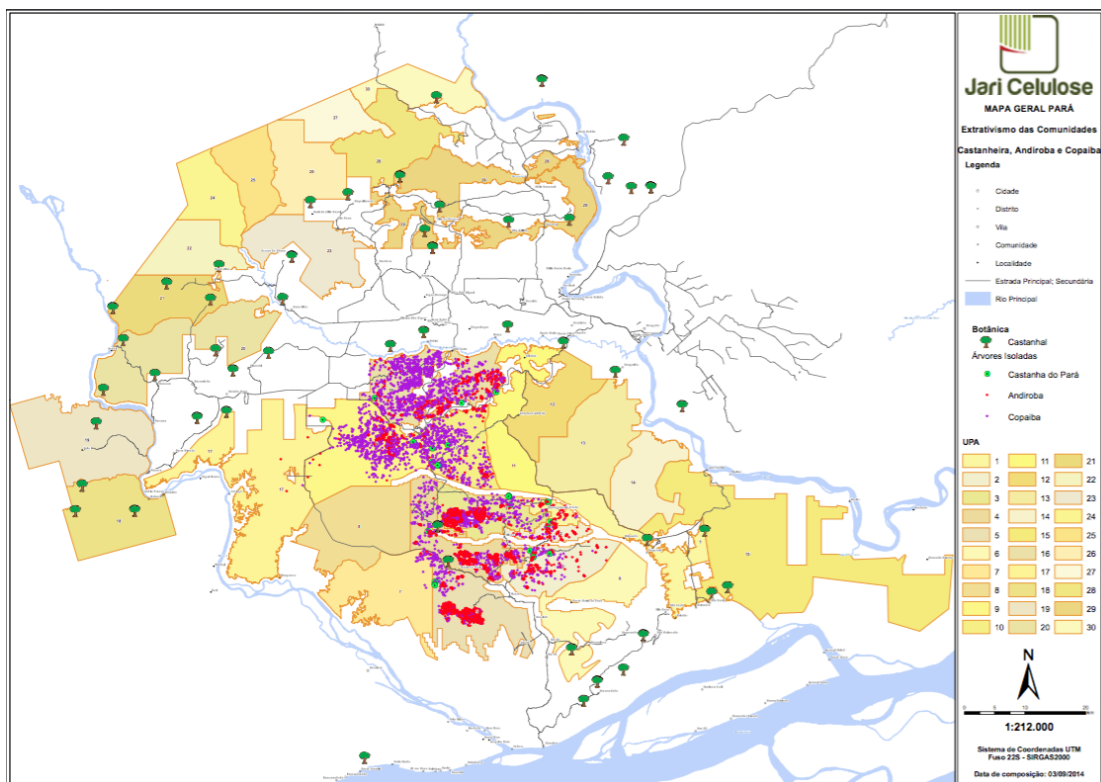
All this 4 steps are to be carried during the next 2 years in order to verify the importance of “castanhais” and of which “castanhais” to what communities. Just for then officially state them as HCVs. However, even with them being identified so far just as potential HCVs there are already measures in place to mitigate potential negative impacts on them and in order to guarantee their maintenance or enhancement (see **Section CM2.2**).

<sup>9</sup> <http://amapaemdestaque.webnode.com.br/pontos-turisticos/cachoeira%20de%20st%20antonio/>

After the validation, Grupo Jari's procedure states that specific cares with the area should be designed in order to maintain or enhance the high conservation value attributes and the following steps should be followed:

1. Define and properly sign the area, establishing protection measures to mitigate activities that may compromise the integrity of the HCVA;
2. Carry out activities to build conscience in the affected and surrounding communities regarding the HCVA importance;
3. To establish monitoring indicators for the attributes considered as a HCVA;
4. Overseen regularly the integrity of the defined area;
5. Regularly monitor the indicators defined and evaluate the HCVA maintenance;
6. To elaborate new actions that seek to maintain the attributes according with the monitoring results.

All this steps will be followed/refined, after the validation of “castanheiras” as a HCV. In this mean time potential negative impacts were identified in **section CM2**, along with mitigation measures that can guaranty the maintenance or enhancement of the attribute. A monitoring for this potential HCV was also described in **section CM4**. Although it is worth consider that the proposal of “castanhais” as an HCV should yet be validated through consultation and in the field. Not every “castanhal” will necessarily represent one HCV.



**Figure 48.** Location of the identified “castanhais” by Grupo Jari, potential HCV.



**Figure 49. Brazil Nut, the final non-timber product managed by communities.**

### **CM1.3. Expected Changes Under the Without-Project Scenario**

The most likely scenario for the communities in the absence of the Project would be the continuity of the chain of events that leads to deforestation, as described on Project Description to the VCS. In this chain, small producers with little access to public policies, terrible live conditions and depending on a low technology of itinerant agriculture with low productivity, would cultivate the land for a few years and, when these lands became unproductive, they would go way looking for new areas to clear cut and begging the cycle again.

In this scenario, considering no better improvement in public management models, the tendency would be that the deforestation rate would be maintained or increased and thus socioeconomic background shown above would remain stagnant or worsen due to population growth and increased pressure from subjacent causes of deforestation

The stagnation of educational level and the information related to the guarantee of rights also have direct relation with the current use of the land. The poverty favors inadequate sanitation structures and the access to infrastructure of health would be kept insufficient in the communities.

Regarding the impact of likely changes on all ecosystem services in the Project Zone identified as important to communities, the without-project scenario due to the progressive unplanned and uncontrolled deforestation would drive to the continuous degradation of the ecosystem, negatively impacting important ecosystem services for the communities in the Project Zone. The impacts from this scenario on the communities could be various we highlighted the main ones:

Due to the environment degradation and erosion the soils quality and conditions would progressively be worst to communities agricultural practices causing productivity loss. The forest fragmentation (another consequence of deforestation) would also affect services like pollination, essential to diverse and sustainable crops production. Due to the forest cover lost the communities in the Project Zone, that are besides agriculture also extracts a few products from the forest, specially Brazil Nut and Açai, will have supply of these resources drastically reduced. Once the tropical rainforest has a great importance for the hydrological



health of the ecosystem it is expected changes on the rainfall pattern, affecting communities agricultural production.

## CM2. Net Positive Community Impacts

The impacts of the estimated based on the theory of change analysis and casual relations between activities, results and consequent impacts, proposed by Richards and Panfil (2011), detailed on **Table 5. Table 24** shows Project's expected benefits, costs, risks and mitigation measures to the communities.

As it was stated in section G1.5 – 6, the communities in the Project Zone have similar patterns of social organization and livelihoods, which justify the identification of the as one group of communities, as described in Section CM1.1.

To build **table 24** the casual relations described in Section G1.8 were taken into account. The impacts to the communities described include benefits, costs and risks, including those related to social, cultural, environmental and economic aspects, to human rights, rights to lands territories and resources. The table also explicit actual and predicts impacts, if it is the case.

As a summary of the main points described in **table 24** may be highlighted:

### **Direct Positive Benefits**

Access to technical assistance and rural extension services, access to technical workshops and trainings in agroforestry and agricultural techniques, increase of productivity and rural production, reduction of poverty, increase of consumer power, increase of food security and health, increased social welfare, creating new opportunities for direct communication with other stakeholders, increase of knowledge and skills in agroforestry, agriculture and REDD+, access to advanced production technologies, soil analysis, fertilizers, genetic material and other selected seeds, among others.

### **Indirect Positive Benefits**

Increase of social cohesion, increase of self-esteem and trust, broader access to local public policies, bigger opportunities of credit access (loans), settling of rural community in the countryside and consequent reduction of rural exodus and urban marginalization, attenuation of risks from extreme weather events, access to water in desirable quantity and quality, increase of availability of foods such as fish, fruits and nuts.

With the expected reduction of deforestation with the implementation of the Project, the associated positive impacts should benefit all communitarian groups, including those who do not participate in the activities of the Project.

- Soil conservation promoting satisfactory agricultural productivity and increasing food production and income to communities.

- Reducing soil erosion also contributes to the conservation of water quality of rivers, streams and lowland areas, important as a source of consumption, fishing, and the livelihoods and traditional cultural identity.
- Maintenance of genetic variability of plant and animal species, that is important to the resilience of species to pests and diseases, as well as climate change, reducing the risk of extinction. Communities depend on several animal and plant species of the forest for food, energy production, fibers and others.
- Maintenance of volume flows of water bodies, preventing floods and droughts, and ensuring water for irrigation and agricultural production.
- Maintaining the physiognomy of all ecosystems has cultural, recreational and scenic beauty to the communities.
- Forest cover also exerts great influence on the dynamics of winds in the region. In addition, the forest acts as a protective shield against gales and storms, so common in the region.

### **Costs**

The negative “cost caused by the activities of the Project that can affect the wellbeing of the communities are related to activities of low impact logging, which are pollutant emissions from vehicles and equipment, and noise produced, by chainsaws, machinery and vehicles. These impacts, however, have short and mild duration, and may not even reach to forest communities as they take place far from their homes.

Another “cost” is the time producers have to dedicate in order to engage in Project activities, such as trainings, Technical Board and workshops, which might take them off their direct activities in the field, competing with their productive activities. This impact is mitigated by the election of weekdays that can cause less prejudice to carry project activities.

### **Potential Risks**

Main risks of the Project are detailed on **section G1.10**, and the risks to communities described in there are mostly related to lack of interest of other stakeholders, for instance governmental institutions in participating in project activities, coming of outsiders (due to better access to the areas), reduced supply of natural resources (hunting, and non-forest timber products).

One of the potential risks that the Project could cause to the welfare of the Communitarian Groups is related to the increase of the number of local population that migrates to the Project area looking for the benefits generated by the Project and/or that will have easier access to the area though the infrastructure build for the SFM. However, this population movement and related impacts are not expected because only communities already established and consolidated in the area are able to participate in the project

activities. In addition, territorial and land surveillance patrols are conducted by teams from Grupo Jari to present new invasions of land and deforestation.

Any other negative impact of the Project is expected (see further “Impacts on High Conservation Value”) because the participation in Project activities is voluntary and the Project does not impose any restrictions on land use to established rural communities. Among the rural communities not assisted by the Project, no negative impact is expected, since they will also not suffer any kind of land use restriction, or will be restrained to change their way of life.

### **Net Positive Impacts**

Even considering the most relevant and direct negative impact on the communities, that is the time that they have to dedicate to project activities (that might compete with their regular productive activities), that is mitigated through the election of most favorable dates to carry projects workshops and meeting, these training activities are necessary to generate expected positive impacts in comparison with their wellbeing condition on the without-project scenario, for instance the use of more efficient agro-extractive technics, increase of productivity, better income and improvement of access to public policies.

Jari/Amapá REDD+ Project can be considered to cause net positive impacts on the communities because most part of its social activities, described on **table 5**, are based on training, capacity building and stakeholders articulation which are imperative to achieve improvements on producers wellbeing, when compared to the without-project scenario.

**Table 24. Project's expected benefits, costs, risks and mitigation measures to the communities.**

Type of Benefit			Activities	Benefits	Costs	Risks	Mitigation Measures
Climate	Community	Biodiversity					
X			<b>Sustainable Forest Management, FSC-certified</b>	<u>Actual Direct:</u> ---	<u>Actual Direct:</u> ---	<u>Actual Direct:</u> ---	---
				<u>Predicted Direct:</u> Job creation; job qualification	<u>Predicted Direct:</u> Annoyance by noise chainsaw and others equipment	<u>Predicted Direct:</u> risks from falling trees on the roads; increased risk of accidents by equipment and vehicle traffic; pollutant emissions from vehicles and equipment	Local Signaling; lectures in communities; training of employees who perform the operation
				<u>Actual Indirect:</u> ---	<u>Actual Indirect:</u> ---	<u>Actual Indirect:</u> -	---
				<u>Predicted Indirect:</u> Improved access by opening roads; increase in family income; reduction of rural exodus and urban marginalization	<u>Predicted Indirect:</u>	<u>Predicted Indirect:</u> Annoyance to neighboring communities by opening up new roads; annoyance to neighboring communities by illegal hunters; better access of outsiders; changing in the availability of natural resources (hunting and non-timber forest products)	Local Signaling; lectures in communities; training of employees who perform the operation; signs prohibiting illegal hunting; property surveillance
X			<b>Monitoring of Deforestation</b>	<u>Actual Direct:</u> maintenance of forest and its ecosystem services	<u>Actual Direct:</u> ---	<u>Actual Direct:</u> ---	---
				<u>Predicted Direct:</u> ---	<u>Predicted Direct:</u> ---	<u>Predicted Direct:</u> ---	---
				<u>Actual Indirect:</u> More land security of communities against the coming of outsiders; training regarding fire control and prevention techniques.	<u>Actual Indirect:</u> Time to participate on trainings regarding fire control and prevention techniques	<u>Actual Indirect:</u> Worry that the surveillance team will denounce illegal activities	The participation on the trainings are voluntary; discussion with community members regarding the roles of the surveillance team, even through the Technical Board.
				<u>Predicted Indirect:</u> attenuation of risks from extreme weather events; access to water in desirable quantity and quality; soil conservation promoting satisfactory agricultural productivity and increasing food production and income to communities; maintenance of volume flows of water bodies, preventing floods and droughts, and ensuring water for irrigation and agricultural production; maintaining the physiognomy of all ecosystems has cultural, recreational and scenic beauty to the communities; forest cover also exerts great influence on the dynamics of winds in the region.	<u>Predicted Indirect:</u> ---	<u>Predicted Indirect:</u> ---	---

X	Property Surveillance	<u>Actual Direct</u> : improved land tenure security through the new invaders impediment	<u>Actual Direct</u> : ---	<u>Actual Direct</u> : ---	---
		<u>Predicted Direct</u> : ---	<u>Predicted Direct</u> : ---	<u>Predicted Direct</u> : others actors causing social disruption and tension	Bring different actors to Technical Board meetings
		<u>Actual Indirect</u> : increase of availability of foods such as fish, fruits and nuts; more land security of communities against the coming of outsiders; training regarding fire control and prevention techniques	<u>Actual Indirect</u> : Time to participate on trainings regarding fire control and prevention techniques	<u>Actual Indirect</u> : Worry that the surveillance team will denounce illegal activities	The participation on the trainings is voluntary; Discussion with community members regarding the roles of the surveillance team, even through the Technical Board.
		<u>Predicted Indirect</u> : ---	<u>Predicted Indirect</u> : ---	<u>Predicted Indirect</u> : risk of conflict between patrolling staff and community	Highly trained patrolling staff explain that there is no land use restriction for these communities
X	Technical Board Meetings	<u>Actual Direct</u> : creating new opportunities for direct communication with other stakeholders	<u>Actual Direct</u> : the time producers have to dedicate in order to engage in Project activities competing with their productive activities	<u>Actual Direct</u> : ---	Election of weekdays that can cause less prejudice to carry project activities
		<u>Predicted Direct</u> : Increase of social cohesion; Community organization	<u>Predicted Direct</u> : ---	<u>Predicted Direct</u> : discouragement of actors to participate due to lack of results	Project Proponents and Fundação Jari encourage all actors to continue participating keeping in mind long-term results
		<u>Actual Indirect</u> : broader access to local public policies	<u>Actual Indirect</u> : ---	<u>Actual Indirect</u> : ---	---
		<u>Predicted Indirect</u> : increased social welfare; improvement in the process of information and continuing education for community leaders; decrease in social conflict	<u>Predicted Indirect</u> : ---	<u>Predicted Indirect</u> : misunderstood about the roles (public authorities and project proponents)	Carefully explain the roles of actors and project proponents in all meetings
X	Technical Assistance and Rural Extension (TARE)	<u>Actual Direct</u> : Access to technical assistance and rural extension services	<u>Actual Direct</u> : the time producers have to dedicate in order to engage in Project activities competing with their productive activities	<u>Actual Direct</u> : ---	Election of weekdays that can cause less prejudice to carry project activities
		<u>Predicted Direct</u> : increase of productivity and rural production; improved natural resources; better management capacity; increase of knowledge and skills in agroforestry, agriculture and REDD+; access to advanced production technologies, soil analysis, fertilizers, genetic material and other selected seeds, among others.	<u>Predicted Direct</u> : Increase in costs of production due to use of technical instruments	<u>Predicted Direct</u> : That the project doesn't offer feasible techniques option	Use low-cost agro-extractive techniques
		<u>Actual Indirect</u> : access to information	<u>Actual Indirect</u> : ---	<u>Actual Indirect</u> : it is dependent producers of the project	Constantly discussion with producers engaged in order to adapt the project to their expectations
		<u>Predicted Indirect</u> : increase of consumer power; increase of food security and health; reduction of poverty; increased social welfare; more opportunities of credit	<u>Predicted Indirect</u> : Increase in cost of some products due to increase of production costs	<u>Predicted Indirect</u> : Increase in land price due to the higher productivity of the lands	Use low-cost agro-extractive techniques; boost families welfare to facilitate their maintenance in the property

			access (loans)			
X			<p><b>Workshops and training in agro-extractive techniques</b></p> <p><u>Actual Direct:</u> access to technical workshops and trainings in agroforestry and agricultural techniques; access to information regarding management of natural resources (water, soil, waste and others); increase of knowledge and skills in agroforestry, agriculture and REDD+, access to advanced production technologies, soil analysis, fertilizers, genetic material and other selected seeds, among others</p> <p><u>Predicted Direct:</u> increase of productivity and rural production; strengthened social and human capacity</p> <p><u>Actual Indirect:</u> access to water in desirable quantity and quality; better soil and waste management</p> <p><u>Predicted Indirect:</u> increased social welfare increase of self-esteem and trust</p>	<p><u>Actual Direct:</u> the time producers have to dedicate in order to engage in Project activities competing with their productive activities</p> <p><u>Predicted Direct:</u> ---</p> <p><u>Actual Indirect:</u> ---</p> <p><u>Predicted Indirect:</u> ---</p>	<p><u>Actual Direct:</u> ---</p> <p><u>Predicted Direct:</u> ---</p> <p><u>Actual Indirect:</u> ---</p> <p><u>Predicted Indirect:</u> ---</p>	<p>Election of weekdays that can cause less prejudice to carry project activities</p> <p>---</p> <p>---</p> <p>---</p>
X			<p><b>Development of Property Use Plans</b></p> <p><u>Actual Direct:</u> ---</p> <p><u>Predicted Direct:</u> improved property management capacity; increase in income; production diversification</p> <p><u>Actual Indirect:</u> Better awareness of their property boundaries</p> <p><u>Predicted Indirect:</u> reduction of rural exodus and urban marginalization; increased ability for households to make investments and manage their property in a integrated manner</p>	<p><u>Actual Direct:</u> the time producers have to dedicate in order to engage in Project activities competing with their productive activities</p> <p><u>Predicted Direct:</u> ---</p> <p><u>Actual Indirect:</u> ---</p> <p><u>Predicted Indirect:</u> Need to hire additional labor force to work on the property due to a better management of the land</p>	<p><u>Actual Direct:</u> ---</p> <p><u>Predicted Direct:</u> Difficult for producers to follow the use plan</p> <p><u>Actual Indirect:</u> ---</p> <p><u>Predicted Indirect:</u> --</p>	<p>Election of weekdays that can cause less prejudice to carry project activities</p> <p>Monthly assistance from Fundação staff</p> <p>---</p> <p>Support on accessing loans and others financing options</p>
X			<p><b>Community Level Workshops (Participatory Organizational Workshops, Community Development Plans and Risks and Impacts Assessment) and Family assessment</b></p> <p><u>Actual Direct:</u> establishing social baseline</p> <p><u>Predicted Direct:</u> Choice of social indicator for monitoring; awareness of communities demands; awareness of strengths and weakness regarding communities' relation with other stakeholders; awareness of project's impacts, risks and costs.</p> <p><u>Actual Indirect:</u> ---</p>	<p><u>Actual Direct:</u> the time producers have to dedicate in order to engage in Project activities competing with their productive activities</p> <p><u>Predicted Direct:</u> ---</p> <p><u>Actual Indirect:</u> ---</p>	<p><u>Actual Direct:</u> Producers and community members aren't available to participate</p> <p><u>Predicted Direct:</u> ---</p> <p><u>Actual Indirect:</u> ---</p>	<p>Election of weekdays that can cause less prejudice to carry project activities</p> <p>---</p> <p>---</p>

			<u>Predicted Indirect:</u> Increase of social cohesion	<u>Predicted Indirect:</u> ---	<u>Predicted Indirect:</u> ---	---
	X	Structuring of the socio-environmental Fund REDD+ Jari	<p><u>Actual Direct:</u> ---strengthening project governance; fostering of projects proposed activities</p> <p><u>Predicted Direct:</u> Give transparency to the project; improved guidelines for benefits sharing</p> <p><u>Actual Indirect:</u> Good expectations</p> <p><u>Predicted Indirect:</u> Social inclusion</p>	<p><u>Actual Direct:</u> ---</p> <p><u>Predicted Direct:</u> ---</p> <p><u>Actual Indirect:</u> ---</p> <p><u>Predicted Indirect:</u> ---</p>	<p><u>Actual Direct:</u> Producers waiting for direct monetary benefits, leaving their productive activities</p> <p><u>Predicted Direct:</u> Increase in social tension due to disproportionate distribution of benefits</p> <p><u>Actual Indirect:</u> ---</p> <p><u>Predicted Indirect:</u> increase of the number of local population that migrates to the Project area looking for the benefits generated by the Project</p>	<p>Awareness to producers about what benefits the fund could really offer</p> <p>Define clearly rules for benefit sharing</p> <p>---</p> <p>Only communities already established and consolidated in the area are able to participate in the project activities; territorial and land surveillance patrols are conducted by teams from Grupo Jari to present new invasions of land and deforestation</p>
	X	Improvement of communication channels	<p><u>Actual Direct:</u> ---</p> <p><u>Predicted Direct:</u> creating new opportunities for direct communication with other stakeholders, to proved feedbacks about project activities</p> <p><u>Actual Indirect:</u> ---</p> <p><u>Predicted Indirect:</u> project activities more effectively and efficiently implemented</p>	<p><u>Actual Direct:</u> ---</p> <p><u>Predicted Direct:</u> ---</p> <p><u>Actual Indirect:</u> ---</p> <p><u>Predicted Indirect:</u> ---</p>	<p><u>Actual Direct:</u> ---</p> <p><u>Predicted Direct:</u> Difficult for producers to access the some of the communication channels (for instance, the internet)</p> <p><u>Actual Indirect:</u> ---</p> <p><u>Predicted Indirect:</u> ---</p>	<p>---</p> <p>Facilitate access through letters, radio, accessible media and personal contact</p> <p>---</p> <p>---</p>
	X	Identifying and maintain High Conservation Values related to community wellbeing	<p><u>Actual Direct:</u> ---</p> <p><u>Predicted Direct:</u> consciousness of high conservation value to related to community wellbeing; effective identification of high conservation values related to community wellbeing.</p> <p><u>Actual Indirect:</u></p> <p><u>Predicted Indirect:</u> Maintenance of High Conservation Values related to community wellbeing.</p>	<p><u>Actual Direct:</u></p> <p><u>Predicted Direct:</u> the time producers have to dedicate in order to engage with the workshops, competing with their productive activities</p> <p><u>Actual Indirect:</u></p> <p><u>Predicted Indirect:</u></p>	<p><u>Actual Direct:</u></p> <p><u>Predicted Direct:</u> Producers and community members aren't available to participate.</p> <p><u>Actual Indirect:</u></p> <p><u>Predicted Indirect:</u></p>	<p>---</p> <p>Election of weekdays that can cause less prejudice to carry project activities</p> <p>---</p> <p>---</p>
	X	Biodiversity Monitoring and Scientific Research	<p><u>Actual Direct:</u> ---</p> <p><u>Predicted Direct:</u> increase of availability of foods such as fish, fruits and nuts</p> <p><u>Actual Indirect:</u> ---</p> <p><u>Predicted Indirect:</u> Increase in use of natural medicines; increase in recognition of the value of forest and natural</p>	<p><u>Actual Direct:</u> ---</p> <p><u>Predicted Direct:</u> ---</p> <p><u>Actual Indirect:</u> ---</p> <p><u>Predicted Indirect:</u> ---</p>	<p><u>Actual Direct:</u> ---</p> <p><u>Predicted Direct:</u> ---</p> <p><u>Actual Indirect:</u> ---</p> <p><u>Predicted Indirect:</u> ---</p>	<p>---</p> <p>---</p> <p>---</p> <p>---</p>



resources; maintenance of genetic variability of plant and animal species, that is important to the resilience of species to pests and diseases, as well as climate change, reducing the risk of extinction.

---



### Impacts on High Conservation Value

The two main risks for the potential High Conservation Value identified, the “castanhais” areas, are related with the activities related with the Sustainable Forest Management activities. The first one is related with a concern of restrict access to the area due to the SFM and the second one is related with possible damage to the Brazil Nut tree.

On its management plan Grupo Jari commits not to explore none of the species with especial interest from the communities and not to restrict their access to this resources. The Brazil Nut tree specially, along with other non-timber forest products, such as copaiba and andiroba, due to its importance as income resource source for the local traditional communities. For this reason any tree specie valuable to the communities’ livelihood are harvested. And besides Grupo Jari’s commitment, the Brazil Nut tree is still protected by a Brazilian Federal Law (Federal Decree nº 5.975 from November 30<sup>th</sup> 2006), what would configure a illegal activity to cut down this tree.

As mitigation, the main important “castanhais” (areas with high concentration of Brazil Nut trees) were identified with Fundação Jari support, so their surroundings are not to be harvested. During the planning phase and the forest inventory necessary to support every annual operation (POAs – Annual Production Unit), when a census is made previously to the harvesting, every “social interesting tree” is mapped, especially the Brazil Nut tree, copaiba and andiroba. This allows the forestry team to plan the harvesting without damaging the trees of interest for the communities, and during the harvesting signs and warnings are distributes in the operation site, and the surround communities are warned. There isn’t any access restriction for local communities (just for outsiders), but the signs and warnings are extremely important to avoid risk of accidents, as described in **table 24**.

The ground mapping of each tree has not happened so far in the Project Area because the forest management hasn’t started yet. To have more efficiency the mapping of tree species with importance to communities is made together with the census of the forest (already necessary to meet SFM requirements).

## CM3. Other Stakeholder Impacts

There are no expected negative impacts on the wellbeing of other stakeholders.

Among Project Positive impacts, the ones the would also benefit other stakeholder wellbeing are:

- Project positive impacts related with environmental conservation and protection of the forest cover, will benefit all local communities and stakeholders living in the Project Zone and around it, being participants or not of the activities in the Project.
- Increased income and consumer power among engaged communities will lead to greater money supply in the region, benefiting local businesses.

- Increased agricultural productivity and higher income will also reduce the rural exodus and marginalization in the cities, reducing related urban problems, such as crime, which is common in the urban area of Laranjal do Jari.
- Access to public policy and improvements in production chain, infrastructure, (such as roads and extensions), logistics (including school buses and transport to farmer's production) and others can potentially also benefit other communities in the region, not just those who choose to participate in project activities.

Since there are no expected negative impacts on other stakeholders, there are expected only positive impacts or at least “no harm” to them.

## CM4. Community Impacts Monitoring

The monitoring of the project impacts on communities and other stakeholders is an important management tool because it allows us to evaluate the effectiveness of activities in achieving the objectives.

Fundação Jari staff, through the Family Assessment and its social activities implementation report, carries out monitoring of the benefits, costs and risks to communities. The Family assessment is a questionnaire individually applied to each family, information about family demographics, inventory of household income assets, land tenure, rural production and extraction, perceptions of well-being, knowledge about REDD +, expectations, concerns and recommendations regarding the project REDD + Jari / Amapá are raised. It essentially monitor project's outcomes and impacts, while Fundação Jari social activities implementation report monitor project's outputs

The Family Assessment was performed at an initial stage of implementing the activities for determining the initial conditions to the project, where the results can be viewed in CM.01 item, and will be reapplied every two years.

The DOP workshops also function as social monitoring tool, because it shows the level of satisfaction with the Project, relationship with local government institutions, access to public policies and other relevant issues and other relevant issues to the communities. Ten workshops involving the five project performance communities were held early in the project, and will be reapplied every 5 years. DOP (and the Community Development Plans, once there are implemented together) monitor the success of activities related with articulation with other stakeholders and access to public policies, for instance the Technical Board, once it is revalidated every 5 years.

The Plan of Use of Property (PU), as mentioned in **Table 5**, is a participatory process in which producers and technicians do the current mapping of the property and perform one micro-zoning, properly allocating areas of production, conservation, infrastructure and housing, generating a future map of the property. The PU is carried out with all farms of the

project activities, and allows not only the farm development land use efficient strategies, but also facilitates rapid visual assessment of the achievement of goals. Reports with monitoring information will be prepared by Biofilica and Fundação Jari every five years. Once every 5 years the PU is revalidated it will be possible to compare the results obtained (regarding land use) with the desired by the producers in the “future map” built 5 years earlier.

It is important to notice, as it is now better explained in the **Section G1.5 and 6** that communities in the Project Zone show to have similar patterns of social organization and livelihoods, which justify the identification of them as one group of communities, as described in **Section CM1.1** through the historical description.

A monitoring plan was developed (**Table 25**), containing listed variables (indicators) to be measured, types of measurements or units, sampling methods, frequency of monitoring and reporting. This monitoring plan was built taken into account project’s casual relation and actual and predicted impacts to the communities, including benefits costs and impacts.

Regarding “reporting”, all variables described in **table 25** will be annually reported by Biofilica in Project’s Annual Monitoring report. It should be considered the some variables are to be monitored jus once every 2 years.

Once the a final version of the Project Description is approved by the validation and verification body it will be upload in Biofilica’s webpage ([www.biofilica.com.br](http://www.biofilica.com.br)) and it content will be disseminated among communities and other stakeholders during the first Technical Chamber meeting of 2016.

The monitoring plan and monitoring results (Project’s Annual Monitoring Report) will be disseminated to stakeholders during every first meeting of the Technical Board on REDD+ of each year and will also be available online on Biofilica’s webpage ([www.biofilica.com.br](http://www.biofilica.com.br)).

A hardcopy of the Project Description, containing the monitoring plan, and every Project’s Annual Monitoring Report will be distributed to project’s participants and members of the Technical Board, especially community members and government representatives, along with verbal explanation of the contents by Fundação Jari staff upon delivery of the documents.

It is worth highlithing that the presentation and discussion of the monitoring plan and the results of the monitoring untaken in accordance with the monitoring plan on the Technical Board meeting is extremely important because communities and stakeholders can discuss the results and propose activities to enhance the benefits to communities and/or mitigate negative impacts. It will also enable adaptive management of the project, in accordance with the rights and wrongs proven over time.

**Table 25. Monitoring Plan applied to the communities.**

Activities	Indicator	Justification / Description	Type of measurement / Unit	Sampling Methods	Frequency of Monitoring
<b>Sustainable Forest Management, FSC-certified</b>	Number of communities affected by the SFM	Related to the forest cover maintenance focal issue, and to communication focal issue (G1.8), allowing to better access impacts of the SFM in the communities, to monitor communication regarding SFM activities, and to monitor maintenance of important resources to the communities.	Number		
	Number of workshops regarding SFM activities implemented prior to the operation		Number		
	Number and location of trees important to the communities mapped	<b>Related</b> to benefits, costs and risks described in <b>table 24</b> , plus: <b>Risk of:</b> reduced Supply of natural resources due to the SFM activities; new land invasions by squatters through the infrastructure built for SFM operation; <b>Output of:</b> Managed forest with minimized impacts on the environment and communities; Physical presence of the company; <b>Outcome of:</b> Maintenance of forest, biodiversity and HCVs after harvesting; inhibition of illegal deforestation; <b>Impact of:</b> Maintenance of forest cover, HCVs and conservation of biodiversity over time	Number	Analyses of the post-harvest report, assessment with the forestry department and assessment with the environment, quality and certification department	Annual
	Number of complains and demands regarding the SFM activities		Number		
	Extension of roads opened		kilometers		
<b>Monitoring of Deforestation</b>	Area deforested per engaged community	Related to "slash and burn" practices focal issue (G1.8), allowing to monitor the efficacy of projects proposed activities on reducing the need of opening new forest areas.	Hectares		
	Area deforested per family attended	<b>Related</b> to benefits, costs and risks described in <b>table 24</b> , plus: <b>Risk of:</b> restriction on land use and land use conversion. <b>Output of:</b> registration of new deforestation; <b>Outcome of:</b> better understanding of the dynamic of the deforestation and adaptive management of activities; mitigation and prevention of deforestation; <b>Impact of:</b> Maintenance of forest cover and conservation of biodiversity; mitigation of global climate change.	Hectares	Biofilica's Annual deforestation Bulleting and assessment with the Surveillance department	Annual
	Number of occurrences forwarded to environmental agencies		Number		
<b>Property Surveillance</b>	Number of complaints/demands regarding the surveillance action	Related to external invasions focal issue, "slash and burn" practices focal issue and communication focal issue (G1.8), allowing to monitor the communication regarding Property Surveillance activities.  <b>Related</b> to benefits, costs and risks described in <b>table 24</b> , plus:	Number	Assessment with the Surveillance Department	Annual

	Number of fire control and prevention workshops implemented per communities engaged	<p><u>Risk of:</u> restriction on land use and land use conversion; risk of forest fire;</p> <p><u>Output of:</u> Agents and drivers of deforestation properly identified; positive relationship with "former squatters";</p> <p><u>Outcome of:</u> better understanding of the dynamic of the deforestation and adaptive management of activities; improvement of relationship with communities;</p> <p><u>Impact of:</u> Maintenance of forest cover, HCVs and conservation of biodiversity; mitigation of global climate change; positive relationship between proponents and local communities.</p>	Number	
<b>Technical Board Meetings</b>	Number of meetings per year		Number	
	Number of institutions invited	Related to access to public policies focal issue and to communication focal issue (G1.8), allowing to monitor the occurrence of the technical board meetings, the invitation effort and efficacy, communities' and stakeholders' engagement, gender and youth representativeness, to monitor time invested by the communities, and to monitor project's social outcomes and impacts.	Number	
	Number of Institutions that attended		Number	
	Number of communities invited	<b>Related to</b> benefits, costs and risks described in <b>table 24</b> , plus: <u>Risk of:</u> lack of interest from stakeholder, specially communities and government agencies to participate in the activities of the Project; Non-inclusion of vulnerable groups such as youth and women causing conflicts and uneven benefits distribution.	Number	
	Number of communities that attended	<u>Output of:</u> Number of meetings of the board; stakeholders informed about the project; <u>Outcome of:</u> greater confidence of all stakeholders in the actions taken by the Project; adaptive management of the Project to incorporate concerns of different stakeholders; facilitating access to public policies and programs; feedback of doubts, questions and suggestions from/to stakeholders.	Number	Assessment with Fundação Jari, Fundação Jari Social Activities report and Technical Board minutes
	Number of represents per communities	<u>Impacts of:</u> improvement of quality of life through greater access to existing public policies; Stakeholders aware of the project and educated about the REDD+; greater confidence of stakeholders regarding project's activities; communities empowerment.	Number	Every 6 months
	Percentage of women participating		Percentage per event	
	Percentage of youth participating		Percentage per event	
	Number of issues addressed		Number	

	Time invested by the communities' members		Hours		
	Public Policies communities are accessing		Number	Family Assessment	Every 2 years
	Number of families attended		Number		
	Number of communities engaged		Number	Assessment with Fundação Jari and Fundação Jari Social Activities report	Every 6 months
	Frequency of visits	Related to "slash and burn" focal issue (G1.8), allowing to monitor coverage of the project, TARE implementation, TARE environmental results, communities' main source of income, communities' food security and market sustainability, communities' access to additional resources, familiar income, gender and youth representativeness, market access and time invested by the producers.	Number per month		
	Percentage of producers using the forest to grow crops		Percentage		
	Amount of cassava produced		tons		
Technical Assistance and Rural Extension (TARE)	Diversity of products produced	<b>Related</b> to benefits, costs and risks described in <b>table 24</b> , plus: <b>Risk of:</b> Restriction on land use and land use change; non-inclusion of vulnerable groups such as youth and women; <b>Output of:</b> Number of families assisted; frequency of assistancy per family; <b>Outcome of:</b> Expansion of knowledge of the producers on their property and cultivation techniques; increase of productivity and agricultural efficiency; improvement of the quality of food products produced; reduction of deforestation; sustainable management of rural property; <b>Impact of:</b> Income improvement; increase of self-esteem and confidence; settlement of families in the countryside and reduction of rural exodus and urban marginalization; risk mitigation of extreme weather events; increase of food security; mitigation of global climate change.	number	Family Assessment	Every 2 years
	Percentage of families with access to loans		Percentage of families attended		
	Familiar Income		Reais (R\$)		
	Gender and age of the producers attended		Percentage of the total	Assessment with Fundação Jari and Fundação Jari Social Activities report	Every 6 months
	Final market achieved		Qualitative (what was the final destination)	Family Assessment	Every 2 years
	Time invested by the communities' members		Hours	Assessment with Fundação Jari and Fundação Jari Social Activities report	Every 6 months

<b>Workshops and training in agro-extractive techniques</b>	Number of total trainings	Relate to "slash and burn" focal issue (G1.8), allowing to monitor coverage of the project, trainings implementation and coverage, gender and youth representativeness and time invested by the producers.	Number		
	Number of trainings per community		Number		
	Number of farmers attended	<b>Related</b> to benefits, costs and risks described in <b>table 24</b> , plus: <b>Risk of:</b> restriction on land use and land use conversion; non-inclusion of vulnerable groups such as youth and women; <b>Output of:</b> number of courses and trainings implemented by Fundação Jari and TARE partners, specially RURAP; number of productive crops of their interest;	Number	Assessment with Fundação Jari and Fundação Jari Social Activities report	Every 6 months
	Gender and age of farmers attended	<b>Outcome of:</b> Improvement of agro-extractive techniques and practices;	Percentage per event		
	Variety of topics covered	<b>Impact of:</b> income improvement; increase of self-esteem and confidence; settlement of families in the countryside and reduction of the rural exodus and urban marginalization; increase of food security.	Number		
	Time invested by the communities' members		Hours		
<b>Development of Property Use Plans</b>	Number of property use plans completely realized		Number		
	Number of "future maps" designed	Related to "slash and burn" focal issue (G1.8), allowing to monitor TARE activities implementation and time invested by the producers.	Number		
	Number of soil analysis performed	<b>Related</b> to benefits, costs and risks described in <b>table 24</b> , plus: <b>Risk of:</b>	Number		
	Number of property micro-zoning realized	<b>Output of:</b> realization of a Property Use Plan for each family assisted by the project <b>Outcome of:</b> TARE promoting participative rural development; producers developing rural entrepreneurship; rational and sustainable use of the property; better efficiency of land use and greater agro-extractive productivity;	Number	Assessment with Fundação Jari and Fundação Jari Social Activities report	Every 6 months
	Number of finalized property use plans discussed with farmers	<b>Impacts of:</b> Income Improvement; increase of self-esteem and confidence; settlement of families in the countryside and reduction of rural exodus; increase of food security; respect to the social and environmental function of the rural property; conservation of biodiversity.	Number		
	Diversity of products in the future maps		Number		
	Number of "future maps" implemented		Number		

	Time invested by the communities' members		Hours		
<b>Community Level Workshops (Participatory Organizational Workshops, Community Development Plans and Risks and Impacts Assessment)</b>	Number of demands identified per community	Related to access to public policies focal issue and communication focal issue (G1.8), allowing to monitor project's social outcomes, technical board efficacy, coverage of the project and time invested by the producers.	Number		
	Number of demands addressed per community	<b>Related</b> to benefits, costs and risks described in table 24, plus: <b>Risk of:</b> Lack of interest from stakeholders, specially communities and government agencies to participate in the project activities; <b>Output of:</b> Identification of relevant actors for each community, identification of main demands for social and economic development; identification of potential risks and negative impacts of project;s activities to communities;	Number	Assessment with Fundação Jari and Fundação Jari Social Activities report	Every 6 months
	Stakeholders involved on addressing each demand	<b>Outcome of:</b> More efficient articulation in the Technical Board; consciousness by the community and prponents of project's potential risks and negative impacts. <b>Impact of:</b> Greater access to public policies and programs; avoidance ans mitigation of potential risks and negative impacts of project activities.	Number		
	Time invested by the communities' members		Hours		
<b>Family Assessment</b>	Number of families interviewed	Related to "slash and burn" practices focal issue (G1.8), allowing to monitor families' socioeconomic development and project's socioeconomic impacts, coverage of the project and time invested by the producers.	Number		
	Number of communities contemplated	<b>Related</b> to benefits, costs and risks described in table 24, plus: To monitor coverage of the project	Number	Family Assessment Report and Fundação Jari Social Activities report	Every 2 years
	Frequency	<b>Output of:</b> Family assessment carried out with each family assisted by the project. Establishment of a socioeconomic baseline at the householde level. <b>Outcome of:</b> Understanding the socioeconomic reality of each family; measurement of the benefits and impacts of the project on families; awareness of the families regarding their reality and changes achieved over time; Implementation of adaptive management. <b>Impact of:</b> improvement of quality of live and socioeconomic parameters of the families; more sustainability of project's intervention; communities' empowerment.	Number per year		
	Time invested by the communities' members		Hours		
<b>Structuring of the socio-environmental Fund REDD+ Jari</b>	Resources invested on each strategic line (climate, community, biodiversity and management)	Related to resources and willness available to boost local socioeconomic development and biodiversity conservation focal point (G1.8), allowing to monitor Project's investments and	Reais (R\$)	Minutes of executive committee meetings, minutes of technical board, assessment with Fundação Jari and Fundação Jari Social	Annual



	Number of meetings carried out between the executive committee	equity, and communication regarding projects investments.	Number	Activities report	
	Number of consultation made through Technical Board	<b>Related to</b> benefits, costs and risks described in <b>table 24</b> , plus: <b>Risk of:</b> Lack of interest from stakeholders, specially communities and government agencies to participate in the activities of the project; risks connected to the management of the Socio-Environmental Fund of the Project. <b>Output of:</b> Structuring of a transparent financial instrument <b>Outcome of:</b> Boost of the project actions and benefits; investemnets in the socioeconomic development of families; investments in reaserach and monitoring of the biodiversity. <b>Impacts of:</b> income improvement; increase of self-esteem and confidence; settlement of families in the countryside and reduction of rural exodus.; conservation of biodiversity and socioeconomic development.	Number		
	Number of communities represented in the technical board consulted about the investments to be done/done		Number		
	Number of complains regarding the investments made		Number		
Improvement of communication channels	Number of registered complaints or demands	Related to the communication focal issue, allowing to monitor communication plan efficiency and efficacy.	Number		
	Number of addressed complaints or demands	<b>Related to</b> benefits, costs and risks described in <b>table 24</b> , plus: <b>Risk of:</b> Risks connected to the management of the Fund; <b>Output of:</b> Communication channels adapeted to the public, stakeholders and specifics of REDD+ Jari Amapá Project; <b>Outcome of:</b> Strengthening communication among stakeholders; greater transparency; resolution of complaints; increased satisfaction of stakeholders towards the project. Increase of participantes benefiting from the project; adative management of the project; <b>Impacts of:</b> Increase of self-esteem and confidence of actors and stakeholders in the project; more efficiency and sustainability of actions of the Project.	Number	Assessment with Environment, Quality and Certification Department	Annual
Biodiversity Monitoring and Scientific Research	Analysis of communities perception regarding availability of natural resources	Related to biodiversity conservation focal issue (G1.8), allowing to monitor communities perception regarding changes on availability of natural resources and regarding the forest importance.	Qualitative		
	Analysis of communities perception regarding the forest importance	<b>Related to</b> benefits, costs and risks described in <b>table 24</b> , plus: <b>Risk of:</b> Redced supply of natural resources due to the SFM activities; <b>Output of:</b> Monitoring the regional biodiversity, its dynamics and changes in the long-term;	Qualitative	Familiar Assessment	Every 2 years

		<p>monitoring of sustainable forest management environmental impacts.  <u>Outcome of:</u> Establishment of adaptive measures and adjustments to the project activities. Measurement of the Sustainable Forest Management impacts; Production and dissemination of knowledge on regional biodiversity.  <u>Impacts of:</u> Conservation of regional biodiversity; mitigation of the impacts of Project's activities and sustainable forest management on biodiversity. Increased awareness and knowledge of biodiversity of the Jari Valley region.</p>			
Seedling Nursery	Number of total seedling produced	Related to biodiversity conservation focal issue and environmental education focal issue (G1.8), allowing to monitor the nursery production and coverage of the project.	Number		
	Number of different species produced	<b>Related</b> to benefits, costs and risks described in table 24, plus: <u>Output of:</u> Production of native species seedling; distribution of native species for restoration of degraded environments and for commercial use, to the communities. <u>Outcome of:</u> Preservation of the genetic resources of the forest; promoting forest restoration in degraded areas within the community; income generation; generation of knowledge on seedling production techniques, forest restoration and the importance of conservation. <u>Impact of:</u> Conservation of biodiversity; increase of forest cover; income generation.	Number		
	Number of seedling distributed to the engaged communities		Number	Assessment with Environment, Quality and Certification Department	Annual
	Number of seedling distributed per family attended		Number		
Xylotheque (Wood Collection)	Number of families attended that have been there	<p>Related to biodiversity conservation focal issue and environmental education focal issue (G1.8), allowing to monitor project inclusion regarding information on biodiversity and conservation issues.  <b>Related</b> to benefits, costs and risks described in table 24, plus:  <u>Output of:</u> Preservation of existing samples; education of people about the biodiversity of tree species of the Valley of Jari.  <u>Outcome of:</u> Preservation and dissemination of knowledge about the biodiversity of the region.  <u>Impact of:</u> Awareness of society to the importance of the biodiversity of the region of the Valley of Jari.</p>	Number	Assessment with Environmental, Quality and Certification Department	Annual

Additionally to the project monitoring initiative and in order to upgrade the socio-economic information in the region and to monitor independently and comparatively the project's impacts on communities in areas where the project is, a partnership was established with the Center for International Forestry Research (CIFOR). With it, the REDD+ Jari/Amapá Project will become part of the Global Comparative Study of REDD+ (GCS) from CIFOR, which objectives are: (i) provide stakeholders of REDD+ information, analysis and tools to reduce carbon emissions in a way effective, efficient and equitable with co-benefits (“3Es+”); (ii) make information accessible to partners and the global community involved in REDD+; and (iii) to influence the formulation and implementation of REDD+ in three scales: global, national and local levels.

The socioeconomic information will be obtained through interviews with the communities in the areas where the Project is conducted by CIFOR, without the participation or interference of Project proponents to set up an independent review and without biased or influenced information. The results of this study will be made available to tenderers and corporate social management strategy Project.

### Monitoring Plan for Identified High Conservation Value

The potential HCV described in the **CM1.2** was the “castanhais”. The potentially negative impacts on them were identified in section **CM2**, as well as the measures taken to mitigate the negative impacts and to maintain or enhance the attribute. It’s worth to note that the “castanheiras” as potential HCV yet should be validated in the field and through public consultation, what project proponents propose to do in the next 2 years. This happens because not necessarily every “castanha” will be an HCV and a careful field assessment (timely appropriated) should be carried out.

All this steps required to validate an HCV, described in **section CM1.2**, will be followed in the next 2 years for the validation of “castanheiras” as a HCV. In this mean time potential negative impacts were identified in **section CM2**, along with mitigation measures that can guaranty the maintenance or enhancement of the attribute. A monitoring for this potential HCV is presented above. All the indicators described be annually reported by Biofilica in Projects Annual Monitoring report.

Indicator	Justification/ Description	Type of measurement/ Unit	Sampling Methods	Frequency
Number of communities engaged that manage Brazil Nut	To evaluate its relevance to engaged communities	Number	Assessment with Fundação Jari and Fundação Jari Social Activities report	Annually, once the HCV attribute is validated and the SFM Plan is approved.
Number of families attended that manage Brazil Nut	To evaluate it relevance to attended communities	Number		
Number of communities affected by the SFM that manage Brazil Nut	To evaluate possible risks to the HCV attribute	Number	Assessment with Environment, Quality and Certification Department	
Number of workshops carried with communities affected by the SFM previously to the operation	To evaluate the proposed mitigation measures	Number		

Number of Brazil Nut trees identified by the pre-harvesting inventory	To evaluate the proposed mitigation measures	Number	Assessment with the Forestry Department and the Post-harvesting report
Number of Brazil Nut tree damage by the SFM	To evaluate the proposed mitigation measures	Number	
Number of complaint regarding damage to Brazil Nut tree or to restriction of access	To evaluate possible risks to the HCV attribute	Number	Assessment with Environment, Quality and Certification Department
Analysis of communities' perception regarding resources availability, focus on the Brazil Nut	To evaluate possible risks to the HCV attribute	Qualitative	Assessment with Fundação Jari and with the Environment, Quality and Certification Department

It is important to highlight that the Project Description (this document) along with the monitoring plan for communities and biodiversity will be made fully available in Biofilica's webpage: [www.biofilica.com.br](http://www.biofilica.com.br) and through direct communication in the Technical Chamber.

## **GL2. Exceptional Community Benefits**

Does not apply.

# Biodiversity Section

## B1. Biodiversity Without–Project Scenario

### B1.1. Biodiversity Original Conditions

#### Vegetation and Flora

As mentioned in Section G1.1.4 Basic Parameters, within the 8 different fitofisionomies, there is for the project area a number of recorded taxon's registered which shows an extremely rich flora compared to other works developed for the Amazon (Oliveira , 2000; Nelson & OLIVEIRA, 2001). Families with greater richness and abundance in the project area are Sapotaceae , Burseraceae , Lecythidaceae , Vochysiaceae and legumes , represented by families Caesalpinoideae , Mimosoideae and Papilionoideae

With respect to endangered species, 54 species listed in the genre lists were recorded:

- 45 are in Official Lists of Brazil ( IUCN and IBAMA) ;
- 16 in Pará State Official list;
- 07 in both lists.

Of the total, 7 species are in the category Endangered (EN), 3 Critical Endangered (CE), 19 in the category Vulnerable (VU) and the other on categories of Minor Concern, Near threatened and Insufficient Data.

**Table 26. Endangerd flora species according to the RED List of Endangerd Species of IUCN, and their occurrence. These information was extracted from DSEA Annex.**

Specie	Common Name	Category IUCN	CELSO AZ.	D-LJ	HA M AB	HST_ EIA	IA N	M G	OR SA	UPA 1- 4	UPA1_ L J
Aniba pedicellata Kosterm.	Pau-rosa	CR								1	
Couepia joaquinae Prance.		CR						3	1	1	
Vouacoupa americana Aubl.	Acapu	CR	1	237	2	1	2	2	3	1	4305
Aniba rosaeodora Ducke	Pau-rosa	EN	1					2	2	1	
Cedrela fissilis Vell.	Cedro	EN						1			
Eschweilera rabeliana S.A.Mori		EN						2	4		
Pouteria amapaensis Pires & T.D.Penn.	Guajará-amarelo	EN	2	1						1	
Pouteria decussata (Ducke) Baehni	Abiu-amargoso	EN	1	1			1	1		1	
Tabernaemontana muriacata Link ex Roem. & Schult		EN							1		
Virola surinamensis (Rol. ex Rottb.) Warb.	Ucuúba-da-várzea	EN		70		1	1	1	3	1	
Aspidosperma album (Vahl) Benoist & Pichon	Araracanga-vermelha	VU	2	20		1	1	2	1	1	20
Aspilia paraensis (Huber) J.U.Santos		VU						2	2		
<b>Bertholletia excelsa Bonpl.</b>	<b>Castanha-do-Pará</b>	VU	1	240		1	1	1	2	1	
Cedrela odorata L.	Cedro-vermelho	VU		4		1	1	2	2	1	22
Couratari guianensis Aubl.	Tauari	VU	1	38		2	2		3	1	274

Dicypellium caryophyllaceum (Mart.) Nees		VU							1		
Euxylophora paraensis Huber.;		VU							1		
Heteropsis flexuosa (Kunth.) G.S.Bunting		VU						1			
Hymenolobium excelsum Ducke	Angelim-da-mata	VU	1	31			2		1	211	
Manilkara cavalcantei Pires & W.A.Rodrigues ex T.D.Penn		VU					1				
Manilkara huberi (Duke) A.Chev.	Macaranduba	VU	1	339		1	5	3	1	896	
Mezilaurus itauba (Meisn.) Taub. ex Mez	Itaúba-preta	VU		4		1	4	4	4	1	10
Pouteria krukovii (A.C.Sm.) Baehni	Abiurana-verm.	VU	1	29						2	
Pouteria macrocarpa (Mart.) D.Dietr.		VU	1					4	2		
Pouteria oppositifolia (Ducke) Baehni	Abiu-ucuubarana	VU	2	501		1	1	1	7	1	2
Ptychopetalum olacoides Benth.	Muirapuama	VU		3			1			1	1
Qualea caerulea Aubl.	Mandioqueira-lisa-II	VU	1	195						1	
Sorocea guilleminiana Gaudich.		VU							1		
Trichilia solitudinis Harms		VU					1	1			

This information is presented in Jari/Amapá REDD+ Project Socioeconomic and Environmental Diagnosis (DSEA), based on regional herbarium archive (samples archived as collected in the Jari Valley region), available forest inventories and others primary studies.

The herbarium archive utilized were:

- Herbarium of Amapá Research Institute (**HAMAB**)
- Herbarium of Embrapa Amazonia Oriental (**IAN**)
- Herbarium of Museo Paraense Emílio Goeldi (**MG**)
- Project's Xyloteque (**ORSA**)

Thrid parties primary studies:

- Azevedo C.P. 2006 (**CELISO AZ**), carried out in Vitoria do Jari
- Environmental Impacts Assessment of Santo Antonio do Jari Hydroelectric Dam (**HST\_EIA**), carried out in the Project Zone

Studies carried out by Jari Florestal:

- **UPA 1-4**: Annual Production Unities in Jari Group's Pará SFM
- **UPA1\_LJ**: Preliminary forest *census* carried out the Project Area, tin the area of the first Annual Production Unit
- **D-LJ**: Forest Inventory carried out in the Project Zone that also supported the forest carbon estimative.

The occurrence of these endangered species according with several different sources, specially the occurrence on the forest inventory carried out in the Project Zone (**D-LJ**) and in the preliminary census carried out in the Project Area (**UPA1\_LJ**) is a supporting evidence to prove their occurrence.

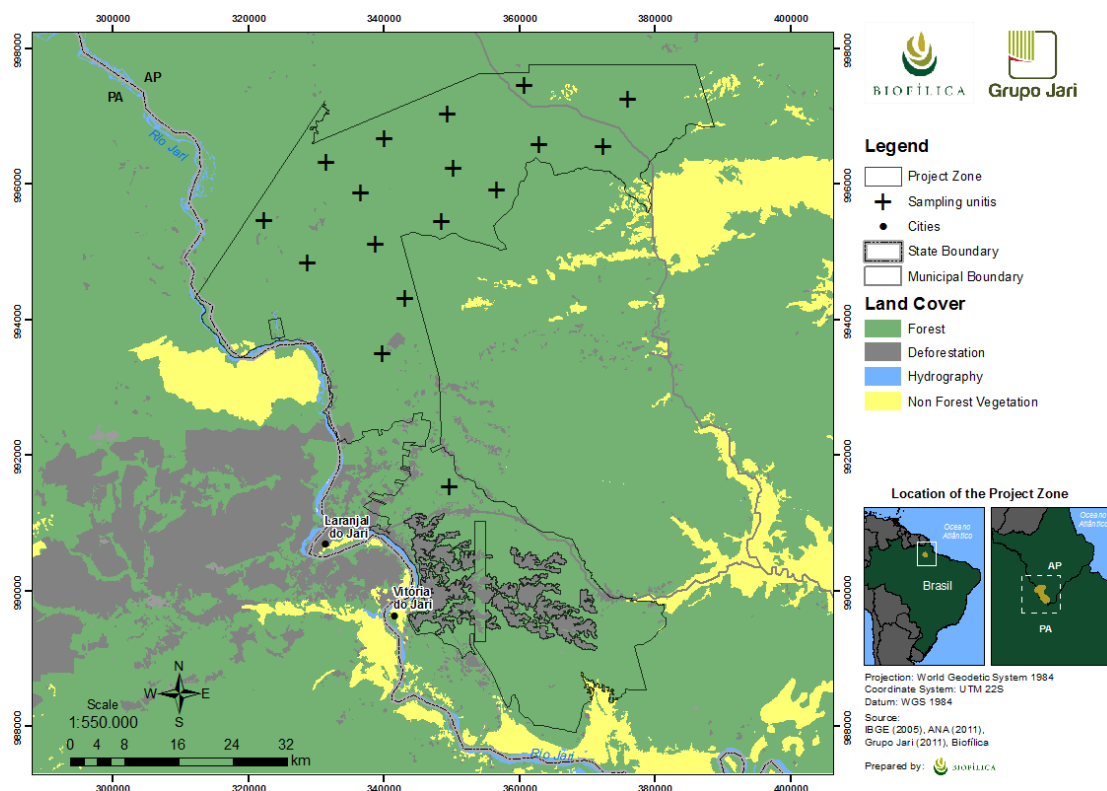


Figure 50. Location of the sample plots used on Jari/Amapá REDD+ forest inventory (D-LJ).

These two species deserve special mention: the *Bertholletia excelsa* Bonpl. and *Aniba rosaeodora* Ducke. The first is the aforementioned Castanheira the Brazil and the second is known as “Rosewood” which has become endangered due to its exploitation for the production of an essential oil, used in the famous Chanel No. 5 fragrance.

According to Veloso et al., (1991), in the area of the dense forests are constantly registered individuals *Bertholletia excelsa* Bonpl. (Lecythidaceae), known as Castanheira (Brazil nut tree). In the area of study of DSEA (2011) the record this species was done in all areas sampled by the inventory (intensity of 0.12 % of the total area of the management REDD + Jari/Amapá), or in all types of registered vegetation. These data confirm the presence of the species in the area as a factor of utmost importance in the planning of social actions, to represent historically important source of income extractive communities, and ecological aspect, since the species are listed on official lists of the country’s species endangered.

According to the DSEA, deforestation and forest degradation in the project area are worrying because they represent, for the most part, higher pressure on environmental carrying capacity. In addition to the immediate threat to forests and their biodiversity (Marengo et al, 2011), deforestation contributes to climate change that pose risks to biodiversity in the long run (Nobre et al., 2007; Marengo et al., 2011). Before the climate change framework, the forest physiognomy can be replaced by other vegetation, such as cerrado, river levels can decrease, directly affecting the vegetation, flora and forest fire risks can increase dramatically.



**Figure 51. Photos of Castanheira-do-brasil (Brazil Nut) to the left and a community member collecting the Brazil Nut ouriços on the right.**

### Fauna

The region of Valley of Jari presents a very diverse fauna, presenting 2.069 registered species.

In relation to the mammals, 144 species were registered, being:

- 34 species of small non-flying mammals;
- 46 species of medium and large mammals;
- 64 species of bats.

Have been registered so far, 516 species of birds. Of these, almost half (255 species) were sampled by Barlow et al. (2007a). The ornitofauna is one of the most special groups in the region. The Valley of Jari is part of the endemic area known as the Guyana Shield, which includes the northern state of Pará, the state of Amapá and its neighbors Suriname and French Guiana. In this context of endemism some bird species only exist in the area covered by the design, making conservation even more important in the region.

**Table 27. List of endemic birds species in the Guyana Shield.**

<i>Pionopsittacaica</i>	<i>T. spodiopitlaelaopteryx</i>	<i>Percnostola r. ruffrons</i>
<i>Caprimulgusmaculosus</i>	<i>Gymnopithys r. rufigula</i>	<i>Iodopleura fusca</i>
<i>Topaza p. pella</i>	<i>Dendrexetastes r. rufigula</i>	<i>Pachyramphussurinamus</i>
<i>Lophornisornata</i>	<i>Phylloscartesvirescens</i>	<i>Haematoderusmilitaris</i>
<i>Threnetesníger</i>	<i>Euscarthmus r. savannophilus</i>	<i>Pipra s. serena</i>
<i>T. loehkeni</i>	<i>Polioptila g. guianensis</i>	<i>Contopusalbugularis</i>
<i>Phaethornismalaris</i>	<i>Euphoniafinschi</i>	<i>Microcochleariusjosephinae</i>
<i>Selenideracuiik</i>	<i>E. cayennensis</i>	<i>Tangara v. velia</i>
<i>Ramphastos v. vitellinus</i>	<i>Myrmeciza f. ferruginea</i>	<i>T. m. mexicana</i>
<i>Celeus u. undatus</i>	<i>Sakesphorusmelanothorax</i>	<i>Cyanicteruscyanicterus</i>
<i>Veniliornissanguineus</i>	<i>Terenuracallinotaguianensis</i>	<i>Periporphyruserythromelas</i>



Data gathered so far indicate that the Valley of Jari presents a diversity of both amphibians and reptiles, having 157 species recorded distribute in:

- 88 species of amphibians;
- 32 species of lizards;
- 27 species of snakes;
- 08 species of chelonians;
- 02 species of jacarés (alligators).

The fish are economically important as they are a source of both proteins and income for the communities. According to the Environmental Impact Assessment of Santo Antônio do Jari Power Plant, there are at least 277 species of fish in the area.

So far, 859 species of insects have been recorded in the Valley of Jari area:

- 129 species of butterflies;
- 335 species of moths;
- 44 species of grasshopper;
- 68 species of dipterous;
- 22 species of bees;
- 176 species of ants;
- 85 species of scarab beetles.

Up to date 116 species of arachnids were found in the Valley of Jari region, being mostly spiders.

From the 2,069 species recorded in the DSEA study area, 133 are on the CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) list of endangered species.

On the Brazilian Environment Institute (IBAMA) list are listed the armadillo (*Prionomys maximus*), the jaguar (*Panthera onca*) and the woodcreeper chicken (*Dendrexetastes rufigula*). On the IUCN list are the sun parakeet (*Aratinga solstitialis*), the toad (*Atelopus spumarius*), the giant anteater (*Myrmecophaga tridactyla*), the armadillo (*Prionomys maximus*), the spider monkey (*Ateles paniscus*), the tapir (*Tapirus terrestris*), the spectral bat (*Vampyrum spectrum*), the jaguar (*Panthera onca*), the white-lipped peccary (*Tayassu pecari*), the Guiana crested eagle (*Morphnus guianensis*) and the harpy eagle (*Harpia harpyja*).

Besides those, there are 632 species from the Least Concern and 05 from the Insufficient Data categories (CITES, IBAMA or IUCN).

**Table 28. Endangered fauna species according to the Red List of Endangered Species of IUCN.**

IUCN Category	Scientific and Common name of the Species
<b>Endangered (EN)</b>	<b>Aratinga solstitialis (Jandaia amarela).</b> Priodontes maximus (Tatu-canastra); Panthera onca (Onça-pintada);
<b>Vulnerable (VU)</b>	Atelopus spumarius (a type of frog); Myrmecophaga tridactyla (Tamanduá-bandeira); Ateles paniscus (Macaco Aranha); Tapirus terrestres (Anta).
<b>Near Threatened (NT)</b>	Vampyrum spectrum (Andirá-guaçu bat); Tayassu pecari (Queixada); Morphnus guianensis (Gavião Real Falso); Harpia harpyja (Harpia).



**Figure 52. Respectively one Guariba monkey and a parrot, part of the daily life of the communities in teh region.**



**Figure 53. Photo of a Yellor Conure (Aratinga solstitialis), threatened and endemic species in the Guyana Shield.**

The information presented in regard of fauna biodiveirsity in the project zone is based on secondary studies, most of them carried out in the other side of Jari River. However, to very important sources of information were Environmental Impacts Assessment of Santo Antonio do Jari Hydroelectric Dam and the 10 years biodiversity monitoring study developed

by Lancaster and Lavras University in the sustainable forest management area of Jari Group in the Pará side. Additionally a virtual database platform was used (ISI Web of Knowledge) to complement and validate the information utilized.

It is important to note that many of the fauna threatened species mentioned are well known by the community members in Laranjal and Vitória do Jari.

## B1.2. High Conservation Value Attributes 1, 2, 3 and 4

For a preliminary assessment of High Value Attributes Conservation was used the document "Assessment, management and monitoring of High Conservation Value Forest: A practical guide for forest managers" produced by the Proforest. Because AAC identification and maintenance of integrity for the CCBS validation was conducted only an initial identification of values. The initial identification of biodiversity related values are described in the table below.

It is important to notice that it was identified only the **potential** presence of the High Conservation Value attribute 1. In order for this potential to be validated the steps described in **section CM1.2** should also be followed and the Project proponent aim to carry out this analysis in the next 2 years.

**Table 29. Initial identification of potential High Conservation Value Attributes 1, 2, 3 and 4.**

Value	Present	Potential	Absent	Justification
<b>HCV 1</b> – Forest areas containing concentration of values of biodiversity significant globally, regionally or nationally (e.g. endemic and endangered species).		X		As presented on item B1.1, there are 3 species of flora in the Category “Critically Endangered” (CR), 8 species of flora in the Category “Endangered” (EN) and 3 in the category “Vulnerable” (VU). As for fauna there are two species “Endangered” (EN) and 5 “Vulnerable” (VU).  Supporting information to the potential presence of this attribute is that the Project Zone is contained within Jari Valley and the Guyana Shield. The Jari Valley is part of the endemism zone of the Guyana Shield. This fact appoints for the likelihood of the potentiality of the HCV attribute. Project Proponent does not aim to manage the Guyana Shield, because it encompasses different Brazilian states and different countries, which would make its management beyond proponents’ governance ability.

<p><b>HCV 2</b> – Forest areas containing forest landscapes significant globally, regionally and nationally, contained within or contained in the management unit, where viable population of the majority (if not all) population exists naturally in their natural patters of distribution and abundance.</p>	<p><b>X</b></p>	<p>Despite its importance as part of an ecological corridor and buffer zone for the other protected areas in the south of Amapá (ESEC Jari, RDS Iratapuru River and RESEX Cajari), these other areas together represent a continuous forest area larger the Project Area. Making that, at the landscape level, it is not as relevant as the whole belt of neighboring protected areas.</p>
<p><b>HCV 3</b> – Forest areas that contain or are contained in rare, threatened or endangered ecosystems</p>	<p><b>X</b></p>	<p>Although the Amazon Forest is in constant threat of deforestation due to its length, it is still not considered a rare or significantly reduced ecosystem of its original size (about 80% of the Amazon's original forest cover still remains<sup>10</sup>).</p>
<p><b>De HCV 4</b> – Forest areas that provide basic ecosystem services in critical situations (e.g. Watershed protection, erosion control, etc.).</p>	<p><b>X</b></p>	<p>The Project Area provides several ecosystem services, however since the PA can still be considered as “well conserved”, along with the surrounding Protected Areas, it is still not possible to consider that the ecosystem services provided by the PA are regionally in a “critical situation”.</p>

Considering that the Project Area has potentially the HCV attribute number 1, related with the presence of endemic and endangered species, the activities and measures that need to be taken to maintain and enhance this attribute are the activities already proposed by the Project (**Table 6**).

### **B1.3. Scenario of the Use of Land in the Absence of the Project**

The land-use scenario in the absence of the project is characterized by the occupation of land from squatters in open areas in the forest through the slash and burn system. These areas are cultivated by one or two years, at which time the soil becomes unproductive and new areas are opened to support subsistence agriculture. It is projected that in the absence of the project, 11,070 ha would be cleared in the Project Area during the 30 years of the project duration.

Deforestation not only directly reduces the number of plant specimens, including endangered species, but also threatens animal diversity by loss and habitat degradation. Most animal species have a close and specific relationship with the environment, and the loss of habitats can lead to extinction not only of those species directly dependent of that environment, but also of species related to it, causing a ripple effect. If not extinct, genetic

<sup>10</sup> See: <http://www.mma.gov.br/biomas/amazonia/mapa-de-cobertura-vegetal> e [http://www.inpe.br/cra/projetos\\_pesquisas/TerraClass\\_2012\\_26nov2014.pdf](http://www.inpe.br/cra/projetos_pesquisas/TerraClass_2012_26nov2014.pdf) .

erosion of the species still poses a risk. In extreme cases habitat loss can lead to extinction of key ecosystem processes (GROOM & VYNNE, 2006).

A side effect and likely to occur in the Project area given the pattern of diffuse deforestation, is the fragmentation of forest cover and habitats. Fragmentation is related to the reduction of continuous areas of a given habitat and change in habitats in the landscape configuration. The result is small isolated patches which become susceptible to drastic exclusion and initial of species, the blending effect (Leck , 1979) , edge effect , effect matrices derived dysfunctions roads effect , facilitating the establishment of invasive species , and others. The result can be a complete change in the structure of habitats, microclimate, species composition and ecological processes through indirect changes such as predation, pollination, dispersal, herbivory and other (NOSS, CSUTI , & GROOM , 2006).

Deforestation and forest degradation also affects the conditions of biodiversity indirectly through the global changes of climate related. Although the prediction task is complex and difficult, it is expected that the effects of climate change on biodiversity are imminent in the long term (50 to 100 years) given the importance of climate in the ecological design of natural systems and hence in distribution and composition of flora and fauna communities . These changes should also allow the establishment of invasive species in different ecosystems, drastically affecting the ecology of ecosystems and biodiversity conservation.

As an indirect effect of deforestation and forest degradation, climate change poses real threat to the future of the region (BETTS et al. 2008) . The dynamics of these ecosystems can be dramatically modified by the increase in average temperature (Malhi and Wright 2004;. BETTS et al 2004), changes in precipitation levels (Mild et al 2008; MARENGO et al 2008a). 2004),

The increasingly constant changes in weather conditions have affected the species of plants and animals (PARMESAN and Yohe 2003; ROOT et al., 2003). By altering habitat availability, these variations often cause changes in species abundance (DEL MONTE- LUMA et al 2004; BLOIS and hadly 2009) and affect interspecific interactions, bringing serious consequences for the environment (MAY 1984; Cooper 2003 ). According to Root et al. (2003 ), there may be four types of changes in the characteristics of the species due to heat : i) changes in density at a given location; ii ) Changes in migration periods , oviposition , etc. .; (iii ) changes in the morphology and ; iv ) changes in gene frequencies.

That way in the absence of the project and the continuity of scenario 'business as usual the forest would be every time more susceptible to loss and degradation of habitats, genetic erosion of species, forest fragmentation leading to exclusion of species and stocking and edge effect, effect matrix, facilitating the establishment of invasive species and the greater susceptibility to the impacts of climate change. All these effects combined would potentiate the extinction process of more sensitive and endemic species.

## B2. Net Positive Biodiversity Impacts

### B2.1 Positive Net Impact on Biodiversity

Direct and indirect impacts of changes in biodiversity, as well as predicted and actual impacts of changes in biodiversity, resulting from project activities under the with-project scenario took in to account the casual relations described in **section G1.8** and in **Table 6. Table 30** details these impacts. Its worth highlighting that due to the composition of projects proposed activities the activity that may more directly be source of negative impacts on biodiversity is the Sustainable Forest Management (SFM), while the REDD+ complementary activities aims to mitigate SFM impacts and to generate positive impacts.

Above these impacts are qualitatively described along with the mitigation measures in place when its applicable.

Considering **table 30** it is possible to analyze that although the SFM activities can potentially cause certain harm to the environment that are mitigation measures in place to monitor, control and reduce possible negative impacts, while the complementary REDD+ proposed activities generate and boost positive impacts. All activities together, including the SFM due to the physical presence and the controlled impacts avoid deforestation, maintain the forest cover (approximately 11,070 hectares for the Project Area and 14,400 hectares for the leakage belt according with the baseline projection) and habitats supply for regional biodiversity, thus the Project provides positive net impact on biodiversity.

#### Activities of REDD+

The REDD+ activities, listed in **Table 6**, have the specific aim of reducing deforestation and promoting social inclusion and development, generating benefits to the climate, communities and biodiversity. The main benefits to biodiversity are related to reducing deforestation and forest degradation and consequent conservation of habitats. Increasing habitat by the introduction of the tree component in the farms also generates benefits for biodiversity. The development of scientific research promotes increased knowledge about local biodiversity, enabling even the record of rare species, endemic or listed as endangered, creating opportunities for conservation.

According to **Table 6** that studies the causal relationships of project activities the main expected positive impacts would be the maintenance of vegetation cover and biodiversity conservation, and consequently the maintenance of the ecological corridor and buffer zone between the Project Area and the neighboring protected areas. These impacts would be favored because of the FSC sustainable forest management practices, the monitoring of deforestation, property security, the technical assistance and rural extension service, the implementation of the Use Plans Property and monitoring Biodiversity. The detailed direct, indirect, actual and predicted impacts are described in **table 30**.

Project activities are designed with the goal of generating positive net impacts on climate, community and biodiversity. As a side effect, however, negative impacts can emerge and measures should be taken to prevent and minimize them. From the activities listed in **Table 6**, those that can potentially add further negative impacts on the main biodiversity is Sustainable Forest Management. Below is a specific analysis of the impacts of this activity.

### **Impacts of Sustainable Forest Management**

With the implementation of low impact forest management FSC-certified, the biodiversity of flora and fauna is protected because the physical presence of the company inhibits devastating illegal logging in the region and invasions by small farmers. The management run by the Jari Florestal is planned and carried out according to strict rules, FSC principles and criteria, ensuring that the richness, diversity and abundance of species remain the same or improve. Applied scientific research promote the generation of knowledge about local biodiversity, creating opportunities for the design and implementation of specific, effective and efficient conservation.

The negative impacts of this activity are mostly short-lived and low severity, and generate no risk to species conservation. Among them are the disturbance due to the increased movement of people and vehicles in the project area as well as the production of noise; Local suppression (although small in these areas) of forest due to the opening of roads and infrastructure; possible trampling of animals also due to and increased flow of people and vehicles; increased hunting, fishing and extraction of timber and non-timber products as a result of opening roads and facilitating access to residents. These impacts are further detailed on **Table 30**.

**Table 30. Direct, Indirect, actual and predict impacts on biodiversity resulting from project activities on the with-project scenario.**

Activities	Positive Impacts	Negative Impacts	Mitigation Measures
Sustainable Forest Management, FSC-certified	<p><u>Actual Direct:</u> -</p> <p><u>Predicted Direct:</u> Less damage during the logging due to the allocation of low impact logging techniques; less number of trees harvested; maintenance of the forest cover;</p>	<p><u>Actual Direct:</u> -</p> <p><u>Predicted Direct:</u> Trees removal; damage on other trees due to the felling of the harvested one; opening of new areas for infrastructure, such as roads and storage patios; erosion due to the roads constructions and traffic of vehicles and equipment; noise due to traffic of vehicle and equipment that may disturb some species;</p>	<p>-</p> <p>Implementation of a pre-harvesting phase with the census (100% inventory) of the trees in the UPA, along with their GPS coordinate, to allow a back office planning job of design felling strategies and roads that will be more efficient and cause less damage to the forest and to the soil; implementation of pre-harvesting quality procedures to assure damage reduction and control:</p> <ul style="list-style-type: none"> <li>PA – Gestão e Certificação florestal – Planejamento, abertura e manutenção de estradas e pontes florestais;</li> <li>PA – Gestão e Certificação Florestal – Derruba direcionada de madeira nativa; PA – Gestão e Certificação Florestal – Redução de grandes clareiras;</li> <li>PA – Gestão e Certificação florestal – Traçamento de Madeira Nativa;</li> <li>PA – Gestão e Certificação – Planejamento de trilhas de arraste e pátios florestais;</li> <li>PA – Gestão e Certificação Florestal – Arraste de Madeira Nativa;</li> <li>PA – Gestão e Certificação Florestal - Preparo e arraste de biomassa florestal;</li> <li>PA – Gestão e Certificação Florestal - Transporte de Madeira Nativa );</li> </ul> <p>Implementation of pos-harvesting practices to monitor SFM impacts and allow adjustments in order to reduce it:</p> <ul style="list-style-type: none"> <li>PA – Gestão e Certificação Florestal – Seleção e distribuição das parcelas;</li> <li>PA – Gestão e Certificação Florestal – Monitoramento do inventário florestal 100%;</li> <li>PA – Gestão e Certificação Florestal – Monitoramento Abertura de estradas e pátios florestais;</li> <li>PA – Gestão e Certificação Florestal – Monitoramento da derruba direcionada;</li> <li>PA – Gestão e Certificação Florestal – Monitoramento do traçamento, medição e marcação de toras;</li> <li>PA – Gestão e Certificação Florestal – Monitoramento Planejamento de trilhas de arraste e pátios florestais;</li> <li>PA – Gestão e Certificação Florestal – Monitoramento do arraste de toras;</li> <li>PA – Gestão e Certificação Florestal – Monitoramento do preparo e arraste de biomassa florestal;</li> <li>PA – Gestão e Certificação Florestal – Monitoramento carregamento e transporte de madeira).</li> </ul>
	<p><u>Actual Indirect:</u> the maintenance of vegetation cover and</p>	<p><u>Actual Indirect:</u> -</p>	<p>-</p>



biodiversity conservation, and consequently the maintenance of the ecological corridor and buffer zone between the Project Area and the neighboring protected areas

Predicted Indirect: Diminish of deforestation due to the project physical presence on the area.

Predicted Indirect: Habitat loss due to the felling of some trees; better access of illegal hunters in the area due to the construction of SFM infrastructure, along with predatory fishery and other exploration of natural resources (fauna and flora); reduction of specie community diversity;

Local signaling in the area advertising outsiders about illegality of hunting and other predatory uses of natural resources; lectures in communities; signs prohibiting illegal hunting, property surveillance; monitoring of biodiversity diversity.

<b>Monitoring of Deforestation</b>	<u>Actual Direct:</u> maintenance of forest and its ecosystem services; maintenance of habitats;	<u>Actual Direct:</u> -	-
	<u>Predicted Direct:-</u>	<u>Predicted Direct:</u> -	-
	<u>Actual Indirect:</u> Avoidance of the arrival of illegal hunters and squatters in the area that will diminish species loss, the maintenance of vegetation cover and biodiversity conservation, and consequently the maintenance of the ecological corridor and buffer zone between the Project Area and the neighboring protected areas	<u>Actual Indirect:</u> -	
	<u>Predicted Indirect:</u> attenuation of risks from extreme weather events, reducing the risk of extinction species extinction, ensuring gene flow between species and, consequently, genetic diversity	<u>Predicted Indirect:</u> -	-

<b>Property Surveillance</b>	<u>Actual Direct:</u> maintenance of forest and its ecosystem services; maintenance of habitats;	<u>Actual Direct:</u> -	-
	<u>Predicted Direct:-</u>	<u>Predicted Direct:</u> -	-
	<u>Actual Indirect:</u> Avoidance of the arrival of illegal hunters and squatters in the area that will diminish species loss, the maintenance of vegetation cover and biodiversity conservation, and consequently the maintenance of the ecological corridor and buffer zone between the Project Area and the neighboring protected areas	<u>Actual Indirect:</u> -	-
	<u>Predicted Indirect:</u> attenuation of risks from extreme weather events, reducing the risk of extinction species extinction, ensuring gene flow between species and, consequently, genetic diversity	<u>Predicted Indirect:</u> -	-
<b>Technical Board Meetings</b>	<u>Actual Direct:</u> -	<u>Actual Direct:</u>	-
	<u>Predicted Direct:-</u>	<u>Predicted Direct:-</u>	-
	<u>Actual Indirect:</u>	<u>Actual Indirect:</u> -	-
	<u>Predicted Indirect:</u> Increase of awareness regarding the importance of forest and biodiversity through discussing regarding environmental policies	<u>Predicted Indirect:</u> -	-

<p><b>Technical Assistance and Rural Extension (TARE)</b></p>	<p><u>Actual Direct:</u> Preservation of farmers standing forest, due to a more efficient use of their crops, better soil and water management during agriculture production</p>	<p><u>Actual Direct:</u> -</p>
	<p><u>Predicted Direct:</u> No use of fire to prepare the crops and no cutting of forest to produce crops, increasing habitat by the introduction of the tree component in the farms</p>	<p><u>Predicted Direct:</u> -</p>
	<p><u>Actual Indirect:</u> more efficient use of natural resources</p>	<p><u>Actual Indirect:</u> -</p>
	<p><u>Predicted Indirect:</u> Increase of awareness and knowledge regarding the importance of forest and biodiversity in their properties.</p>	<p><u>Predicted Indirect:</u> -</p>
<p><b>Workshops and training in agro-extractive techniques</b></p>	<p><u>Actual Direct:</u> Preservation of farmers standing forest, due to a more efficient use of their crops, better soil and water management during agricultural production</p>	<p><u>Actual Direct:</u> -</p>
	<p><u>Predicted Direct:</u> No use of fire to prepare the crops and no cutting of forest to produce crops, increasing habitat by the introduction of the tree component in the farms</p>	<p><u>Predicted Direct:</u> -</p>
	<p><u>Actual Indirect:</u> more efficient use of natural resources</p>	<p><u>Actual Indirect:</u> -</p>
	<p><u>Predicted Indirect:</u> Increase of awareness and knowledge regarding the importance of forest and biodiversity in their</p>	<p><u>Predicted Indirect:</u> -</p>

	properties.		
<b>Development of Property Use Plans</b>	<u>Actual Direct:</u> Preservation of farmers standing forest, due to a more efficient use of their crops, better soil and water management during agricultural production	<u>Actual Direct:</u>	-
	<u>Predicted Direct:</u> No use of fire to prepare the crops and no cutting of forest to produce crops, increasing habitat by the introduction of the tree component in the farms	<u>Predicted Direct:</u>	-
	<u>Actual Indirect:</u> more efficient use of natural resources	<u>Actual Indirect:</u>	-
	<u>Predicted Indirect:</u> Increase of awareness and knowledge regarding the importance of forest and biodiversity in their properties.	<u>Predicted Indirect:</u>	-
	<u>Actual Direct:</u> -	<u>Actual Direct:</u>	-
<b>Diagnosis Organizational and Participatory and Community Development Plans / Family Assessment</b>	<u>Predicted Direct:</u> -	<u>Predicted Direct:</u>	-
	<u>Actual Indirect:</u>	<u>Actual Indirect:</u>	-
	<u>Predicted Indirect:</u> Increase of awareness regarding the importance of forest and biodiversity through discussing regarding environmental policies	<u>Predicted Indirect:</u>	-
<b>Structuring of the socio-environmental Fund REDD+ Jari</b>	<u>Actual Direct:</u> strengthening project governance, fostering of projects proposed activities to biodiversity	<u>Actual Direct:</u>	-

	<p><u>Predicted Direct:</u> Give transparency to the project, improved guidelines for benefits sharing, including benefits to biodiversity</p> <p><u>Actual Indirect:</u></p> <p><u>Predicted Indirect:</u></p>	<p><u>Predicted Direct:</u> -</p> <p><u>Actual Indirect:</u> -</p> <p><u>Predicted Indirect:</u> - The technical chamber could prioritize investments only in social issues and not on biodiversity</p>	<p>-</p> <p>-</p> <p>Discussion of a Governance Scheme in which there would be a executive committee on social issues and other on biodiversity and climate issues, in order to assure the structure and the resources need to implement biodiversity activities.</p>
	<p><u>Actual Direct:</u> -</p>	<p><u>Actual Direct:</u> -</p>	<p>-</p>
<b>Improvement of communication channels</b>	<p><u>Predicted Direct:</u> creating new opportunities for direct communication with other stakeholders, to proved feedbacks about project activities, including impacts on the environment due to the SFM activities</p> <p><u>Actual Indirect:</u> -</p> <p><u>Predicted Indirect:</u> project activities more effectively and efficiently implemented with less damage to the biodiversity</p>	<p><u>Predicted Direct:</u> -</p> <p><u>Actual Indirect:</u> -</p> <p><u>Predicted Indirect:</u> -</p>	<p>-</p> <p>-</p> <p>-</p>
<b>Biodiversity Monitoring and Scientific Research</b>	<p><u>Actual Direct:</u> -</p> <p><u>Predicted Direct:</u> - monitoring of species diversity and richness, monitoring and controlling of SFM negative impacts, monitoring of maintenance of high conservation values</p> <p><u>Actual Indirect:</u> -</p>	<p><u>Actual Direct:</u> -</p> <p><u>Predicted Direct:</u> -</p> <p><u>Actual Indirect:</u> -</p>	<p>-</p> <p>-</p> <p>-</p>

	<p><u>Predicted Indirect:</u> conservation of regional biodiversity, increase in recognition of the value of forest and natural resources, increase of availability of foods such as fish, fruits and nuts, increased awareness and knowledge of biodiversity of the Jari Valley region, assurance of availability of natural resources to the communities</p>	<p><u>Predicted Indirect:</u> -</p>	-
<b>Seedling Nursery</b>	<p><u>Actual Direct:</u> Preservation of genetic resources of the forest, promoting forest restoration in degraded areas within the community.</p>	<p><u>Actual Direct:</u></p>	-
	<p><u>Predicted Direct:</u> Increase of forest cover</p>	<p><u>Predicted Direct:</u> -</p>	-
	<p><u>Actual Indirect:</u> -</p>	<p><u>Actual Indirect:</u> -</p>	-
	<p><u>Predicted Indirect:</u> conservation of regional biodiversity, increase in recognition of the value of forest and natural resources, increase of availability of foods such as fish, fruits and nuts, increased awareness and knowledge of biodiversity of the Jari Valley region, assurance of availability of natural resources to the communities</p>	<p><u>Predicted Indirect:</u> -</p>	-
<b>Xylotheque (Wood Collection)</b>	<p><u>Actual Direct:</u> Preservation and dissemination of knowledge about the biodiversity of the region.</p>	<p><u>Actual Direct:</u></p>	-
	<p><u>Predicted Direct:</u></p>	<p><u>Predicted Direct:</u> -</p>	-
	<p><u>Actual Indirect:</u> -</p>	<p><u>Actual Indirect:</u> -</p>	-

Predicted Indirect: Awareness of society to the importance of the biodiversity of the region of the Valley of Jari. Biodiversity conservation.

Predicted Indirect: -

-

## B2.2 Comparing the Scenario in the Absence of the Project and with the Project

Under the without-project scenario there would be an approximately reduction of forest cover of 11,070 hectares for the Project Area and 14,400 hectares for the leakage belt according with the baseline projection, between 2011 and 2041, plus a scenario of uncontrolled forest degradation due to the occupation pattern of squatters and local itinerant agriculture (slash and burn cycle) described in **section G1.2**. Under these without-project scenario there would be intense fragmentation processes, habitat loss, genetic erosion and extinction of species and ecological functions as described in Section B1.1.

The project scenario aims to reduce the deforestation predicted on the baseline projection, maintaining the forest cover and controlling degradation, reducing intense fragmentation processes, habitat loss, genetic erosion and extinction of species and ecological functions. The positive impacts on biodiversity are generated by the activities proposed for all project aspects (Climate, Community and Biodiversity). Project's single activity with a higher risk of causing negative impacts on biodiversity is the Sustainable Forest Management activity with application of Reduced Impact Logging Techniques. However, as it is described in section B2.1 and B2.3, there are mitigation measures in place to monitor and reduce the potential negative impacts on biodiversity and the environment and even when compared with the without project scenario of uncontrolled unplanned deforestation it has less negative impacts to biodiversity, being them controlled and possible to mitigate.

The presence of the sustainable forest activities together with other activities proposed by the project to generate climate benefits, such as deforestation monitoring and property surveillance, will reduce deforestation maintain forest cover and habitats to species in the Project Zone, promote mitigation of risk of extinction and biodiversity conservation, ensuring gene flow between species and, consequently, genetic diversity. Activities proposed to generate communities benefits will also generate positive impacts on biodiversity once producers will have condition to manage more efficiently their lands and crops, would need to continue the slash and burn cycle and cut new forested areas. The activities proposed to generate benefits to biodiversity will allow project proponents to monitor species diversity and richness, to monitor and reduce potential negative impacts from other project activities, to maintain biodiversity genetic heritage and boost awareness and knowledge of biodiversity importance in the Project Zone. None of the positives impacts is expected under th without-project scenario, therefore it can be considered that the project generates positive net impacts to biodiversity even when compared with the baseline (without-project scenario).



## **B2.3 Mitigation of Negative Impact**

As the main source of negative impacts on biodiversity and from sustainable forest management in this section will be focused on strategies to mitigate the negative impacts of this specific activity.

To avoid or minimize the negative impacts of low forest management, Florestal Jari has a number of operating procedures, work instructions and environmental procedures are strictly followed and monitored. In addition, all employees and staff are trained and qualified before the start of activities.

Several techniques are adopted to ensure that the extraction of wood produces the least possible impact on biodiversity. The main ones are:

Planning of forest roads and channels: aims to ensure the lowest possible road density, reducing the cut of vegetation, and protecting relevant species or that are used by wildlife.

Cutting of vines: prevents the overthrow of the desired individual affects nearby trees.

Forest Inventory 100 % and extraction planning: inventory identifies trees with a minimum diameter desired, as well as ensure that the maximum volume extracted by UPA is met. In addition, individuals selected for extraction have planned aiming to affect minimally the surrounding trees, permanent preservation area and trees with relevant value, and ensure worker safety.

Residues management procedure: Establishes the criteria to classify, dispose of and transport the residues generated by the Project activities.

Monitoring of smoke procedure: Establishes the conditions for the monitoring, assessment, determination and control of the black smoke level from road and rail loads and passenger transportation vehicles/equipment, fixed or stationary sources, fueled by diesel in operation in the Project area.

Monitoring and control of effluents procedure: Establishes the system to monitor and control the effluents generated from forest activities with the potential to cause environmental impact.

Prevention and control of forest fires procedure: Establishes the criteria for the prevention and control of forest fires.

Erosion and deterioration: Procedures to guide the control of soil erosion:

- Low impact management;
- Forest protection areas on the margins of water bodies or at risk of erosion (30-100 m wide) will be marked and protected;
- No management will take place on steep slopes;
- Construction of minimum size roads and other support areas;
- Reducing skidding trails to a minimum by careful planning;
- Road construction will always follow the crest of the hills;
- Skidding trails and roads perpendicular to slopes;
- Leveling areas to make outflow easier;
- Using landfills transversally to water bodies will be avoided;
- Management in periods of heavy rain will be controlled;
- Complementary plantation using species that rapidly cover exposed soil due to forest operations may be done, as necessary;
- Construction of channels around large logging for timber areas.

Noise: The highest intensity noise found in Project-related activities is related to specific activities of the forest management, caused by chainsaws during the felling, logging, skidding and transportation activities. In order to soften the noise to the people directly involved in such operations, the use of safety equipment and hearing protection will be mandatory. Regarding the effects to the fauna, the intention is to reduce it through a strict control over the use of the equipment, ensuring it is used exclusively during operating hours, which is medium in duration and moderate in magnitude.

Water Quality:

Predatory Hunting: Predatory hunting will be prevented by premises security specialized teams that will watch the area. The inspectors will have vehicles to circulate the area (ground and water) and will be trained to record infractions that will be later on informed to the governmental agency in charge.

Vegetation and Genetic Diversity: In the planning of FSC-certified Management activities the sizing and qualification of the selected area took into consideration the existing diversity so as to safeguard ecosystems with higher genetic potential by classifying them as areas of permanent protection. In terms of genetic conservation the following procedures shall be used:

- Checking the existence and classification of genetic sites for conservation;
- Placing the forest Project in the regional or national context based on herbaria and book references;

To contribute to this activity Grupo Jari has a nursery of native tree species, which seedlings are used to restore degraded areas in the region. The maintenance of the nursery of native tree species one of the activities proposed by the Project and the seedlings are also donated to local population to recover their own properties Grupo Jari has also an experimental project together with Embrapa (Brazilian Agricultural and Livestock Research Agency) to study the yield performance of Amazon tree species via natural and artificial regeneration in gaps opened due to forest exploitation, aiming at the generation of subsidies for future forest restoration programs.

Buffer zone: The Project area contributes to the protection of the Rio Cajari Forest Management Reserve (Resex Cajari) Buffer Zone located on the east side and the Rio Iratapuru Sustainable Development Reserve (RDS Iratapuru) located on the north, besides being a key factor for the conservation and maintenance of water resources as there are three important river basins located in the area – Jari, and Maracá. With the implementation of the Project, areas that are not effectively protected right now, will receive less deforestation and degradation pressure.

Monitoring the Fauna: Jari Florestal keeps a project in partnership with the Lancaster and Cambridge Universities (England) and Lavras (Brazil) to monitor the fauna in the Project forest management areas and aims to assess the maintenance of the forest ecological values in terms of animal diversity and the key services of these ecosystems as indicators of fauna biodiversity. Thus, the intention is to have more subsidies to establish more effective strategies to complete the knowledge gaps on some subjects subsidize the decision making process.

## B2.4 High Conservation Value

The **potential** High Conservation Value identified in section B1.2 was the HCV attribute number 1, related with the presence of endemic and endangered species. The activities and measures that need to be taken to maintain and enhance this attribute are the activities already proposed by the Project (**Table 6**). In that manner Project activities already aim to generate positive impacts on this attribute and the potential positive and negative impacts are the same described in **B2.1** and **B2.3**.

Which means that the only project activity that might generate negative impacts on its attribute is the low impact logging, and the mitigation actions were described in **B2.3**.

## B2.5-6 Invasive species

Rural communities undertake the management of non-timber forest products of native species such as nuts and açai. The agricultural crops are already used in the region and are not invasive, such as cassava, maize, rice, beans and watermelon.

The FSC certified forest management explores only native species present in the project area. No invasive species will be introduced or having their population increased as a result of project activities.

Despite the project encouragement to use native species by rural communities, such as açai, brazil nut, curauá and cassava, some non-native species are used by the project, such as corn, rice, watermelon and beans. These agricultural species are worldwide-domesticated food species and were introduced into the region during the past century (not due to the project's activities) and are an important source of food and income to rural and urban communities in the region as part of the local culture. Widely grown in other regions of Brazil, these species are not recognized by any threaten to native species.

In order to identify and describe possible adverse effects of non-native species used by the farmers in the Jari Valley region it was used the official "Global Strategy on Invasive Alien Species" developed by the Global Invasive Species Programme (GISP) of IUCN. According with the strategy even if there has been yet no consensus regarding the minimum criteria for species to be considered invasive or harmful, for instance level of damage, spread or size of population need, some times just a small population of non-native species could drive drastic changes on its new environment.

One of the most significant environmental adverse effects is the transformation of the biota structure and species composition of the native ecosystems. Once they may out-compete with the native species for the resources directly or indirectly change the nutrients cycling system, non-native species behaving as invasive may repress or exclude native species ultimately leading to a loss of native species, or extinction in very sensitive environments such as islands.

Adverse effects may also reach other ecological services, impacting the hydrological cycle, flood control, water supply, waste assimilation, recycling of nutrients, conservation and regeneration of soils, pollinization and seed dispersal. Economical effects may be even more diverse and uncertain, although great part of the literature refers to impact of non-native species as invaders as being the non-commercial species, e.g. weeds, causing damage on the agricultural activity by reducing crops yields and productivity, increasing control costs, decreasing water supply due to degradation of water catchment areas, or acting as pests and pathogens of crops, livestock and trees.

In the agricultural arena, the domestication of plants and animals has thousand years of history, counting on intentional introduction of outside species and now a days great part of the crops and livestock in the world are originary from others regions, and the increase occurrence of invasive alien species expanded with the domestication movement. That introduction of agricultural species can unintentionally bring pest and diseases to the system

threatening natural ecosystem, and even livestock can become invasive species themselves, for instance rabbit, deers and in some cases pigs and cats, once they don't have their controlling factors that they would have in their natural environment. From this optic the human agriculture and livestock may represent an opportunity for some species to benefit from the modifications of natural habits and disseminate them selves causing the adverse effects already described.

Still according with Global Invasive Species Program, none of the species used (worldwide-domesticated food species) are listed as invasive specie. This means they don't directly represent any threat to the natural ecosystem, once they need the man care and farm to grow, such as soil management, irrigation and weed control. Especially, because they are not adapted to the rainforest microclimate conditions and they've being cultivated in the region for centuries without any unexpected spread or disease introduction/facilitation being reported.

Additionally, according with Pimentel et al (2001), some of the main introduced (non-native) agricultural species, such as corn (*Zea mays* L.), wheat (*Triticum* spp.), rice (*Oryza sativa* L.), plantation forest, domestic chicken (*Gallus* spp.), cattle (*Bos Taurus*), and others, became essential to the contemporary agricultural and are responsible for 98% of the world's food supply, highlighting the net benefits of this cultures compared with the potential negative effects of such long domesticated species. The same author complements that the "real challenge lies in preventing further damage from invading alien species to natural and managed ecosystems worldwide, especially with current rapid human population growth and related activities".

In summary, the main adverse effects of non-native (agricultural worldwide-domesticated) species used by the producers engaged with the project are the potential behavior as drivers of other species with invasors characteristics, that in turn may alter the native ecosystem structure and species composition. Their use is justified because of their importance to communities' livelihoods, as their source of food and income, and the small risk of causing negative impacts on native species and disease introduction or facilitation.

It is not expected the introduction of any other non-native species, other than the ones already in place.

## **B2.7 Genetically Modified Organisms (GMO)**

The reduction of greenhouse gas emissions will be achieved by reducing deforestation and forest degradation. Thus, no genetically modified organism will be used. Still, seeds or cuttings from agriculture or forestry species provided to communities are not GMOs.

## **B2.8 Fertilizer Use**

The main fertilizer used for the project is the organic compound. In addition to avoiding the anaerobic decomposition of organic waste available in rural properties as manure and straw, emit greenhouse gases and contaminate the water, the composting process, if properly conducted, results in organic fertilizer of excellent quality, with ideal rates carbon and nitrogen

Chemical fertilizers are used minimally, avoiding possible adverse effects such as pollution and eutrophication of water bodies and ground water and emissions of gases that cause the greenhouse effect.

There is no intention of use of chemical pesticides, biological control agents and other inputs.

## **B2.9 Waste Management**

Grupo Jari has a series of documents that establish criteria and measures for waste management. The environmental procedure "Waste Management " , in accordance with the NBR 10.004 , establishes the criteria for classification, disposal and transportation of waste generated by Grupo Jari. Determines the conditions to classified dangerousness, proper disposal, transportation, operation of the intermediate disposal site and packaging waste. Records are made through a waste control sheet.

The forest residue has economic interest, being essential to the viability of the enterprise. Various procedures establish transport criteria and use of waste, as well as monitoring of activities.

Wastes from agricultural production in the communities are turned into compost and reused as fertilizer.

## **B3. Offsite Biodiversity Impacts**

**Positive Impact:** The Project area is surrounded by protected areas (Figure 1), for this fact the main positive impacts expected for Biodiversity Outside the project area are maintaining an ecological corridor for biodiversity and the functioning of the Project Area as a Buffer Zone of the risks and threats to the mosaic of protected areas in the south of Amapá.

**Negative Impact:** Negative impacts are not expected on biodiversity outside the project zone as a result of project activities, nor leaks are expected from the implementation of the project. This is partly because the project area is surrounded by protected areas and social activities of the project are already directed to mitigate possible leaks, keeping people in the countryside and in harmony with the forest.

## **B4. Biodiversity Impacts Monitoring**

The biodiversity monitoring allows assessing the impact of project activities on biodiversity and detects unforeseen changes, enabling necessary adjustments to achieve the objectives and desired impacts. The Social and Biodiversity Impact Assessment Manual (Richards and Panfil, 2011) was used to identify biodiversity variables to be monitored considering project's biodiversity objectives, predicted activities, outputs, outcomes and impacts, described in **section G1.8**. The list of variables is presented in **Table 30**.

The area to be monitored is the Project Area, the exact location of the plots is yet to be determined and will vary according to the Sustainable Forest Management activities in order to conciliate the biodiversity monitoring and the impact assessment of the sustainable forest management. The sampling methods for the biodiversity monitoring is presented right below **Table 30**. The Biodiversity monitoring will be carried out at least every two years, since great part of the impacts in the biodiversity happen in the medium and long term and it will also depend on the resources availability. All data available regarding the list of variables presented will be reported in Project's Annual Monitoring report, to be produced by Biofilica.

**Table 31. List of variables selected to monitor project's biodiversity activities and impacts.**

Activities	Indicator	Justification / Description	Type of measurement / Unit	Sampling Methods / Source	Frequency of Monitoring	
Biodiversity Monitoring and Scientific Research	Number of expeditions for the sampling at each monitoring event	Related to the biodiversity conservation focal issue, allowing the proponents to monitor the efficacy of project's activities on maintaining regional biodiversity and efficiency of the biodiversity monitoring.  Related to the benefits, costs and risks predicted for this activity in <b>table 30</b> , plus: <u>Output of:</u> monitoring the regional biodiversity, its dynamics and changes in the long term. <u>Outcome of:</u> Establishment of adaptative measures and adjustments to the project activities. <u>Impact of:</u> Conservation of regional biodiversity; and mitigation of Project activities' and SFM's impacts on biodiversity.	Number	Fauna Monitoring Report		
	Intensity of expeditions for the sampling at each monitoring event		Days			
	No. of monitored taxa at each monitoring event		Number			
	No. of monitored species at each monitoring event		Number			
	Diversity of the monitored fauna taxon at each monitoring event		Not applicable			
	Richness of the monitored fauna taxon at each monitoring event		Number			
	Diversity of plant community in Permanent Plots		Not applicable	Post Exploratory Report		Biannual
	Richness of the plant community in Permanent Plots		Number			
	Presence of endangered species in the Project Area		Number and list			
Status of species of relevance on IUCN's red list of endangered species	Not applicable	Fauna Monitoring Report				



	Number of studies and research projects developed	Related to the biodiversity conservation focal issue, allowing the proponents to monitor the efficacy of project's activities on maintaining regional biodiversity, and to environmental education focal issue, allowing society to build awareness about Jari Valley's biodiversity importance and relevance.	Number	Fauna Monitoring Report and published scientific papers.		
	Number of scientific papers		Number			
	Number of institutions engaged	Related to the benefits, costs and risks predicted for this activity in <b>table 30</b> , plus: <u>Output of:</u> Production of papers, scientific and academic research; training students on the regional biodiversity. <u>Outcome of:</u> Production and dissemination of knowledge on regional biodiversity. <u>Impact of:</u> Increased awareness and knowledge of biodiversity on Jari Valley region.	Number			
	Amount invested in research		R\$			Project's Annual Monitoring report
	Validation workshops/knowledge return events		Number			
Seedling Nursery	Number of seedlings		Number	Assessment with the Forestry Department	Annual	
	Number of species produced	Related to biodiversity conservation focal issue, allowing the maintenance of native tree species variety, and related to environmental education focal issue, allowing producers to know and maintain local tree species.	Number			
	Number of seedlings distributed to communities in the Project Zone		Number			
	Number of seedling distributed to communities engaged by the Project	Related to the benefits, costs and risks predicted for this activity in <b>table 30</b> , plus: <u>Output of:</u> Production of native species seedlings, distribution of seedlings of native species for restoration of degraded lands and for commercial use, to the local communities <u>Outcome of:</u> Preservation of genetic resources of the forest. Promotion of the forest restoration in degraded lands within the community; income generation; generation of knowledge on seedling production, forest restoration and the importance of native species. <u>Impact of:</u> Conservation of biodiversity, increase of forest cover, income generation.	Number	Assessment with Fundação Jari and Fundação Social Activities report		
	Number of seedling distributed to families engaged		Number			
	Number of seedlings used for restoration of degraded lands		Number			
	Number of seedling used for productive ends		Number			
Xylotheque (Wood Collection)	Number of Wood samples	Related to environmental education focal issue, allowing general public to see and understand the high diversity of biodiversity on Jari Valley.	Number	Assessment with Environment, Quality and Certification Department	Annual	
	Number of botanical samples		Number			
	Number of insects samples	Related to the benefits, costs and risks predicted for this activity in <b>table 30</b> , plus: <u>Output of:</u> Preservation of existing samples; education of people about the biodiversity of species. <u>Outcome of:</u> Preservation and dissemination of knowledge about regional biodiversity. <u>Impact of:</u> Awareness of society to the importance of the biodiversity on Jari Valley.	Number			
	Number of general visits		Number			
	Number of visits with educational ends		Number			

The sampling methods for the biodiversity monitoring was developed according with University of Lavras, University of Cambridge and the University of Lancaster biodiversity monitoring recommendations. The plan was drawn up using the principles and criteria of FSC and is aimed at monitoring long-term (scale of decades) in managed native forests (pre and post impact) - Forest Management Units (FMUs) and long-term monitoring plots of primary forest areas as control.

Monitoring sample groups of species that have been selected in a recent research within the same landscape, sample each taxon indicator before selective cutting impact in multiple intervals of 0 to 10 years post-cut, and replicate each sample through multiple units of forest management Alliance in different parts of the landscape.

One of the main taxon sampled annually by the monitoring program is the dung beetle. Several studies of the dung beetle (*Scarabaeinae* spp) show their sensitivity to environmental changes. These beetles are globally distributed (Hanski & CAMBEFORT 1991) and form a dominant component of tropical fauna of insects (PECK & FORSYTH 1982), with key functional roles in tropical forest ecosystems (ANDRESEN & FEER, 2005; Horgan, 2005). Studies of the responses of communities (Davis et al . , 2001) and at the level of species ( McGeoch et al., 2002 ) of these beetles in relation to land use change and tropical habitat fragmentation have a high degree of sensitivity to changes in vegetation in local scale and landscape ( OLIVEIRA, 2011).

On works carried out in the region of the Jari Valley, Barlow et al. (2007) found that the diversity of dung beetles is similar between the areas of secondary forests and eucalyptus, but much lower than the diversity found in primary forests. Gardner et al. (2008) found that a reduction in the diversity of dung beetles is related to the decrease in body size of these organisms, compromising the ecological services provided by these beetles in modified habitats.

This study is already implemented for more than 10 years in the areas of sustainable forest management of Grupo Jari in Pará and the project's goal is to expand the same methodology of monitoring for the project area, sustainable forest management of Grupo Jari in Amapá. The monitoring plan will still be discussed and adapted, prior to its implementation as soon as the project's Socio-environmental Fund has been finalized and come into vigor, because it intends that this is one of the activities directly funded through the sale of credit.

### **Indicators**

Three indicators will be used for monitoring: birds, mammals and *Scarabaeinae* (dung beetle). Indicators were chosen according to the following criteria: cost-effectiveness and efficiency of the practice field sampling, which allows representative samples to be collected from a relatively large number of local and seasons and allows replication; they perform as gradient disturbance indicator on habitat in the Jari landscape and elsewhere; its importance for key functional processes in tropical forests; relatively low levels of seasonality compared

to other taxa; current understanding of their taxonomy and ecology, necessary to allow for meaningful interpretations of the data. The selection of indicator taxa was made based on previously collected field data.

### **Sample Design**

The effects of selective logging on biodiversity of groups of focal species will be monitored in five independent management units. The selection of individual management units will be made in collaboration with the Florestal Jari managers observing the progress of the development of future selective extractions. Each management unit shall consist of five transects studies with 5 Km, which are permanent and independent. Sampling shall be made throughout the transect with traps or scores points every 200 meters.

### **Sampling Procedure**

Short term: dung beetles and birds will be sampled simultaneously along each transect. Bird point counts will be conducted through transect 3 km long, with samples being taken every 200 m to count the spatial heterogeneity, where the beetles sampling will be conducted only within the first 1 Km. Large mammals are sampled through any extension of 5 km of each transect. Only one sample area is sampled over a period of three days to ensure that communities of birds and mammals are sampled in all areas.

Long-term: to provide a detailed assessment of the effects of selective logging system, a management unit will be sampled once before the holding (within 1 year of the court date) and subsequently in the following intervals; (i) within one year after the operation, (ii) 3-4 years after the operation, (iii) 5-6 years after logging, and (iv) 10-11 years after logging. As long as the length of the project can be guaranteed, sampling will also be conducted for 20 years after logging.

In addition to the submitted monitoring plan, it will be studied the possibility of implementing a participatory monitoring program, in which some community members are selected and trained to carry out intelligence gathering in the region. Information about the presence of endemic species and included in lists of endangered species and the presence of invasive alien species, as well as increase or decrease of observations can be produced by the Community. That possibility is still being evaluated and before being implemented should be presented and discussed during the meetings of the Technical Board.

As the proposed monitoring plan aims to sample the diversity and richness of fauna, closely associated with the maintenance of health and ecosystem functionality will also be used to estimate the effectiveness of measures taken to maintain and improve high-value attributes for conservation in if AAVC 1.

The monitoring plan and its results will be released by the Technical Board about REDD + through appropriate language. The plan is also available to the public via the website [www.biofilica.com.br](http://www.biofilica.com.br).



**Figure 54.** Example of biodiversity monitoring report already conducted on the Pará side.



**Figure 55.** Monitored dung beetle. Source: Federal University of Lavras.

Once the a final version of the Project Description is approved by the validation and verification body it will be upload in Biofilica’s webpage ([www.biofilica.com.br](http://www.biofilica.com.br)) and it content will be disseminated among communities and other stakeholders during the first Technical Chamber meeting of 2016.

The monitoring plan and monitoring results (Project’s Annual Monitoring Report) will be disseminated to stakeholders during every first meeting of the Technical Board on REDD+ of each year and will also be available online on Biofilica’s webpage ([www.biofilica.com.br](http://www.biofilica.com.br)).

A hardcopy of the Project Description, containing the monitoring plan, and every Project’s Annual Monitoring Report will be distributed to project’s participants and members of the Technical Board, especially community members and government representatives, along with verbal explanation of the contents by Fundação Jari staff upon delivery of the documents.

The researches and students involved on project’s activities will also be invited to join technical Board meetings.

It is worth highlighting that the presentation and discussion of the monitoring plan and the results of the monitoring undertaken in accordance with the monitoring plan on the Technical

Board meeting is extremely important because communities and stakeholders can discuss the results and propose activities to enhance the benefits to communities and biodiversity and/or mitigate negative impacts. It will also enable adaptive management of the project, in accordance with the rights and wrongs proven over time.

### GL3. Exceptional Biodiversity Benefits

The REDD+ Jari/Amapá Project Zone has a very important role in biodiversity conservation, and besides being the part of the Shield Endemic Area of the Guyanas, it also fulfills the vulnerability criteria described by CCBS.

CCBS' criteria for exceptional biodiversity benefits is based on the Key Biodiversity Areas (KBA) framework of vulnerability and irreplaceability, as set out in the IUCN website<sup>11</sup> and in the in the guide for "Identification and Gap Analysis of Key Biodiversity Areas" (Langhammer et al, 2007). According with the referred guide KBAs are "sites of global significance for biodiversity conservation. They are identified using globally standard criteria and thresholds, based on the needs of biodiversity requiring safeguards at the site scale. These criteria are based on the framework of vulnerability and irreplaceability widely used in systematic conservation planning."

It used two variables (or concepts) to identify conservation targets and actions to be prioritized: Irreplaceability and vulnerability, as also set in the CCBS, third edition. Briefly explaining both concepts and discussing their applicability (or not) to the Jari/Amapá REDD+ project:

- **Irreplaceability** – It is related with the uniqueness and area. In its case one or more specie occur nowhere else and if the specific site is lost so it is the whole specie. In practical terms to meet this criterion the area must to maintain a globally significant proportion of the species occurrence **Figure 54** presents the threshold set out by the Guide.

Regarding the Project conditions, although it is part of the Guyana Shield (one of the endemism centers of the Amazon), there is still a considerable proportion of this endemic area standing up (in both Brazilian states, Amapá and Pará, and in other countries, such as Guyana, Suriname and French Guyana). Additionally, we still don't have a primary assessment of Project Zone Biodiversity and we are basing our analysis in literature, one of the main sources, the Impact Evaluation for the Santo Antonio do Jari Hydroelectric Dam, was primary and overlapping study to the Project Zone, the second one is also primary studies carried out in the Pará portion of the Jari Valley (neighbor to the project Zone), and third (only for flora information) there were the forest inventory carried out in the Project Zone. However, all these studies

<sup>11</sup>[https://www.iucn.org/about/union/secretariat/offices/iucnmed/iucn\\_med\\_programme/species/key\\_biodiversity\\_areas/](https://www.iucn.org/about/union/secretariat/offices/iucnmed/iucn_med_programme/species/key_biodiversity_areas/)

were carried out in the community level, without specific population assessment per species, thus it is hard to affirm that any species meets the irreplaceability criteria set in the **Figure 54**. Therefore, the Project doesn't have enough information to affirm that and it not requesting this criterion.

- Vulnerability – It is related to threat and time. In its case a site's biodiversity in a considerable degree of global threat and would be lost in the future. A site meets this criterion once it holds one or more globally significant threatened species according to the IUCN Red List, as set out in **Figure 54**. It is important to highlight that regarding "vulnerable" labeled species, they should occur in number to represent a viable population, this occurs because one of the goals of the KBA framework is to help on prioritizing areas for conservation and "Critically Endangered" and "Endangered" if there is at least one individual it can be considered a conservation priority, but to help on the election of "vulnerable" ones it would be useful to analyze the viability of the population.

Regarding the project condition to meet this criterion, based on the Socioeconomic and Environmental Assessment (DSEA) carried out by the Project that used different information sources secondary and primary, one of the main sources, the Impact Evaluation for the Santo Antonio do Jari Hydroelectric Dam, was primary and overlapping study to the Project Zone, the second one is also primary studies carried out in the Pará portion of the Jari Valley (neighbor to the project Zone), and third (only for flora information) there were the forest inventory carried out in the Project Zone. According with the explained on **section B1.1** it can be demonstrated the presence at least of 3 species "Critically Endangered" and 8 "Endangered" species, thus the Project meets the Vulnerability criterion.

There were also listed 26 "vulnerable" species, however even if the main sources consulted were primary and samples were collected of these vulnerable species, the assessments were carried out the community level and not population level, as it would be necessary in this case to prove number of individuals and/or pair.

The only exception in regard of "vulnerable" species is the *Bertholletia excelsa* Bonpl., or Brazil Nut Tree, that according with the forest inventory carried out by the project proponents has at least 240 individuals in the Project Zone, more than the 30 individuals required.

Therefore, though this information is presented above and **table 26** presented in **section B1.1**, the Jari/Amapá REDD+ Project matches the vulnerability criteria, proving the occurrence of at least one individual "Critically Endangered" (*Vouacapoua americana* Aubl.) and "Endangered" (*Pouteria amapaensis* Pires & T.D.Penn. and *Pouteria decussata* (Ducke) Baehni), and more than 30 individuals of a "Vulnerable" species (*Bertholletia excelsa* Bonpl.).

Criterion	Sub-criteria	Provisional thresholds for triggering KBA status
<b>Vulnerability</b> Regular occurrence of a globally threatened species (according to the IUCN Red List) at the site	N/A	Critically Endangered (CR) and Endangered (EN) species – presence of a single individual  Vulnerable species (VU) – 30 individuals or 10 pairs
<b>Irreplaceability</b> Site holds X% of a species' global population at any stage of the species' lifecycle	a) Restricted-range species	Species with a global range less than 50,000 km <sup>2</sup> 5% of global population at site
	b) Species with large but clumped distributions	5% of global population at site
	c) Globally significant congregations	1% of global population seasonally at the site
	d) Globally significant source populations	Site is responsible for maintaining 1% of global population
	e) Bioregionally restricted assemblages	To be defined

**Figure 56. Box describing criterion, sub-criteria and provisional thresholds for triggering KBA status. Source: Langhammer et al, 2007.**

Thus, Project area has occurrence of globally endangered species according to the Red List of Endangered Species of IUCN. As described in item B1.1 Biodiversity Original Conditions species considered endangered according to the criteria of IUCN are:

- **Critically Endangered (CR)** – Flora: *Aniba pedicellata* Kosterm.; *Couepia joaquinae* Prance.; *Vouacapoua Americana* Aubl..
- **Endangered (EN)** – Flora: *Virola surinamensis* (Rol. Ex Rottb.) Warb.; *Tabernaemontana muricata* Link ex Roem, & Schult.; *Pouteria amapaensis* Pires & T.D. Penn.; *Pouteria decussata* (Ducke) Baehni, *Eschweilera rabeliana* S.A.Mori; *Cedrela fissilis* Vell.; *Aniba rosaeodora* Ducke; Fauna: *Aratinga solstitialis* (Jandaia Amarela).
- **Vulnerable (VU)**: Flora: *Aspidosperma album* (Vahl) Benoist ex Pichon.; *Aspilia paraensis* (Huber) J.U.Santos; *Bertholletia excelsa* Bonpl.; *Cedrela odorata* L.; *Couratari guianensis* Aubl.; *Dicypellium caryophyllaceum* (Mart.) Nees; *Euxylophora paraensis* Huber.; *Heteropsis flexuosa* (Kunth.) G.S.Bunting; *Hymenolobium excelsum* Ducke; *Manilkara cavalcantei* Pires & W.A.Rodrigues ex T.D.Penn.; *Manilkara huberi* (Ducke) A.Chev.; *Mezilaurus itauba* (Meisn.) Taub. ex Mez; *Pouteria krukovii* (A.C.Sm.) Baehni.; *Pouteria macrocarpa* (Mart.) D.Dietr.; *Pouteria oppositifolia* (Ducke) Baehni; *Ptychopetalum olacoides* Benth.; *Qualea coerulea* Aubl.; *Sorocea guilleminiana* Gaudich.; *Tabebuia impetiginosa* (Mart. ex DC.) Standl.; *Trichilia solitudinis* Harms; *Virola surinamensis* (Rol. ex Rottb.) Warb.. Fauna:

Priodontes maximus (Tatu-canastra); Panthera onca (Onça-pintada); Atelopus spumarius frog; Myrmecophaga tridactyla (Tamanduá-bandeira); Ateles paniscus (macaco Aranha); Tapirus terrestres (Anta).

### **Description of Population Trends**

Due to the lack of studies at the population level, as a confinable source of information the trends described by the IUCN Red List was used to describe general trend of “Critically Endangered” and “Endangered” Species and then other analysis was made about the mentioned trend under the without-project scenario, as it is described in **Table 32**. As set out by the CCB footnote 127 three trigger species were selected for population trend focus, once several trigger species occur. The species were selected based on the following criteria:

- Availability of data and information, in order to facilitate analysis and comparisons in the medium and long term;
- Those facing the most acute threats at the site.

### **Measures needed and taken to maintain or enhance the population status**

The measures need and taken to maintain or enhance the population status were also described in **Table 32**. They were based on the casual model explained in the **section G1.8**. The measures described are aligned with the best practices already taken and planned to be taken according with the Sustainable Forest Management Plan operated in Pará by Grupo Jari since 2004 and according the the Sustainable Forest Management Plan for the Project Area, documents that describes in-situ species management.

### **Indicators and Monitoring Plan**

Indicators of the population were set up in a Monitoring Plan also presented in Table 30. This monitoring will be implemented together with the monitoring plan described in **section B.4**. The proposed monitoring plan can be considered effective because it will monitor the individuals and population of the selected trigger species, and through these primary data, it is expected to follow the actual trends of their populations. Besides, if any expected change is observed it will allow project proponents to take appropriate actions, based on consultation with specialists.



**Table 32. Selected Trigger species, their population trend, measures need to be taken and indicators adopted.**

Degree of Threat	Species	Population Trend according IUCN and main threats	Trend in the without-project scenario	Measures need and taken to maintain and enhance the population status	Indicators to be adopted	Observation/ Additional Information
Critically endangered	<b><i>Vouacapoua Americana</i> Aubl. (Acapú)</b>	According with IUCN RED List: "Declines in numbers continue because of overexploitation."	Under the without-project scenario, with the continuous unplanned and uncontrolled deforestation its population trend would likely decline. Especially because this species provides hard wood, very good to be used on constructions and the agents and drivers of deforestation identified were exactly linked with invasions to demarcate land possession and subsistence crops production. Thus, besides deforesting to demarcate land possession and to grow their subsistence crops, they would likely use this species timber to build their houses and farm general infrastructure.	It is included in the official list compiled by IBAMA of threatened Brazilian plants (Portaria IBAMA nº 37, April 03, 1992). According to the Brazilian List it is considered "endangered". However due to its commercial importance the sustainable harvesting is allowed following best practices management regulated by the Brazilian Law (MMA's Normative Instruction nº5 of December 11, 2006). As measure already taken every tree of this species is inventoried in the census of the Annual Operation Unit (UPA), the minimum harvesting DBH (Diameter on the Breast High) of 50 centimeters, 10% of the tree that could be harvested (already considering the minimum harvesting DBH) shall not be harvested, and from the trees left a maximum of 3 individuals per 100 hectares can be harvested. All the individuals mapped and the harvesting planning should be described in the Annual Operation Plan (POA) and approved by the environmental authority, in this case IBAMA prior to the SFM activities. After the SFM operation a post-harvesting report shall be prepared with the outputs of the harvesting, including for instance number of individuals harvested by specie and their volume, and this report authority, IBAMA, to be evaluated. The next POA can only be approved if all the measures required by law were followed and can be observed on the ground. The sustainable forest management with low impact logging of this specie following the Brazilian Law, which is regional abundant,	Number of individuals identified through the pre-harvesting activities and their location, relative abundance and site occupancy and number and number and percentage of individuals harvested and their volume (m <sup>3</sup> ). To be monitor every year along with the SFM activities and reported on the post-harvest report and in the Project's Activities Annual report.	Subpopulations are now reduced to remaining areas of high dense forest. <a href="http://www.iucnredlist.org/details/33918/0">http://www.iucnredlist.org/details/33918/0</a>

			<p>will avoid its predatory exploitation, support the consolidation of a spatial and temporal record of this specie presence and enable its survival and existence over the years. Additionally, the post-harvest micro activities of the SFM (permanent sample plots and damage evaluation) will evaluate if there was any collateral damage to individuals of this specie that was not harvested and, if there was, will monitor the regrowth.</p> <p>These measures are planned to happen in the SFM activities to be carried by the Project and are consistently already in place since 2004 in neighbour SFM initiative already carried out by The Project proponents in the Pará State.</p>	
<p><b>Vulnerable</b></p>	<p><b>Bertholletia excelsa Bonpl. (Brazil Nut Tree)</b></p>	<p>According with IUCN RED List: "The Brazil nut tree has experienced major declines in its population because of deforestation. One of the greatest concentrations of trees exists in Tocantins valley where various activities, from the construction of the trans-amazon railway to the building of a reservoir, have brought about a shrinking in the gene pool. An area of 200,000 ha in south Pará has been purchased by the government with the aim of settling landless farmers. Trees remaining in the vast cattle ranches of Pará and Acre are neglected and dying. The production of Brazil nuts more than halved between 1970 and 1980, apparently because of deforestation. Almost all Brazil nuts consumed around the world still come from wild trees. Little is known about the impact of seed gathering on regeneration, but it</p> <p>Under the without-project scenario, with the continuous unplanned and uncontrolled deforestation its population trend would likely decline. Though the drives and underlining causes of deforestation are not direct linked with the exploitation of this specie, the forest cover loss would cause the lost of its habitat, and therefore the population would decline.</p>	<p>As already discussed in other parts of this document the Brazil Nut Tree is protected by the Brazilian Law (Decree nº 5.975, November 30, 2006, the same law that protects the "Castanheira" and the "Seringueira", Hevea) and extremely important to communities livelihood, therefore as a measure already taken any SFM activity will harvest a tree of this specie. As a measure to be taken in order to guarantee the maintenance and to monitor its population, during every inventory activity related with the SFM (diagnosis inventory or pre-harvesting inventorying) the presence of any individual of this specie will be mapped and reported. This measure will allow the SFM activities to avoid and damage on this individual (through pre-harvesting planning) and also will support the consolidation of a spatial and temporal record of this specie presence. Considering that even with the individuals mapping previously to the harvest that might still have some damage risk, the post-harvest micro activities of the SFM</p>	<p>Number of individuals identified through the pre-harvesting activities and their location, relative abundance and site occupancy. To be monitor every year along with the SFM activities and reported on the post-harvest report and in the Project's Activities Annual report.</p> <p><a href="http://www.iucnredlist.org/details/32986/0">http://www.iucnredlist.org/details/32986/0</a></p>

clearly can be detrimental under some regimes where agoutis, the natural disperser of the Brazil nut, are hunted or chased away.”

(permanent sample plots and damage evaluation) will evaluate if there was any collateral damage and, if there was, will monitor the regrowth.

These measures are planned to happen in the SFM activities to be carried by the Project and are consistently already in place since 2004 in neighbour SFM initiative already carried out by The Project proponents in the Pará State.

According with IUCN RED List: Decreasing. "The population is inferred to be in on-going decline as it is thought to be subject to continued trapping pressure. Due to high demand in the pet trade this once-common species has declined dramatically during the last twenty years (J. Gilardi in litt. 2007). It has been heavily exported from Guyana during this time, leading to its virtual extirpation from that country. Trappers from Guyana and French Guiana have since travelled over the border to Brazil to buy birds for export (T. Arndt in litt. 2007, L. Silveira in litt. 2007). An annual export quota of 600 birds was set by Guyana in the 1980s and it is thought that more than 2,200 were imported into the United States between 1981 and 1985 (J. Gilardi in litt. 2007). Trade is on-going, and due to the ease with which birds can be attracted to bait (e.g. corn) and the large distances they will travel, it is easy to trap all the individuals in an area (J. Gilardi in litt. 2007)."

Under the without-project scenario, with the continuous unplanned and uncontrolled deforestation its population trend would likely decline. Though there aren't many registries of trapping pressure of this specie in the Projec Zone, the forest cover lost would cause the lost of its habitat, and there fore the population would decline.

As a measure already taken no illegal activity (including predatory hunting and trapping) ins allowed within the Project Zone, and every time the Surveillance Team catch such activities it is reported and forwarded to the responsible environmental agency. As a measure to be taken in order to guarantee the maintenance and to monitor its population and especial attention will be directed to the specie presence during the biodiversity monitoring activities. Once o group of this specie is identified in certain transect a specialist will be contacted to monitor its population every biodiversity monitoring period (at least once every two years).

Presence and distribution of the species and populations, and population size. To be monitored at least once every two years, depending on resources availability, and reported in the Biodiversity Monitoring report.

The total population probably now numbers no more than a couple of thousand individuals at the very most, but probably fewer, with at least 90% of these in Brazil, within a restricted, decreasing and fragmented range (Laranjeiras et al. 2011).  
<http://www.iucnredlist.org/details/62233372/0>

**Endanger  
ed** ***Aratinga  
solstitialis***  
**(Jandaia  
Amarela)**

## References

- ANDRESEN, E.; FEER, F.. **The role of dung beetles as secondary seed dispersers and their effect on plant regeneration in tropical rainforests.** In: P. M. Forget, J. E. Lambert, P. E. Hulme, and S. B. Vander Wall, editors. *Seed fate: Predation, dispersal and seedling establishment* CABI International, Oxon, UK, 2005. p. 331-349.
- ARVORAR & IPÊ. Diagnóstico Ambiental da Região do Projeto Jari/Amapá. Relatório Final. Volume Principal. Nazaré Paulista. 2011.
- BARLOW, J. et. al. Quantifying the biodiversity value of tropical primary, secondary, and plantation forests. **Proceedings of the National Academy of Sciences.** EUA, v. 104, n. 47, p. 18555-18560, 2007.
- BETTS, R.A.; COX, P.M.; COLLINS, M.; HARRIS, P.P.; HUNTINGFORD, C.; JONES, C.D. The role of ecosystem-atmosphere interactions in simulated Amazonian precipitation decrease and forest dieback under global climate warming. **Theoretical and Applied Climatology.** v. 78, p. 157 – 175, 2004.
- BETTS, R.A.; MALHI, Y.; ROBERTS, J.T. The future of Amazon: new perspectives from climate, ecosystem and social sciences. **Philosophical Transactions of the Royal Society Biological Sciences.** v. 363, p. 1729 – 1735, 2008.
- BIOFÍLICA INVESTIMENTOS AMBIENTAIS. Projeto REDD+ Jari/Amapá. Descrição do Projeto: VCS Versão 3.0. 2013.
- BLOIS, J.L.; HADLY, E.A. Mammalian response to Cenozoic climatic change. **Annual Review of Earth and Planetary Sciences.** 37. p. 181–208, 2009.
- BRANDO, P.M.; NEPSTAD, D.C.; DAVIDSON, E.A.; TRUMBORE, S.E.; RAY, D.; CAMARGO, P. Drought effects on litterfall, wood production and belowground carbon cycling in an Amazon forest: results of a through fall reduction experiment. **Philosophical Transactions of the Royal Society Biological Sciences.** v. 363, p. 1839–1848, 2008.
- BROWN, S et. al. **Baselines for land-use change in the tropics: application to avoided deforestation Projects.** *Mitigation and Adaptation Strategies for Climate Change*, 12:1001-1026. 2007
- COCHRANE, M. A.; LAURANCE, W. F. **Synergisms among Fire, Land Use, and Climate Change in the Amazon.** *AMBIO: A Journal of the Human Environment*, Vol. 37, Issue 7, pg(s) 522-527. 2008.

- COOPER, G.J. **The Science of the Struggle for Existence: On the Foundations of Ecology**. Cambridge University Press, Cambridge. 2003.
- DAVIS, A.J.; HOLLOWAY, J.D.; HUIJBREGTS, H.; KRIKKEN, J.; KIRK-SPRIGGS, A.H.; SUTTON, S.L. Dung beetles as indicators of change in the forests of northern Borneo. **Journal of Applied Ecology**, v. 38, p. 593-616. 2001.
- DEL MONTE-LUNA, P.; BROOK, B.W.; ZETINA-REJON, M.J.; CRUZ-ESCALONA, V. The carrying capacity of ecosystems. **Global Ecology and Biogeography**, v. 13, p. 485–495. 2004.
- ECOLOGY BRASIL. **Estudo de Impacto Ambiental da UHE Santo Antônio do Jarí**. [S.l.: s.n.]. Disponível em: <[http://siscom.ibama.gov.br/licenciamento\\_ambiental/UHE\\_PCH/UHE Santo Antônio \(Rio Jarí\)/EIA\\_RIMA Agosto 2009/](http://siscom.ibama.gov.br/licenciamento_ambiental/UHE_PCH/UHE_Santo_Antônio_(Rio_Jarí)/EIA_RIMA_Agosto_2009/)>, 2009.
- FEARNISIDE P.M. **Desmatamento na amazônia brasileira: história, índices e consequências**. Megadiversidade, vol. 1, nº 1. 2005.
- FEARNISIDE P.M. As Mudanças Climáticas Globais e a Floresta Amazônica. *In*: BUCKERIDGE M. (ed.) **A Biologia e as Mudanças Climáticas Globais no Brasil**. São Paulo: Universidade de São Paulo, 2008.
- FUNDAÇÃO ORSA. Vale do Jari: Plano de Desenvolvimento Humano e Sustentável. 2014
- FUNDAÇÃO ORSA. Relatório de Atividades 2011. Alphaville-Barueri. 2011
- GARDNER, T.A.; RIBEIRO-JUNIOR, M.A.; BARLOW, J.; ÁVILA-PIRES, T.C.S.; HOOGMOED, M.S.; PERES, C.A. The value of primary, secondary and plantation forests for a Neotropical Herpetofauna. **Conservation Biology**, v. 21, n. 3, p. 775-787, 2007.
- GARDNER, T.A.; RIBEIRO-JUNIOR, M.A.; BARLOW, J.; ÁVILA-PIRES, T.C.S.; HOOGMOED, M.S.; PERES, C.A. The value of primary, secondary and plantation forests for a Neotropical Herpetofauna. **Conservation Biology**, v. 21, n. 3, p. 775-787, 2007.
- GTPPCDAP. Grupo de Trabalho do Plano de Prevenção e Controle do Desmatamento e Queimadas do Estado do Amapá. **Plano de Prevenção e Controle do Desmatamento e Queimadas do Estado do Amapá**. Amapá: Governo do Estado do Amapá, 2009, 106 p.
- HAYASHI, S., SOUZA JR., C., SALES, M. & VERÍSSIMO, A. 2012. **Boletim Transparência Florestal da Amazônia Legal** Janeiro de 2012. Imazon.
- HAYASHI, S., SOUZA JR., C., SALES, M. & VERÍSSIMO, A. 2012. **Boletim Transparência Florestal da Amazônia Legal** Fevereiro de 2012. Imazon.

HAYASHI, S., SOUZA JR., C., SALES, M. & VERÍSSIMO, A. 2011. **Boletim Transparência Florestal da Amazônia Legal** Dezembro de 2011. Imazon.

HAYASHI, S., SOUZA JR., C., SALES, M. & VERÍSSIMO, A. 2011. **Boletim Transparência Florestal da Amazônia Legal** Novembro de 2011. Imazon.

HAYASHI, S., SOUZA JR., C., SALES, M. & VERÍSSIMO, A. 2011. **Boletim Transparência Florestal da Amazônia Legal** Outubro de 2011. Imazon.

HAYASHI, S., SOUZA JR., C., SALES, M. & VERÍSSIMO, A. 2011. **Boletim Transparência Florestal da Amazônia Legal** Setembro de 2011. Imazon.

HAYASHI, S., SOUZA JR., C., SALES, M. & VERÍSSIMO, A. 2011. **Boletim Transparência Florestal da Amazônia Legal** Agosto de 2011. Imazon.

HAYASHI, S., SOUZA JR., C., SALES, M. & VERÍSSIMO, A. 2011. **Boletim Transparência Florestal da Amazônia Legal** Julho de 2011. Imazon.

HAYASHI, S., SOUZA JR., C., SALES, M. & VERÍSSIMO, A. 2011. **Boletim Transparência Florestal da Amazônia Legal** Junho de 2011. Imazon.

HAYASHI, S., SOUZA JR., C., SALES, M. & VERÍSSIMO, A. 2011. **Boletim Transparência Florestal da Amazônia Legal** Maio de 2011. Imazon.

HAYASHI, S., SOUZA JR., C., SALES, M. & VERÍSSIMO, A. 2011. **Boletim Transparência Florestal da Amazônia Legal** Abril de 2011. Imazon.

HAYASHI, S., SOUZA JR., C., SALES, M. & VERÍSSIMO, A. 2011. **Boletim Transparência Florestal da Amazônia Legal** Março de 2011. Imazon.

HAYASHI, S., SOUZA JR., C., SALES, M. & VERÍSSIMO, A. 2011. **Boletim Transparência Florestal da Amazônia Legal** Fevereiro de 2011. Imazon.

HIGUCHI, N., PEREIRA, H. S., DOS SANTOS, J., LIMA, A.J.N. **Governos locais amazônicos e as questões climáticas globais**. Manaus: Edição dos Autores, 86 P. 2009.

HORGAN, F. G. Effects of deforestation on diversity, biomass and function of dung beetles on the eastern slopes of the Peruvian Andes. **Forest Ecology and Management**, v. 216, p. 117-133, 2005.

LINS, C. **Jarí 70 anos de história**. Rio de Janeiro: Data Forma, 3ª Ed., 2001. p. 304p

- MALHI, Y.; Wright, J. Spatial patterns and recent trends in the climate of tropical rainforest regions. **Philosophical Transactions of the Royal Society B Biological Sciences**. v. 359, p. 311 – 329, 2004.
- MARENGO, J.A. *et al.* **Riscos das mudanças climáticas no Brasil: análise conjunta Brasil-Reino Unido sobre os impactos das mudanças climáticas e do desmatamento na Amazônia**. São Paulo. 2011.
- MARENGO, J.A.; NOBRE, C.A.; TOMASELLA, J.; CARDOSO, M.F.; OYAMA, M.D. Hydro-climatic and ecological behavior of the drought of Amazonia in 2005. **Philosophical Transactions of the Royal Society Biological Sciences**. v. 363, p. 1773-1778, 2008.
- MAY, R.M. Ecology: a test of ideas about mutualism. **Nature**, 307, 410–411, 1984.
- MCGEOCH, M.A.; VAN RENSBURG, B.J.; BOTES, A.. The verification and application of bioindicators: a case study of dung beetles in a savanna ecosystem. **Journal of Applied Ecology**, v. 39, p. 661-672, 2002.
- NELSON B.W.; OLIVEIRA A.A.de.. **Biodiversidade da Amazônia Brasileira: avaliação e ações prioritárias para a conservação, uso sustentável e repartição de benefícios**. In: CAPOBIANCO J.P.R.; VERÍSSIMO A.; MOREIRA A.; SAWYER D.; SANTOS I.dos; PINTO L.P. (Orgs). São Paulo, Estação Liberdade: Instituto Socioambiental, 2001, p.32-176.
- NETO J. H.; CIANCIARUSO, M.V. **Efeitos de queimadas recorrentes na diversidade funcional de aves amazônicas**. Universidade Federal de Goiás, Goiânia, 2012.
- NOBRE C.A., SAMPAIO G. e SALAZAR L.. **Mudanças climáticas e Amazônia. Centro de Previsão de Tempo e Estudos Climáticos (CPTEC)**, do Instituto Nacional de Pesquisas Espaciais (INPE). 2009.
- NOBRE C.A., MARENGO, J., SAMPAIO G, BETTS, R., KAY, G. Riscos das mudanças climáticas no Brasil: Análise Conjunta Brasil-Reino Unido sobre os Impactos das Mudanças Climáticas e do Desmatamento na Amazônia Cap. 4. Mudanças climáticas globais e regionais. pag. 25-29. 2011
- MMA. **PAS - Plano Amazônia Sustentável: diretrizes para o desenvolvimento sustentável da Amazônia Brasileira**. Brasília, 2008.
- OLIVEIRA, A .A.. Inventários quantitativos de árvores em matas de terra firme: histórico com enfoque na Amazônia Brasileira. **Acta Amazônica**, 30(4): 543-567, 2000.

- OLIVEIRA, V.H.F. **Usos múltiplos da paisagem amazônica e a comunidade de escarabeíneos**. 2011. 66p. Dissertação (Mestrado em Ecologia Aplicada) – Universidade Estadual de Lavras, Lavras, MG, 2011.
- PARMESAN, C.; YOHE, G. A globally coherent fingerprint of climate change impacts across natural systems. **Nature**. v. 421, n. 2, p. 37-42. 2003.
- PECK, S.B.; FORSYTH, A.. Composition, Structure, and Competitive Behavior in a Guild of Ecuadorian Rain-Forest Dung Beetles (Coleoptera, Scarabaeidae). **Canadian Journal of Zoology-Revue Canadienne De Zoologie**, v. 60, p. 1624-1634, 1982.
- POEMA. **Diagnóstico sócio-ambiental das comunidades rurais do vale do jari**. . Belém - PA, 2005.
- PORTER-BOLLAND L., ELLIS E.A., GUARIGUATA M.R., RUIZ-MALLEN I., NEGRETE-YANKELEVICH S., REYES-GARCIA V. Community managed forests and forest protected areas: An assessment of their conservation effectiveness across the tropics (2012) **Forest Ecology and Management**, 268, pp. 6-17.
- PUTZ FE, ZUIDEMA PA, PINARD MA, BOOT RGA, SAYER JA, et al. (2008) Improved tropical forest management for carbon retention. **PLoS Biol** 6(7): e166. doi:10.1371/journal.pbio.0060166
- RAYDEN, T. Assessment, management and monitoring of High Conservation Value Forest (HCVF): A practical guide for forest managers. ProForest, Oxford, 2008.
- RAMINELLI, R. J. A incrível conquista da Amazônia. **Revista Nossa História**, p. 74 - 79, 2003.
- ROOT, T.L.; PRICE, J.T.; HALL, K.R.; SCHNEIDER, S.H.; ROSENZWEIG, C.; POUNDS, J.A. Fingerprints of global warming on wild animals and plants. **Nature**. v. 421, n. 2, p. 57-60, 2003.
- SABOGAL, C.; LENTINI, M.; POKORNY, B.; SILVA, J.N.; ZWEEDE, J.; VERÍSSIMO, A.; BOSCOLO, M. **Manejo florestal empresarial na Amazônia Brasileira: restrições e oportunidades - relatório síntese**. Belém: CIFOR, Imazon, Embrapa, IFT, 2006. 74p.
- SOUSA, W. P. **A dinâmica dos sistemas de produção praticados em uma Unidade de Conservação de Uso Direto na Amazônia - A Reserva Extrativista do Rio Cajari no Estado do Amapá**. Dissertação (Mestrado em Agriculturas Amazônicas) - Universidade Federal do Pará / Programa de Pós Graduação em Agriculturas Familiares e Desenvolvimento Sustentável / Belém - PA. 2006.



SPATHELF, P.; MATTOS, P. P.; BOTOSSO, P. C. Certificação florestal no Brasil - uma ferramenta eficaz para a conservação das florestas naturais? **Revista Floresta** 34(3) Set/Dez 2004, 373-379, Curitiba-PR.

VCS-VERIFIED CARBON STANDARD. Methodology for Avoided Unplanned Deforestation VM0015, v1.1. 2009.

VELOSO, H. P.; RANGEL-FILHO, A. L. R. & LIMA, J. C. A.. **Classificação da vegetação brasileira adaptada a um sistema universal**. IBGE, Rio de Janeiro, p.124, 1991

WAGLEY, C. **Uma comunidade amazônica: Estudo do homem nos trópicos**. São Paulo: Companhia Editora Nacional, 1977. p. 401