# Verified Carbon Standard

# FEIJÓ REDD+ PROJECT

Ecológica

Document Prepared by Ecológica Assessoria Ltda.

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| **Project Title** | Feijó REDD+ Project |
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# 1 PROJECT DETAILS

## 1.1 Summary Description of the Project

In Brazil, 58.39% of its entire 8,510,345,538 km² territory[1] is covered by forests, representing almost 497 million hectares of forest area[2] and putting it in second place for nations with most forest area worldwide. Brazil has also been at times the country with the highest levels of deforestation in the world, having lost almost 15 million hectares of its forest area from 2010 to 2020[3]. The Amazon rainforest experienced its worst year in a decade in 2021. From January to December, 10,362 km² of native forest were destroyed[4]. The expansion of the agriculture frontier due to cattle ranching, soy farming, timber collection, infrastructure and colonization by subsistence agriculturalists has contributed to this historically high deforestation rate, which is concentrated in the northern portion of the country, where the Amazon Rainforest lies.

The Feijó REDD+ Project has its properties located in the State of Acre, Brazil. Acre was one of the most isolated States in the country, however, the inauguration of the Abunã Bridge, built over the Madeira River, officially interconnected the State to the rest of Brazil's road network in May 2021[5]

Acre also registered high deforestation rates in 2021, with 889 km², behind only Pará (4,037 km²), Amazonas (2,071 km²), Mato Grosso (1,504 km²) and Rondônia (1,290 km²)[6].

In addition to the pressure of increasing livestock and other important activities in the region, the properties are located between settlement projects, in addition to receiving an energy transmission line that will pass inside the properties. Therefore, the area is a vulnerable target of invasions and illegal actions, such as fires and theft of wood. Thus, monitoring and vigilance actions are fundamental to guarantee the standing forest.

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[1] IBGE – Instituto Brasileiro de Geografia e Estatística. Brazil. 2019. Available at: <https://www.ibge.gov.br/cidades-e-estados>.

[2] FAO and UNEP. 2020. The State of the World's Forests 2020. Forests, biodiversity and people. Rome. Available at: <https://doi.org/10.4060/ca8642en>.

[3] FAO. 2020. Global Forest Resources Assessment 2020: Main report. Rome. Available at: < https://doi.org/10.4060/ca9825en>.

[4] IMAZON – Instituto do Homem e do Meio Ambiente da Amazônia. Available at:< Desmatamento na Amazônia cresce 29% em 2021 e é o maior dos últimos 10 anos - Imazon>

[5] ESTADÃO - Available at: <Ponte integrou Acre à malha rodoviária brasileira em 2021, mas Estado já tinha estrada federal (estadao.com.br)>

[6] Available at:< Acre é o quinto estado com maior índice de desmatamento em 2021, diz relatório - (contilnetnoticias.com.br)>

The primary objective of the Feijó REDD+ Project is to avoid the unplanned deforestation (AUD) of the 41,625.87 ha project area, and APD of the 1,874.13 ha project area, consisting of 100% Amazon rainforest. The project area is located within three private properties. A Sustainable Forest Management Plan is also carried out in some of the properties.

The AUD REDD project is expected to avoid a predicted 5,750 ha of deforestation, equating to 2,660,226 $tCO_2e$ in emissions reductions over the 30-year project lifetime (02-January-2019 to 31-December-2048), with an annual average of 88,674 $tCO_2e$.

The APD REDD project is expected to avoid a predicted 1,751 ha of deforestation, equating to 820,856 $tCO_2e$ in emissions reductions over the 30-year project lifetime, with an annual average of 27,362 $tCO_2e$.

Beyond the project's ecological and carbon benefits, a proportion of the carbon credits generated will be dedicated to improving the social and environmental conditions in the project region, specifically contributing to improving deforestation control, and developing environmental education and other social activities. The contribution to sustainability is being monitored through the application of the SOCIALCARBON® Standard and CCB Standard. The SOCIALCARBON Standard is based on six main indicators: Biodiversity; Natural; Financial; Human; Social and Carbon Resources and CCB Standard is based on The Climate, Community and Biodiversity Standards.

## 1.2   Sectoral Scope and Project Type

Sectoral Scope: 14 - Agriculture, Forestry, Land Use

Project Category: Avoided Unplanned Deforestation (AUD project activity) and Avoiding Planned Deforestation (APD).

This is not a grouped project.

## 1.3   Project Eligibility

According to the VCS Methodology Requirements v4.1[7], for Reduced Emissions from Deforestation and Degradation (REDD) projects, eligible activities are those that reduce net GHG emissions by reducing deforestation. Thus, the project is eligible under the scopes of the VCS Program:

- The project meets all applicable rules and requirements set out under the VCS Program;
- The project applies a methodology eligible under the VCS Program;
- The implementation of this project activity does not lead to the violation of any applicable law;
- This is an eligible AFOLU project category under the VCS Program: reduced emissions from deforestation and degradation (REDD);
- This project is not located within a jurisdiction covered by a jurisdictional REDD+ program;

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[7] Available at < https://verra.org/wp-content/uploads/2022/01/VCS-Methodology-Requirements_v4.1.pdf>

- Implementation partners are identified in the project activity;

- This project does not convert native ecosystems to generate GHG. The project area only contains native forested land for a minimum of 10 years before the project start date;

- This project does not occur on wetlands and does not drain native ecosystems or degrade hydrological functions;

- Non-performance risk will be analyzed in accordance with the VCS Program document AFOLU Non-Permanence Risk Tool.

## 1.4    Project Design

☒  The project includes a single location or installation only

☐  *The project includes multiple locations or project activity instances, but is not being developed as a grouped project*

☐  *The project is a grouped project*

### Eligibility Criteria

Not applicable. This is not a grouped project.

## 1.5    Project Proponent

| | |
|---|---|
| **Organization name** | UTRB – Universal Timber Resource do Brasil |
| **Contact person** | Fábio Levi Vidigal |
| **Title** | Legal representant |
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| | |
|---|---|
| **Organization name** | Nigrum Capital Assessoria e Gestão de Negócios LTDA. |
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|---|---|
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## 1.6 Other Entities Involved in the Project

| Organization name | Uezu Planejamento Ambiental S/S LTDA |
|---|---|
| Role in the project | Geographic Information System – GIS |
| Contact person | Alexandre Uezu |
| Title | CEO |
| Address | Rodovia Dom Pedro I – KM 47, SN, Nazaré Paulista – SP |
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## 1.7 Ownership

The project area is located in the municipality of Feijó, State of Acre, and is composed by the following areas:

- Fazenda Cachimbo
- Fazenda Escanteio
- Fazenda Porto Brasil

These properties are owned by Universal Timber Resources do Brasil Participação Ltda. (hereafter "UTRB" or "the company"). The legal documents proving the land title and ownership of the property will be made available to the auditors during the validation process, in the Appendix.

## 1.8 Project Start Date

AUD – Avoiding Unplanned Deforestation

The Universal Timber Resources do Brasil inspected the properties at the end of 2018 to verify the conditions regarding the contract with the tenant to carry out forest management. They found some irregularities and non-compliance with contractual clauses by the company Sena Madeireira Ltda (hereafter SML). Among the irregularities, they observed that the surveillance of the area was flawed, allowing the entry of external agents that could promote deforestation and degradation, in addition to hunting of wild animals within the properties. A wheel loader that had suffered a fire and had been abandoned in the handling area was also found, without proper removal and environmentally correct destination. Added to these two points and in order to comply with the environmental legislation of forest management authorizations, they determined that the contracted company could not enter in the APUs in the rainy season.

The partners of UTRB was informed and at the end of December 2018 notify SML, as a matter of urgency, of the termination of the contract. Thus, on January 2, 2019, the UTRB notified SML about the breach of contract and canceled it.

After these events, several measurements were also carried out by the technical team of the properties. According to Methodology VM0015, section 1.2.2, the project start date is the date which additional activities have started or will be started to avoid unplanned deforestation. Thus, as of January 2, 2018, the UTRB adopted several measures to avoid repeating actions such as those mentioned above. An environmental conservation plan was developed to prevent encroachment, deforestation and illegal hunting. Among the actions listed on the plan are: intensification of the presence of forest engineers responsible for the management plan in the area contact with the local community to avoid new encroachments and illegal actions on the property, hiring housekeepers, restriction of entry of fishermen during the prohibited season, etc.

Thus, for the AUD REDD Project, the Project Start Date was defined on 02-January-2019.

APD – Avoiding Planned Deforestation

Based on the applicability of methodology VM0007 (section 4.3.3) which cites that REDD project for planned deforestation activity is applied where the conversion of forest land to a deforested condition must be legally permitted.

Therefore, to define the Project Start Date of the APD REDD Project, the date of issue of the authorizations for forest exploitation issued by the Environmental Institute of Acre-IMAC for Fazenda Cachimbo was adopted. The PSD was defined on 17-April-2020. This is the date on which the owner obtained authorization to clear the forest for use in pasture.

| | Project Start Date |
|---|---|
| **AUD** | 02 January 2019 |
| **APD** | 17 April 2020 |

## 1.9    Project Crediting Period

The AUD and APD REDD Project has a crediting period of 30 years, from 02-January-2019 to 31-December-2048.

## 1.10    Project Scale and Estimated GHG Emission Reductions or Removals

The estimated annual GHG emission reductions/removals of the project are:

☐  <20,000 tCO$_2$e/year

☒  20,000 – 100,000 tCO$_2$e/year

☐  100,001 – 1,000,000 tCO$_2$e/year

☐  >1,000,000 tCO$_2$e/year

Table 1. Project scale

| Project Scale | |
|---|---|
| Project | **X** |
| Large project | |

Table 2. Estimated GHG emission reductions – AUD and APD

| Year | Estimated GHG emission reductions or removals (tCO$_2$e) AUD | Estimated GHG emission reductions or removals (tCO$_2$e) APD |
|---|---|---|
| 2019 | 63,623 | |
| 2020 | 66,299 | 136,715 |
| 2021 | 68,993 | 136,753 |
| 2022 | 71,723 | 136,790 |
| 2023 | 74,493 | 136,828 |
| 2024 | 77,301 | 136,866 |
| 2025 | 80,146 | 136,904 |
| 2026 | 83,034 | 0 |
| 2027 | 85,961 | 0 |
| 2028 | 88,931 | 0 |
| 2029 | 77,448 | 0 |

| | | |
|---|---|---|
| 2030 | 80,359 | 0 |
| 2031 | 83,166 | 0 |
| 2032 | 86,013 | 0 |
| 2033 | 88,899 | 0 |
| 2034 | 91,827 | 0 |
| 2035 | 94,796 | 0 |
| 2036 | 97,807 | 0 |
| 2037 | 100,862 | 0 |
| 2038 | 103,962 | 0 |
| 2039 | 86,290 | 0 |
| 2040 | 89,272 | 0 |
| 2041 | 92,089 | 0 |
| 2042 | 94,946 | 0 |
| 2043 | 97,843 | 0 |
| 2044 | 100,781 | 0 |
| 2045 | 103,761 | 0 |
| 2046 | 106,785 | 0 |
| 2047 | 109,852 | 0 |
| 2048 | 112,963 | 0 |
| Total estimated ERs | 2,660,226.39 | 820,856.42 |
| Total number of crediting years | 30 | 30 |
| Average annual ERs | 88,674.21 | 27,361.88 |

## 1.11   Description of the Project Activity

The principal objective of the Feijó REDD project (hereafter "the project") is the conservation of 43,500ha of Amazon rainforest. The project combines conservation measures and forest management plan in the project area's properties.

Among the conservation measures adopted by the UTRB are the hiring of farm housekeeper, supervision of the team responsible for the management plans, and effective participation in raising awareness among neighbors about illegal deforestation and hunting, as well as preventing invasion of properties. Another aspect adopted is to always keep environmental and police entities updated on suspicious and illegal activities in the surroundings of the project, through filling formal complaints.

The project will combine conservation with forest management, through a Sustainable Forest Management Plan in some areas. The increased complexity and costs associated with the sustainable operation of the forest as well as other factors such as bureaucratic constraints and price fluctuations of certified timber prices make sustainable forest management less competitive than illegal logging. Thus, revenue from the sales of the Verified Carbon Units (VCUs) is essential for the project activity to compete with profitable alternative land use scenarios. In addition, the carbon credit revenue is important to mitigate encroachment and illegal actions within and around the Project Area. This surveillance allows

the management of the environmental situation of the property during the development of the forest exploration work, in addition to ensuring compliance with the requirements set out in the current legislation.

Environmental education and other social activities that benefit the local community will be supported, as well as improving the control of deforestation. The SOCIALCARBON® Standard and CCB Standard are being applied to assess and monitor the project's contribution to sustainability, thus improving the social and environmental conditions in the project region.

In addition to the AUD project, the APD project will avoid the deforestation of areas that had previous authorization to planned deforestation.

Therefore, besides forest conservation, the present project aims to improve and quantify its social and environmental activities that benefit the local communities, through application of the SOCIALCARBON® Methodology and CCB Standard. This methodology measures the contribution of carbon projects towards sustainable development. The SOCIALCARBON® Methodology is based on six main indicators: Biodiversity; Natural; Financial; Human; Social and Carbon Resources and aims to deliver high-integrity benefits in each to improve social and environmental conditions in the project region.

The project is in the State of Acre, which has a set of public policies that support forest conservation. In 2010, the State created a state system Sistema Estadual de Incentivos a Serviços Ambientais - SISA (State System of Incentives to Environmental Services) to promote the maintenance and expansion of environmental services. The SISA-Carbon Program, established in Articles 22 and 23 of Law no. 2,308 / 2010, sets out only the objectives of this program, which is to promote the GHG emission reductions, according to the voluntary goal of the State of Acre. The SISA-Carbon Program described in articles 22 and 23 of Law no. 2,308 / 2010 does not provide any determination, rule, limitation or specification about the execution of REDD projects in the territory of the State of Acre, by private initiative or by the State of Acre itself.

Thus, the articles of the Law on the SISA-Carbon Program were not regulated by the State of Acre in order to have a legal record on their accounting, registration of projects and distribution of emission reduction percentages. There is no regulation of articles 24, 25 and 26 of Law No. 2,308 / 2010, so that the applicability of these articles is not fully enforced. In other words, the SISA-Carbon Program has no legal applicability on these issues until they become fully regulated.

In addition, the SISA-Carbon Program, established by law, does not, under any circumstances, prohibit REDD projects from being carried out by private initiative, nor does it have, under any circumstances, the obligation of private REDD projects to adhere to the SISA-Carbon Program.

The Government of the State of Acre instituted on 23-December-2021 the ISA Clima Program, whose main objective is to implement initiatives that promote the mitigation and adaptation to climate change.

The present AUD REDD project is expected to avoid a predicted 5,750 ha of deforestation, equating to 2,660,226 $tCO_2e$ in emissions reductions over the 30-year project lifetime (02-January-2019 to 31-December-2048), with an annual average of 88,674 $tCO_2e$, including buffer (RF), leakage (DLF) and

project efficiency (EI) reductions. For the APD REDD project is expected to avoid a predicted 1,751 ha of deforestation, equating to 820,856 $tCO_2e$ in emissions reductions over the 30-year project, with an annual average of 27,362 $tCO_2e$.

## 1.12 Project Location

The project area is situated in the municipality of Feijó, in the State of Acre, Northwest of Brazil and border with Peru. This municipality is located around 363 km from Rio Branco, capital of the State of Acre. The project area is covered 100% by native vegetation, totaling approximately 43,500 ha.

The closest access road is BR 364, called Rodovia Marechal Rondon, highway connecting the Brazilian states of São Paulo, Goiás, Mato Grosso, Rondônia, and Acre to Mâncio Lima, the last municipality in Brazil on the border with Peru. Inside the properties run the Jurupari and Pauini River.

**Figure 1. Location of the properties**



The municipality of Feijó shares borders with two other municipalities in the South of the State of Amazonas, Envira and Pauini, as presented in figure below. The South of Amazonas is a region that has also been the target of pressure from different segments, loggers, cattleman, soy producers, among others, coming from neighboring states.

**Figure 2. Municipality of Feijó/AC and surroundings**
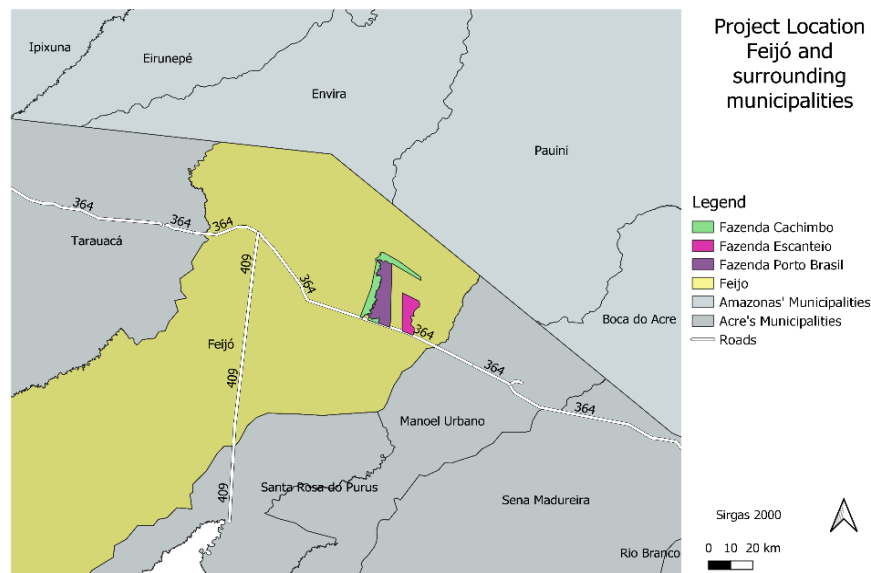


## 1.13 Conditions Prior to Project Initiation

<u>General characteristics of the project area and reference region</u>

The Feijó REDD+ Project makes an important contribution to the conservation of Northwest Amazonia's biodiversity as well as to climate regulation in Brazil and South America. The region is known for the amount of rubber and Brazil nuts tree, as well as mountains and waterfalls.

The general characteristics of the project area and reference region are described below.

<u>Climate and Hydrology</u>

The project region is classified as megathermal (humid tropical), according to Köppen, with average temperatures in the coldest month above 18°C[8]. These are regions with high humidity and rainfall between 1,500 and 2,500 mm/year with reduced rainfall in the months between July and September[9]. These high precipitation values near the Andes Mountains are due to the orographic rise of moisture transported by the east trade winds of the Intertropical Convergence Zone (ITCZ)[10]. The project area is included in the following climate subtypes (Figure 3), according to the Köppen classification:

- Af - with well-distributed rainfall throughout the year and without dry season;
- Am - with a short dry season, under the influence of monsoons.

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[8] Pereira et. al. Agrometeorologia – Fundamentos e Aplicações Práticas, Guaíba/RS, Edipec, 2002.

[9] EMBRAPA/CNPTIA. Available at: https://www.infoteca.cnptia.embrapa.br/infoteca/bitstream/doc/1092480/1/26630.pdf

[10] INPE/CPTEC. Available at: http://climanalise.cptec.inpe.br/~rclimanl/boletim/cliesp10a/fish.html

There is a trend in the region to reduce rains in the north-south direction and increase in an east-west direction. The average annual temperature is 24.5°C, with maximum air temperatures around 32ºC with little variation throughout the year across the State. In the month of July, the lower air temperatures with minimum ranging from 17°C to 22°C.

**Figure 3. Cimate Köppen classification**
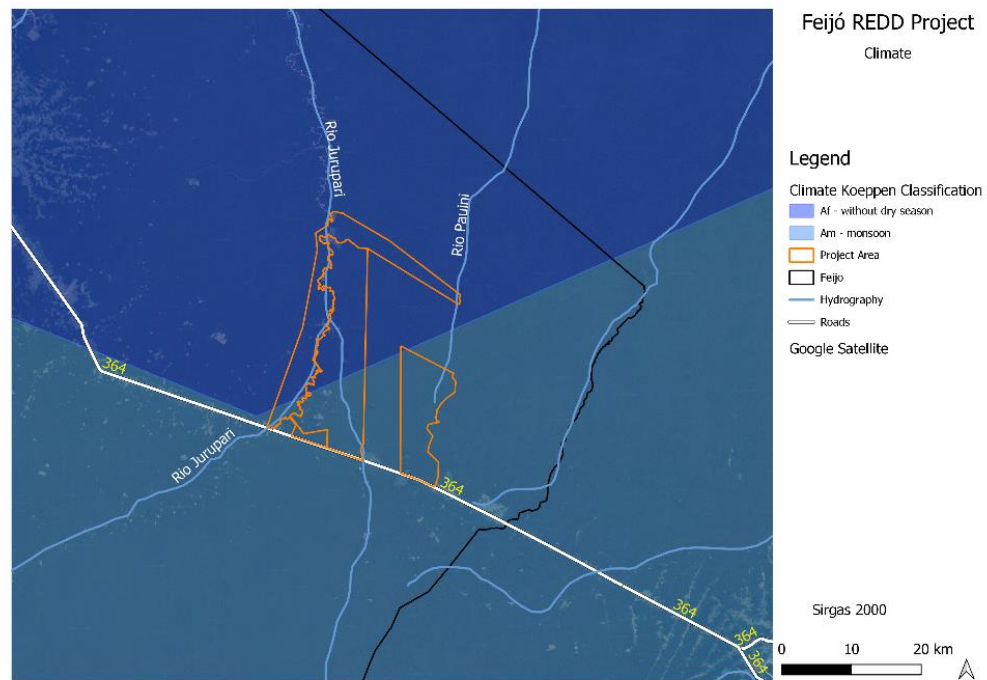


The project area is in the Amazon Basin, specifically in the Coari Lake and Auati Parana River sub-basin and Coari Lake and Purus River sub-bacin. The main river near the Project Area are the Jurupari and Pauini River (Figure 4). The Pauini River is a tributary of the Purus River and has a considerable volume of water that thickens the dense Purus basin. Its springs are in the state of Acre, but it cuts cities both in that state and in Amazonas.

**Figure 4. The Project Area and Hydrology**
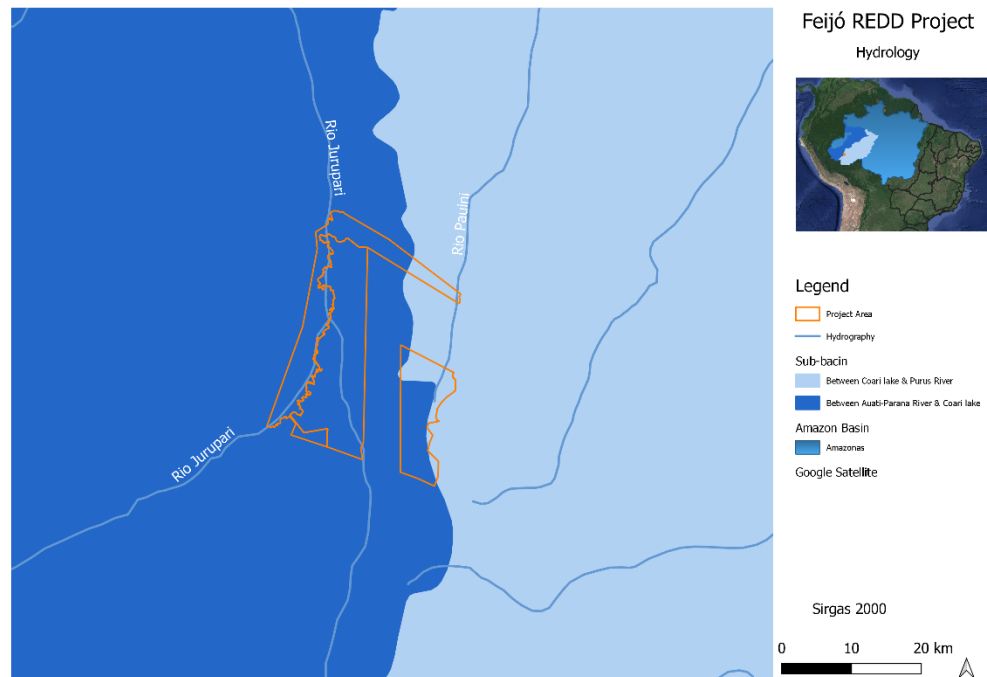


### Geology, Topography and Soils

In Acre, as in other parts of the Amazon, the altimetric variation is not expressive. The geomorphological unit in which the Project Area is inserted is the Juruá-Iaco Depression, which has an altitude between 150 and 440m and slopes that vary from medium to strong (Figure 5).

**Figure 5. Distribution of geomorphological units in the State of Acre[11]**
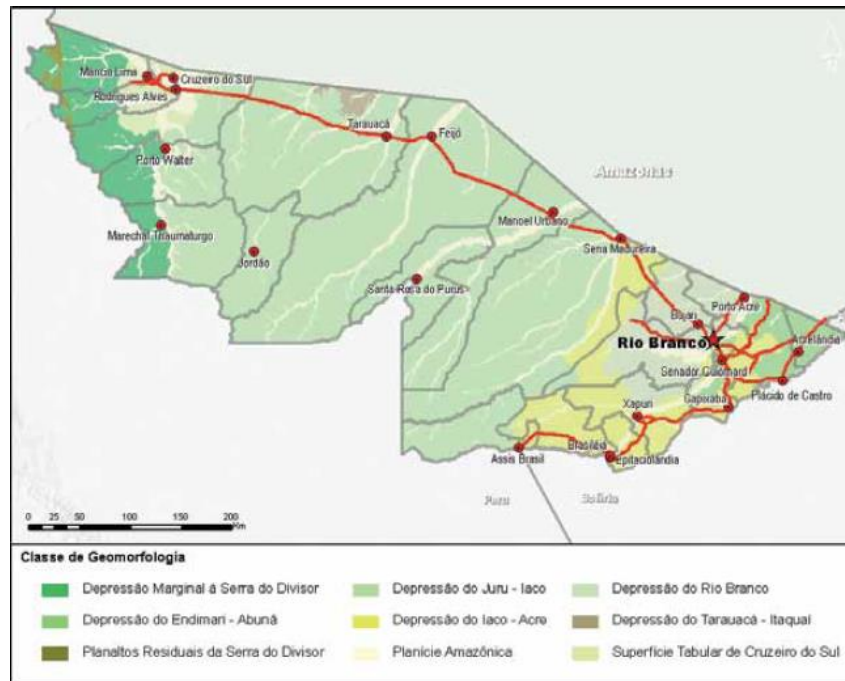


The predominant soil types within the Project Area are Luvissols and Cambisol (Figure 6). The Luvissols occurs over most of the Project Area. They are shallow soils, that is, they rarely exceed 1m in depth and usually present an abrupt textural change. The limitations of the use are related to the amount of stones in the surface horizon that can hinder the use of agricultural mechanization and the susceptibility to compaction. The Luvissols are poorly or moderately weathered soil, with clay accumulation on the B horizon. The Cambisol are heavily, even imperfectly, drained, shallow to deep soils. They are soils in the beginning of formation, with few characteristics. A large part of Cambisols is under natural vegetation[12].

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[11] ACRE, 2010. Zoneamento Ecológico-Econômico do Acre Fase II, 2006. Available at: https://agencia.ac.gov.br/zoneamento-ecologico-economico-do-acre-e-destaque-entre-os-estados-da-amazonia-legal/

[12] Lepsch, Igo. 2013. Formação e Conservação dos Solos, 2ª ed. Oficina de Textos. São Paulo.

**Figure 6. Project Area and Soils**
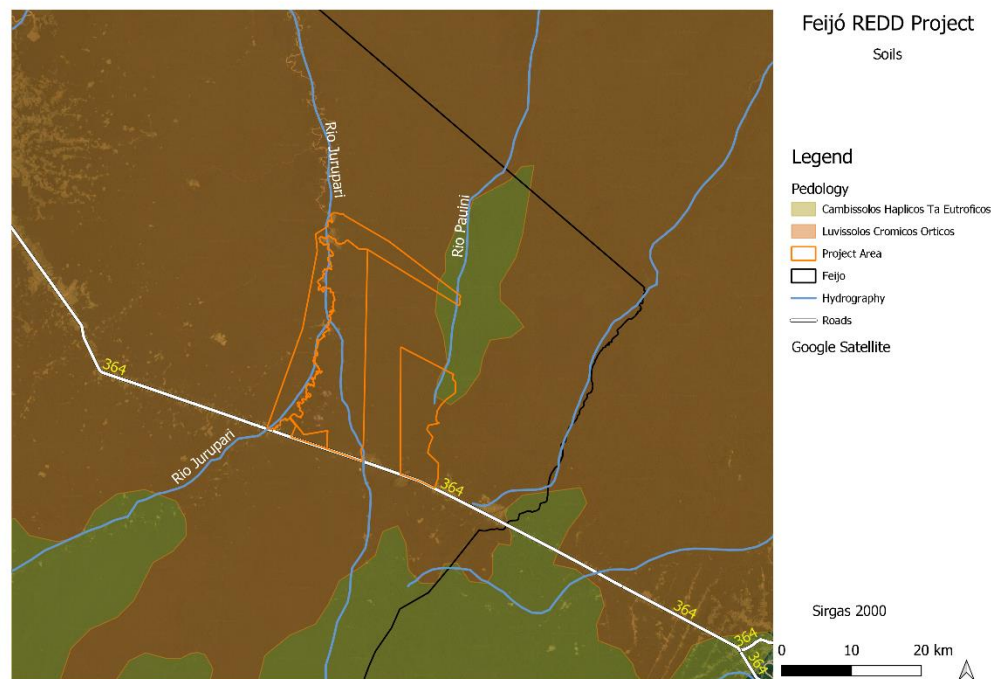


### Vegetation cover

In Acre, two phytoecological regions predominate: the Dense Tropical Forest and the Open Tropical Forest. The Open Tropical Rainforest area variation of the Dense Tropical Rainforest, being a more open forest formation. The Feijó REDD Project's boundaries are composed by 12 different phyrophysiognomies, predominantly Open Tropical Rainforest.

The Open Tropical Rainforest, which surrounds the southern part of the Amazon Basin, occurs in numerous disjoint clusters and is characterized by three facies dominated by typical genera, suggestively located in less humid areas. In the project area there are two main: "palm forest" and "bamboo forest" and their variations: Alluvial Open Rainforest with palm trees (Aap), Lowland Open Rainforest with palm trees (Abp) and Lowland Open Rainforest with bamboo (Abb) (Figure 7).

**Figure 7. Vegetation in Project Area**
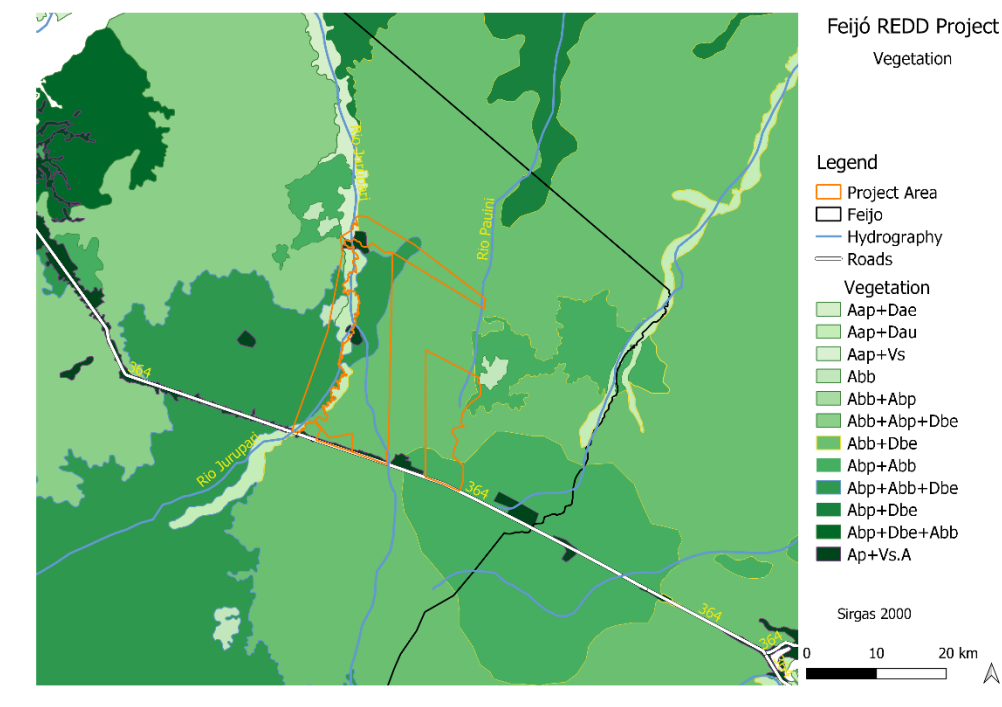


### Biodiversity

The western Amazon is considered by some researchers a high priority region for biodiversity conservation. According to the Acre ZEE, the group of birds was the one that presented the greatest diversity within State, followed by fish, mammals, amphibians and reptiles[13]. According to The World Conservation classification Union (IUCN), Acre has three species of mammals in the category "Endangered" and 14 in the category "Vulnerable", with nearly all of these species are mammals, with the exception of two species of reptiles - the tracajá (*Podocnemis unifilis*) and the tortoise (*Geochelone denticulata*), highly targeted by hunters.

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[13] ACRE, 2010. Zoneamento Ecológico-Econômico do Acre Fase II, 2006. Available at: https://agencia.ac.gov.br/zoneamento-ecologico-economico-do-acre-e-destaque-entre-os-estados-da-amazonia-legal/

**Figure 8. Tracajá (left) and tortoise (right) [14]**



*Podocnemis unifilis*

*Geochelone denticulata*
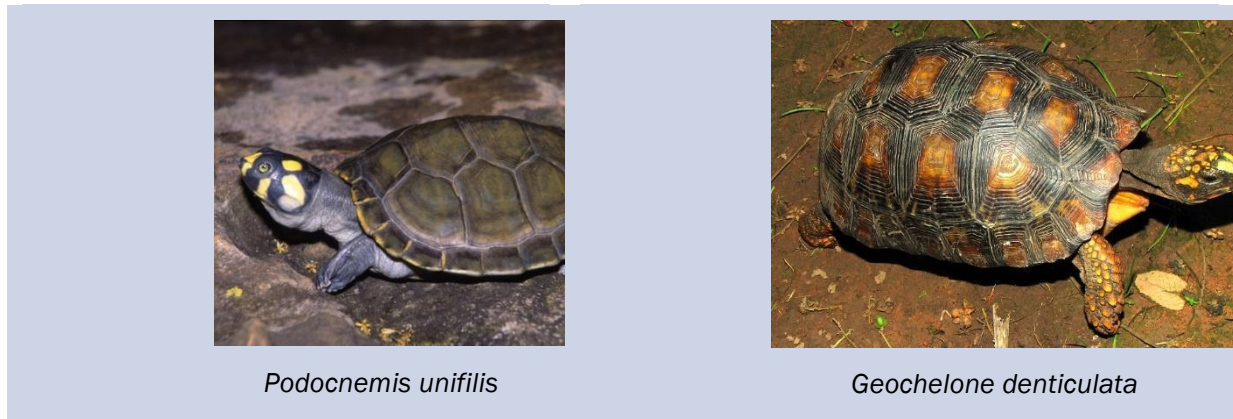
Two species that occur in Acre appear as "Endangered" by the IUCN. They are on the List of Brazilian Fauna Species Endangered: the giant otter (*Pteronura brasiliensis*) and the giant armadillo (*Priodontes maximus*). both are species targeted by hunters and with reproductive rates relatively low.

**Figure 9. Giant otter (left) and giant armadillo (right**



*Pteronura brasiliensis*

*Priodontes maximus*
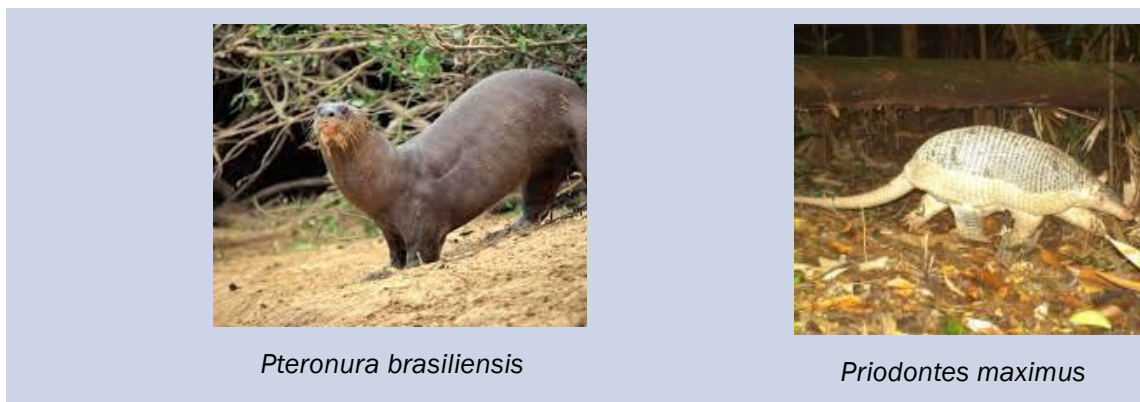
As some of the other conditions existing prior to the project initiation are the same as the baseline scenario and, as per the VCS guidelines, therefore, there is no need to repeat the description of the scenarios, the remaining conditions prior to the project initiation can be found at Section 3.4 (Baseline Scenario).

Socio-economic conditions

The municipality of Feijó has more than 27,970 km$^2$ of territorial extension, being the largest in the State of Acre. The population count, in the last census of 2010, was around 32,412 people and a population density of 1.16 inhab/km$^2$. The population estimate for 2021 is 34,986 people. In 2019, only 6% of the total population was considered economically active. Formal workers received, on average, 1.4 minimum

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[14] Available at: https://www.icmbio.gov.br/portal/faunabrasileira/estado-de-conservacao/

wages (Figure 10), which placed the municipality at the lowest levels in the state (21st out of 22 municipalities) and in the country (5265th out of 5570). This represents living with US$ 247.64 per month, considering that in 2019 the salary was R$ 998.00[15] and the average dollar rate, from June to December, was US$ 4.03[16].

Figure 10. **Average monthly salary of formal workers**[17]
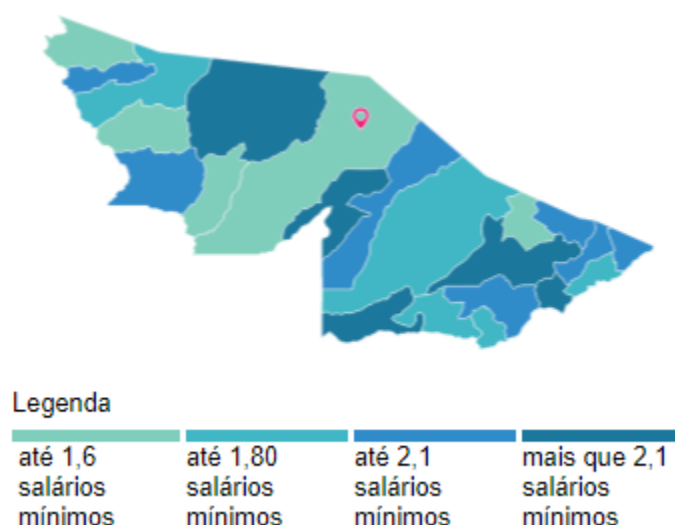


The municipality also has one of the lowest schooling rates, around 82% of children aged 6 to 14 years attended schools in the period of the last census, 2010. The HDI of the municipality is low and in 2010 it was 0.539. The municipality's GDP is also one of the lowest in the State of Acre, placing Feijó in the 19th position out of 22 municipalities and 4247th in the Brazilian ranking.

- **Ecosystem type:** The project area is composed 100% by Amazon Rainforest native vegetation. The Feijó REDD Project's boundaries are composed by 12 different phyrophysiognomies, predominantly Open Tropical Rainforest.

- **Current and historical land-use:** The project area is used by UTBR for sustainable forest management. The property, not within the project area, has also authorized cleared area for cattle ranch.

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[15] http://www.planalto.gov.br/ccivil_03/_Ato2019-2022/2019/Decreto/D9661.htm

[16] https://www.bcb.gov.br/estabilidadefinanceira/historicocotacoes

[17] https://cidades.ibge.gov.br/brasil/ac/feijo/panorama

- **Has the land been cleared of native ecosystems within 10 years of the project start date?**

☐ Yes     ☒ No

## 1.14 Compliance with Laws, Statutes and Other Regulatory Frameworks

According to Brazilian Forest Code (Law nᵒ 12,651, of May 25, 2012), Art. 3 for the purposes of this Law, it is understood by:

*I – Legal Amazon: the States of Acre, Pará, Amazonas, Roraima, Rondônia, Amapá and Mato Grosso, and the regions located to the North of parallel 13°S, in States of Tocantins and Goiás, and to the West of meridian 44°W, of the State of Maranhão.*

*II - Permanent Preservation Area - APP: protected area, covered or not by native vegetation, with the environmental function of preserving water resources, the landscape, geological stability and biodiversity, facilitating the gene flow of fauna and flora, protecting the soil and ensure the well-being of human populations*

*III – Legal Reserve (LR): an area located inside a rural estate, excluding the Area of Permanent Preservation, necessary for sustainable use of natural resources, conservation and recovering of ecological processes to conservation of biodiversity and to shelter and protection of native fauna and flora.*

Even with these definitions of the Brazilian Forest Code, there is a clear disregard for legal conservation requirements, especially in the Amazon region, since a large part of deforestation occurs in areas that should be preserved.

One of the main ways to combat deforestation in Brazil is the command and control mechanisms, such as effective monitoring, demanding compliance with environmental legislation and a greater presence of the State. However, this does not seem to be implemented in most regions of the country, due to the tendencies of some governmental spheres that disregard responsibilities to the detriment of other economic and social interests. This attitude placed Brazil among the biggest deforesters in the world. With the approval of the new Forest Code (2012) and its general pardon for those who deforested, a significant increase in annual deforestation rates was observed over these years.

**Figure 11. The Brazilian Legal Amazon States Acre (AC), Amapá (AP), Amazonas (AM), Maranhão (MA), Mato Grosso (MT), Pará (PA), Rondônia (RO), Roraima (RR), Tocantins (TO) (ancient North of Goiás). Source: IBGE (2019)**
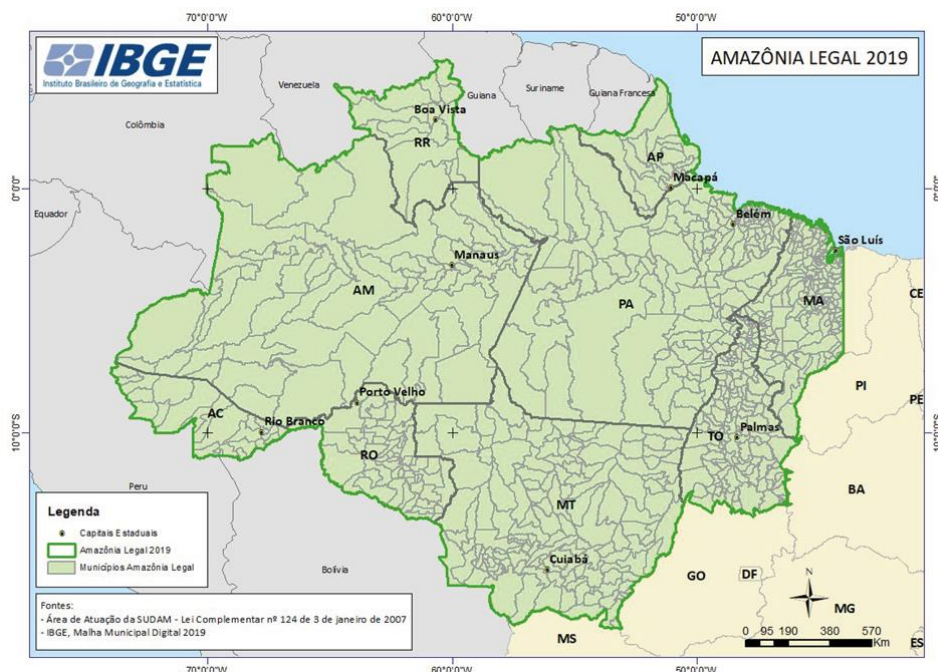
After the deforestation peak of 27,772 km² per year in 2004, the rate dropped by 84% over the eight consecutive years, reaching 4,571 km² per year in 2012. This created a dangerous illusion in Brasília, the Capital of Brazil, that deforestation was under control and that the government could therefore build roads, dams and other infrastructure without putting the forest at risk. Unfortunately, that was never the case. Deforestation rates have been on an upward trend since 2012, reaching 11,088 km² per year in 2020, or 243% above the 2012 rate[18].

In spite of the legal provisions intended to preserve at least 80% of the Amazon Forest coverage, lack of law enforcement by local authorities along with public policies seeking to increase commodities production and encourage land use for agricultural, bio energy and cattle breeding purposes created a scenario of almost complete disregard of the mandatory provisions of the Forest Code. High rates of criminality associated with land disputes usually jeopardize efforts concerning law enforcement improvement. In addition to that, to cover vast distances of areas with low demographic density makes tracking of illegal activities and land surveillance very difficult for the authorities. Accordingly, policies implemented to address illegal deforestation only by means of command-and-control approaches have proven to be ineffective so far.

Given the permanent attempts against the Project Area, the project proponents use their best efforts to prevent property invasion and to remain in compliance with Brazilian Forest Code. Some of the farms hold sustainable logging activities. These activities are carried out according to Sustainable Forest Management Plans previously approved by the Acre State Government. These management plans were conceived in accordance with Brazilian Forest Code and local regulation.

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[18] Available at: https://amazoniareal.com.br/o-desmatamento-da-amazonia-brasileira-14-o-aumento-do-desmatamento-pos-desaceleracao/#:~:text=As%20taxas%20de%20desmatamento%20t%C3%AAm,de%202012%20(Figura%2014).

Therefore, all calculations were made assuming that the reference region has a general non-compliance with the Brazilian Forest Code. Thus, the baseline scenario considers the potential of unplanned deforestation in the project area to surpass the limits stipulated by the Law.

As the project activity involves planned logging, it is important to describe compliance with applicable law.

Sustainable Forest Management is defined in Article 3, VII, of Law 12.651/2012 (National Forest Code), as the administration of natural vegetation to obtain economic, social and environmental benefits, respecting the support mechanisms of the ecosystem object of management and considering, cumulatively or alternatively, the use of multiple wood species or not, of multiple products and by-products of the flora, as well as the use of other goods and services.

The National Forest Code and Decree 5,975[19] also specifies the technical and scientific foundations of the PMFS (Article 31, 1st paragraph):

II. Characterization of physical and biological environment;

III. Determination of existent stock;

IV. Exploitation intensity compatible with the forest's environmental support capacity;

V. Cutting cycle compatible with the restoration time of the volume of product extracted from the forest;

VI. Promotion of the natural regeneration of the forest;

VII. Adoption of adequate silvicultural system;

VIII. Adoption adequate operating system;

IX. Monitoring of the development of remaining forest;

X. Adoption of mitigation measures for the social and environmental impacts.

In addition, the law also demands the fulfillment of obligations related to control and monitoring of the sustainable management. The company must submit an annual report to the environmental agency with information on the entire Sustainable Management Area and the description of the appliable activities and must be submitted to technical inspections to approve the operations and activities carried out in the management area.

The technical procedures for the preparation, presentation, execution and technical evaluation of sustainable forest management plans are regulated by IBAMA's Normative Instructions: 1, of

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[19] Available at < http://www.planalto.gov.br/ccivil_03/_ato2004-2006/2006/decreto/d5975.htm>

24/04/2007[20]; 5, of 11/12/2006[21]; and 2 of 27/06/2007[22]; in addition to CONAMA's Resolution 406, of 02/02/2009[23].

The approval of the SFMP and expedition of environmental licenses is responsibility of the State Government. After the SFMP approval, the company proceeds to the applicable Forest Management Licenses (AUTEX, in national level, and PEF, in Acre).

In this sense the preparation for REDD+ activities, programs and projects become essential for the Project Region, not only as a means to promote forest conservation, but also as a way to implement a new productive forest-based economy. This scenario needs to be reinforced because the areas in question hold incomparable biological and cultural diversity, with their traditional inhabitants marginalized from the process of economic development through capitalized livestock production.

Regarding other regulatory frameworks that exist in Brazil, on November 28th, 2019 occurred the approval of the Federal Decree 10,144/2019, which establishes the National Commission for Reducing Emissions of Greenhouse Gases from Deforestation and Forest Degradation, Conservation of Forest Carbon Stocks, Sustainable Management of Forests and Increase of Forest Carbon Stocks - REDD+[24].

In terms of the object, jurisdictionally and scope of the Decree 10,144/2019, it is understood that its application is merely administrative, that is, it merely organizes the functioning of the Federal Government about the REDD+ agenda. Its application is restricted to the federal entities of the Public Administration, and, because it is a decree, a normative type that only grants regulation to the matter of law, does not establish duties or obligations to the society.

Thus, Decree 10,144/2019[25] only limits the Federal Government's understanding of what shall be accounted for in order to comply with mitigation commitments of other countries to the United Nations Framework Convention on Climate Change. It does not impose a barrier or obstacles to the implementation of REDD projects and the commercialization of carbon assets generated from these projects. This consideration in the Decree does not affect or interfere with the voluntary or regulated carbon market, domestic or international.

There is no law in Brazil that does not allow or restrict the execution of REDD projects or that does not allow or restrict any commercial transaction of assets resulting from REDD projects. On the contrary, such transactions are valid and legally permitted. Thus, there is no contradiction or irregularity between the Feijó REDD Project and such Decree.

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[20] https://www.ibama.gov.br/component/legislacao/?view=legislacao&legislacao=113233

[21] https://www.ibama.gov.br/component/legislacao/?view=legislacao&legislacao=112909

[22] https://www.ibama.gov.br/component/legislacao/?view=legislacao&force=1&legislacao=113306

[23] https://www.ibama.gov.br/component/legislacao/?view=legislacao&legislacao=114762

[24] http://www.planalto.gov.br/ccivil_03/_Ato2019-2022/2019/Decreto/D10144.htm#art12

[25] Available at <http://www.planalto.gov.br/ccivil_03/_ato2019-2022/2019/decreto/D10144.htm>

## 1.15   Participation under Other GHG Programs

### 1.15.1 Projects Registered (or seeking registration) under Other GHG Program(s)

This project has not been registered and is not seeking registration under any other GHG Programs.

### 1.15.2 Projects Rejected by Other GHG Programs

Not applicable. This project is not requesting registration in any other GHG Programs nor has the project been rejected by any other GHG programs.

## 1.16   Other Forms of Credit

### 1.16.1 Emissions Trading Programs and Other Binding Limits

Does the project reduce GHG emissions from activities that are included in an emissions trading program or any other mechanism that includes GHG allowance trading?

☐  Yes            ☒  No

If yes, provide the name of the emissions trading program or other mechanism that allows GHG allowance trading.

### 1.16.2 Other Forms of Environmental Credit

Has the project sought or received another form of GHG-related credit, including renewable energy certificates?

☐  Yes            ☒  No

If yes, provide the name of the other program(s) under which the project has sought or received another form of GHG-related credit.

## 1.17   Sustainable Development Contributions

By avoiding the planned and unplanned deforestation of the project area and, in addition, applying social environmental standards such as SOCIAL CARBON and CCB, the Feijó REDD+ Project contributes to National Sustainable Development[26] and SDGs[27] such as good health and well-being, quality education gender equality, decent work and economic growth, sustainable production and consumption patterns, actions to combat climate change and its impacts, and conservation of terrestrial ecosystems and biodiversity.

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[26] Available at < https://odsbrasil.gov.br/> Last visited 13/01/2022.

[27] Available at < https://sdgs.un.org/goals> Last visited 10/02/2022.

Reducing deforestation and promoting sustainable development in the Amazon is also a key component to Brazil's Nationally Determined Contribution (NDC) under the Paris Agreement. According to the Brazilian Government Ministry for the Environment (in Portuguese, Ministério do Meio Ambiente), the implementation of REDD+ activities are an important component to meet the Country's contribution under the United Nations Framework Convention on Climate Change while preserving natural forest resources[28].

## 1.18 Additional Information Relevant to the Project

### Leakage Management

Although there is a risk of leakage, the proponents believe that the project activity will have positive impacts on surrounding areas. This project activity might be a successful benchmark of the following technical and economic aspects:

I.        Sustainable management of forest resources generating success and profit;

II.        Additional return to forest management, thanks to REDD incentives, which can compensate avoiding deforestation for other activities;

III.        Positive example of sustainable real estate maintenance, in addition to profits with sustainable management plus REDD revenues.

In this context, the project may well stimulate other landowners to adhere to this project concept.

#### Leakage Management Plan

By means of Project monitoring activities, satellite imaging, and social and governmental cooperation for monitoring the project and its surroundings, the project proponent believes that the success of this business plan will generate an increased number of sustainably managed areas with REDD+.

### Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description.

### Sustainable Development

This project activity complies with the logic of the environmental priorities defined by the Brazilian Federal Administration, which, in the course of COP 14 Conference held in Poznan, Poland, in December

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[28] Commitments available in Brazil's iNDC, from 2016, and reinforced in its update in 2020/2021. Available at https://www4.unfccc.int/sites/NDCStaging/Pages/Party.aspx?party=BRA > Last visited on 13/01/2022

2008, declared a deforestation reduction goal of 70% by the year 2018, and following that, further goals of achieving zero illegal deforestation by 2030, and offsetting of greenhouse gas emissions originating from legal removal of vegetation. The latter are elements of the Brazilian Nationally Determined Contribution (NDC), which the country aims to adopt within the framework of the Paris Climate Agreement (COP-21)[29]. In order to attain this goal, it will be necessary to join government initiatives with independent actions (such as that proposed under the present project).

The map below shows the strategic zone for "Containment of the expansion fronts with protected areas and alternative uses", which was established by the Macro ZEE/AL (Macrozoneamento Ecológico-Econômico da Amazônia Legal; Ecological and Economic Macro-zoning of Amazon) from the Brazilian Ministry of Environment[30], which encompasses the Project Area. The Macro ZEE/AL aims to establish strategic indications of occupation and use of land on a sustainable basis to guide, at the regional scale, the development and spatial distribution of public development policies, territorial and environmental planning, as well as the decisions of private agents. Due to its shield function for the heart forest protection, this territorial unit deserves strengthening policies. In this context, this project activity aligns with the strategies set up by the Macro ZEE/AL of the Brazilian Ministry of Environment.

**Figure 12. Containment of the expansion fronts with protected areas and alternative uses (Source: Brazilian Ministry of the Environment – MMA)[31]**

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[29] http://redd.mma.gov.br/pt/redd-e-a-indc-brasileira

[30] http://www.mma.gov.br/component/k2/item/8200-figuras

[31] https://antigo.mma.gov.br/component/k2/item/8200-figuras.html

CONTENÇÃO DAS FRENTES DE EXPANSÃO COM ÁREAS PROTEGIDAS E USOS ALTERNATIVOS

Due to the increase in deforestation in the Legal Amazon, the Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAm; Plano de Ação para a Prevenção e Controle do Desmatamento na Amazônia Legal) came into effect, starting mitigation and ongoing actions to reduce deforestation. This project activity is in line with main PPCDAm premises[32].

This project therefore represents an enormous potential to continue the work started by other REDD+ neighbouring projects in Feijó/AC: assisting the Federal Administration and state agencies to attain these goals and leverage further pilot REDD projects in the municipalities, which are facing critical deforestation levels.

## Further Information

No further information to disclose.

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[32]https://www.gov.br/agricultura/pt-br/acesso-a-informacao/acoes-e-programas/ppa/plano-plurianual-ppa-2016-2019-1/relatorio_avaliacao_programa_2050-mudanca_do_clima.pdf

# 2 SAFEGUARDS

## 2.1 No Net Harm

*Summarize any potential negative environmental and socio-economic impacts and the steps taken to mitigate them.*

## 2.2 Local Stakeholder Consultation

*Describe the process for, and the outcomes from, the local stakeholder consultation conducted prior to validation. Include details on the following:*

- *The procedures or methods used for engaging local stakeholders (e.g., dates of announcements or meetings, periods during which input was sought).*

- *The procedures or methods used for documenting the outcomes of the local stakeholder consultation.*

- *The mechanism for on-going communication with local stakeholders.*

- *How due account of all and any input received during the consultation has been taken. Include details on any updates to the project design or justify why updates are not appropriate.*

*For AFOLU projects, also demonstrate how the project has or will communicate the following:*

- *The project design and implementation, including the results of monitoring.*

- *The risks, costs and benefits the project may bring to local stakeholders.*

- *All relevant laws and regulations covering workers' rights in the host country.*

- *The process of VCS Program validation and verification and the validation/verification body's site visit.*

## 2.3 Environmental Impact

*Summarize any environmental impact assessments carried out with respect to the project, where applicable.*

## 2.4 Public Comments

*Demonstrate how due account of all and any comments received during the public comment period has been taken. Include details on any updates to the project design or demonstrate the insignificance or irrelevance of comments.*

## 2.5 AFOLU-Specific Safeguards

*For AFOLU projects, provide details on the following:*

- *Local stakeholder identification process and a description of results.*

- *Risks to local stakeholders due to project implementation and how the project will mitigate such risks.*

- *Risks to local stakeholder resources due to project implementation and how the project will mitigate such risks, including the plans to ensure the project will not impact local stakeholder's property rights without the free, prior and informed consent.*

- *Processes to ensure ongoing communication and consultation with local stakeholders, including a grievance redress procedure to resolve any conflicts which may arise between the project proponent and local stakeholders.*

*For AFOLU projects with no impacts on local stakeholders, provide evidence of such.*

*For non-AFOLU projects, this section is not required.*

# 3 APPLICATION OF METHODOLOGY

## 3.1 Title and Reference of Methodology

The list below references the methodologies, tools and modules used in the project scope:

**For AUD:**

- VM0015 "Methodology for Avoided Unplanned Deforestation", Version 1.1, 03 December 2012[33].

- VT0001 - Tool for the demonstration and assessment of additionality in VCS agriculture, forestry and other land use (AFOLU) project activities Version 3.0, 1 February 2012[34].

- AFOLU "Non-Permanence Risk Tool" VCS Version 4, Procedural Document, 19 September 2019, v4.0[35].

**For APD:**

- VM0007 REDD + Methodology Framework (REDD+ MF) Version "Methodology for Avoided Unplanned Deforestation", Version 1.6, 08 September 2020[36].

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[33] https://verra.org/methodology/vm0015-methodology-for-avoided-unplanned-deforestation-v1-1/

[34] https://verra.org/methodology/vt0001-tool-for-the-demonstration-and-assessment-of-additionality-in-vcs-agriculture-forestry-and-other-land-use-afolu-project-activities-v3-0/

[35] https://verra.org/wp-content/uploads/2019/09/AFOLU_Non-Permanence_Risk-Tool_v4.0.pdf

[36] https://verra.org/methodology/vm0007-redd-methodology-framework-redd-mf-v1-6/

- VMD0001 – Estimation of carbon stocks in the above and below ground biomass in the live tree and non-tree pools (CP-AB). Version 1.1, 11 October 2013.

- VMD0002 Estimation of carbon stocks in the dead wood pool (CP-D). Version 1.0, 03 December 2010.

- VMD0005 Estimation of carbon stocks in the long-term wood products pool (CP-W). Version 1.1, 20 November 2012.

- VMD0006 Estimation of baseline carbon stock changes and greenhouse gas emissions from planned deforestation/forest degradation and planned wetland degradation (BL-PL). Version 1.3, 08 September 2020.

- VMD0009 Estimation of emissions from activity shifting for avoiding planned deforestation/forest degradation and avoiding planned wetland degradation (LK-ASP). Version 1.3, 08 September 2020.

- VMD0015 Methods for monitoring of GHG Emissions and removals (M-MON). Version 2.1, 20 November 2012.

- VMD0016 Methods for Stratification of the Project Area (X-STR). Version 1.2, 08 September 2020.

- VT0001 Tool for the demonstration and assessment of additionality in VCS agriculture, forestry, and other land use (AFOLU) project activities (T-ADD). Version 3.0 1 February 2012.

- AFOLU Non-Permanence Risk Tool, v4.0, 19 September 2019.

- CDM – Executive Board "Tool for testing significance of GHG emissions in A/R CDM project activities (Version 01)" EB 31[37];

## 3.2    Applicability of Methodology

| VM0015 | |
|---|---|
| Applicability Conditions | Justification of Applicability |
| a) Baseline activities may include planned or unplanned logging for timber, fuelwood collection, charcoal production, agricultural and grazing activities as long as the category is unplanned deforestation according to the | The project activity includes planned logging for timber, in addition to avoiding unplanned deforestation. None of the baseline land-use conversion activities are legally designated or sanctioned for forestry or deforestation, and |

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[37] Available at: https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-04-v1.pdf. Last visited on January 6th, 2022.

| | |
|---|---|
| most recent VCS AFOLU requirements. | hence the project activity qualifies as avoided unplanned deforestation. This is in accordance with the definition of unplanned deforestation under the VCS Standard v4.0.

The primary land uses in the baseline scenario are: cattle ranching, mainly for producing beef cattle; and timber harvesters, acting both legally and illegally. These unplanned deforestation and degradation agents have been attracted due to infrastructure expansion.

Therefore, in the baseline scenario, the project area would continue to be illegally deforested by the deforestation agents described above. With that said, the present criteria are fulfilled. |
| b) Project activities may include one or a combination of the eligible categories defined in the description of the scope of the methodology (table 1 and figure 2). | Within the categories of Table 1 and Figure 2 of the methodology, the present project activity falls within category B, "Avoided Deforestation with Logging in the Project Case". The project area contains 100% native vegetation, and a sustainable forest management plan is implemented. In addition, it is important to note that degradation is not included in either the baseline or project scenario. The area is in the 1st logging cycle and most of the area has not been managed yet, which categorizes it as old growth. |
| c) The project area can include different types of forest, such as, but not limited to, old growth forest, degraded forest, secondary forests, planted forests and agroforestry systems meeting the definition of "forest". | The forest classes that compose the project area are named as per Technical Manual for Brazilian Vegetation[38]. The area is considered forest as per the definition of forest adopted |

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[38] Available at <https://www.terrabrasilis.org.br/ecotecadigital/pdf/manual-tecnico-da-vegetacao-brasileira.pdf>

| | |
|---|---|
| | by FAO[39]: Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10%, or trees able to reach these thresholds in situ.<br><br>No deforested, degraded or areas otherwise modified by humans were included in the project area at Project Start Date. |
| d) At project commencement, the project area shall include only land qualifying as "forest" for a minimum of 10 years prior to the project start date. | The project area consisted of 100% tropical rainforest in 2008 – 10 years prior to the project start date – all of which conformed to the Brazilian definition of forest[40]. This was ascertained using satellite images, as described in the section Project Location of the present VCS PD. |
| e) The project area can include forested wetlands (such as bottomland forests, floodplain forests, mangrove forests) as long as they do not grow on peat. Peat shall be defined as organic soils with at least 65% organic matter and a minimum thickness of 50 cm. If the project area includes forested wetlands growing on peat (e.g. peat swamp forests), this methodology is not applicable. | Project Area is composed of Luvissols and Cambisol. Therefore, none of the project region grows on peat, satisfying this applicability criterion. |
| **VT001** | |
| AFOLU activities the same or similar to the proposed project activity on the land within the proposed project boundary performed with or without being registered as the VCS | The activities in the proposed project boundary does not lead to violation of any applicable law even if the law is not enforced. The sustainable forest management plan is |

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[39]https://www.fao.org/3/y4171e/y4171e10.htm#:~:text=FAO%202000a%20(FRA%202000%20Main,of%20other%20predominant%20land%20uses.>

[40] Brazil adopts the FAO forest definition: "Land with tree crown cover (or equivalent stocking level) of more than 10 percent and area of more than 0.5 hectares (ha). The trees should be able to reach a minimum height of 5 meters (m) at maturity in situ." Available at: <http://www.fao.org/docrep/006/ad665e/ad665e06.htm>.

| | |
|---|---|
| AFOLU project shall not lead to violation of any applicable law even if the law is not enforced; | an activity authorized and endorsed in Brazil, and the landowner has all the environmental and legal authorizations necessary to conduct the activity. |
| The use of this tool to determine additionality requires the baseline methodology to provide for a stepwise approach justifying the determination of the most plausible baseline scenario. Project proponent(s) proposing new baseline methodologies shall ensure consistency between the determination of a baseline scenario and the determination of additionality of a project activity. | The methodology provides a stepwise approach to justify determination of the most plausible baseline scenario. |

| VM0007 | |
|---|---|
| **Applicability Conditions** | **Justification of Applicability** |
| a) At project commencement, the project area shall include only land qualifying as "forest" for a minimum of 10 years prior to the project start date. | The project area consisted of 100% tropical rainforest in 2008 – 10 years prior to the project start date – all of which conformed to the Brazilian definition of forest[41]. This was ascertained using satellite images, as described in the section Project Location of the present VCS PD. |
| b) Baseline deforestation in the project area is categorized as planned deforestation | The conversion of forest lands to deforested conditions in the Project Area in the baseline scenario is legally permitted, excluding Permanent Protection and Legal Reserve areas, in accordance with Brazilian legislation. |

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[41] Brazil adopts the FAO forest definition: "Land with tree crown cover (or equivalent stocking level) of more than 10 percent and area of more than 0.5 hectares (ha). The trees should be able to reach a minimum height of 5 meters (m) at maturity in situ." Available at: <http://www.fao.org/docrep/006/ad665e/ad665e06.htm>.

| | |
|---|---|
| c) The Leakage of a APD project where the baseline deforestation agent is identified | Project Leakage is identified as defined by VMD0009, estimating the total area of deforestation on all land managed by the baseline deforestation agent. Leakage avoidance activities must not include: Agricultural lands that are flooded to increase production (e.g., rice paddy) and Intensifying livestock production. |
| d) VMD0001 v1.1 - Estimation of carbon stocks in the above and below ground biomass in the live tree and non-tree pools (CP-AB) | The Feijó REDD Project meets the applicability condition of this tool because the project area is covered by forest. Inclusion of the aboveground tree biomass pool as part of the project boundary is mandatory as per the framework module REDD-MF. Non-tree aboveground biomass and belowground biomass will also be considered in carbon stocks estimates, which is optional per the methodology requirements. |
| e) VMD0002 v1.0 - Estimation of carbon stocks in the dead wood pool (CP-D). | The Feijó REDD Project meets the applicability condition of this tool because the project area is covered by forest. The dead wood is included as part of the project boundary as per applicability criteria in the framework module REDD-MF, specifically: Dead wood shall be included if stocks are greater in the baseline than in the project scenario (in conformance with REDD-MF), and Dead wood shall be included if determined to be significant. |
| g) VMD0005 - Estimation of carbon stocks in the long-term wood products pool (CP-W). | The Feijó REDD Project meets the applicability condition of this tool because logging operations are expected to happen in the baseline scenario prior to the conversion of forest to non-forest. |

| | Inclusion of the harvested wood pool as part of the project boundary is mandatory when the process of the deforestation involves timber harvesting for commercial markets, as per the requirements of the framework module REDD-MF (VM0007). |
|---|---|
| h) VMD0006 - Estimation of baseline carbon stock changes and greenhouse gas emissions from planned deforestation/forest degradation and planned wetland degradation (BL-PL). | The Feijó REDD Project is defined by forest that would be legally converted to non-forest land.<br><br>This tool was used to estimate the GHG baseline emissions in Project Area. |
| i) VMD0009 - Estimation of emissions from activity shifting for avoiding planned deforestation/forest degradation and avoiding planned wetland degradation (LK-ASP). | The Feijó REDD Project meets the applicability condition of this tool because the baseline scenario is the conversion of forest lands that are legally authorized and documented to non-forest land. |
| i) VMD0016 - Methods for Stratification of the Project Area (X-STR) | This module is mandatory because there are several types of forests in the project area featuring different strata. |
| k) VT0001 - Tool for the demonstration and assessment of additionality in VCS agriculture, forestry, and other land use (AFOLU) project activities (T-ADD) | The activities in the proposed project boundary does not lead to violation of any applicable law even if the law is not enforced. The sustainable forest management plan is an activity authorized and endorsed in Brazil, and the landowner has all the environmental and legal authorizations necessary to conduct the activity. |
| l) T-SIG: Tool for testing significance of GHG emissions in A/R CDM project activities | This tool must be used to justify the omission of carbon pools and emission sources is significant. |

## 3.3    Project Boundary

### 3.3.1   Spatial Boundaries

The Project Areas, both AUD and APD, are in the municipality of Feijó in Acre and is composed by 3 properties, as described at section 1.7 (Figure 13).

**Figure 13. Project boundaries**
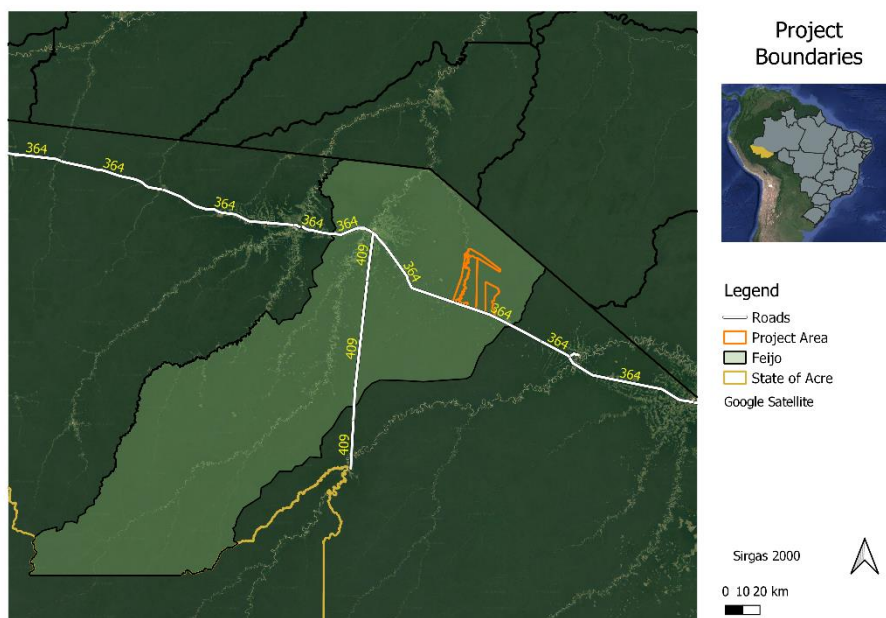


#### Project Area

In accordance with VCS requirements stipulated in the Approved VCS Methodology VM0015, version 1.1, the project area may only include areas composed of "forest"[42] for a minimum of ten years prior to the project start date. Therefore, satellite images between 2008 and 2018 were analyzed and classified. The areas within the properties that were defined as forest in 2008 and in 2018 were identified and utilized to compose the project area. In addition, some non-forest areas were also excluded, such as rivers, rocks, and non-forest vegetation.

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[42] Brazilian Forestry Service. Brazil adopts FAO forest definition: "Land with tree crown cover (or equivalent stocking level) of more than 10 percent and area of more than 0.5 hectares (ha). The trees should be able to reach a minimum height of 5 meters (m) at maturity in situ." http://www.florestal.gov.br/snif/recursos-florestais/index.php?option=com_k2&view=item&layout=item&catid=14&id=158.

According to the Approved VCS Methodology VM0007, the project area is "*fixed (ex ante) and cannot change over the project lifetime (ex post). Where multiple baselines exist (e.g., planned deforestation, unplanned deforestation, forest degradation, degraded land) there must be no overlap in boundaries between areas appropriate to each of the baselines. Thus, two project types cannot occur on the same piece of land*"[43].

Therefore, the estimated Project Area (Table 3) is 41,625.87 ha to avoid the unplanned deforestation (AUD) and 1,874.13 ha to planned deforestation (APD).

Table 3. Project area estimated – AUD and APD

|  | Project Area (ha) |
|---|---|
| AUD | 41,625.87 |
| APD | 1,874.13 |

## AUD

### Reference Region

The reference region (RR) is an analytical domain through which information on rates, agents, drivers and underlying causes of land-use and land-cover (LU/LC) change are obtained, and subsequently used for future projection and monitoring.

According to the applied methodology, as no applicable sub-national or national baseline is available, and the country or subnational region has not been divided in spatial units for which deforestation baselines will be developed, a baseline must be developed for a reference region.

The Reference Region must encompass the project area, the leakage belt and any other geographic area that is relevant to determine the baseline of the project area.

A geographic area with agents, drivers and overall deforestation patterns observed during the 10-year period preceding the start date, i.e. November-2010 to November-2020, was determined, representing a credible proxy for possible future deforestation patterns in the project area.

The RR was defined in accordance with two criteria:

● The methodology recommends that projects under 100,000 ha in size should have RRs 20 – 40 times bigger than the project area.

● The conditions determining the likelihood of deforestation within the project area being similar or expected to become similar to those found within the reference region, depending on:

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[43] VM0007, version 1.6. Available at: https://verra.org/methodology/vm0007-redd-methodology-framework-redd-mf-v1-6/

the landscape configuration and ecological conditions (elevation, slope, vegetation, and rainfall), socio-economic and cultural conditions, and agents and drivers of deforestation (agent groups, infrastructure or other drivers). The latter condition was the most important for adjusting the RR in order for it to more accurately represent the land-use dynamics. Specifically, this was based on the waterways (watersheds) and infrastructure (roads), which are the principal means of human and product transportation in the region. As such, from the areas directly surrounding the project, the RR was expanded to meet the nearest main waterways and roads.

It is possible to assume that the deforestation in the Project Area is likely to occur in a similar way to the observed in the Reference Region. The RR is yet to be defined.

### Leakage Belt

The Leakage Belt (LB) is the land area or land areas surrounding or adjacent to the Project Area in which baseline activities could be displaced due to the project activities implemented in the project area. To define the boundary of the Leakage Belt, Opportunity cost analysis (Option I) will be applied, in accordance with Approved VCS Methodology VM0015 "Methodology for Avoided Unplanned Deforestation", Version 1.1, 3 December 2012, Sectoral Scope 14.

The boundary of the Leakage Belt will be revisited at the end of each fixed baseline period, as opportunity costs are likely to change over time. In addition, this boundary of the Leakage Belt may have to be revisited if other VCS AFOLU projects are registered nearby the Project Area.

Opportunity cost analysis (Option I) is applicable where economic profit is an important driver of deforestation. In this context, literature studies, surveys and other credible and verifiable sources of information were used to demonstrate profitability of the main products of deforestation in the region: wood and cattle.

The LB is yet to be defined.

### Leakage Management Area

The leakage management area (LMA) complies non-forest areas located outside the project boundary in which the project proponent intends to implement the activities which reduce the risk of leakage in the project scenario. These activities must include the agents of deforestation and involve seeking new sources of income which contribute to forest conservation. Leakage management could involve agricultural, agroforestry, reforestation, education, or other activities.

The LMA is yet to be defined.

### Forest

According to the Brazilian Forests at a Glance 2019[44], the Brazilian Forest Service considers as forests the lands that correspond to the vegetation typologies according to the Classification System of the Brazilian Institute of Geography and Statistics (IBGE), updated by the SIVAM project[45]. Brazil endorses the definition of forest adopted by FAO: Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 %, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use. The compliance of the project area with these definitions is further explained in section 1.13.

In addition, as per VM0015 methodology, the Minimum Mapping Unit (MMU) size of the LULC maps created using RS imagery shall not be more than one hectare irrespective of forest definition. Thus, the 30 m resolution LANDSAT images used for mapping have the minimum mapping unit defined at 30x30m (0.09ha), therefore falling easily to the methodology requirement. Details on data and image processing can be verified in Appendix II.

## APD

### Proxy Area

For APD projects, it is necessary to define the Proxy Area. These Proxy Areas may or may not be managed by the same deforestation agent as the project area baseline. At least 6 proxy areas must be included. Criteria for selecting Proxy Areas include:

1. Land conversion practices should be the same as those used by the baseline agent.

2. Post-deforestation land use should be the same in proxy areas as expected in the project area that have the same business.

3. Proxy areas shall have the same type of management and land use rights as the proposed project area.

4. If there are an insufficient number of sites in the immediate area of the project, the sites must be identified elsewhere in the same country as the project.

5. Deforestation agents in proxy areas must have deforested their land under the same criteria as the project lands (legally permitted and suitable for conversion).

6. Deforestation in the proxy area must have occurred in the 10 years prior to the baseline period.

7. The forest types surrounding the proxy area or in the proxy area prior to deforestation shall be in the same proportion as in the project area.

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[44] Available at https://www.florestal.gov.br/documentos/publicacoes/4262-brazilian-forests-at-a-glance-2019/file

[45] As of 1996, through a contract signed between the Implementation Commission of the Airspace Control System - Ciscea, and its Amazon's Surveillance System Project - Sivam, and IBGE, updated the information that make up the Legal Amazon, attending, at the same time, the Systematization of Information on Natural Resources project. Information available at https://www.terrabrasilis.org.br/ecotecadigital/pdf/manual-tecnico-da-vegetacao-brasileira.pdf; SIVAM Project: https://www.camara.leg.br/noticias/55929-o-que-e-o-sivam/.

8. Analysis of proxy areas can be done through original data collection (field measurements and/or remote sensing analysis).

The proxy areas are yet to be defined.

#### Leakage Area

By estimating the total area of deforestation in all lands managed by the baseline deforestation agent, it is possible to observe the existing displacements of the activities of the same deforestation agent, but in other areas under its management.

The predicted deforestation within the project boundary is then subtracted from the total deforestation on all land managed by the baseline agent/class. This subtraction gives the expected deforestation if no leakage occurs. If deforestation is subtracted from the total area of deforestation monitored by the base deforestation agent, the result is the area of leaked deforestation.

The leakage area has not yet been defined.

### 3.3.2 Temporal Boundaries

#### AUD

- **Starting date and end date of the historical reference period**

The adopted historical reference period is January 2008 to December 2018.

- **Starting date of the project crediting period the AUD project activity**

    The project has a crediting period of 30 years, from 02-January-2019 until 31-December-2048.

- **Starting date and end date of the first fixed baseline period**

The first baseline period is from 02-January-2019 to 31-December-2029.

#### APD

- **Starting date and end date of the historical reference period**

The adopted historical reference period is April 2010 to March 2020.

- **Starting date of the project crediting period the APD project activity**

    The project has a crediting period of 30 years, from 02-January-2019 until 31-December-2048.

- **Starting date and end date of the first fixed baseline period**
- The first baseline period is from 02-January-2019 to 31-December-2029.

### 3.3.3 Carbon Pools

### AUD

The applied Methodology VM00015 considers six carbon pools. Their inclusion or exclusion within the boundary of the proposed AUD project activity, as well as the respective justification/explanation, are described in Table below.

Table 4. Carbon pools included or excluded within the boundary of the proposed AUD project activity

| Carbon pools | Included / Excluded | Justification / Explanation of choice |
|---|---|---|
| Above-ground | Tree: Included | Carbon stock change in this pool is always significant |
| | Non-Tree: Excluded | No existence of perennial crops as final class |
| Below-ground | Included | Stock change in this pool is significant |
| Dead wood | Excluded | Excluded for simplification. This exclusion is conservative. |
| Harvested wood products | Included | Stock change in this pool is considered significant |
| Litter | Excluded | Excluded as it does not lead to a significant over-estimation of the net anthropogenic GHG emission reductions of the AUD project activity. This exclusion is conservative. |
| Soil organic carbon | Excluded | Recommended when forests are converted to cropland. Not to be measured in conversions to pasture grasses and perennial crop according to VCS Methodology Requirements, 4.0. |

In accordance with the methodology, approximately 1/10 of the carbon stock in the below-ground pool of the initial "forest" class will be released in a ten-year interval. This is further discussed in the section Baseline Emissions.

## APD

The table below describes the relevant carbon stock considered in the scope of the project, according to VM0007.

Table 5. Carbon pools included or excluded within the boundary of the proposed APD project activity

| Carbon pools | Included / Excluded | Justification / Explanation of choice |
|---|---|---|
| Above-ground | Tree: Included | Carbon stock change in this pool is always significant and mandatory as per VM0007 |

| | | |
|---|---|---|
| | Non tree: Included | Inclusion is optional in the case if stocks are not higher in the baseline than in the project scenario. Part of forest types in the project area are characterized by the occurrence of bamboo and palm |
| Below-ground | Tree: Included | Stock change in this pool is significant |
| | Non tree: Included | Inclusion is optional. Part of forest types in the project area are characterized by the occurrence of bamboo and palm |
| Dead wood | Included | Inclusion is optional in the case if stocks are not higher in the baseline than in the project scenario. |
| Harvested wood products | Included | Inclusion of the harvested wood pool as part of the project boundary is mandatory when the process of the deforestation involves timber harvesting for commercial markets. |

### 3.3.4   Sources of GHG Emissions

In addition, the Methodology considers the two sources of GHG emissions listed in the Table below. Their inclusion or exclusion within the boundary of the proposed APD project activity, as well as the respective justification/explanation, are described in the Table below.

**AUD**

Table 6. Sources and GHG included or excluded within the boundary of the proposed AUD project activity

| Source | | Gas | Included / Excluded | Justification / Explanation of choice |
|---|---|---|---|---|
| **Baseline scenario** | Biomass burning | $CO_2$ | Excluded | Excluded as recommended by the applied methodology. Counted as carbon stock change. |
| | | $CH_4$ | Included | Included as non-CO2 emissions from biomass burning in the baseline scenario, according to the methodology. |
| | | $N_2O$ | Included | Included as non-CO2 emissions from biomass burning in the baseline scenario, according to the methodology. |
| | | Other | Excluded | No other GHG gases were considered in this project activity. |
| | Livestock emissions | $CO_2$ | Excluded | Not a significant source |
| | | $CH_4$ | Excluded | Excluded for simplification. This is conservative. |
| | | $N_2O$ | Excluded | Excluded for simplification. This is conservative. |
| | | Other | Excluded | No other GHG gases were considered in this project activity. |
| **Project scenario** | Biomass burning | $CO_2$ | Excluded | No biomass burning increase is predicted to occur in the project scenario compared to the baseline case. Therefore, considered insignificant. |
| | | $CH_4$ | Included | Included as non-CO2 emissions from biomass burning in the project scenario, according to the methodology. |
| | | $N_2O$ | Included | Included as non-CO2 emissions from biomass burning in the project scenario, according to the methodology. |
| | | Other | Excluded | No other GHG gases were considered in this project activity. |
| | Livestock emissions | $CO_2$ | Excluded | Not a significant source |
| | | $CH_4$ | Excluded | No livestock agriculture increase is predicted to occur in the project scenario compared to the baseline case. Therefore, considered insignificant. |
| | | $N_2O$ | Excluded | As above. |
| | | Other | Excluded | No other GHG gases were considered in this project activity. |

**APD**

The table below describes the relevant GHG sources:

Table 7. Sources and GHG included or excluded within the boundary of the proposed APD project activity

| Source | | Gas | Included / Excluded | Justification / Explanation of choice |
|---|---|---|---|---|
| **Baseline scenario** | Biomass burning | $CO_2$ | Included | Carbon stock decreases due to burning are accounted as carbon stock change |
| | | $CH_4$ | Included | Included as non-CO2 emissions from biomass burning in the baseline scenario, according to the methodology |
| | | $N_2O$ | Included | Included as non-CO2 emissions from biomass burning in the baseline scenario, according to the methodology. |
| | | Other | Excluded | No other GHG gases were considered in this project activity. |
| | Combustion of fossil fuels | $CO_2$ | Excluded | Carbon emissions from harvesting equipment, log transport in the baseline scenario can be conservatively excluded according to VM0007 |
| | | $CH_4$ | Excluded | Non-$CO_2$ emissions from harvesting equipment, log transport in the baseline scenario can be conservatively excluded according to VM0007 |
| | | $N_2O$ | Excluded | Non-$CO_2$ emissions from harvesting equipment, log transport in the baseline scenario can be conservatively excluded according to VM0007 |
| | Use of fertilizers | $CO_2$ | Excluded | No increase in fertilizer use is contemplated in the project case |
| | | $CH_4$ | Excluded | Non-CO2 emissions from use of fertilizers in the baseline scenario can be conservatively excluded according to VM0007 |
| | | $N_2O$ | Excluded | Non-CO2 emissions from use of fertilizers in the baseline scenario can be conservatively excluded according to VM0007 |
| **Project scenario** | Biomass burning | $CO_2$ | Excluded | No biomass burning increase is predicted to occur in the project scenario compared to the baseline case. Therefore, considered insignificant. |
| | | $CH_4$ | Included | Included as non-CO2 emissions from biomass burning in the project scenario, according to the methodology. |
| | | $N_2O$ | Included | Included as non-CO2 emissions from biomass burning in the project scenario, according to the methodology. |
| | | Other | Excluded | No other GHG gases were considered in this project activity. |

| | | | |
|---|---|---|---|
| Combustion of fossil fuels | $CO_2$ | Excluded | Carbon emissions from harvesting equipment, log transport in the baseline scenario can be conservatively excluded according to VM0007 |
| | $CH_4$ | Excluded | Non-$CO_2$ emissions from harvesting equipment, log transport in the baseline scenario can be conservatively excluded according to VM0007 |
| | $N_2O$ | Excluded | Non-$CO_2$ emissions from harvesting equipment, log transport in the baseline scenario can be conservatively excluded according to VM0007 |
| Use of fertilizers | $CO_2$ | Excluded | No increase in fertilizer use is contemplated in the project case |
| | $CH_4$ | Excluded | Non-CO2 emissions from use of fertilizers in the baseline scenario can be conservatively excluded according to VM0007 |
| | $N_2O$ | Excluded | Non-CO2 emissions from use of fertilizers in the baseline scenario can be conservatively excluded according to VM0007 |

## 3.4   Baseline Scenario

### AUD

In the baseline scenario, forest is expected to be converted to non-forest by the agents of deforestation acting in the reference region, project area and leakage belt, as described below. Therefore, the project falls into the AFOLU-REDD category, specifically: Avoided unplanned deforestation (AUD). The revenue from the present REDD project is essential to maintain this area as standing forest, as described under additionality of the Project (section 3.5), as well as to carry out the present project's leakage management activities.

Degradation was not considered in the present REDD project, in accordance with methodology requirements, which define "forest" and "non-forest" as the minimum land-use and land-cover classes.

Analysis of historical land use and land cover change, as well as definition of classes and categories of LU/LC and the analysis of historical changes will be conducted as per VM0015 methodology.

<u>**ANALYSIS OF AGENTS, DRIVERS, AND UNDERLYING CAUSES OF DEFORESTATION**</u>

- **Identification of agents of deforestation**

As previously mentioned in "1.13 Conditions Prior to Project Initiation" of this VCS-PD, pasture accounts for virtually all the deforested land occupation in the project region.

The following information is provided for the identified agent of deforestation:

*a)* **Cattle Ranchers**

Description of the main features of the main agent of deforestation: Cattle ranching (pasture) is usually financed by means of initial capital obtained in wood logging. Deforestation is considered to occur through clear-cutting of forests for logging followed by pasture installation. This deforestation pattern may be caused by private landowners themselves and also by professional land-grabbers, by means of invasions in unguarded areas. The final use of virtually all occupied lands would be cattle ranching (pasture). Thus, it can be affirmed that the deforestation agent group is composed by large and small-scale cattle ranchers supported by land-grabbers and loggers in the initial stage of deforestation. This group is composed by private owners and itinerant land-grabbers. It can also be affirmed that this group of deforestation agents is culturally and economically adapted to this "business cycle" of deforestation, whose results are clearly demonstrated in the Reference Region during the reference period.

Assessment of the most likely development of the population size of the deforestation agent group in the Reference Region, Project Area and Leakage Belt: As the main deforestation agent in the region, cattle ranching (pasture) is expected to increase in the project region. This increase is inferred from official IBGE data on cattle livestock in the municipalities of Feijó/AC (Figure 14).
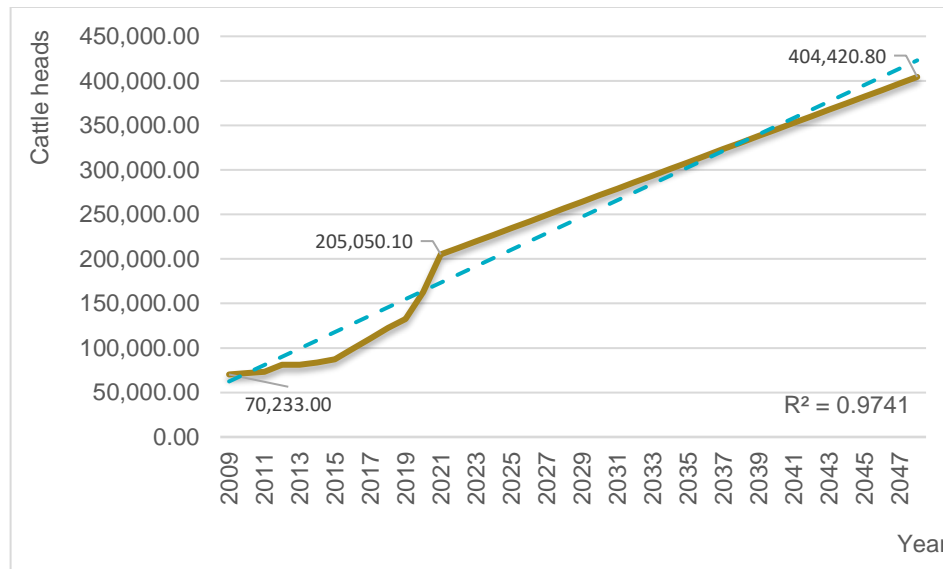
**Figure 14.** **Historical growth of livestock numbers in the municipality of Feijó, Acre: number of cattle heads per year (IBGE, 2021)[46]**
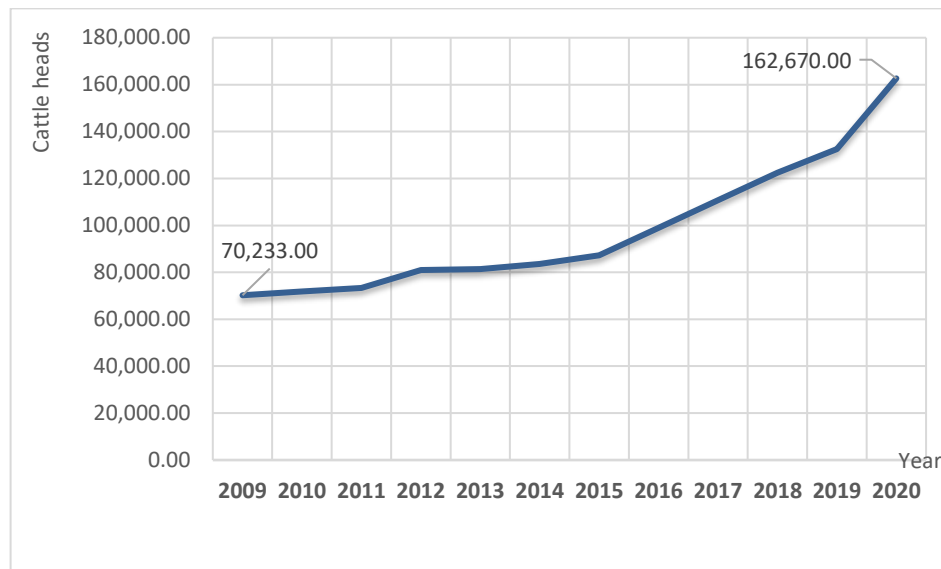


Given these dynamics, the herd size in Feijó is expected to increase by up to 30% (404,420 heads) during the project lifetime (up to 2048, seeFigure 15), according to statistical projections conducted with official IBGE data from the 10 years prior to the project start date. This significant pace of growth in cattle-related land uses will certainly impose considerable deforestation pressures in the future.

Figure 15. Projected growth of livestock numbers in the municipality of Feijó, State of Acre, within project lifetime (adapted from IBGE, 2021)

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[46]https://www.ibge.gov.br/estatisticas/economicas/agricultura-e-pecuaria/9107-producao-da-pecuaria-municipal.html?=&t=resultados

### b) Timber harvesting

Timber harvesting can be regarded as the initial approach in a series of activities by deforestation agents, s it is the precursor of cattle ranching implementation. Official registration of formally documented logging for sale to sawmills has been volatile over the last 10 years, according to official IBGE data. As shown inFigure 16, production of legal timber in Feijó presented a decrease in years 2011 (8,410 m³) and significant decrease in 2015 (11,545 m³). From that year afterwards, the supply of legal wood only continued to increase. Based on official data from the last 6 years, it is projected that the production tends to increase during the project lifetime, reaching 138,613 m³ in 2048, which also points to a significant increase in timber demand for the following years of project.

**Figure 16.** **Historical production and future projection of legally registered logs in the municipality of Feijó, State of Acre (adapted from IBGE, 2021)**
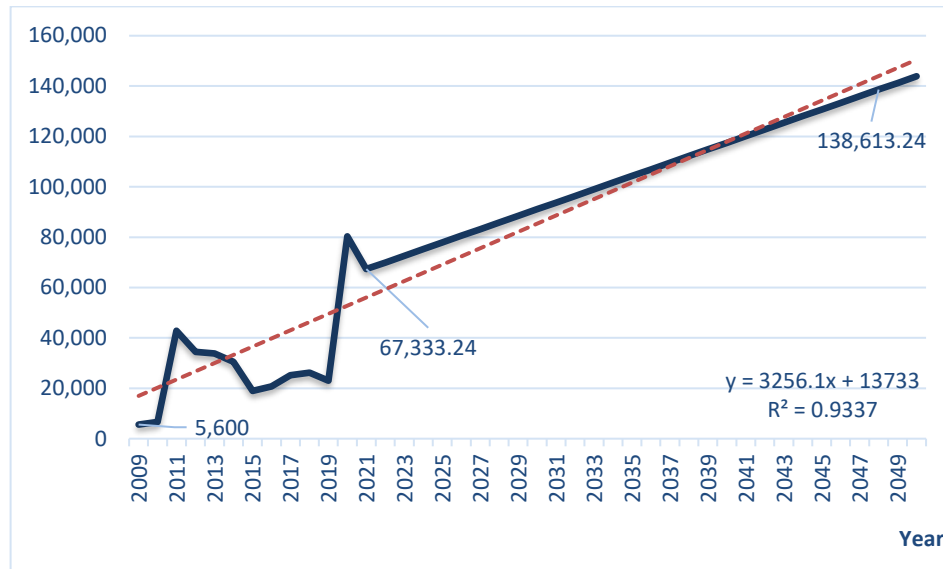
Statistics on historical deforestation attributable to the agent group: in Feijó, the highest deforestation rates for the last ten years occurred in 2018 (83.30 km$^2$), totaling deforested area of 1,643.50. During the historical reference period (2008 – 2019), the lowest deforestation occurred in 2015 (11.30 km$^2$). However, in the following years, the increase in deforestation increased in the municipality (Figure 17).

**Figure 17. Increase deforestation – Feijó/AC[47]**
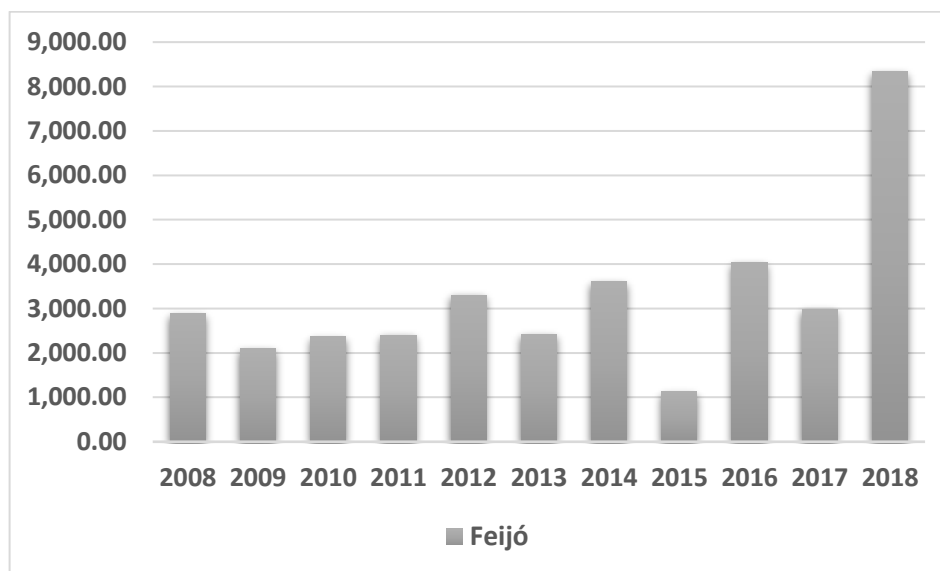


### Identification of drivers of deforestation

In the State of Acre there is a particularity in deforestation where the highest rates occur in vacant land and rural settlement projects. All related to population increase and cattle herd[48]. In this step, the factors that drive the land-use decisions of the agent group are analyzed to identify the immediate causes of deforestation. For this analysis, two sets of driver variables are distinguished:

**a)      Driver variables explaining the quantity (hectares) of deforestation:**

### Cattle prices:

According to CEPEA (2021)[49], the price of cattle increased 245% over the 2010 (R$ 88.51 per arroba) to 2021 (R$ 305.46 per arroba) period. This economic phenomenon can be observed throughout the

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[47] PRODES - http://www.dpi.inpe.br/prodesdigital/prodesmunicipal.php

[48] http://www.journals.ufrpe.br/index.php/JEAP/article/view/2790/482483315

[49] https://www.cepea.esalq.usp.br/br/consultas-ao-banco-de-dados-do-site.aspx

country. Young (1998) as cited in Rivero et al. (2009)[50], evaluating the mechanisms that cause deforestation in the Legal Amazon, found a positive relation between the expansion of agricultural areas and the variation of prices of agricultural products. For Margulis (2001) as cited in Rivero et al. (2009), the higher the agricultural prices, the higher is the migration to rural lands, which results in deforestation.

This key driver variable is likely to have a major impact on cattle ranchers' decision to deforest. Considering that the higher is the cattle price, the higher are the profits obtained with pasture for cattle ranching, instead of maintaining standing forests. This driver also plays an important role on the definition of economic radius for cattle activities, which also influences the distances of deforestation from consumption poles.

China's demand for beef is still a reflection of swine flu, which has decimated between 40% and 60% of the country's pig stock (about one third of the world's pork production). In addition to this conjuncture factor, China also contributed to the growth of imports, since it was the only major economy in the world to record economic growth in 2020, even amid the coronavirus pandemic, and a more long-term factor, which is the gradual increase in income of the Chinese population, which results in higher consumption of more expensive proteins, such as beef. Analysts estimate that the price of beef should remain under pressure for the next few years, due to the livestock cycle: the low supply of ox is not something that can be solved immediately, because cattle is a multi-year production, as it begins to produce today to deliver animals in two, three, or four years[51]. In 2020, Brazil broke its beef export record, with more than 2 million tons sold (8% more than in 2019). For 2021, the projection indicates an increase of 5% over the value of 2020[52], indicating a strong trend of increased in exports for the coming years. Beef exports have continued increased, growing by almost 7% in 2020 and close to 8% in 2021, increasing by more than 15% in the biennium 2020/2021[53]. Chinese importers have increased the purchases of Brazilian beef by more than 150% in 2020[54]. The dynamics of cattle prices are regulated by micro and macroeconomic scenario throughout the country and abroad, and there are no applicable measures that can be implemented to address this driver.

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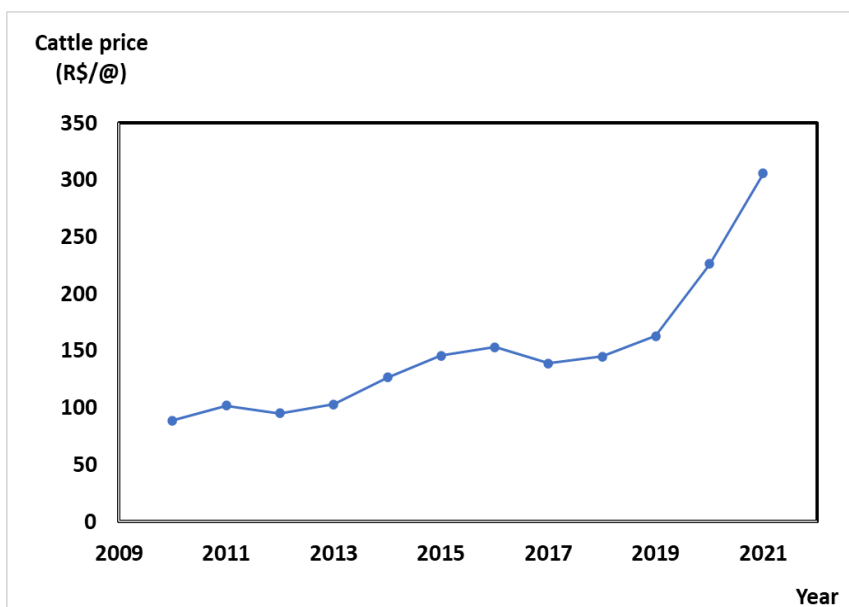
[50] https://www.scielo.br/j/neco/a/jZHjd9B8ZghY7tG9G7qchTk/?format=pdf&lang=pt

[51] https://www.bbc.com/portuguese/brasil-55664305

[52]https://revistagloborural.globo.com/Noticias/Criacao/Boi/noticia/2021/01/apos-recorde-brasil-projeta-alta-de-5-nas-exportacoes-de-carne-bovina-em-2021.html#:~:text=Segundo%20Abrafrigo%2C%20pa%C3%ADs%20alcan%C3%A7ou%20marca,em%20rela%C3%A7%C3%A3o%20ao%20ano%20anterior&text=As%20exports%C3%A7%C3%B5es%20de%20carne%20bovine,by%20fortes%20shipments%20%C3%A0%20China

[53] https://www.avisite.com.br/index.php?page=noticias&id=21284

[54] https://www2.safras.com.br/eng/2020/09/23/meat-exports-in-brazil-will-be-an-important-differential-in-2021/

Figure 18. **Cattle prices in Brazil (CEPEA, 2021**



### Population density:

This deforestation driver is associated with the dynamics of the local cattle market, as well as with the increase of potential deforestation agents working in the region. Several authors include population density as a prediction variable in deforestation models, which demonstrates that this driver has important impact on deforestation trends (Reis and Margulis, 1991; Reis, 1996; Andersen and Reis, 1997 as cited in Rivero et al. 2009).

This key driver variable provides an increasing pressure of deforestation by cattle ranchers, avid for mitigating poverty by means of a profitable business.

The estimate of population growth in Feijó is not so expressive due to the low rate of development of the municipality. However, over the projection period, it is estimated that the population will increase by more than 20% (Figure 19). This estimate was made by means of a linear regression based on the past 10 years of official data on population, according to official IBGE data[55]. This population growth rate could represent a major driver to increase the deforestation in the region over upcoming decades.

Considering that the project activity cannot regulate the population density, there will be no project measures to address this driver.

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[55] https://ftp.ibge.gov.br/Estimativas_de_Populacao/

**Figure 19. Projected population growth in the municipality of Feijó, Acre, Brazil**
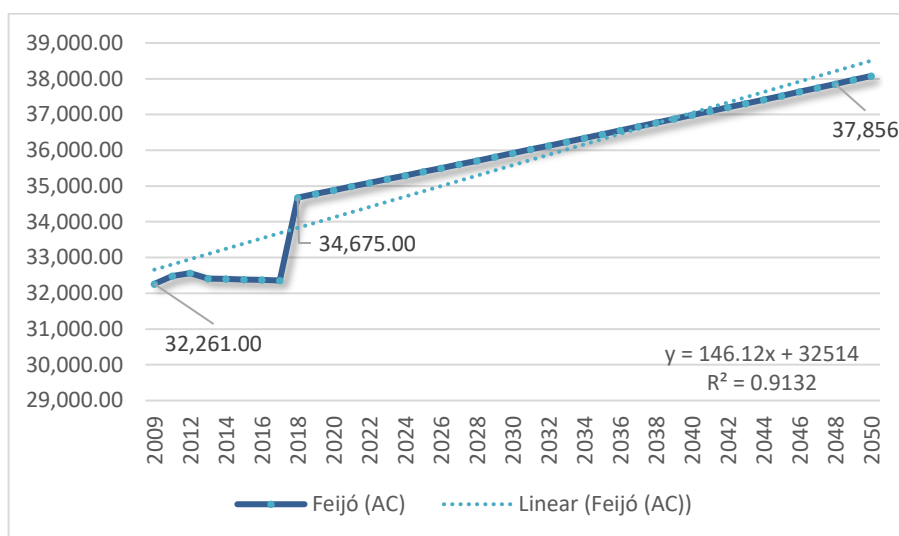


**b)      Driver variables explaining the location of deforestation:**

These driver variables were used in deforestation projection modelling, the results of which show that such variables can predict the location of deforestation variables explaining the quantity (hectares) of deforestation:

### Access to forests (existing roads and navigable rivers):

Studies on historical location of deforestation in the Reference Region can evidence that this factor has been a driver for deforestation during the historical reference period. It is broadly recognized that deforestation is accelerated in regions that have denser road networks (IMAZON, 2021[56]).

The presence of roads and navigable rivers is a logical deforestation driver, since it facilitates the flow of wood and other products harvested from the forest. The capacity to transport wood logs, rapidly clear the land for pasture and place wood logs in sawmills, quickly obtaining revenues, certainly has a major impact on cattle ranchers' decision to deforest the most accessible forest areas.

The Reference Region holds a dense network of primary, secondary, and tertiary roads. The lands located near these roads are more likely to undergo deforestation, generating a progressive fishbone effect. This deforestation pattern may even increase exponentially in some cases, given that a single road may originate several other offshoot roads in the future, and so on. In a brief analysis of deforestation location, the existence of the fishbone deforestation patterns can be noted, which indicates the creation of secondary and tertiary roads in the Reference Region. Barber et al. (2014), in their study on deforestation drivers in the Amazon, conclude that proximity to transportation networks, particularly the rapidly growing unofficial road network, is a major driver of deforestation in the Amazon. Thus, it can be expected that

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[56] https://imazongeo.org.br/

the growth of the unofficial road network will increasingly affect the dynamics of deforestation over the project lifetime.

A similar line of reasoning is applicable to the navigable rivers surrounding the Project Area: the Pauini River is a navigable river that has been used to access the northeast portion of the Project Area. The project area is also cut by the Jurupari River, which passes through two of the three properties and is a valuable way for land-grabbers to easily invade the property and clear forests for logging and pasture. In the case of navigable rivers, the number of paths will be invariable across the project lifetime, as the creation of new navigable rivers is highly unlikely.

The project activity will result in the increase of the intensity of surveillance activities during the crediting period, in such a way that the main means of access to the Project Area will be continuously monitored and controlled.

### Proximity to forest edges:

Studies on historical location of deforestation in the Reference Region provide evidence that this has also been a driver for deforestation over the historical reference period. Similarly, to the proximity to roads and navigable rivers, the effect of this driver on deforestation decisions is related to easier logistics when clearing areas and easier and quicker revenue from logging. The proximity to forest edges has been used in similar ways by other REDD projects, including the "Fortaleza Ituxi REDD Project", "The Suruí Forest Carbon Project", the "RMDLT Portel-Pará REDD Project", the "Florestal Santa Maria REDD Project", and others. Furthermore, this deforestation driver has been used to explain the dynamics of deforestation in similar analyses (LAURANCE et al. 2009[57]; ROSA et al. 2013[58]). According to ROSA et al. (2013), deforestation is contagious, such that local deforestation rates increase over time if adjacent locations are deforested.

The impact of this driver on cattle ranchers' decision to deforest is similar to that explained for roads and navigable rivers: this proximity facilitates the logistics of wood and other products extracted from the forest.

This key driver variable will have increased impact during next years, owing to the advance of deforestation in the region, which will bring deforestation pressures gradually closer to the boundaries of the Project Area. As stated in several parts of this PD, deforestation for logging and cattle ranching is a common practice in the project region, and this behavior tends to continue in the future. Thus, it is expected that deforested areas will attract deforestation agents continuously, in a growing deforestation trend, provoked by a "contagious" process, as stated by ROSA et al. (2013).

The project measures that will be implemented to address this driver are the same measures that are being adopted to manage leakage in this project. These measures are described in detail in "1.17 Additional Information Relevant to the Project", subtopic "Leakage Management", of this PD, and involve

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[57] https://doi.org/10.1016/j.tree.2009.06.009

[58] https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0077231&type=printable

Sustainable Forest Management practices, increased surveillance, replication of project concepts to other areas (divulgation), engagement of local communities in inhibiting illegal occupation, and others.

- **Identification of underlying causes of deforestation**

According to literature surveys and local interviews, it is concluded that the underlying causes of deforestation are as follows:

### Land-use policies and their enforcement:

As previously mentioned in this PD, in spite of the legal provisions intended to preserve at least 80% of the Amazon's forest cover, the lack of law enforcement by local authorities along with the increase in production and prices of cattle has created a scenario of almost complete disregard of the mandatory provisions of the Forest Code. High rates of criminality associated with land disputes usually jeopardize efforts concerning law enforcement improvement. In addition to that, to cover vast distances of areas with low demographic density makes tracking of illegal activities and land surveillance very difficult for the authorities. Accordingly, policies implemented to address illegal deforestation only by means of command-and-control approaches have proven to be ineffective so far.

This key underlying cause has a strong effect on the decisions of the main deforestation agents, as they are at liberty to continue their illegal business activities with very low probability of being detained by authorities. There are several indications of loosening of environmental legislation in recent years, with emphasis on the following subfactors:

*Greater conveniences for obtaining "forest clearing authorization"*: An example of this fact can be observed in the state of Goiás, which reported a 1,100% increase in the number of permits for deforestation in 2020[59]. The new environmental licensing in Goiás, plus technologies that facilitate the inspection work of the Secretariat of Environment and Sustainable Development (Semad), in addition to effort in the analysis of applications, are responsible for increasing the number of deforestation permits in the State. According to data from Semad's Environmental Licensing Superintendence, there was an increase of area suppressed by 673%: 6.5 km$^2$ in 2019, to 43.8 km$^2$ in 2020. Thus, as occurred in the State of Goiás, the facilitation of the issuance of authorization for the suppression of native vegetation can occur at any time in the Amazon Biome. In fact, attempts at facilitation have been sought recently (in 2020), as indicated in the next topic.

*Granting of tacit (or automatic) environmental licensing, in case of delay of the environmental agency*: The controversial automatic release of environmental permits and permits by maturity of term, that is, after a period stipulated for the government agency to manifest (120 days), was voted on 29/04/2020, by a virtual plenary. Provisional Measure 915 originally referred to the so-called "Economic Freedom Law" edited by the government, but ended up bringing, within the texts, changes that directly affect the rite of environmental licensing throughout the country. The change could lead to the automatic

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[59] https://www.meioambiente.go.gov.br/noticias/2089-emiss%C3%A3o-de-licen%C3%A7as-para-supress%C3%A3o-de-vegeta%C3%A7%C3%A3o-tem-aumento-de-1-100-in-a-year-in-goi%C3%A1s.html

authorization of forest suppression in the Amazon and Atlantic Forest enforced by delay, and without analysis of the environmental agency. This means that, once the 120-day period is expired, the request would be automatically granted with a tacit license[60]. Fortunately, environmentalists have reedited the Provisional Measure 915, to prevent deforestation licensing for term expiration[61].

*Loosening legislation for timber exports*: As reported by Reuters, during 2019 Brazil exported "thousands of cargoes of wood from an Amazonian port without authorization from the federal environmental agency, increasing the risk that they have been extracted from illegally deforested land". The rule change scrapping IBAMA's authorizations for most timber exports came after five cargoes of wood arrived in US and European ports without these mandatory documents. Foreign authorities contacted Brazil to ask about the missing authorizations, with the head of IBAMA in Pará then retroactively granting the authorizations. The problem, however, is much more widespread than just the five shipments. In Pará state, more than half of the roughly 3,000 officially registered shipments in the past year, containing an estimated 54,000 $m^3$ of wood that left one port, did not have authorization. Companies had requested authorizations from IBAMA for those shipments but exported them before the agency had time to respond. Beyond that, many shipments were exported without seeking approval from IBAMA. Shipments went to the US, the Netherlands, France, Germany, Belgium, and possibly other countries. Before the rules changed, IBAMA was required to give authorization to all wood exports before they leave port. Even though, most of the shipments needed only the proper paperwork to be given the green light, but only certain cargoes would be randomly selected for physical inspection[62]. Arbitrarily, the president of IBAMA ensured that all future unauthorized exports of wood, previously classified as illegal, became legal: he took advantage of the inattention of the press to the theme during Carnival, at the end of February 2020, to quietly revoke a 2011 IBAMA policy that required an authorization from the agency before forest products could receive export licenses. From that date on, such permits would be required only for endangered tree species or in other special circumstances. With the repeal, the way was opened for large shipments of illegal timber from the Brazilian Amazon to go abroad[63]. It was also revealed that in February 2020, loggers from Pará asked IBAMA to change that rule: the companies wanted to sell wood abroad presenting only the Document of Forest Origin (DFO, "*DOF – Documento de Origem Florestal*" in Portuguese), made by the companies themselves and that originally only serves to allow the transport of the goods to the port. This change has been immediately accepted by the president of IBAMA[64].

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[60] https://www.correiobraziliense.com.br/app/noticia/brasil/2020/04/29/interna-brasil,849652/camara-pode-aprovar-hoje-licenciamento-ambiental-automatico.shtml

[61] https://epbr.com.br/ambientalistas-alteram-mp-915-para-prevent-licensing-environmental-by-course-of-time/

[62] https://www.businesslive.co.za/bd/world/americas/2020-03-04-brazil-may-be-exporting-illegally-deforested-wood/

[63] https://brasil.mongabay.com/2020/04/ao-afrouxar-leis-de-exportacao-brasil-permite-saida-de-madeira-ilegal-da-amazonia/

[64]https://g1.globo.com/natureza/noticia/2020/11/17/documentos-mostram-que-ibama-facilitou-exportacao-de-madeira-extraida-ilegalmente.ghtml

*Legislation favoring landgrabbers*. An analysis conducted by IPAM (Environmental Research Institute of the Amazon) showed that 35% of deforestation occurred in the Amazon between August 2018 and July 2019 was recorded in non-designated areas without information. About land regularization, environmental NGOs warn about two ongoing projects. While, in the Senate is presented Bill 510/21, in the House of Representatives it is considered to vote the Bill 2633/20[65]. Commonly, both derive from the original text of Provisional Measure 910, known as "*MP da Grilagem*" (Landgrabbers' Provisional Measure), for changing the law to favor large occupants of recently invaded public lands. Bill 510/21 once again changes the deadline for public land invasions to be legalized (from 2011 to 2014) and allows large areas (up to 2500 hectares) to be titrated without the need for inspection. Indeed, given that the land grabbing of undesignated public lands is responsible for more than 1/3 of the deforestation in the country, it is to be expected that amnesty for landgrabbers and illegal deforesters will be an incentive to intensify this practice in the coming years. Bill 2633/20 has a loophole that would allow to legalize, via bidding, public areas invaded after the deadline for occupation provided for by law (i.e., 2014). Of the 49.8 million hectares of forests under state and federal responsibility, but not yet allocated to any category of use, 11.6 million hectares, or 23%, were irregularly declared as rural properties of particular use, in the National System of Rural Environmental Registration (CAR). If the entire area registered to date as private property was legalized, 2.2 to 5.5 million hectares could be deforested in the coming years, according to the deforestation limits defined by the Forest Code and considering that deforestation is often greater than allowed. In recent years, grabbing of non-destined public forests has increased: in 2019, it was the land category where the most forest felled in the Amazon, according to data from the deforestation alert system of INPE (National Institute of Space Research), Deter. The trend continued in 2020. Among the conditions defined by Provisional Measure 910, for appropriation of public lands by individuals, are: i) the area must be registered in the Rural Environmental Registry (CAR, "*Cadastro Ambiental Rural*"): as it is known, any information can be imputed in the "CAR" system until the current moment without any veracity checking, and ii) the claimant must be performing agricultural activities in the territory (i.e., should have preferably deforested the area)[66]. The Provisional Measure defines that for areas that meet the requirements and have up to 15 fiscal modules (areas with up to 1,650 hectares), the title will be granted without the need for inspection. Before the Provisional Measure, the exemption from inspection was granted to areas with up to four fiscal modules (maximum 440 hectares). The exemption from the inspection may allow large illegally deforested areas to be taken over by individuals. This is because the Provisional Measure only prohibits the regularization of areas that have been subject to fines or environmental embargoes, and not all environmental violations are known and fined by the government[67]. Given that the Project Area is surrounded by public lands and that cases of land-grabbing can be evidenced in the Reference Region, an abnormal increase in deforestation in that region is

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[65] https://ipam.org.br/35-do-desmatamento-na-amazonia-e-grilagem-indica-analise-do-ipam/

[66]https://ipam.org.br/cientistas-mapeiam-grilagem-em-florestas-publicas-na-amazonia/#:~:text=O%20impact%20da%20grilagem%20se,main%20g%C3%A1s%20%2effect%20estufa

[67] https://amazonia.org.br/como-a-mp-da-grilagem-pode-mudar-o-mapa-de-regioes-da-amazonia/

expected in the coming years, because Brazilian legislation increasingly gives all indications that it is very inviting to land-grabbing acts, granting amnesty to landgrabbers and agents of illegal deforestation.

The problem of lack of command-and-control measures to contain deforestation in the Amazon Biome is a widespread issue, which has been getting worse and worse every year, due to lack of personnel and infrastructure of legal authorities, in addition to schemes of corruption and violence established by illegal agents to maintain the *status quo*. In this context, the lack of law enforcement can be assumed to be a constant underlying cause of deforestation during the project lifetime.

Although the project activity cannot solve the problem of lack of enforcement in Brazil, it can serve as a case of success, to encourage neighbors to adopt sustainable practices as a profitable land-use alternative.

### Poverty and wealth:

According to statistics on the municipality of Feijó (IBGE, 2021)[68], in 2018, the average monthly salary was 1.4 minimum wages. The proportion of occupied people in relation to the total population was 6.%. In comparison with other municipalities in the state, it ranked 21 out of 22, while in comparison with cities nationwide, it ranked 5265 out of 5570. Considering households with monthly incomes of up to half a minimum wage per person, it had 51% of the population in these conditions. These data show that the region faces poverty issues.

This key underlying cause has a major impact on deforestation decisions, as the main agents (cattle ranchers, operationally supported by loggers and land-grabbers) can easily recruit cheap manpower, consisting of workers seeking to sustain their families by means of this profitable activity, despite it being illegal, due to the inconsistency of law enforcement.

Over the coming years, it is not expected that the region will rapidly solve the poverty issue, as it is historically deeply rooted in the region. Given this context, poverty can be assumed to be a constant underlying cause during the project lifetime.

Although the project activity cannot solve the poverty issue, it aims to provide new jobs for local agents, who will be able to generate revenues for their families by means of a legal and sustainable initiative.

● **Analysis of chain of events leading to deforestation**

Based on the historical evidence collected, it is concluded that the implementation of the BAU activity (pasture) is usually financed by means of initial capital obtained through timber logging.

The lack of enforcement of policies and laws also affects land tenure and property rights. This aspect stimulates the action of land grabbers and squatters. Ineffective legal land registration and documentation is also a barrier to official registration of timber production from natural forests. In this scenario, a great portion of harvested wood logs can be regarded as illegal and official registration is not technically feasible.

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[68] https://cidades.ibge.gov.br/brasil/ac/feijo/panorama

All the above factors combine to result in uncontrolled land invasions and deforestation, followed by cattle ranching activities, a scenario which is substantiated by illegal trespassing events, and the fact that daily patrolling of the area is required by one or two employees on motorbikes, in order to combat the constant deforestation pressure.

- **Conclusion**

Available evidence about the most likely future deforestation trend within the Reference Region and Project Area is deemed to be "Conclusive". Meaning that the hypothesized relationships between agent groups, driver variables, underlying causes, and historical levels of deforestation have been verified via literature studies and other verifiable local sources of information.

The weight of the available evidence conservatively suggests that the overall trend in future baseline deforestation rates will be "Increasing". During the reference period, the deforestation rate in the Reference Region has consistently increased. In this context, the deforestation rate used in the projections was the Modelling ("c") approach (see step 4.1.1 of the VM0015 methodology: Selection of Baseline Approach).

### PROJECTION OF FUTURE DEFORESTATION

This section refers to the following steps of the VM0015 Methodology: "4.1.1: Selection of the baseline approach"; and "Step 4.1.2: Quantitative projection of future deforestation".

## APD

### 3.4.1   Agent of Planned Deforestation

The company Universal Timber Resources do Brasil – UTRB is identified as the agent of planned deforestation in the baseline considering the current Feijó REDD Project, which is considered as the "simplest scenario" per VMD0006.

### 3.4.2   Area of Deforestation

According to methodology, the area of deforestation ($A_{planned,i}$) is defined as an immediate site-specific threat of deforestation, which can be demonstrated by the following points:

- **Legal permissibility for deforestation**: The application of a sustainable forest management plan is regulated in Brazil by the laws N° 12,651/2012[69], decree N° 5,975[70], in addition to Acre's legislation, with law N°1,117/1994[71]. In Art. 12, N°12,651/2012 every rural property must maintain an area with native vegetation coverage. Every rural property must

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[69] Available at <https://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2012/Lei/L12651.htm>

[70] Available at <http://www.planalto.gov.br/ccivil_03/_ato2004-2006/2006/decreto/d5975.htm> 1

[71] http://pnla.mma.gov.br/images/2018/08/Procedimentos-de-Licencamento-Ambiental-ACRE-AC.pdf

maintain an area of native vegetation such as the Legal Reserve (RL), in addition to the Permanent Preservation Area (APP), observing the minimum required according to the biome. For properties located in the Legal Amazon, the percentage is 80%. Thus, deforestation in the Legal Amazon of a maximum of 20% of the property's area is legally permitted.

- **Suitability of project area for conversion to alternative non-forest land use**: To determine the suitability of the project area, a series of analyzes and geoprocessing are performed for the baseline activity. Based on the primary data from the CAR, obtained from the Rural Environmental Registry System (SICAR), the declarations and delimitations of areas protected by law (area of permanent preservation and legal reserve) as well as the limits of the property are verified. Subsequently, it overlaps deforestation data to exclude deforested areas. Data are obtained from MAPBIOMAS[72] for the baseline period. Areas deforested prior to 10 years before the project start date are disregarded to meet the applicability conditions of the methodology. After this step, the information is crossed with topographic data to exclude areas with an inclination greater than 25°, which must also have forest preservation areas according to Brazilian legislation. This topographic criterion is related to the ecology of the forest whose function is to prevent landslides. Afterwards, the use is evaluated according to the soil and climate of the region. Finally, the analysis of access to relevant markets is carried out based on the logistics network used in the existing production chains, such as the BR 364 that connects the project area to the state capital, Rio Branco and the Jurupari and Pauini rivers that will flow into others. important rivers in the region, such as the Tarauacá and Purus, respectively, and which pass through important municipalities in the states of Acre and Amazonas. This analysis of the existing modalities makes it possible to evaluate the flow of wood, cattle, among other products from the existing chains.

- **Government approval for deforestation to occur**: according to VMD0006 v1.3, the intention to deforestation within the project area is demonstrated by recent approval from relevant government department for conversion of forest to an alternative land use or documentation that a request for approval has be filed with the relevant government department for permission to deforest and convert to alternative land use. The properties that make up the project area have documents that present the eligibility of authorization for vegetation suppression to change land use. Generally in Brazil, deforestation permits are requested for areas smaller than 1,000 ha. This is due to a few reasons: 1) the validity period of the suppression authorization is short, in some states it is valid for only 1 year; 2) high cost of the suppression operation. These two reasons lead landowners to opt for deforestation in smaller plots and 3) implementation of agricultural projects larger than 1,000 ha requires the preparation of an Environmental Impact Study (Estudo de Impacto Ambiental – EIA, in Portuguese) and the issuance of an Environmental Impact Report (Relatório de Impacto

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[72] https://mapbiomas.org/

Ambiental – RIMA, in Portuguese)[73], which must be submitted for approval by the competent state environmental agency, which entails high costs and a long period of analysis by the agency.

● **Intent to deforest**: the intention to deforest is demonstrated by the existence of a land use management plan valid for the project area, called the Forest Exploration Project (Projeto de Exploração Florestal – PEF, in Portuguese). Deforestation authorization must be requested from the responsible government in each state. Brazilian environmental law establishes requirements for forest clearing, leaving specific regulation to the states. In the State of Acre, the competent body is IMAC – Instituto de Meio Ambiente do Acre, which issues both the authorization for the use of forest raw materials (Autorização para Utilização de Matéria Prima Florestal-AUMPF, in Portuguese), and the Authorization for Forest Exploration (Autorização para Exploração Florestal-AUTEX, in Portuguese). The intention to deforest can also be demonstrated by the history of deforestation in other lands of the same owners, if it occurs.

### 3.4.3 Rate of Deforestation

Deforestation rates are defined in accordance with forest exploitation plans. These plans show the area to be deforested in a spatially explicit way and contain an associated execution schedule. The deforestation rate is yet to be defined.

### 3.4.4 Likelihood of Deforestation L-Di

According to VMD0006, v1.3, the likelihood of deforestation ($L\text{-}D_i$) is set to be 100%, because the project area is not under government control and is not zoned for deforestation.

### 3.4.5 Risk of Abandonment

The risk of abandonment is considered based on proxy areas that have the same class of deforestation agent in an interval of 10 years. Properties close to the project area will be analyzed based on the same classes and agents of deforestation, climate, soil and topography. Thus, how the history of land use conversion will be analyzed. If any of the proxy areas have been abandoned to forest regrowth, then thee planned deforestation activities is not eligible and this module must not be used.

### 3.4.6 Annual Area of Deforestation

The annual Area of Deforestation in the baseline case is determined according to the VMD0006 v1.3, equation 5, which considers:

● D(%) – projected annual proportion of land that will be deforested in stratum *I* during year *t*.

● $A_{planned,i,t}$ – total area of planned deforestation over baseline period for stratum *I*;

● $L\text{-}D_i$ – likelihood of deforestation for stratum *i*.

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[73] CONAMA: item XVII, art. .2 of CONAMA Resolution No. 01, of January 23, 1986, amended by CONAMA Resolution No. 11, of March 18, 1986

## 3.5   Additionality

### AUD

For the purpose of the present analysis, the VCS Tool for the Demonstration and Assessment of Additionality in VCS Agricultural, Forestry and Other Land Use (AFOLU) Project Activities - VT0001 version 3.0[74] was applied for the project activity of the Feijó AUD REDD Project.

**STEP 1. Identification of alternative land use scenarios to the AFOLU project activity.**

**Sub-step 1a. Identify credible land use scenarios to the proposed VCS AFOLU project activity**

Credible alternative land use scenarios to the present AFOLU project activity are:

**The continuation of the current (pre-project) land use scenario**: in this scenario, no REDD project is undertaken. The deforestation pattern identified in section 3.4 above, which describes the relationship among the agents, drivers and underlying causes present in the region during the historical period, will most likely continue to cause deforestation in the future.

This scenario involves the implementation of a sustainable forest management plan within the project boundaries of the proposed VCS REDD project, however without carrying out additional social and environmental activities, as well as activities to reduce unplanned deforestation. This scenario also complies with item iii of the methodological tool (activities similar to the proposed project activity on at least part of the land within the project boundary of the proposed VCS AFOLU project at a rate resulting from legal requirements).

Although this is a similar activity proposed by the present project, i.e. avoiding deforestation through conducting sustainable forest management activities, no other complementary activities to improve monitoring of deforestation would be carried out, such as: increased surveillance, monitoring and control by satellite images, REDD+ technical studies, social and environmental activities promoted by the SOCIALCARBON Standard, among others.

Many scientific articles conclude that sustainable forest management plans (SFMP), namely those certified, can be considered a tool for forest conservation, maintenance of forest carbon stocks, and decrease of deforestation rates in the region where they are implemented. This mainly occurs due to the use of reduced impact logging techniques, reduced social and environmental operational impacts, greater surveillance in the area, and generation of economic value for forests. On the other hand, there is a belief that forest is a non-productive natural resource and needs replacing with productive activities,

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[74] Available in <https://verra.org/wp-content/uploads/2017/11/VT0001v3.0.pdf>

such as livestock farming and agriculture, primarily in areas that require social and economic development[75],[76],[77],[78],[79].

However, the complexity and costs of a sustainable timber operation, added to factors such as bureaucratic constraints and fluctuation of certified timber prices, make SFMP less competitive than illegal logging. Thus, investment in additional practices to what is required by law is risky and may affect the survival of the operation. This includes activities that are complementary to the operation, specifically avoidance or reduction of unplanned deforestation/degradation and increase of monitoring of forest management areas.

Therefore, despite the contribution to forest preservation and carbon stock maintenance, SFMP areas are subject to unplanned deforestation and loss of carbon stock due to external agents, however expected to be in a lower intensity than in other areas without forest management. In addition, there are incentives for the local population to perform activities that result in unplanned deforestation, such as the expansion of low productivity agricultural activities, resulting in an ongoing necessity of cutting down the forest to maintain production.

There are many challenges to guarantee the consolidation of these areas and their effective social and environmental protection. Many conservation areas located in the Amazon still don't have an approved management plan, and a large amount does not have a management team. Furthermore, the number of Government agents assigned to these areas is greatly lacking and insufficient to carry out effective surveillance. The result is intense deforestation and pressure on protected areas in the legal Amazon, primarily because of wood harvesting activities, agriculture, road construction and mining[80],[81].

**Implementation of a sustainable forest management plan, combined with the implementation of additional activities:** In this scenario, the Project activity would be carried out on the land within the project boundary, nevertheless performed without being registered as the VCS REDD project. This

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[75] BRASIL. Ministério do Meio Ambiente (MMA). Plano de ação para prevenção e controle do desmatamento na Amazônia. Brasília, 2012.

[76] SCHULZE, M., GROGAN, J., & VIDAL, E. 2008. O manejo florestal como estratégia de conservação e desenvolvimento socioeconômico na Amazônia: quanto separa os sistemas de exploração madeireira atuais do conceito de manejo florestal sustentável? In N. Bensusan & G. Armstrong (Eds.), O Manejo da Paisagem e a Paisagem do Manejo (1ª ed., pp. 161-213). Brasil: IEB

[77] VIEIRA, I. C. G.; SILVA, J. M. C.; TOLEDO, P. M. Estratégias para evitar a perda de biodiversidade na Amazônia. Estud. av., São Paulo , v. 19, n. 54, Aug.  2005 .

[78] HOLMES, T.P. el al. Custos e benefícios financeiros da exploração de impacto reduzido em comparação à exploração florestal convencional na Amazônia Oriental. Belém: Fundação Floresta Tropical, 2002, 66p, 2nd edition.

[79] VERWEIJ, P. *et al*. Keeping the Amazon Forests standing: a matter of values. Zeist: WWF, 2009. 72p.

[80] VERÍSSIMO, A. *et al* (Org.). **Áreas Protegidas na Amazônia brasileira:** avanços e desafios. Belém : Imazon ; São Paulo : Instituto Socioambiental, 2011. 90 p.

[81] PORTAL AMAZONIA.COM. Unidades de Conservação do Amazonas ainda sofrem com crimes ambientais. 2013. Available at: <http://www.portalamazonia.com.br/editoria/meio-ambiente/unidades-de-conservacao-do-amazonas-ainda-sofrem-com-crimes-ambientais/>. Last visit on: March 12th, 2015

scenario would include avoiding deforestation through conducting sustainable forest management activities.

Additionally, complementary activities to improve the monitoring of deforestation caused by the agents (identified in section 3.4 above) would have to be carried out, such as: increased surveillance, monitoring and control by satellite images, REDD+ technical studies, social and environmental activities promoted by the SOCIALCARBON Standard, among others. These investments are usually not made by the Brazilian Government, nor are part of sustainable forest management plans, as they are financially unattractive and not necessary to legally perform the timber harvest. Therefore, the economic feasibility of this scenario would be reduced without additional revenues from the sale of VCUs.

**Cattle ranching:** In this scenario, the landowner would change its activity from forest management to cattle ranching. This is a plausible scenario since cattle is one of Brazil's main economic activities, as previously described in section above.

The State of Acre is not the most expressive in the number of herds in the northern region of Brazil, but it is pressured by neighboring states (Figure 24), mainly Rondônia and the south of Amazonas. The northern region had more than 24% of the country's herd[82] (Figure 25).

This growth in the number of herds over the years in the region can be observed by the type of land use on agricultural properties (Figure 26). In the municipality of Feijó, more than 85% of the properties are destined for pasture and are in good condition. Only 7% of properties are intended for agricultural crops (permanent and temporary)[83].

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[82] Available at https://www.ibge.gov.br/estatisticas/economicas/agricultura-e-pecuaria/9107-producao-da-pecuaria-municipal.html?=&t=resultados

[83]https://www.ibge.gov.br/estatisticas/economicas/agricultura-e-pecuaria/9107-producao-da-pecuaria-municipal.html?=&t=resultados

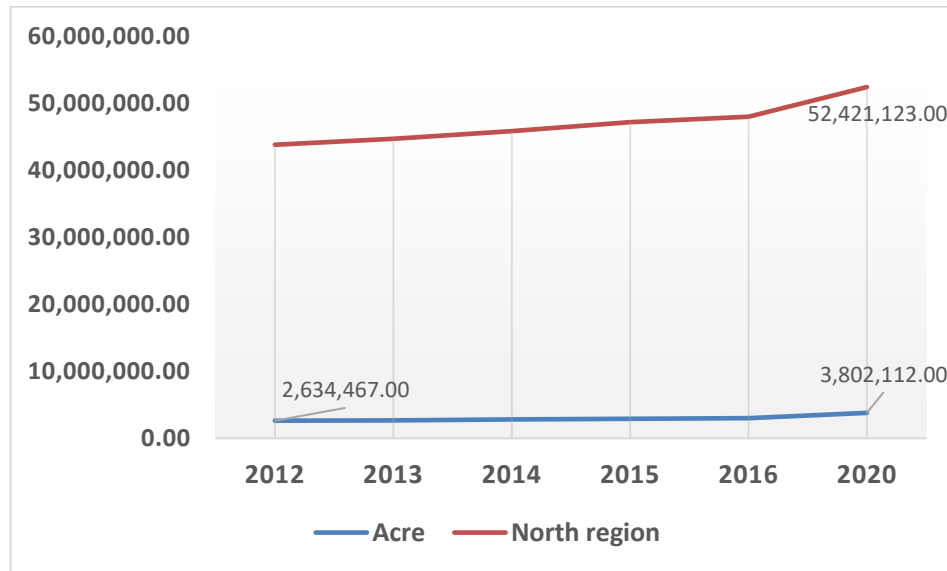**Figure 20. Herd effective in Acre and North region**



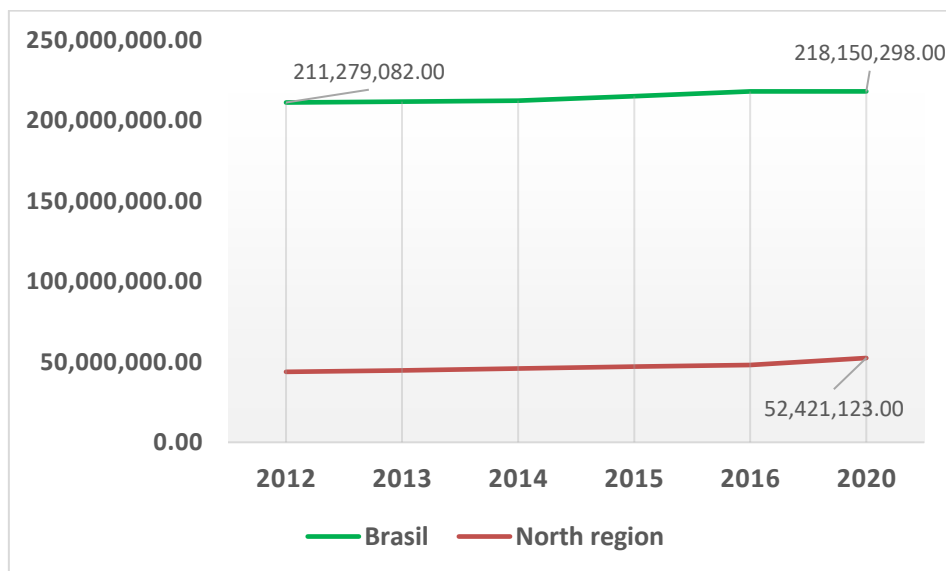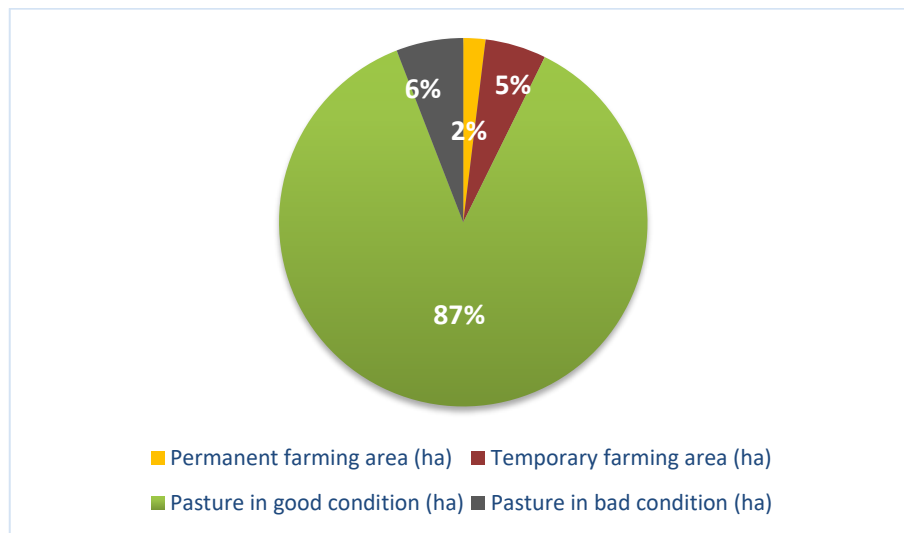**Figure 21. Herd effective in North region and Brazil**

Figure 22. Land use in Feijó/AC



Legend:
- Permanent farming area (ha)
- Temporary farming area (ha)
- Pasture in good condition (ha)
- Pasture in bad condition (ha)

**Sub-step 1b. Consistency of credible land use scenarios with enforced mandatory applicable laws and regulations.**

**Scenario I and II -** The application of a sustainable forest management plan is regulated in Brazil by the laws Nº 12,651[84], decree Nº 5,975[85], in addition to Acre's legislation, with law N° 1,117/1994[86]. Despite the requirement to mitigate social impacts, social and environmental activities for the communities surrounding the management plan area are not required by law. According to Ribeiro[87], the main obstacles related to the approval of the sustainable forest management plan in the Amazon are: a) low investment capacity, financial and fiscal incentives, b) bureaucracy and lack of control in the SFMP approval procedure and c) lack of participation of traditional communities in the process of elaboration of the SFMP, when they are involved. Thus, it is common to see the exclusion of the surrounding community from management activities in private areas.

As it does not contain social and environmental activities to control deforestation coming from communities surrounding the property, scenario I may contain activities that are illegal or of uncertain

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[84] Available at <https://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2012/Lei/L12651.htm>

[85] Available at <http://www.planalto.gov.br/ccivil_03/_ato2004-2006/2006/decreto/d5975.htm> 1

[86] http://pnla.mma.gov.br/images/2018/08/Procedimentos-de-Licencamento-Ambiental-ACRE-AC.pdf

[87] RIBEIRO, A.C.F. et al. O PLANO DE MANEJO FLORESTAL COMO INSTRUMENTO DE DESENVOLVIMENTO SUSTENTÁVEL NA AMAZÔNIA. Direito & Desenvolvimento, ISSN 2236-0859, 2020. Available at <https://periodicos.unipe.br/index.php/direitoedesenvolvimento/article/download/875/715/#:~:text=O%20Plano%20de%20Manejo%20Florestal%20Sustent%C3%A1vel%20%2D%20PMFS%20est%C3%A1%20intimamente%20relacionado,forma%20alcan%C3%A7armos%20um%20desenvolvimento%20ambiental>.

legal status, not being enforced namely due to the lack of control[88] and government capacity. This type of illegal deforestation, apart from planned deforestation, occurs mainly due to social pressure and low HDI in the Amazon regions. Although not being in compliance with applicable mandatory laws and regulations, this scenario results from systematic lack of enforcement of applicable laws and regulations. One of the goals of the present REDD project is to contribute to a solution to this problem by promoting the sustainable management of forest resources through increased monitoring and surveillance to avoid unplanned, illegal deforestation.

For instance, Government conservation units such as parks and sustainable use areas (APAs) are also affected by advancing deforestation and increased accessibility of the region to economic activities due to creation or improvement of infrastructure. Between 2000 and 2008, 2.25 million hectares were deforested in protected areas in Legal Amazon, and illegal exploitation of wood (degradation) has occurred in many of them.

One way to avoid increased accessibility and illegal exploitation of protected areas would be to increase the effectiveness of sanctions in cases of environmental malpractice.

The creation of protected areas is proven to be one of the most effective tools in forest conservation and the fight against deforestation. However, without management and investment, these important reserves do not attain their sustainable development goals, leaving them vulnerable to criminal activity such as land squatting, illegal wood harvesting and deforestation. This underlines the importance of REDD+ projects for forest conservation, despite being located in protected areas, because they are capable of contributing to the improvement of deforestation monitoring and control, promoting social, economic and environmental benefits in the region.

As Scenario II is the implementation of the SFMP with the addition of social environmental activities, as presented above, it is also in compliance with all applicable legal and regulatory requirements. Thus, there are no restrictions for SFMP within the areas where the Feijó REDD project's property is located.

**Scenario III -** Cattle raising in the Amazon Forest is legal as long as the owner follows the 80% Legal Reserve and Permanent Preservation Areas restriction described in the Brazilian legislation. The landowner must also provide a deforestation authorization for clearing the area for pasture. This authorization is provided by the State's government[89], in the responsible environmental agency.

### Sub-step 1c. Selection of the baseline scenario

Based on the scenarios presented, Baseline Scenario will be chosen.

### STEP 2. Investment Analysis

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[88] MOUTINHO, P. *et al.* **REDD no Brasil:** um enfoque amazônico: fundamentos, critérios e estruturas institucionais para um regime nacional de Redução de Emissões por Desmatamento e Degradação Florestal – REDD. Brasília, DF: Instituto de Pesquisa Ambiental da Amazônia, 2011.

[89] Available at < https://www.legisweb.com.br/legislacao/?id=132746>

### Sub-step 2a. Determine appropriate analysis method

The Feijó REDD Project generates financial benefits other than the revenue from the sale of VCUs, primarily through the commercialization of timber, as a result of the sustainable forest management plan. Thus, an investment comparison (Option II) will be carried out in order to determine the project's additionality, i.e, whether the proposed project activity, without the revenue from the sale of GHG credits, is economically or financially less attractive than the other land use scenarios.

### Sub-step 2b. - Option II. Apply investment comparison analysis

An investment comparison analysis will performed to demonstrate which of the scenarios identified above is more financially attractive.

### Sub-step 2c. - Calculation and comparison of financial indicators

The following scenarios were analyzed as part of the investment analysis:

1. The implementation of a sustainable forest management plan within the project boundaries of the proposed VCS REDD project, however without carrying out additional social and environmental activities, as well as activities to reduce unplanned deforestation.

2. Implementation of a sustainable forest management plan, combined with the implementation of additional activities to reduce deforestation.

3. Land use change to cattle ranching.

### Sub-step 2d. - Sensitivity analysis

The objective of this sub-step is to demonstrate that the conclusion regarding the financial attractiveness of the project is robust to reasonable variations in the critical assumptions. The investment analysis provides a valid argument in favor of additionality only if it consistently supports the conclusion that the proposed VCS AFOLU project without the financial benefits from carbon credits is unlikely to be financially attractive.

### STEP 4. Common practice analysis

The previous steps shall be complemented with an analysis of the extent to which similar activities have already diffused in the geographical area of the Feijó REDD Project activity. Similar activities to the proposed REDD project, i.e., that are of similar scale, take place in a comparable environment, inter alia, with respect to the regulatory framework and are undertaken in the relevant geographical area, shall be analyzed. Other registered VCS AFOLU Project activities shall not be included in this analysis.

## APD

The following sections present the results of each step to demonstrate additionality in VCS AFOLU projects according to VT0001 v3.0.

### STEP 1. Identification of alternative land use scenarios to the AFOLU project activity.

**Sub-step 1a. Identify credible land use scenarios to the proposed VCS AFOLU project activity**

The following describes the realistic and credible land use scenarios that would have occurred within the proposed project boundary in the absence of the AFOLU project activity under VCS.

i. **The continuation of the current (pre-project) land use scenario:** in this scenario, no REDD project is undertaken. Three alternative land use scenarios were identified within the project property boundaries:

1) authorized deforestation, through licenses and authorizations for forest exploitation in up to 20% of the property;

2) maintenance of the property's forest cover, without exploitation of the 20% permitted by law;

3) illegal deforestation, in addition to the 20% allowed, deforestation without permits.

Scenario 01 is realistic and credible, as it represents an activity that the project agent has already performed on other properties.
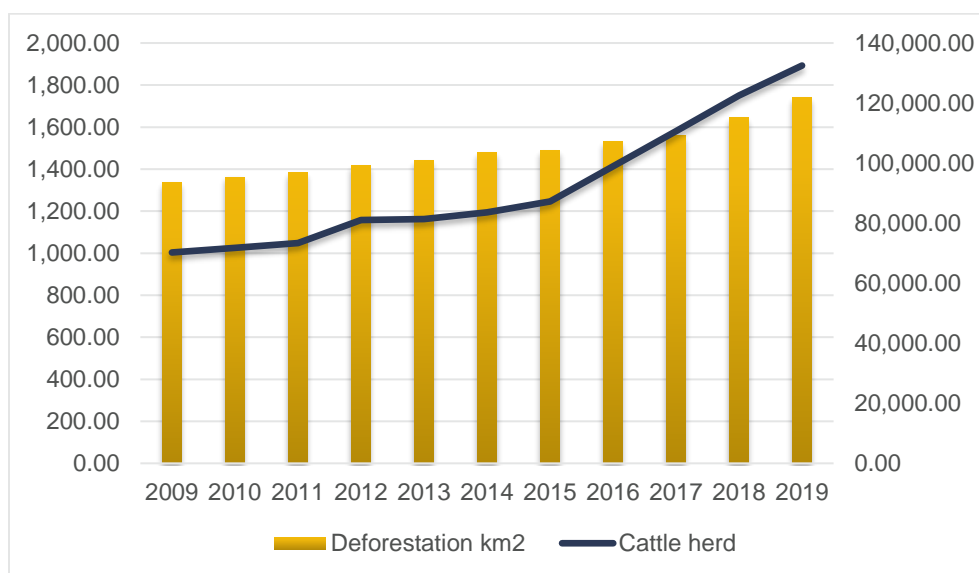
Scenario 02 is already rarer to occur, as it implies leaving the property without generating financial resources and with maintenance costs, fees and taxes and risk of losing the property for agrarian reform. This scenario is more unlikely, but it is in accordance with environmental legislation.

Scenario 03 presents illegal activities taking place in the area, that is, suppression of vegetation without authorization issued by the competent environmental agency. This is a realistic scenario, since most of the deforestation that took place in the country was illegal and in the last year, significantly on federal and state public lands, that is, in conservation units[90].

Scenario 01 is considered the most plausible baseline scenario because the land is expected to be converted to non-forest land in the baseline case and the conversion is legally authorized and documented. Deforestation with an increase in livestock is intrinsically linked and follows a pattern in the Amazon region. What can be confirmed by the increase in head of cattle in the municipality (Figure 27).

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[90] https://www.cnnbrasil.com.br/nacional/desmatamento-na-amazonia-em-2021-e-o-maior-dos-ultimos-10-anos/#:~:text=As%20unidades%20de%20conserva%C3%A7%C3%A3o%20federais,do%20que%20no%20ano%20anterior.

**Figure 23. Deforestation and cattle herd in Feijó (AC)**



**Sub-step 1b. Consistency of credible land use scenarios with enforced mandatory applicable laws and regulations.**

**Scenario I and II:** The application of an authorized deforestation is regulated in Brazil by the laws Nº 12,651[91], decree Nº 5,975[92].

**Sub-step 1c. Selection of the baseline scenario**

Based on the scenarios presented, Baseline Scenario will be chosen.

**STEP 2. Investment Analysis**

**Sub-step 2a. Determine appropriate analysis method**

This stage follows the same as for the AUD stage, that is, the proposed project activity is less attractive than the commercialization of wood after suppression and implementation of agricultural activity.

Same for steps 2b, 2c and 2d described in AUD.

**STEP 4. Common practice analysis**

The previous steps must be complemented with an analysis of the degree of diffusion of similar activities in the geographical area of the Feijó REDD Project activity. Activities similar to the proposed REDD project will be analyzed, ie that are of a similar scale, take place in a

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[91] Available at <https://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2012/Lei/L12651.htm>

[92] Available at <http://www.planalto.gov.br/ccivil_03/_ato2004-2006/2006/decreto/d5975.htm>

comparable environment, among other things, with respect to the regulatory framework and are carried out in the relevant geographic area. Other registered VCS AFOLU Project activities should not be included in this analysis.

## 3.6 Methodology Deviations

*Describe and justify any methodology deviations. Include evidence to demonstrate the following:*

- *The deviation will not negatively impact the conservativeness of the quantification of GHG emission reductions or removals.*

- *The deviation relates only to the criteria and procedures for monitoring or measurement, and does not relate to any other part of the methodology.*

# 4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

## 4.1 Baseline Emissions

*Describe the procedure for quantification of baseline emissions and/or removals in accordance with the applied methodology. Include all relevant equations, and explain and justify all relevant methodological choices (e.g., with respect to selection of emission factors and default values).*

## 4.2 Project Emissions

*Describe the procedure for quantification of project emissions and/or removals in accordance with the applied methodology. Include all relevant equations, and explain and justify all relevant methodological choices (e.g., with respect to selection of emission factors and default values).*

## 4.3 Leakage

*Describe the procedure for quantification of leakage emissions in accordance with the applied methodology. Include all relevant equations, and explain and justify all relevant methodological choices (e.g., with respect to selection of emission factors and default values).*

## 4.4 Net GHG Emission Reductions and Removals

*Describe the procedure for quantification of net GHG emission reductions and removals. Include all relevant equations. For AFOLU projects, include equations for the quantification of net change in carbon stocks.*

*Provide the ex-ante calculation (estimate) of baseline emissions/removals, project emissions/removals, leakage emissions and net GHG emission reductions and removals in the table below.*

*For data and parameters monitored, use estimates. Document how each equation is applied, in a manner that enables the reader to reproduce the calculation. Provide example calculations for all key equations, to allow the reader to reproduce the calculation of estimated net GHG emission reductions or removals.*

| Year | Estimated baseline emissions or removals (tCO₂e) | Estimated project emissions or removals (tCO₂e) | Estimated leakage emissions (tCO₂e) | Estimated net GHG emission reductions or removals (tCO₂e) |
|------|------|------|------|------|
| Year A | | | | |
| Year B | | | | |
| Year C | | | | |
| Year... | | | | |
| Total | | | | |

# 5  MONITORING

## 5.1  Data and Parameters Available at Validation

*Complete the table below for all data and parameters that are determined or available at validation, and remain fixed throughout the project crediting period (copy the table as necessary for each data/parameter). Data and parameters monitored during the operation of the project are included in Section 5.2 (Data and Parameters Monitored) below.*

| Data / Parameter | |
|------|------|
| Data unit | *Indicate the unit of measure* |
| Description | *Provide a brief description of the data/parameter* |
| Source of data | *Indicate the source(s) of data* |

| Value applied | *Provide the value applied* |
|---|---|
| Justification of choice of data or description of measurement methods and procedures applied | *Justify the choice of data source, providing references where applicable. Where values are based on measurement, include a description of the measurement methods and procedures applied (e.g., what standards or protocols have been followed), indicate the responsible person/entity that undertook the measurement, the date of the measurement and the measurement results. More detailed information may be provided in an appendix.* |
| Purpose of Data | *Indicate one of the following:*<br><br>• *Determination of baseline scenario (AFOLU projects only)*<br><br>• *Calculation of baseline emissions*<br><br>• *Calculation of project emissions*<br><br>• *Calculation of leakage* |
| Comments | *Provide any additional comments* |

## 5.2 Data and Parameters Monitored

*Complete the table below for all data and parameters that will be monitored during the project crediting period (copy the table as necessary for each data/parameter). Data and parameters determined or available at validation are included in Section 5.1 (Data and Parameters Available at Validation) above.*

| Data / Parameter | |
|---|---|
| Data unit | *Indicate the unit of measure* |
| Description | *Provide a brief description of the data/parameter* |
| Source of data | *Indicate the source(s) of data* |
| Description of measurement methods and procedures to be applied | *Specify the measurement methods and procedures, any standards or protocols to be followed, and the person/entity responsible for the measurement. Include any relevant information regarding the accuracy of the measurements (e.g., accuracy associated with meter equipment or laboratory tests).* |
| Frequency of monitoring/recording | *Specify measurement and recording frequency* |
| Value applied | *Provide an estimated value for the data/parameter* |

| Monitoring equipment | *Identify equipment used to monitor the data/parameter including type, accuracy class, and serial number of equipment, as appropriate.* |
|---|---|
| QA/QC procedures to be applied | *Describe the quality assurance and quality control (QA/QC) procedures to be applied, including the calibration procedures where applicable.* |
| Purpose of data | *Indicate one of the following:*<br><br>• *Calculation of baseline emissions*<br><br>• *Calculation of project emissions*<br><br>• *Calculation of leakage* |
| Calculation method | *Where relevant, provide the calculation method, including any equations, used to establish the data/parameter.* |
| Comments | *Provide any additional comments* |

## 5.3    Monitoring Plan

*Describe the process and schedule for obtaining, recording, compiling and analyzing the monitored data and parameters set out in Section 5.2 (Data and Parameters Monitored) above. Include details on the following:*

• *The methods for measuring, recording, storing, aggregating, collating and reporting data and parameters. Where relevant, include the procedures for calibrating monitoring equipment.*

• *The organizational structure, responsibilities and competencies of the personnel that will be carrying out monitoring activities.*

• *The policies for oversight and accountability of monitoring activities.*

• *The procedures for internal auditing and QA/QC.*

• *The procedures for handling non-conformances with the validated monitoring plan.*

• *Any sampling approaches used, including target precision levels, sample sizes, sample site locations, stratification, frequency of measurement and QA/QC procedures.*

*Where appropriate, include line diagrams to display the GHG data collection and management system.*

# APPENDIX

*Use appendices for supporting information. Delete this appendix (title and instructions) where no appendix is required.*