The Importance of (ECI / EIA) applied to substations and the 500kv Transmission Line Manaus – Boa Vista and the Socio-Environmental Changes of the Waimiri Atroari Indigenous Lands

Geilson Pires Ferreira
piresgg23@gmail.com
FAMETRO University Center – Brazil

Giselane Campos Espadim
giselanecampos@gmail.com
FAMETRO University Center – Brazil

Fabiana Rocha Pinto
fabiana.floresta@gmail.com
Engineering Coordination at FAMETRO University Center – Brazil

David Barbosa de Alencar
david002870@hotmail.com
Galileo Institute of Technology and Education of the Amazon – ITEGAM

Gisele de Freitas Lopes
gikalps@gmail.com
Galileo Institute of Technology and Education of the Amazon – ITEGAM

Abstract

The purpose of this study was to present the importance of the Environmental Impact Study as a way to mitigate the ecological relations and social and environmental viability of the 500kV Manaus - Boa Vista Transmission Line (LT) Transmission Line and Associated Substations, which complied with the Annex Terms of Reference. III-B of Interministerial Ordinance No. 419, of October 26, 2011, as directed by FUNAI. Thus, the project contemplates the expansion of the Transmission System belonging to the basic network of the National Interconnected System - SIN, seeking to interconnect the capital of Boa Vista / RR to the SIN. Exploratory research through documentary and bibliographic survey was used to understand the land use in the stretch of BR-174, cutting the Waimiri Atroari Indigenous Lands. An analysis was made of the analysis based on social and environmental changes based on maps prepared by the ECI / EIA as a land use analysis, as well as the mitigation of possible impacts to be mitigated by a previous survey proposed by the Environmental Protection Laws. Non-indigenous land occupation policies arise from the need for economic and social growth. For the indigenous, this interference process alters the territorial history and

the emotional bonds. Therefore, this forced contact with the non-Indian, generated a series of impacts on the life of the indigenous community, having changed the way of life the local vegetation, the occupation and use of the land, interfering in the ECI / EIA knowledge and understanding of this enterprise. . Thus, understanding these relationships becomes of paramount importance because it is not just a technological advance or the suppression of a local need, bringing transformative consequences to a nation of indigenous people.

Keywords: Environmental Impacts, Amazon, Indigenous Land.

1. INTRODUCTION

This study presents an analysis of the importance of Environmental Impact Studies as a way of mitigating implications on the ecological relations and social and environmental viability of an enterprise along the BR-174 that comprise the Waimiri Atroari Indigenous Lands, whose demarcation was approved by Decree No. 97,837, of June 16, 1989.

In this sense, understanding the use of natural resources, as well as occupation and use of land, as well as their supervision, require almost uninterrupted monitoring, so that there are no major losses. According to CONAMA Resolution No. 460/2013, in its art. 3 ° which states that "soil protection must be carried out in a preventive manner, in order to ensure the maintenance of its functionality or, in a corrective manner, aiming to restore quality or recover in a manner compatible with the intended uses".

In this context, there are management laws and guidelines that ensure the effective management and monitoring of these areas, given their particularities. Over time, several characteristics have been added to the protection of the environment, and have broken down into several categories to meet different goals. This trend of category unfolding has been sanctioned at international meetings, and made effective in national laws and policies to accompany the large enterprises to be realized.

In support of this follow-up, this study is based on the EIA Indigenous Component (ECI) Study Report of the 500kV Manaus - Boa Vista Transmission Line (LT) and Associated Substations that complied with Annex III-B of the Ordinance Interministerial No. 419, of October 26, 2011, as directed by FUNAI (BVSA, 2014), as it has become of great importance to obtain information on changes submitted to the consolidation of this venture. Therefore, by analyzing such projections based on local surveys, it will be possible to understand the social and environmental changes in IT.

The need for knowledge of land use activities associated with rural activities, together with the importance of economic growth, brings a careful view of the environment, which proposes an approach through the use of remote sensing, aiming to reduce the major impacts caused (PINTO et al. 2017). Thus, this study is also based on the analysis of maps generated specifically by the ECI located along the BR-174, given that technological advances have brought better conditions for the monitoring of large areas through satellite images.

Thus, remote sensing is a tool that occupies a wide space of possibilities with magnificence of action, favoring the development of several terrestrial-environmental monitoring satellites, thus allowing, at a global, regional or local scale, the choice of the methodology for collecting data. adequate (quantitative and qualitative) data on various environmental situations (MASCARENHAS; FERREIRA; FERREIRA,

2009).

Therefore, it is verified that these environmental analysis techniques have become an increasingly common practice among the various research areas. In the case of land use and vegetation cover, they contribute significantly to the efficiency and reliability of analyzes involving the processes of environmental change, as well as various other factors that may cause changes in these conditions, but without forgetting the field truth (Rosendo, 2005).

Soil is one of the most important natural resources of the planet, so its use must be adequate, the use of these essential techniques for the elaboration of maps that overlap the land use, allowing the understanding of the patterns of space organization, for a possible planning. , since knowledge is seen as a use that can cause impacts on the environment (DE PAULA; CABRAL, 2012).

Thus, in the construction of this research, the survey of the spatial characteristics of the area corresponding to the study was approached, using as main source, the Waimiri Atroari IT ECI Report of the Manaus-Boa Vista Transmission Line and Associated Substations. Starting his narrative through the descriptive process of the construction of BR-174; the spatial analysis using the maps generated by the ECI / EIA and evaluation of the possible changes and mitigations of the social and environmental problems generated by the enterprise when being consolidated in an area related to Indigenous Lands.

2. Material and Method

2.1 Study area

The study covers the stretch of BR-174, which corresponds to the Waimiri Atroari Indigenous Lands (TI), whose demarcation was approved by Decree No. 97,837, of June 16, 1989, with a total area of 2,585,911 ha. the States of Roraima / Amazonas, cut by the BR-174, in the 121 km stretch (Lat: -1.257796 °, -0.2226420 °; Lon: -60.407078 °, - 60.691821 °).

The highway crosses the Waimiri-Atroari IT, which inhabits a rainforest region of the northern Amazon, located in northern Amazonas and southern Roraima (VIDAL et al. 2018). It is a one-way highway with construction started in 1970 (RODRIGUES, 2011) (figure 01).

Figure 01 - Illustration of the study area named “Waimiri Atroari Indigenous Land”

Source: Funai / BBC News Brazil.

The 121.8 km crossing in the Waimiri Atroari Indigenous Land (TI) is planned considering 48.0 km in the part belonging to Presidente Figueiredo / AM and 73.8 km in the part belonging to Rorainópolis / RR. (ECI / EIA, 2013).

From exploratory research through documentary and bibliographic survey we sought to understand the occupation and use of land in the stretch of BR-174 that crosses the Waimiri-Atroari Indigenous Lands.

Subsequently, we approached the case study of the enterprise composed by the 500kV Manaus - Boa Vista Transmission Line (LT) and Associated Substations (BVSA, 2014), which made a cut of the analysis based on social and environmental changes based on the choice of elaborated maps. ECI / EIA as a form of land use analysis, as well as future impacts to be mitigated by the survey proposed by the Environmental

2.2 Protection Laws.

Therefore, the study area of the LT Corridor within TI also developed by means of photointerpretation mapping over rectified orthophoto mosaic obtained in September 2013 for this purpose, using geoprocessing techniques, using Arcgis 10.1 software.

In this sense, the result of the comparative understanding of Line's proposal with the Environmental Protection Laws and the Indigenous Statute resulted in the analysis of the possible changes and mitigations of the social and environmental problems to be generated by the enterprise when it is consolidated in an

2.3 Indigenous Lands -related area.

For the analysis of this study and its respective results, the time series of the ECI / EIA Report of the

Waimiri-Atroari IT-related areas along BR-174 (Table 1) were used.

Table 1: Description of maps used for composition and analysis

MAP	YEAR	EXCERPT FROM BR-174	ANALYZE
Fishing & Straw Harvesting Activities	2013	km 218 to 221	Subsistence activity: food and crafts.
Mowing and collecting buriti	2013	km 236 to 239	Subsistence activity: food.
Ecological walkways	2013	km 271 to 274	Wildlife Passage
Xeri Village	2013	km 277 to 281	Subsistence Activity: Housing and Socialization

Source: ECI / EIA, 2013.

3. Results and Discussion

The characterization of the project comprised of the 500kV Manaus - Boa Vista Transmission Line (LT) and Associated Substations complied with the Terms of Reference of Annex III-B of Inter-ministry Ordinance No. 419, of October 26, 2011, as directed by FUNAI. This project contemplates expansion of the Transmission System belonging to the basic network of the National Interconnected System - SIN and is part of the Growth Acceleration Program - PAC 2, coordinated by the Federal Government.

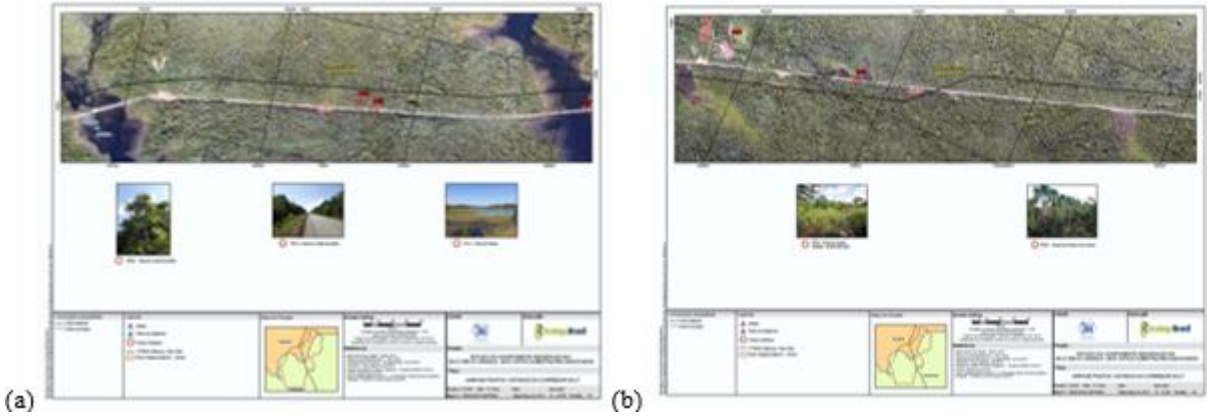
The 500 kV Manaus - Boa Vista and Associated Substations LT is a project formulated within a context of regional development, since its main objective is to link the capital of Roraima, Boa Vista, to SIN, until then an isolated system. (ECI / EIA, 2013).

To consolidate the ECI / EIA, work groups were organized, with interdisciplinary professionals coordinated by an anthropologist, to meet Funai's term of reference, where the methodology was based on Waimiri Atroari's own forms of social and political organization, contemplating his emotional and social perceptions. practices with the territory they inhabit, identifying the natural resources and their uses, as well as the places of territorial domain that demarcate the group's ethnic identity.

Faced with so many nuances and possibilities, the study presented here was based on analyzing the alterations of subsistence activity, as well as the collective activities of indigenous people, since human beings need these two premises for their healthy performance in living and living together. Therefore, four maps of the ECI / EIA study were chosen to describe the changes in these aforementioned fields.

Figures 02 (a) and 02 (b) show the maps that we call subsistence activities characterized by the development of straw collection practices for the construction of malocas, handicrafts and utensils. It is possible to identify fishing, mowing and collecting activities. Buriti

Figure 02 - Subsistence activity location maps (a) buriti collection; fishing (b) mowing; Buriti collection.



Source: ECI / EIA, 2013.

According to the ECI / EIA, during field activities the Waimiri Atroari demonstrated that the suppression of vegetation, due to the aspects characterized by its territoriality, is one of the main points of concern and fear.

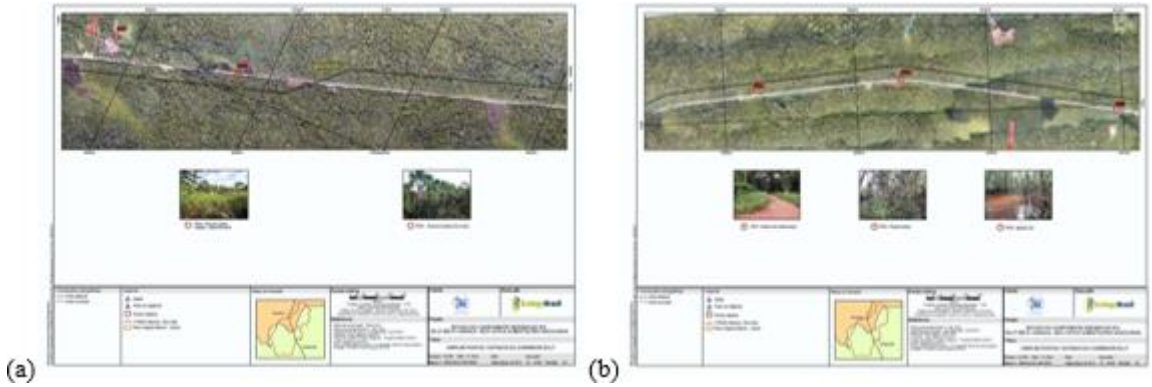
It is observed that the highlighted points are located near BR, which already configures a consolidation of past changes with the construction of the road. Virtually the entire region of the route is used for hunting, fishing and gathering forest products for handicrafts, constructions, medicinal uses. As well, the whole area is full of meanings of what it is to be and live like a Waimiri Atroari (ECI / EIA, 2013).

Regarding the history of the BR-174 and the Indigenous Peoples, this highway that would link Roraima to the rest of Brazil would shorten distances and facilitate the settlement of new residents, but it also brought with it a number of problems with the locals. Waimiri Atroari (MONTEIRO; DA SILVA, 2018). Also according to the authors cited, this undertaking involved the work of the military and civilians, and one of the obstacles was the clashes with the indigenous people who, as a result of the idea of progress at any cost, thus accounted for in 1971, two thousand dead Indians.

Still according to Monteiro; Da Silva (2018), General Enio dos Santos Pinheiro, Army Director of Works and Cooperation, added: "They were sacrificed but were sacrificed for the progress of our country." Therefore, this forced contact with the non-Indian, generated a series of impacts on the life of the indigenous community, being in the altered way of life, as in the local vegetation, through the occupation and use of the soil already mentioned.

Maps 03 (a) and 03 (b) present in a specific and specific way the socio-cultural activities of the indigenous people, who, already adapted to the changes promoted by the road, still manifest their fragmentation of the distinct use of the territory.

Figure 03 - Location maps: (a) passage of wild animals; (b) collective activities; Xeri village.



It is observed that when removing a forest, the animal species are reduced, and beyond this understanding, the indigenous understand in their perception that by restricting and changing the environment is moving with the spirits, with the body, with ethos, with practice, with the indigenous way of life (ECI / EIA, 2013). Therefore, it is not a purely natural fact, but essentially a socioecological and cultural construction. Thus, the territory is emotionally significant, since in the Indian's view "every plant species that is extracted, each spirit-creature that is killed is a memory that is lost" (ECI / EIA, 2013).

Vidal et al. (2018) state that in the years 1972 to 1977, a "pacification" and relocation operation of the Waimiri Atroari was organized by the National Indian Foundation (FUNAI). The population was clustered in villages and later numerous transfers were ordered by the Waimiri Atroari Attraction Front (FUWA) in the 1980s (VIDAL, 2018).

4. Conclusion

Non-indigenous land occupation policies arise from the need for economic growth and are a constant in our economic and social form. For the Indians, this process of interference greatly alters the emotional territorial history of their different life forms.

At present the relationship between the enterprises and the Traditional Peoples has been altered by the consolidation of Environmental Protection Laws, which we can mention: Law No. 6.938 / 1981 (PNMA, 2019), which recommends and obliges the Prior Study of Environmental Impacts in any undertaking that may cause some kind of social and environmental damage, as is the case of Tucuruí, as is also known. Law No. 6,001 / 1973, which deals with the Indian Statute (2019), has the purpose of preserving its integrated culture, progressively and harmoniously the national communion.

In this sense, the ECI / EIA's knowledge and understanding of this venture is of utmost importance to society as a whole, as it is not just a technological advance or the suppression of a local need, but beyond the vision of solving a regional problem. since it brings transformative consequences to a nation of indigenous people, who guard and safeguard a different way of life from the current capitalist societies.

For ECI / EIA, Waimiri Atroari leaders want "before visitors enter their territory to knock on their door asking for permission to talk" proposing a joint decision for their future projects.

5. References

BVSA. Boa Vista and Associated Substations. LT 500 KV MANAUS - EIA Indigenous Component Study 2545-00-ECI-RL-0001-00, Rev. No. 00. March 2014.

CONAMA. National Council of the Environment. CONAMA Resolution No. 460/2013. Available at: http://www.mma.gov.br. Accessed on: 27 Oct, 2019.

DE PAULA, M. R .; CABRAL, J. B. P. Use of Remote Sensing and Geoprocessing techniques to characterize the land use of the Caçu-GO hydropower basin. Geonorte Magazine, 3 (6), 127-139. 2012

Indian statute. Law No. 6,001, DECEMBER 19, 1973. Available at: http://legislacao.planalto.gov.br. Accessed Oct 2019.

MASKS, L. M. A .; FERREIRA, M. E .; FERREIRA, L, G. Remote sensing as a control and environmental protection instrument: analysis of the remaining vegetation cover in the Araguaia river basin. 2009

MONTEIRO, E. W. Q .; DA SILVA, L.F. (2019). The opening of the BR 174 highway in the Brazilian Amazon and its developments for the state of Roraima. Geographic Presence Magazine, 5 (2), 71-78.

PINTO, J.F.S.K.C .; SETZER, A .; MORELLI, F .; GOMES, A. R .; ADAMI, M., VENTURIERI, A .; GUIMARÃES, T. Dynamics of land use and land cover in burned areas of municipalities in the Brazilian Amazon. In Embrapa Eastern Amazon - Article in Congress Proceedings (ALICE). In: BRAZILIAN REMOTE SENSING SYMPOSIUM, 18. Santos. Annals ... São José dos Campos: INPE, 2017.

PNMA. National Environmental Policy. LAW NO. 6,938, AUGUST 31, 1981. Available at: http://legislacao.planalto.gov.br. Accessed Oct 2019.

ROSENDO J.S. Vegetation indices and monitoring of land use and vegetation cover in the Araguari-MG river basin using MODIS sensor data. Uberlandia, MG. 2005

VIDAL, B. S., DA SILVA NETO, J. C. A., & ALEIXO, N. C. R. Temporal analysis of vegetation cover and land use on Highway BR-174: between Manaus – AM and Presidente Figueiredo-AM. Electronic Journal Alta Paulista Environmental Forum, 14 (3). 2018.