



**Verified Carbon
Standard**

GAIROVA REDD+ PROJECT



Ecológica

Document Prepared by Ecológica Assessoria Ltda.

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1 PROJECT DETAILS

1.1 Summary Description of the Project

In Brazil, 58.39% of its entire 851,034,553.8 ha territory¹ is covered by forests, representing almost 497 million hectares of forest area² 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 2020³. 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 State of Mato Grosso is one of the main grain and meat producers in Brazil. Currently, the State is the 5th largest exporter, mainly with soy, cotton and beef⁴. Simultaneously, Mato Grosso also registers high deforestation rates, reaching in 2018 the highest in 10 years⁵; in 2019 in addition to the states of Pará, Amazonas and Rondônia, it accounted for 84.56% of all deforestation observed in the Brazilian Legal Amazon⁶.

The primary objective of the Gairova REDD+ Project is to avoid the unplanned deforestation (AUD) of the 26,000 ha project area, consisting of 100% Amazon rainforest. The project area is located within 4 private properties, which are located in Juara, in the State of Mato Grosso, Southern Amazon. A Sustainable Forest Management Plan is also carried out in some of the properties.

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

¹ IBGE – Instituto Brasileiro de Geografia e Estatística. Brazil. 2021. 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 <https://g1.globo.com/mt/mato-grosso/noticia/2021/07/21/valor-de-exportacoes-neste-ano-em-mt-aumenta-26percent-em-comparacao-com-2020.ghml>

⁵ <https://g1.globo.com/mt/mato-grosso/noticia/2018/12/10/mt-registra-o-maior-indice-de-desmatamento-da-amazonia-nos-ultimos-10-anos.ghml>

⁶ http://www.inpe.br/noticias/noticia.php?Cod_Noticia=5465

SOCIALCARBON® Standard, which is based on six main indicators: Biodiversity; Natural; Financial; Human; Social and Carbon Resources.

The present REDD+ project is expected to avoid a predicted 3,800 ha of deforestation, equating to 1,297,696 tCO₂e in emissions reductions over the 30-year project lifetime (30-July-2021 to 31-July-2051), with an annual average of 43,257 tCO₂e.

1.2 Sectoral Scope and Project Type

Sectoral Scope: 14 - Agriculture, Forestry, Land Use

Project Category: Avoided Unplanned Deforestation (AUD project activity)

This is not grouped project.

1.3 Project Eligibility

According to the VCS Methodology Requirements v4.0⁷, 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 Version 4.1:

- The project meets all applicable rules and requirements set out under the VC 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;
- 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

This project has been designed as an Avoided Unplanned Deforestation applying VM0015 methodology, Version 1.1.3 from December 2012.

⁷ https://verra.org/wp-content/uploads/2019/09/VCS_Methodology_Requirements_v4.0.pdf

Eligibility Criteria

Not applicable. This is not a grouped project.

1.5 Project Proponent

Organization name	Gairova Agropecus Ltda
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Title	Legal Representative
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Organization name	Ecológica Assessoria Ltda.: Project developer, Project participant and Project conceiver.
Contact person	Marcelo H. S. Haddad
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1.6 Other Entities Involved in the Project

Organization name	Sustainable Carbon Projetos Ambientais Ltda.
Role in the project	Carbon credits trader and Registry Manager

Contact person	Stefano Merlin Carolina Pendl Abinajm Eliane Seiko Maffi Yamada Júlia Pícoli Palhares Lyara Carolina Montone do Amaral Yara Fernandes da Silva
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Organization name	Uezu Planejamento Ambiental S/S LTDA
Role in the project	Geographic Information System – GIS
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1.7 Ownership

The project area is located at Juara, in the State of Mato Grosso, and is composed by the following areas:

- Fazenda Gairova
- Fazenda Bacuri

- Fazenda Cachoeira
- Fazenda Conceição

These properties are owned by the Project Proponent (Gairova Agropecus Ltda). 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

The Project Start Date of this project is 30/07/2021.

1.9 Project Crediting Period

The project has a crediting period of 30 years, from 01-August-2021 to 31-July-2051.

1.10 Project Scale and Estimated GHG Emission Reductions or Removals

Project Scale	
Project	X
Large project	

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
2020	38.631
2021	39.237
2022	39,843
2023	40,448
2024	41,054
2025	41,660
2026	42,264
2027	42,870
2028	43,476

2029	44,081
2030	41,461
2031	42,099
2032	42,704
2033	43,310
2034	43,916
2035	44,522
2036	45,127
2037	45,733
2038	46,339
2039	46,944
2040	41,418
2041	42,084
2042	42,690
2043	43,296
2044	43,902
2045	44,507
2046	45,112
2047	45,718
2048	46,323
2049	46,929

Total estimated ERs	1,297,696
Total number of crediting years	30
Average annual ERs	43,257

1.11 Description of the Project Activity

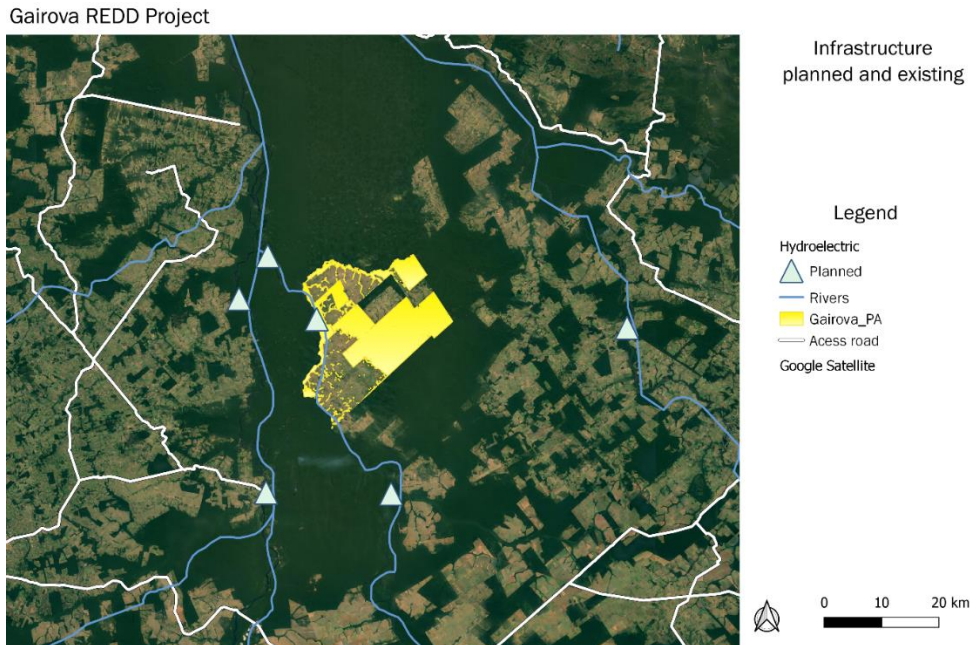
The principal objective of the present REDD+ project is the conservation of 26,000 ha of Amazon rainforest area within the property described in section 1.12 of the present VCS PD. This will be achieved through avoidance of unplanned deforestation. It is important to note that this project is not located within a jurisdiction covered by a jurisdictional REDD+ program.

The present REDD+ project is expected to avoid deforestation, equating to 1,297,696 tCO₂e in emissions reductions over the 30-year project lifetime (30-July-2021 to 31-July-2051), including buffer (RF), leakage (DLF) and project efficiency (EI) reductions.

The main deforestation agents within the Gairova REDD+ project region are: cattle ranching, mainly producing beef, and timber harvesters, acting both legally and illegally. Beyond that, recent surveys show that plans are being made to build new hydroelectric plants in the region. In Brazil, it is common to underestimate the social and environmental costs caused by the construction and operation of hydroelectric plants, as a counterpoint to the economic benefits of this type of venture. From a socio-environmental point of view, despite the fact that hydroelectric plants are considered as generators of clean energy, these projects are associated with several impacts, such as regional microclimate change, extinction of fish species, diaspora of local terrestrial fauna (in search of a new dry habitat), decay of submerged trees. Not to mention the social impact: in Brazil, the number of homeless people due to the construction of dams and hydroelectric plants is increasing critically, due to the almost constant collapse of dams, environmental disasters, and lack of support from responsible socio-environmental bodies and responsible companies⁸.

⁸ MORAN, E. F. et al. Sustainable hydropower in the 21st century. Available at: <https://www.pnas.org/content/115/47/11891>. Last visited on January 7th, 2022.

Figure 1. HPP Infrastructure in the Project Area surroundings



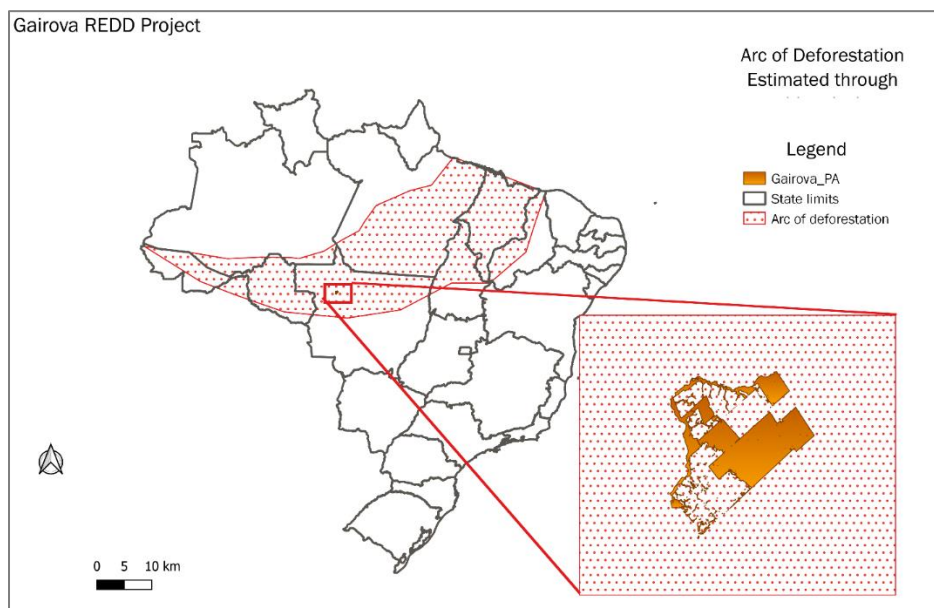
In addition to the impacting activities that might put the local population and biodiversity at risk, the project area is also located in a region known for its historic of frequent deforestation. In recent years, the expansion of agricultural and livestock activities, mainly due to the advancement of the so-called arc of deforestation from the south of the Amazon biome has been promoting high rates of deforestation and degradation to clear space for cattle ranching, small-scale subsistence farming, logging, and, increasingly, soybean production for world markets⁹. This pressure is expected to continue, given the globalization of markets in the Amazon region and international development policies planned for the region¹⁰.

According to NASA, deforestation in the Amazon Rainforest is occurring most rapidly along a curve that hugs the southeastern edge of the forest that scientists and resource managers have come to call the “Arc of Deforestation.”

⁹ Deforestation patterns in the Amazon – Available at <
<https://www.earthobservatory.nasa.gov/images/4385/deforestation-patterns-in-the-amazon>> Last visited on
 22/07/2021.

¹⁰ Nepstad, D. C.; C. M. Stickler e O. T. Almeida. 2006. Globalization of the Amazon Soy and Beef Industries: Opportunities for Conservation. *Conservation Biology* 20(6):1595-1603.

Figure 2. Brazilian Arc of Deforestation



Thus, conservation actions are essential in the region, establishing a barrier against the advancement of deforestation, making an important contribution to the conservation of Southern Amazon biodiversity and also to climate regulation in Brazil and South America.

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.

Sustainable Forest Management Plan within the properties of the Gairova REDD+ Project

The Sustainable Forest Management Plan (PMFS) is a set of plans and techniques for forest extraction, adapted to the conditions of the forest. This concept will guide the exploitation of forest resources (wood, residual woody material from exploration and non-wood products), guaranteeing the supply of wood processing and processing units.

The management of the forest must occur in a sustainable manner, which ensures the use of available resources based on techniques such as the Reduced Impact Exploration (EIR) system, the conservation of the forest, preventing soil wear and erosion, in addition to protecting watersheds, reduce the risk of fire and allow the maintenance of natural regeneration and protection of biological diversity.

Therefore, there is a guarantee that the wood product comes from sustainable management, which makes its commercialization feasible. And the main products are roundwood and sawn wood, to serve

the foreign and domestic markets. Gairova Agropecus Ltda is committed to the norms and principles of sustainability of the forestry activity.

The SFMP aims to produce and extract forest resources in a sustainable way, planning, harvesting, and using forestry systems that maximize economic efficiency, with socio-environmental responsibility and compliance with forest regulation mechanisms, which are mentioned at Section 1.14, in addition to enabling the supply of raw material of safe and continuous origin to the consumer market.

In the area designated for forest harvest management, permanent preservation and the absolute reserve areas were excluded. According to the Brazilian Forest Code, permanent preservation areas (PPA) at the borders of waterways shall be comprehensively preserved. The Permanent Preservation Area of the property is 4,090.22 ha. The sustainable logging is carried out in approximately 11,500 ha.

The cutting cycle in this plan is 30 years. This cycle is based on an attempt to introduce new paradigms for forest management, in order to reduce the period for recovery of forest stocks. Forest monitoring will provide the growth data from the permanent plots installed in the Forest Management Unity, aiming to adjust the period initially foreseen.

The silvicultural system to be adopted is the polycyclic one, widely recommended for yields upland forests in the Brazilian Amazon. EMBRAPA named the referred system of the Brazilian System of Selective Management. In each cycle, mature trees are harvested in intermediate cuts. In the case of this management plan, a cycle will be initially adopted of 30 years.

The application of this system is due to the results of research carried out, which indicate this system as the most appropriate for the management of tropical forests. The sequence of operations of the system to be developed in the SFMP of Fazenda Vale Verde is presented below:

Table 1. Main forestry measures and operations to be conducted by Arca S/A in the SFMP

Year	Operations
Y-1	<ul style="list-style-type: none"> • Demarcation of UPAs, UTs and trails or guidance trails; • 100% inventory (forest census) and cutting of vines on trees to be harvested; • Preparation of exploration maps; • Establishment and measurement of permanent plots; • Harvest; • Planning and construction of permanent infrastructure (roads and storage yards);
Y	<ul style="list-style-type: none"> • Exploration of trees, observing the established guidelines for exploration with reduced impact; • Exploitation of residues for charcoaling;

Y+1	<ul style="list-style-type: none"> • Remeasurement of permanent parcels; • Maintenance of permanent infrastructure; • Survey of damage caused by exploration and waste; • Data collection for volume equation; • Silvicultural treatments;
Y+3	<ul style="list-style-type: none"> • Remeasurement of permanent parcels;
Y+4	<ul style="list-style-type: none"> • Inventory of forest residues;
Y+5	<ul style="list-style-type: none"> • Remeasurement of permanent parcels; • Data collection for the volume equation; • Adjustment of the volume equation;
Y+10	<ul style="list-style-type: none"> • Remeasurement of permanent parcels;
Y+20	<ul style="list-style-type: none"> • Remeasurement of permanent parcels;
Y+30	<ul style="list-style-type: none"> • Beginning of the new cycle.

Furthermore, the applied forestry management system has the following objectives:

- Employ Reduced Impact Exploration (EIR) techniques, in order to mitigate damage to remaining forest, regulating production in order to ensure a minimum 30-year cutting cycle;
- Implement a monitoring and control program for forest management activities, aiming to optimize productivity, reduce impacts and costs of operations, in order to guide the possible changes that may be necessary to the original management plan;
- Develop partnerships with research institutions for the development of studies that enhance the improvement of forest management techniques;
- Support forest certification in the management area, through compliance with the principles and criteria of onshore forest management;
- Value local products, whether timber or non-timber;
- Maximize the resources of the management area through the multiple use of the forest;

- Develop markets and secure existing markets with wood and non-wood products (resins, oils, seeds, etc.) of sustainable origin.

All actions that cause direct and indirect impacts on the environment must be monitored and the appropriate mitigating measures implemented. Likewise, it should be noted that both management and field teams must be properly trained to employ natural resource management methodologies in order to minimize impacts and costs, in addition to the use of reduced impact exploration techniques to minimize the damage caused to remaining species, to the soil, hydrography, air and fauna. In this aspect, the activities with the greatest impact will be identified and monitored, offering conditions for assessment and measurement directly in the field by the company's team.

With the management and exploration system employed, the environmental impacts are reduced. The selection method provides a stable habitat for plants and animals. Managed stands support more weeds, secondary vegetation and natural regeneration than unmanaged primitive stands. It increases the diversity and frequency of birds and nests with rapid recovery after exploration and has a reduced impact on the mammal community because of the maintenance of natural conditions important to their development.

The chain of custody is extremely important, as it ensures the tracking of the raw material, from production to the consumer. Tree identification starts at the forest inventory, through the plates that are placed on the tree stump after the cut. The log must also carry identification (UPA number, UT number, tree, section number, species code and log length) after unloading. Marking must be done on each section of the logs when tracing is needed.

For the tracking of wood in the various stages of management, some activities will be developed to ensure control of the entire wood chain, from the tree that will be harvested to the exit from the industrial processing unit.

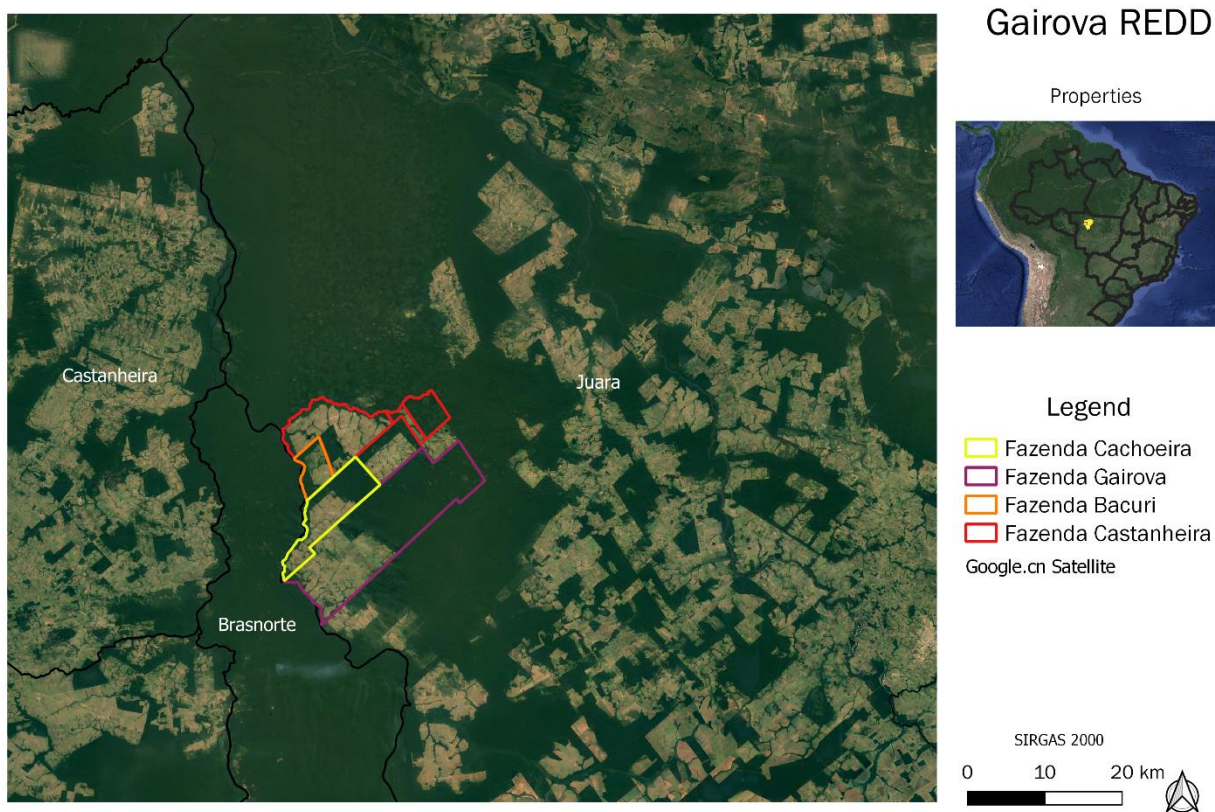
Despite the importance of sustainable forest management for climate change adaptation and mitigation, its implementation is not considered common practice, primarily due to the shortage of human resources and funding required to implement the necessary measures.

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 is being applied to assess and monitor the project's contribution to sustainability using six key indicators: Biodiversity; Nature; Financial; Human; Social and Carbon Resources, thus improving the social and environmental conditions in the project region.

1.12 Project Location

The project area is situated in the municipality of Juara, bordering the municipality of Brasnorte, both in the State of Mato Grosso, a region known as Southern Amazon. This municipality is located around 700 km from Cuiabá, capital of the State of Mato Grosso. The project area is covered 100% by native vegetation, totaling 26,000 ha.

Figure 3. Project Area



The closest access road is BR 174, called Manaus-Boa Vista, highway connecting the Brazilian states of Mato Grosso, Rondônia, Amazonas and Roraima to Venezuela. The properties also make frontier with the Rio do Sangue (Blood River, in free translation).

1.13 Conditions Prior to Project Initiation

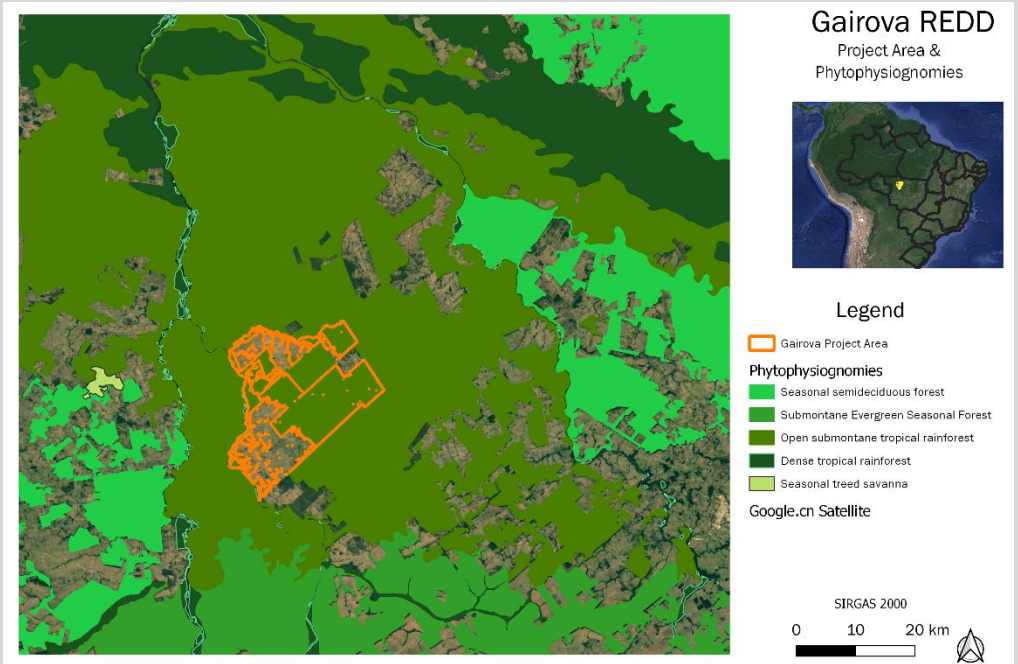
General characteristics of the project area and reference region

The Gairova REDD+ Project makes an important contribution to the conservation of Southern Amazonia's biodiversity as well as to climate regulation in Brazil and South America. The region is important agriculture and cattle ranching center, where native forest is vulnerable to the advancement of soy plantation, for example.

The general characteristics of the project area is described below.

Aspect	Characteristics
Territory	The municipality of Juara, with an area of 22,632,713 km ² , it is the 50th largest city in Brazil is located in the northern portion of the state of Mato Grosso, which has 903,357,908 km ² in length and it's the third largest state in Brazil, behind only Amazonas and Pará, both also located in the Amazon biome. The State Capital,

	<p>Cuiabá, is located exactly midway between the Atlantic and the Pacific, which makes the state the focal point of the South American continent in a horizontal position.</p>
Climate	<p>The municipality of Juara is located in the Humid Continental Equatorial climate unit, with a defined dry season of the “South Amazonian Depression”, subunit IA1, which corresponds to the northwestern corner of the State of Mato Grosso. The low latitude (8° to 9° South Latitude), with altitudes from 100 to 300 meters, defines a megathermic condition, where the average annual temperatures oscillate between 25.7°C and 24.7°C, and the maximum between approximately 32.0°C and 33.0°C, and the minimum from 19.5°C to 21.0°C. In reality, the biggest thermal differences (amplitude) are associated with the day and night cycle and not with the seasonal cycle, that is, the daily thermal amplitude of this unit varies between 10° and 12°, while the annual amplitude is between 1°C and 2°C. The average total rainfall ranges from 2,000 to 2,500 mm. The dry season occurs from June to September (4 months) with an intensity of 200 to 250 mm of water deficiency. The water surplus is high, ranging from 100 to 1,200 mm, with a duration of 8 months (September/October to April).</p>
<p>Figure 4. Project Area & Climate Classification</p>	
Biodiversity	<p>In the <i>Mato Grossense</i> Amazon biome, there are two types of forests: the Amazon Forest and the Seasonal Forest. They occupy about 50% of the State territory. Concentrated in the north of the state, the Amazon is the most complex in terms of biodiversity in the world. Due to the difficulty of light entry, due to the abundance and thickness of the crowns, ground vegetation and land animals are very scarce in the Amazon. Most of the endemic fauna is made up of animals that inhabit the treetops.</p>

	<p>Among the birds in the canopy are parrots, toucans and woodpeckers. Among the mammals are bats, rodents, monkeys and marsupials.</p>
<p>Native Vegetation Cover</p>	<p>Mato Grosso is the only Brazilian state with three biomes: Amazon Rainforest, Cerrado and Pantanal. This makes the state unique, with great diversity and conservation importance. Of 141 municipalities, 86 are covered by the Amazon biome, corresponding to 480,215 km² (54%). In the center of the state, the Cerrado biome covers 354,823 km² (39%), and a smaller area is occupied by the Pantanal biome, at the south, corresponding to 60,885 km² (7%).</p> <p>The Project Area is fully covered by Amazon Rainforest and is composed mainly by the phytophysognomy open submontane tropical rainforest, according to the image below:</p> <p style="text-align: center;">Figure 5. Project Area & Phytophysionomies</p> 
<p>Geology, Topography and Soils</p>	<p>The Mato Grosso state has modest altitudes, with large, flattened surfaces, carved in sedimentary rocks and covers three distinct regions: in the north-central portion of the state, the sedimentary plateaus and crystalline plateaus (with altitudes between 400 and 800m), that make up the central Brazilian plateau. The sandstone-basalt plateau, located in the south, is a simple portion of the southern plateau. The part of the Pantanal Mato-Grossense, lowered from the central-western portion¹².</p> <p>The predominant soil types within the project area are red-yellow clay soil (red-yellow argisil) and litholic neosoil. Red-yellow Clay Soil have very low to medium natural fertility. In Coastal Tablelands, these soils need correctives and fertilizers to obtain good crop productivity, requiring the use of organic matter in the superficial horizon,</p>

¹² GOVERNO DE MATO GROSSO. Geografia. <http://www.mt.gov.br/geografia>

especially in sandy-textured soils¹³. Litholic Neosols are considered of low fertility and shallow. The limitations of use are related to the shallow depth, the presence of rock and the steep slopes associated with the areas where these soils occur. These factors limit root growth, machine use and increase the risk of erosion. Its fertility is conditioned to the sum of bases and the presence of aluminum, being higher in eutrophic and more limited in dystrophs and allycs. Phosphorus contents are low under natural conditions. They are normally indicated for the preservation of flora and fauna¹⁴.

Figure below presents the main soils in the region.

Figure 6. Project Area soil types



Protected Areas

There are 111 protected areas in Mato Grosso State, 23 of them are federal, 43 are managed by the State and 45 by the municipalities¹⁵. As for the classification of the federal units, we have:

- 16 Sustainable Use Areas (US), 15 of them are Private Natural Heritage Reserves (RPPN) and 01 is an Environmental Protection Area (APA);

¹³ Available in

https://www.agencia.cnptia.embrapa.br/gestor/territorio_mata_sul_pernambucana/arvore/CONT000gt7eon7k02wx7ha087apz2axe8nfr.html > Last visited on December 07th, 2021

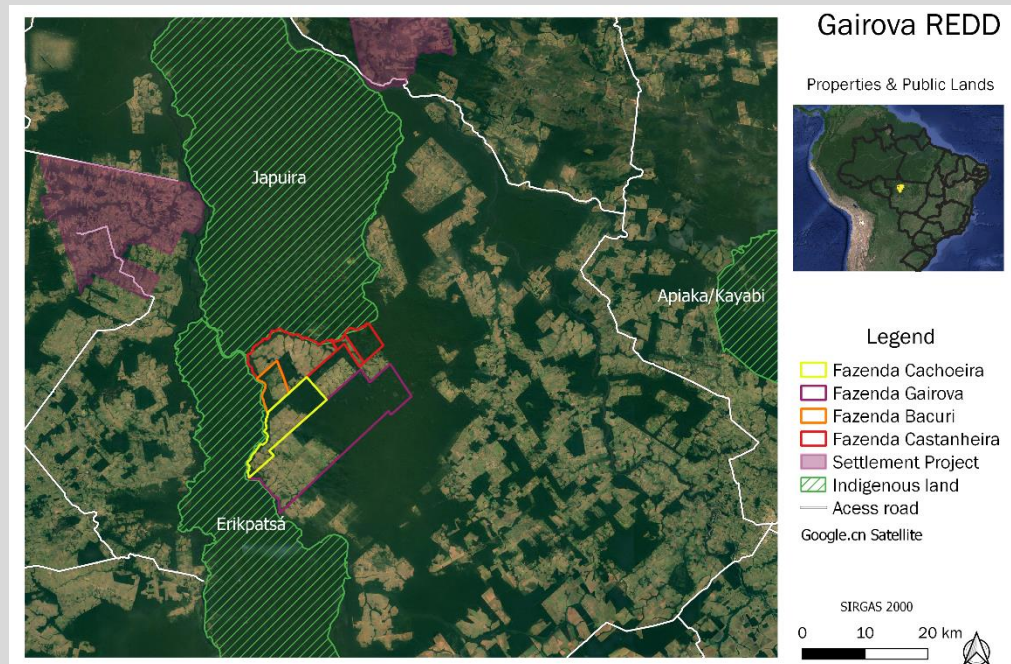
¹⁴ Available at

https://www.agencia.cnptia.embrapa.br/gestor/solos_tropicais/arvore/CONT000gn230xho02wx5ok0liq1mqxhk6vk7.html Last visited on March 02nd, 2022.

¹⁵ Available at <<http://www5.sefaz.mt.gov.br/-/unidades-de-conservacao-uma-proposta-para-conter-a-destruicao-dos-ecossistemas#:~:text=UNIDADE%20DE%20CONSERVA%C3%87%C3%83O%20Atualmente%2C%20existem,s%C3%A3o%20estaduais%20e%2045%20municipais.>>

- 07 Full Protection Areas (PI), 04 of them are National Parks (PARNA) and 03 are Ecological Stations (ESEC).¹⁶

Figure 7. Project Area & Public Lands



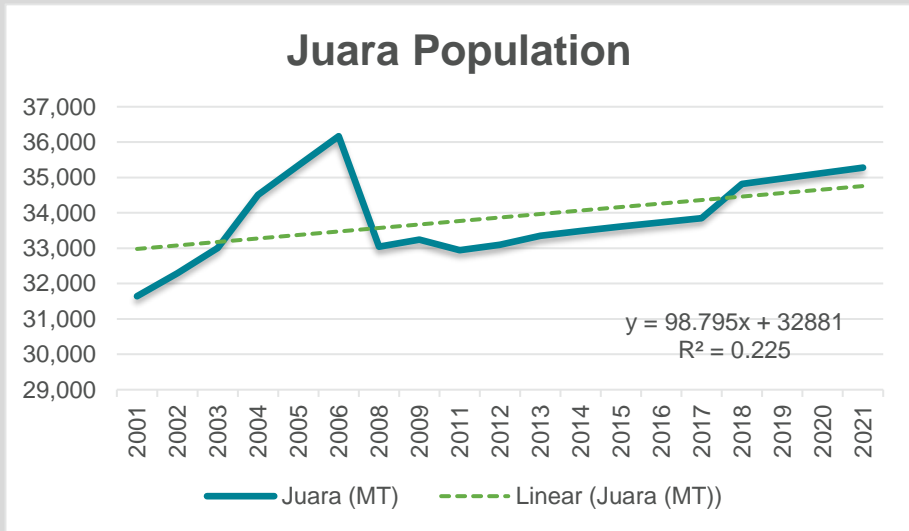
Bordering the project area are the Japuira and Erikpatsá indigenous reserves. The Japuira Indigenous Reserve has an area of 153,000 ha and a population of approximately 360 indigenous people¹⁷ da tribo Rikbaktsá, also known as "Orelhas de Pau" (Wooden Ears, in free translation) or "Canoeiros" (Canoe People), reputed as ferocious warriors in the 1960s, experienced a process of depopulation that resulted in the extermination of 75% of their members. Now recovered, they still have the respect of the regional population in recognition for their persistence in the defense of their rights, territory, and way of life¹⁸. The Erikpatsá Indigenous Reserve has a territory of 80,000 ha and is inhabited by a population of around 680 indigenous people, also from the Rikbaktsá tribe¹⁹.

¹⁶ Available at <<http://www.sema.mt.gov.br/site/index.php/component/content/article/244-unidades-administrativas/unidades-de-conserva%C3%A7%C3%A3o/unidades-de-conserva%C3%A7%C3%A3o-federais/137-unidades-de-conserva%C3%A7%C3%A3o-federais?Itemid=474>>

¹⁷ Terras Indígenas no Brasil. Terra Indígena Japuira. Available at: <https://terrasindigenas.org.br/en/terras-indigenas/3705>. Last visited on January 7th, 2022.

¹⁸ Povos Indígenas no Brasil. Rikbaktsá. Available at: <https://pib.socioambiental.org/en/Povo:Rikbakts%C3%A1>. Last visited on January 7th, 2022.

¹⁹ Terras Indígenas no Brasil. Terra Indígena Erikpatsá. Available at: <https://terrasindigenas.org.br/pt-br/terras-indigenas/3839>. Last visited on January 7th, 2022.

Water resources	<p>The State of Mato Grosso is one of the main reserves of fresh water in the world. The main sub-basins in the state are Guaporé, Aripuanã, Juruena-Arinos, Teles Pires and Xingu. Rivers from the Amazon Basin drain 2/3 of the state's territory²⁰. Juara belongs to the Amazonas hydrographic Basin, which presents an annual flow between 20,000 - 40,000 hm³. The Sangue, Arinos and Peixes rivers are the main water course in the municipality, draining them in the south-north direction. Due to the abundance of water resources and the absence of urban infrastructure in the region, the surroundings of the project area has great potential for generating electricity and, therefore, the possibility of deploying hydroelectric plants in the region is being studied.</p>
Socio-economic conditions	<p>The municipality of Juara is above a territory area of 22,632.71 km² and an estimated population of 35,275 inhabitants (estimated data from the 2010 Census). According to statistics on the municipality of Juara/MT (IBGE, 2021)²¹, in 2019, the average monthly salary was 2.1 minimum wages. The proportion of occupied people in relation to the total population was 19.2%. In comparison with other municipalities in the state, it ranked 40 out of 141, while in comparison with cities nationwide, it ranked 1503 out of 5570. Considering households with monthly incomes of up to half a minimum wage per person, it had 35.5% of the population in these conditions.</p> <p style="text-align: center;">Figure 8. Historical analysis of Juara's Population</p> <div data-bbox="459 995 1362 1522">  <p style="text-align: center;">Juara Population</p> <p style="text-align: right;">$y = 98.795x + 32881$ $R^2 = 0.225$</p> <p style="text-align: center;">— Juara (MT) - - - Linear (Juara (MT))</p> </div> <p>For Brasnorte/MT, municipality with 20,571 inhabitants (estimate for 2021, as the last Census occurred in 2010) distributed over 15.968,355 km² (IBGE, 2021)²², wich have an average monthly salary of 2.4 minimum wages (2019), and the proportion</p>

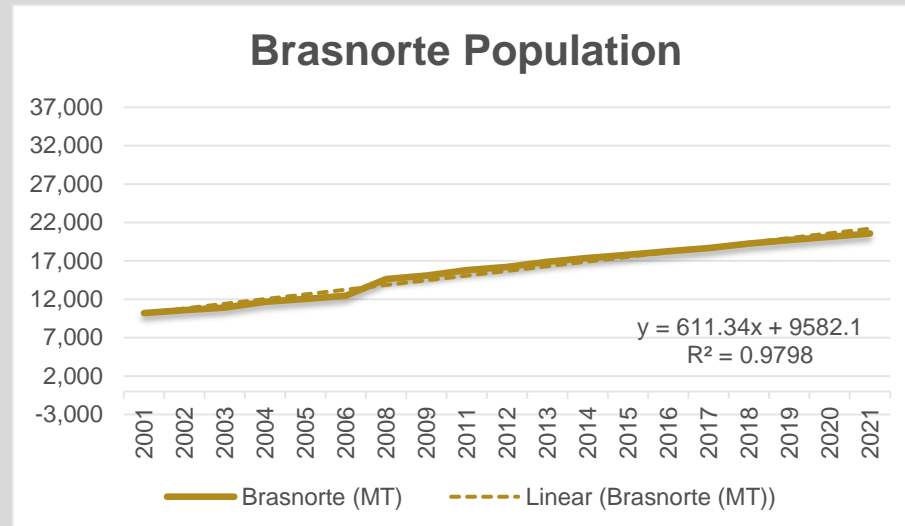
²⁰ Information available at < <http://www.mt.gov.br/geografia> >

²¹ IBGE Cidades. Juara, MT – Brasil. Available at: <https://cidades.ibge.gov.br/brasil/mt/juara/panorama>. Last visited on: January 7th, 2022.

²² IBGE Cidades. Brasnorte, MT – Brasil. Available at: <https://cidades.ibge.gov.br/brasil/mt/brasnorte/panorama>. Last visited on January 7th, 2022.

of occupied people in relation to the total population was 15.6%. Considering households with monthly incomes of up to half a minimum wage per person, it had 35.6% of the population in these conditions in 2010.

Figure 9. Historical analysis of Brasnorte's Population



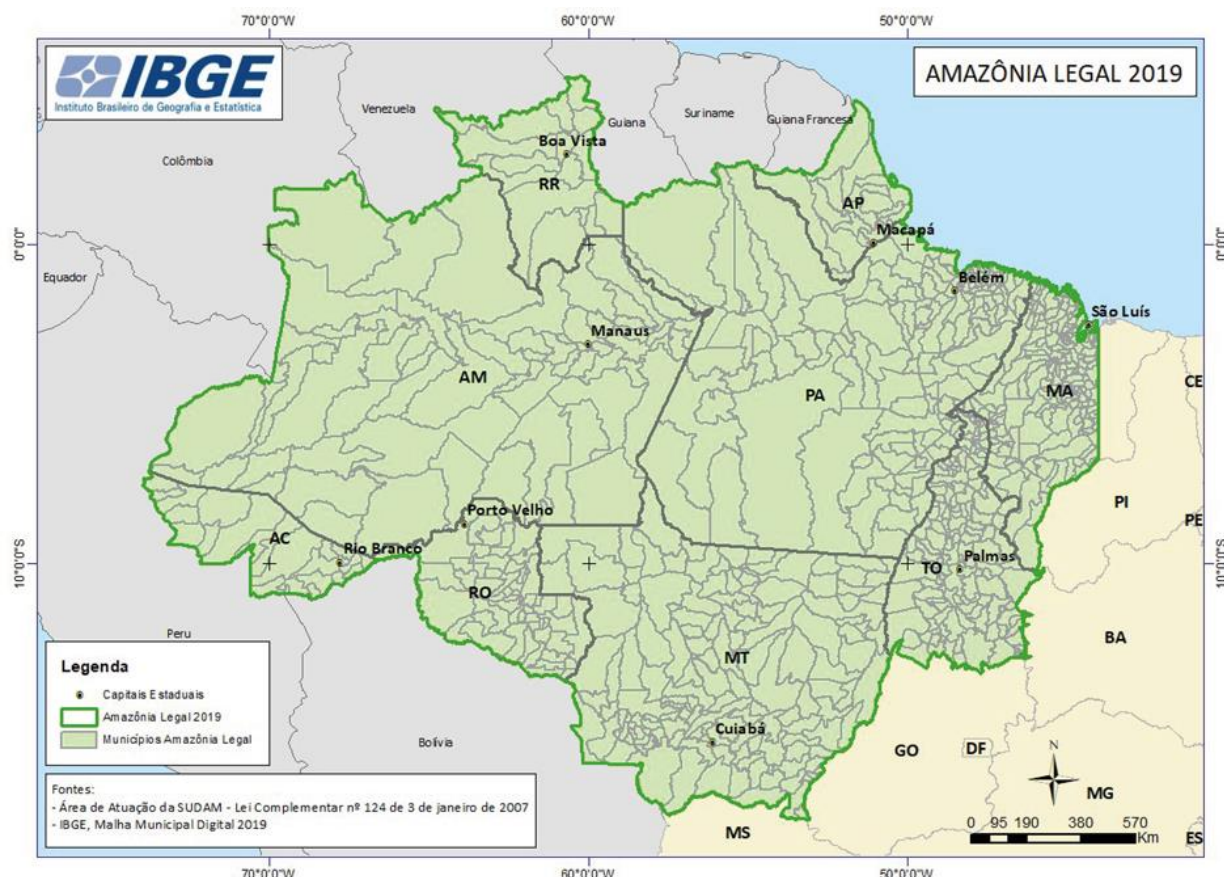
1.14 Compliance with Laws, Statutes and Other Regulatory Frameworks

In the federal legislation level, the following definitions of the Brazilian Forest Code (Law nº 12,651, of May 25, 2012) stand out as being relevant:

“III – Legal Reserve (LR): 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.

VI – 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.”

Figure 10. 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)



The Legal Reserve (LR) must be registered in property deed in the Real Estate Registry Office: its location must be publicly known, and future landowners must know where it is located, its boundaries and frontiers. The LR can be located anywhere inside a rural estate. Brazilian Forest Code determines that, once allocated, LR may not be changed even in cases of real estate transfer, land dismembering or area rectification.

The LR allocation is a prerequisite to obtaining permission to exploit the native vegetation existing inside the rural estate. In order to obtain this Permit for Forestry Stewardship, the landowner must previously register the location of the LR in land property documents through the Real Estate Registry Office, before suppressing any kind of native vegetation.

According to Provisory Measure nº 2166-67 (Medida Provisória nº 2.166-67) of August 24, 2001:

“Article 16. The forests and other types of native vegetation, excepting those located in Areas of Permanent Preservation, as well as those not subject to the politics of restricted use or subject to specific legislation, are susceptible to suppression, as long as a portion of vegetation is preserved, as Legal Reserve, at a minimum:

I – eighty percent (80%), in rural estates located in forest zones located in the Legal Amazon.”

Thus, in compliance with Brazilian Forest Code, the farms have officially allocated 80% of their total area as LR.

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 (IPAM, 2011).

In the state of Mato Grosso²³, the Secretariat for the Environment (Sema/MT) is the body responsible for environmental licensing. At the collegiate decision level, there is the State Environment Council (Consema/MT) and the State Water Resources Council (Cehidro). Among the Licensing Instruments and authorizations for environmental intervention in the state of Mato Grosso, the “Exploration Authorization” (Autex) applies to sustainable forest management activities, which is the document issued by the competent agency that authorizes the exploration of the “Annual Production Unit” (UPA) and specifies the maximum volume per species allowed for exploration, valid for 12 months, and may be extended for another 12 months, as long as duly justified in a technical exploration report. Each “Annual Production Unit” (UPA) corresponds to a subdivision of the “Forest Management Area” (AMF), destined to be explored each year. The “Forest Management Area” (AMF), in turn, is the area of the rural property to be used through forest management. The context for obtaining “Autex” is explained as follows (Decree n° 2152 of 12/02/2014)²⁴:

“Section II

Forest License

Art. 3 The Forest License will be issued with the approval of the Sustainable Forest Management Plan (PMFS), valid according to the cutting cycle.

Art. 4 The technical procedures for the elaboration, presentation, execution, analysis and technical evaluation of the Forest License in the native forests of the State of Mato Grosso and their forms of succession, shall observe the provisions of this decree and the following requirements:

I - The documentary and technical pieces listed in the Normative Instruction;

²³ <http://www.acr.org.br/download/biblioteca/Procedimentos-do-Licenciamento-Ambiental.pdf> (accessed in 18/05/2021)

²⁴ <http://extwprlegs1.fao.org/docs/html/bra135748.htm> (accessed in 18/05/2021)

II - Rural Environmental Registry - CAR;

III - The georeferenced location of the area covered by the license.

Single paragraph. A Forest License will be issued by the Rural Environmental Registry, with only one PMFS being allowed, regardless of the number of annual production units.”

For this project activity, the Sustainable Forest Management Plan on a Business Scale (PMFS-EE) is considered, according to the classification of the Government of the State of Mato Grosso. All the documents in their entirety are available for consultation by the audit team.

1.15 Participation under Other GHG Programs

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

Not applicable: the project is not engaged in any other emissions trading program and the host country has no binding limits on GHG emissions yet. The project has not been registered or is 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

The project neither has nor intends to generate any other form of GHG-related environmental credit for GHG emission reductions or removals claimed under the VCS Program. The VCS Program has a central project database, which lists each approved project. The VCS Project Database is the central storehouse of information on all projects validated to VCS criteria and all Verified Carbon Units issued under the program. Every VCU can be tracked from issuance to retirement in the database, allowing buyers to ensure every credit is real, additional, permanent, independently verified, uniquely numbered and fully traceable online. This project has not been registered under any other credited activity, and no VCUs have been assigned to the project area so far. Thus, any possibility of double counting of credits is eliminated.

1.16.2 Other Forms of Environmental Credit

The project has not sought or received another form of GHG-related environmental credit, including renewable energy certificates.

1.17 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+.

The main leakage management activities are outlined below:

- Surveillance activities designed to mitigate illegal logging and land occupation in the area will be achieved through the project activity. By continuing to promote an increase in the number of REDD+ Projects in the region, whenever feasible, as well as sustainable forest management plans, the project aims to impact deforestation and degradation significantly. This process will be further consolidated through combined efforts with private and governmental entities, and NGOs. The main condition for execution of this activity is the approval and validation of this project activity, which will be a further important benchmark for engagement of all potential private landowners in Juara and Brasnorte.
- Replication of project concept to other areas: further areas with potential for REDD+ projects have already been identified around the project site, which will favour and encourage forest conservation by means of financial incentives obtained from credit sales and provide social and environmental benefits to local communities.

Combating illegal land occupation: the local community will be strategic in monitoring illegal land occupation and potential illegal logging. Those who are interested in being trained and carrying out local monitoring will be included in the project, an activity which may also become a new source of income for local communities.

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 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)²⁵. 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 Environment²⁶. 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.

²⁵ <http://redd.mma.gov.br/pt/redd-e-a-indc-brasileira> (accessed in 18/05/21)

²⁶ <http://www.mma.gov.br/component/k2/item/8200-figuras> (accessed in 18/05/21)

for Sustainable Development in Brazil²⁹. The Commission is made up of eight government representatives (Government Secretariat of the Presidency of the Republic; Civil House of the Presidency of the Republic; Ministry of Foreign Affairs; Ministry of Citizenship; Ministry of Economy; Ministry of Environment; representative of the state/district levels; representative of the municipal level) and by eight representatives of civil society and the private sector. The monitoring of the country's advances in relation to the SDGs established as priorities is carried out by the Institute of Applied Economic Research (IPEA) and the Brazilian Institute of Geography and Statistics (IBGE), which are also permanent technical advisory bodies.

There is no monitoring at the specific level of projects, and progress at the national level can be accompanied by the synthesis report carried out by IBGE³⁰ and by the IPEA reports³¹. In addition, in 2018 there was the SDG Award, an initiative of the Federal Government whose objective is to encourage, value and give visibility to practices that contribute to achieving the goals of the 2030 Agenda throughout the national territory. The first edition of the Award had 1045 entries to compete in four categories: government; for-profit organizations; non-profit organizations; and teaching, research and extension institutions.

For the REDD Project, monitoring of the contributions will be achieved following the monitoring plan, data monitored and the application of the SOCIALCARBON Standard, to guide and assess the evolution of the socio-environmental benefits of the project.

Further Information

No further information to disclose.

2 SAFEGUARDS

2.1 No Net Harm

2.2 Local Stakeholder Consultation

2.3 Environmental Impact

2.4 Public Comments

²⁹ More information on the CNODS available at < <https://www.gov.br/mre/pt-br/assuntos/desenvolvimento-sustentavel-e-meio-ambiente/desenvolvimento-sustentavel/comissao-nacional-para-os-objetivos-do-desenvolvimento-sustentavel-cnods> > Last visited on 13/01/2022.

³⁰ Available at < <https://odsbrasil.gov.br/relatorio/sintese> > Last visited on 13/01/2022

³¹ Available at < <https://www.ipea.gov.br/ods/publicacoes.html> > Last visited 13/01/2022

2.5 AFOLU-Specific Safeguards

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

Approved VCS Methodology VM0015 “Methodology for Avoided Unplanned Deforestation”, Version 1.1, 3 December 2012³²;

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 2012³³;

AFOLU “Non-Permanence Risk Tool” VCS Version 4, Procedural Document, 19 September 2019, v4.0³⁴;

CDM – Executive Board “Tool for testing significance of GHG emissions in A/R CDM project activities (Version 01)” EB 31³⁵;

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 most recent VCS AFOLU requirements.	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 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.

³² Available at: <https://verra.org/wp-content/uploads/2018/03/VM0015-Methodology-for-Avoided-Unplanned-Deforestation-v1.1.pdf>. Last visited on January 6th, 2022.

³³ Available at: <https://verra.org/wp-content/uploads/2017/11/VT0001v3.0.pdf>. Last visited on January 6th, 2022.

³⁴ Available at: https://verra.org/wp-content/uploads/2019/09/AFOLU_Non-Permanence_Risk-Tool_v4.0.pdf. Last visited on January 6th, 2022.

³⁵ Available at: <https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-04-v1.pdf>. Last visited on January 6th, 2022.

<p>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).</p>	<p>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.</p>
<p>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”.</p>	<p>The forest classes that compose the project area are named as per Technical Manual for Brazilian Vegetation³⁶. The area is considered forest as per the definition of forest adopted by FAO³⁷: 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.</p> <p>No deforested, degraded or areas otherwise modified by humans were included in the project area at Project Start Date.</p>
<p>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.</p>	<p>The project area consisted of 100% tropical rainforest in 2011 – 10 years prior to the project start date – all of which conformed to the Brazilian definition of forest³⁸. This was ascertained using satellite images, as described in the section Project Location of the present VCS PD.</p>
<p>e) The project area can include forested</p>	<p>Project Area is composed of Argisil and</p>

³⁶ Available at <<https://www.terrabrasilis.org.br/ecotecadigital/pdf/manual-tecnico-da-vegetacao-brasileira.pdf>>

³⁷ Available at <[https://www.fao.org/3/y4171e/y4171e10.htm#:~:text=FAO%202000a%20\(FRA%202000%20Main,of%20other%20pre dominant%20land%20uses.>](https://www.fao.org/3/y4171e/y4171e10.htm#:~:text=FAO%202000a%20(FRA%202000%20Main,of%20other%20pre dominant%20land%20uses.>)>

³⁸ 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>>.

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.	Neosoil. Therefore, none of the project region grows on peat, satisfying this applicability criterion.
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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 AFOLU project shall not lead to violation of any applicable law even if the law is not enforced;	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.
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.

3.3 Project Boundary

Spatial Boundaries

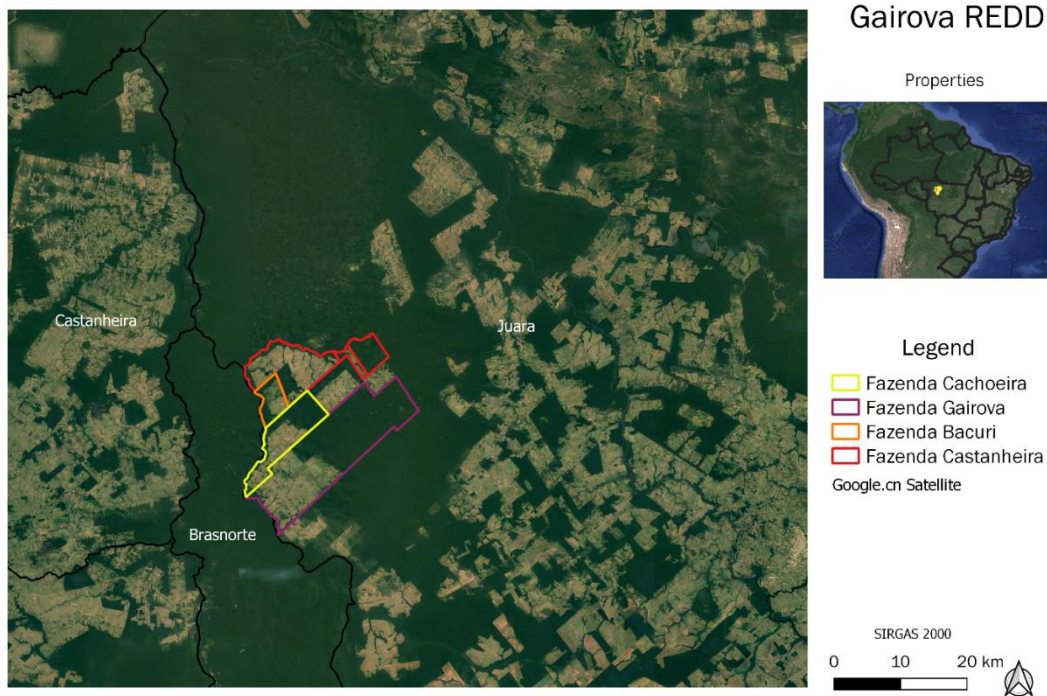
- Project Area

According to VM00015, Project Area must comprise an area covered only by forest for at least 10 years before the Project start date: the date when activities are initiated to protect against the risk of future deforestation. Thus, some adjustments and discounts are made to comply to the methodology.

Project area is 26,000 ha.

Estimated Project Area is presented in figure below:

Figure 12. Project Area location



- **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 will be 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: 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) comprises 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 definition of the Leakage Management Areas shall take into account the deforested areas of private lands neighbouring the city of Colniza, and the city of Cotriguaçu . The following spatial criteria were used for delimitation:

- a) Non-forest classes;
- b) Logistical proximity for the Project Proponents to conduct management near the REDD project, taking into account the main access point to the Project Area, with the objective of creating a barrier to stop deforestation entering the Project Area from the Reference Region;
- c) High potential for land use changes in these areas, considering their proximity to roads and other deforested areas.

The LMA is yet to be defined. More information on the Leakage Management Plan will be made available in section 1.17.

Temporal Boundaries

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

The adopted historical reference period is yet to be defined.

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

The project has a crediting period of 30 years, from 01-August-2021 to 31-July-2051.

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

The first baseline period is from 01-August-2021 to 31-July-2027 (six years).

- **Monitoring period**

The monitoring periods will comply with the criteria established in the applied methodology, which states that the minimum duration of a monitoring period is one year and the maximum duration is one fixed baseline period.

Carbon Pools

The applied Methodology 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 2. 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.

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 AUD project activity, as well as the respective justification/explanation, are described in the Table below.

Table 3. 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-CO ₂ emissions from biomass burning in the baseline scenario, according to the methodology.
		N ₂ O	Included	Included as non-CO ₂ 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 ₂ O	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-CO ₂ emissions from biomass burning in the project scenario, according to the methodology.
		N ₂ O	Included	Included as non-CO ₂ 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 ₂ O	Excluded	As above.
		Other	Excluded	No other GHG gases were considered in this project activity.

3.4 Baseline Scenario

In the baseline scenario, forest is expected to be converted to non-forest by the agents of deforestation acting in the project area, 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.

ANALYSIS OF AGENTS, DRIVERS, AND UNDERLYING CAUSES OF DEFORESTATION

- **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.

Assessment of the most likely development of the population size of the deforestation agent group in the Project Area: 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 Juara and Brasnorte.

Figure 13. Historical growth of livestock numbers in Juara/MT

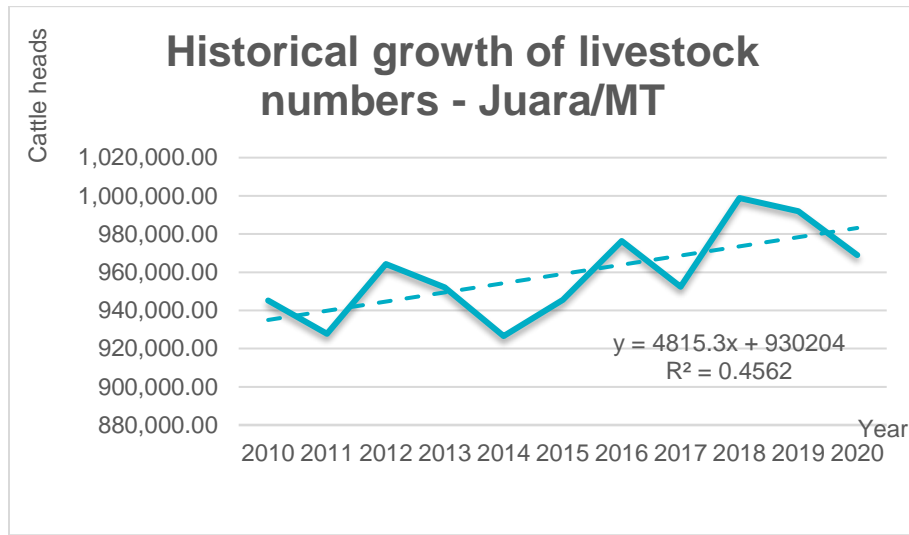


Figure 14. Historical growth of livestock numbers in Brasnorte/MT

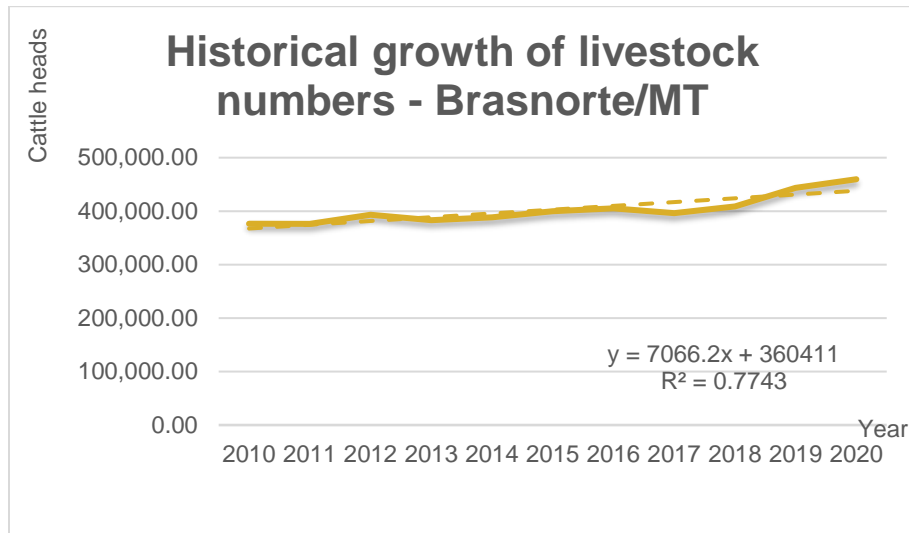
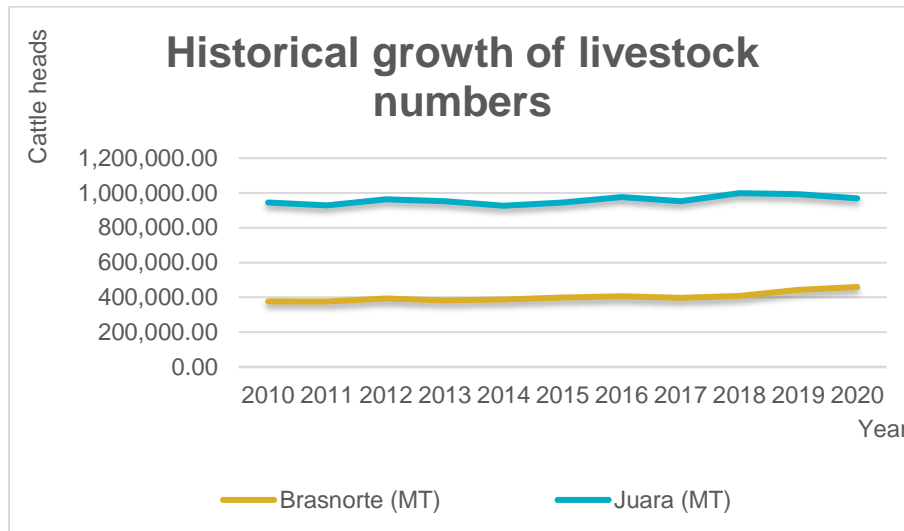


Figure 15. Comparison between the historical growth of livestock numbers in Juara and Brasnorte/MT



b) Timber harvesting

Timber harvesting can be regarded as the initial approach in a series of activities by deforestation agents, as 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 in Figure below, production of legal timber in Juara presented a significant decrease in years 2012 and 2013 but returned to increase in 2014. From that year afterwards, the production values remained practically the same, with a few variations in specific periods.

Figure 16. Timber log production in Juara/MT

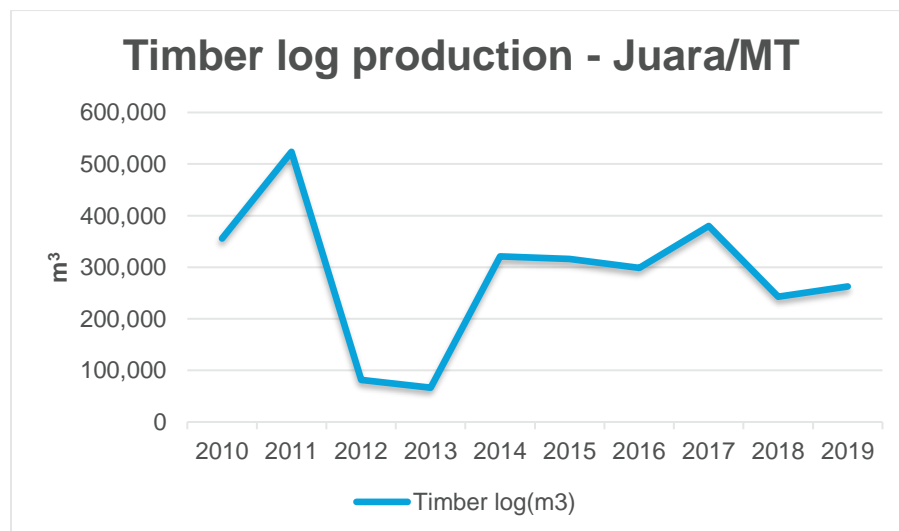


Figure 17. Timber log production in Brasnorte/MT

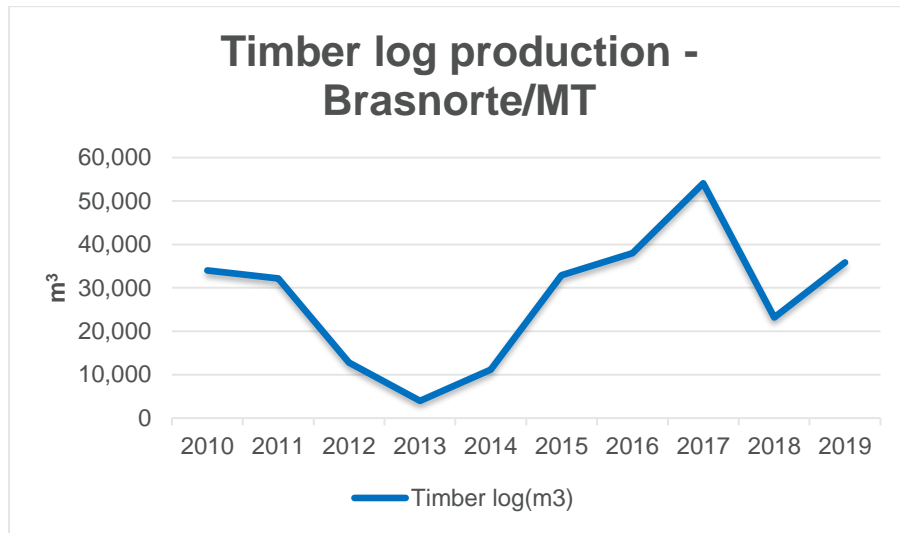
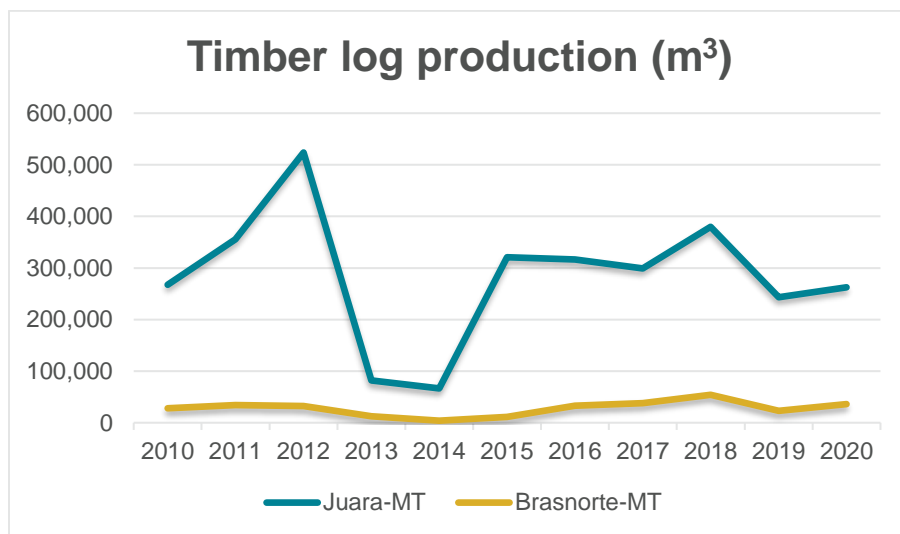


Figure 18. Comparison between timber log production in Juara and Brasnorte/MT



Based on official data, it is projected that the production tends to increase during the project lifetime in Brasnorte and reduce in Juara, tending to a balance, reaching 83.806 m³ and 194.052,00 m³ in 2050, respectively, which also points to a significant increase in timber demand for the following years of project, mainly in Brasnorte.

Figure 19. Timber log historical production and future projection in Juara/MT

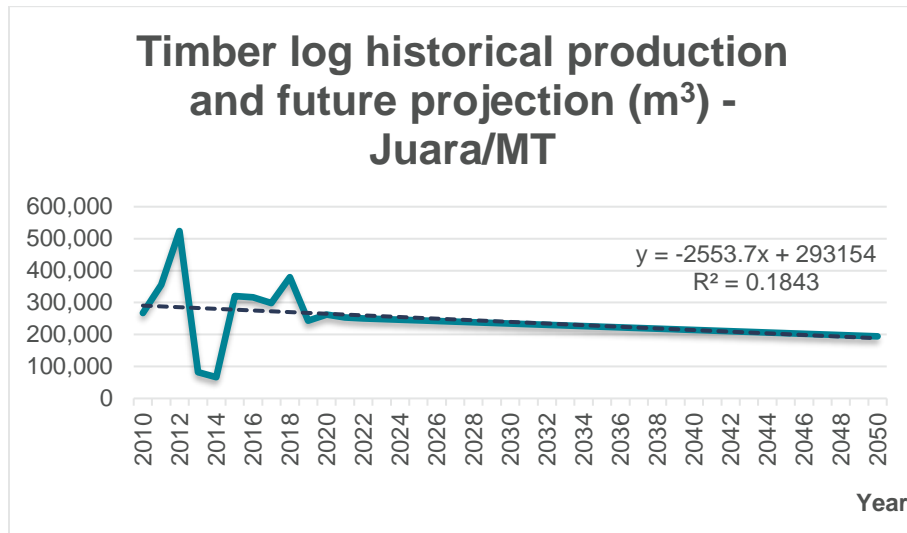


Figure 20. Timber log historical production and future projection in Brasnorte/MT

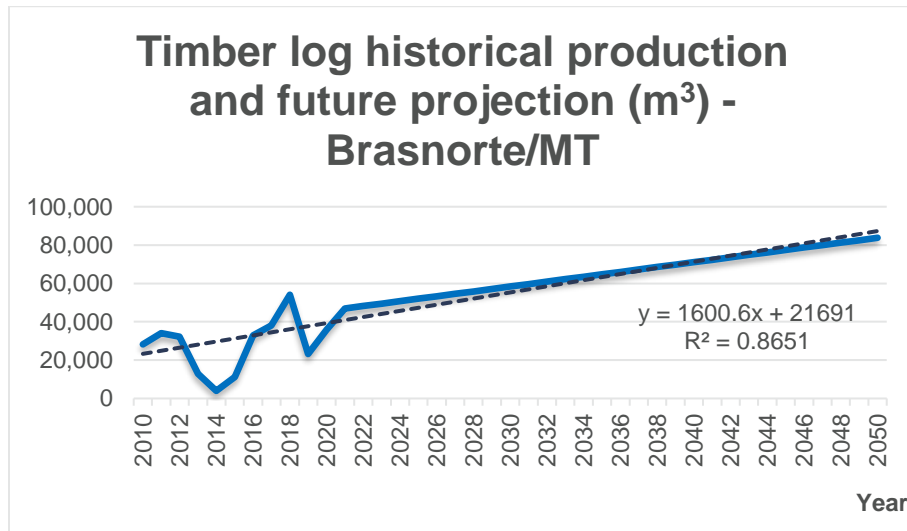
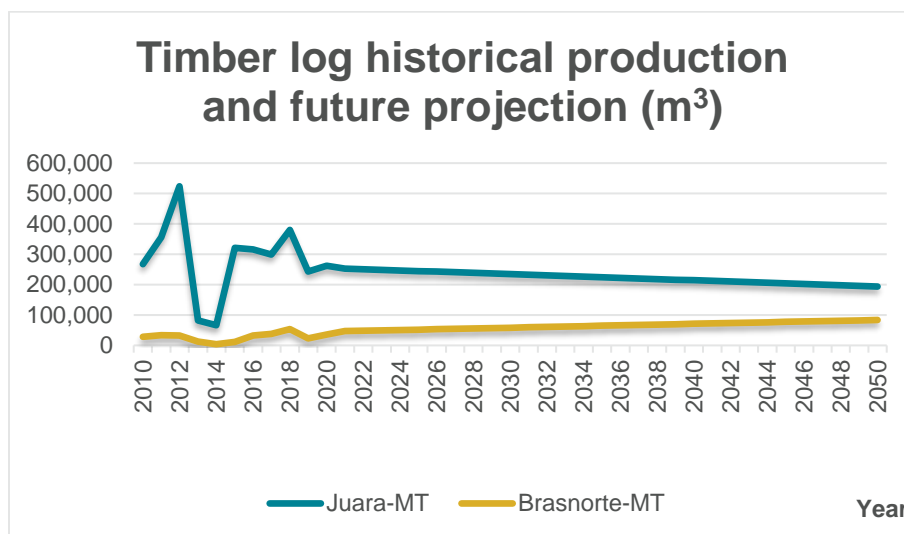


Figure 21. Comparison between timber log historical production and future projection in Juara and Brasnorte/MT



- **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 2020³⁹. 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

³⁹ <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-go%C3%A1s.html> (accessed in 01/06/2021)

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 km² in 2019, to 43.8 km² 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 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 license⁴⁰. Fortunately, environmentalists have reedited the Provisional Measure 915, to prevent deforestation licensing for term expiration⁴¹.

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 m³ 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 inspection⁴². 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

⁴⁰ <https://www.correiobraziliense.com.br/app/noticia/brasil/2020/04/29/interna-brasil,849652/camara-pode-aprovar-hoje-licenciamento-ambiental-automatico.shtml> (accessed in 01/06/2021)

⁴¹ <https://epbr.com.br/ambientalistas-alteram-mp-915-para-prevent-licensing-environmental-by-course-of-time/> (accessed in 01/06/2021)

⁴² <https://www.businesslive.co.za/bd/world/americas/2020-03-04-brazil-may-be-exporting-illegally-deforested-wood/> (accessed in 01/06/2021)

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 abroad⁴³. 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 Ibama⁴⁴.

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 2633/20⁴⁵. 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, “Cadastró 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

⁴³ <https://brasil.mongabay.com/2020/04/ao-afrouxar-leis-de-exportacao-brasil-permite-saida-de-madeira-ilegal-da-amazonia/> (accessed in 01/06/2021)

⁴⁴ <https://g1.globo.com/natureza/noticia/2020/11/17/documentos-mostram-que-ibama-facilitou-exportacao-de-madeira-extraida-ilegalmente.ghtml> (accessed in 01/06/2021)

⁴⁵ <https://ipam.org.br/35-do-desmatamento-na-amazonia-e-grilagem-indica-analise-do-ipam/> (accessed in 01/06/2021)

the territory (i.e., should have preferably deforested the area)⁴⁶. 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 government⁴⁷. Given that the Project Area is surrounded by public lands, an abnormal increase in deforestation in that region is 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 Juara/MT (IBGE, 2021)⁴⁸, in 2019, the average monthly salary was 2.1 minimum wages. The proportion of occupied people in relation to the total population was 19.2%. In comparison with other municipalities in the state, it ranked 40 out of 141, while in comparison with cities nationwide, it ranked 1503 out of 5570. Considering households with monthly incomes of up to half a minimum wage per person, it had 35.5% of the population in these conditions. For Brasnorte/MT (IBGE, 2021)⁴⁹, an average monthly salary of 2.4 minimum wages was reported in 2019, and the proportion of occupied people in relation to the total population was 15.6%. Considering households with monthly incomes of up to half a minimum wage per person, it had 35.6% of the population in these conditions in 2010. These data show that the region faces poverty issues.

⁴⁶ <https://ipam.org.br/cientistas-mapeiam-grilagem-em-florestas-publicas-na-amazonia/#:~:text=0%20impact%20da%20grilagem%20se.main%20g%C3%A1s%20%20effect%20estufa> (accessed in 01/06/2021)

⁴⁷ <https://amazonia.org.br/como-a-mp-da-grilagem-pode-mudar-o-mapa-de-regioes-da-amazonia/> (accessed in 01/06/2021)

⁴⁸ IBGE Cidades. Juara, MT – Brasil. Available at: <https://cidades.ibge.gov.br/brasil/mt/juara/panorama>. Last visited on: January 7th, 2022.

⁴⁹ IBGE Cidades. Brasnorte, MT – Brasil. Available at: <https://cidades.ibge.gov.br/brasil/mt/brasnorte/panorama>. Last visited on January 7th, 2022.

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.

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, 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”.

3.5 Additionality

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 3.0⁵⁰ was applied.

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:

- I. 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,

⁵⁰ 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^{51, 52, 53, 54, 55}.

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^{56, 57}.

⁵¹ BRASIL. Ministério do Meio Ambiente (MMA). Plano de ação para prevenção e controle do desmatamento na Amazônia. Brasília, 2012.

⁵² 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

⁵³ 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.

⁵⁴ HOLMES, T.P. et 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.

⁵⁵ VERWEIJ, P. et al. Keeping the Amazon Forests standing: a matter of values. Zeist: WWF, 2009. 72p.

⁵⁶ VERÍSSIMO, A. et al (Org.). **Áreas Protegidas na Amazônia brasileira**: avanços e desafios. Belém : Imazon ; São Paulo : Instituto Socioambiental, 2011. 90 p.

⁵⁷ 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

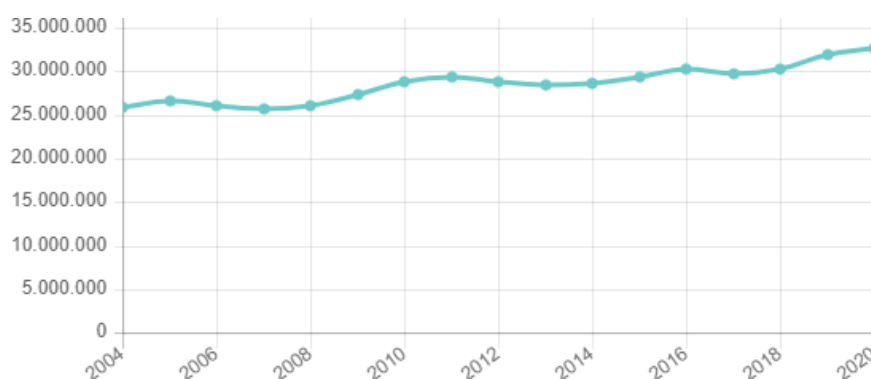
- II. Implementation of a sustainable forest management plan, combined with the implementation of additional activities:** In this scenario, the Project activity would be carried out on the land within the project boundary, nevertheless performed without being registered as the VCS REDD+ project. This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

- III. 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, especially in Mato Grosso State.

According to the 2020's report⁵⁸, the State of Mato Grosso has the main cattle herd in Brazil, making Mato Grosso's livestock an important segment for the state's economy. The relevance of livestock in the Mato Grosso economic matrix is expressed in its participation of 20.9% of the State's GDP⁵⁹ (Agriculture and livestock segments). It is possible to observe that, since 2004, the cattle herd in the State is increasing:

Figure 22. Cattle herd in Mato Grosso (in cattle heads)



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

⁵⁸ Available at <<https://biblioteca.ibge.gov.br/index.php/biblioteca-catalogo?view=detalhes&id=784>> Last visit on: October 27th, 2021.

⁵⁹ Available at <http://www.seplag.mt.gov.br/images/files/responsive/Planejamento/INFORMACOES_SOCIOECONOMICAS/PIB/contas_regionais_2018.pdf> Last visit on: October 27th, 2021

Scenario I and II – The application of a sustainable forest management plan is regulated in Brazil by the laws N° 12,651⁶⁰, decree N° 5,975⁶¹, in addition to Mato Grosso's legislation, with law 233/2005⁶². 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 Ribeiro⁶³, 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 legal status, not being enforced namely due to the lack of control⁶⁴ 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.

⁶⁰ Available at <https://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2012/Lei/L12651.htm> Last visit: 02/07/2021

⁶¹ Available at <http://www.planalto.gov.br/ccivil_03/_ato2004-2006/2006/decreto/d5975.htm> Last visit: 02/07/2021

⁶² Available at < <https://www.legisweb.com.br/legislacao/?id=132392>> Last visit: 27/10/2021

⁶³ 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=0%20Plano%20de%20Manejo%20Florestal%20Sustent%C3%A1vel%20%2D%20PMFS%20est%C3%A1%20intimamente%20relacionado,forma%20alcan%C3%A7armos%20um%20desenvolvimento%20ambiental>>.

⁶⁴ 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.

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 Gairova 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 government⁶⁵, 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

Sub-step 2a. Determine appropriate analysis method

The Gairova REDD+ Project generates financial benefits other than the revenue from the sale of VCU's, 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 perform to demonstrate which of the scenarios identified above is more financially attractive.

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

The following scenarios will be 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

⁶⁵ Available at < <https://www.legisweb.com.br/legislacao/?id=132746>>

- 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 Gairova 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.

3.6 Methodology Deviations

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

4.2 Project Emissions

4.3 Leakage

4.4 Net GHG Emission Reductions and Removals

5 MONITORING

5.1 Data and Parameters Available at Validation

Data / Parameter	
Data unit	
Description	
Source of data	
Value applied	
Justification of choice of data or description of measurement methods and procedures applied	
Purpose of Data	
Comments	

5.2 Data and Parameters Monitored

Data / Parameter	
Data unit	
Description	
Source of data	
Description of measurement methods and procedures to be applied	
Frequency of monitoring/recording	
Value applied	
Monitoring equipment	
QA/QC procedures to be applied	

Purpose of data	
Calculation method	
Comments	

5.3 Monitoring Plan

APPENDIX