

Relocation Program for Indigenous Communities: Socioeconomic Impacts Mitigation in Brazil

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Abstract

Under Brazilian law, environmental licensing should be undertaken prior to the installation of an enterprise or potentially harmful activity to the environment, such as the construction or duplication of a highway. In Brazil, the concept of environmental management in highway projects was adopted in 2005 with the duplication of the southern section of Highway 101. The Consortium responsible for conducting environmental management projects in the Northeast stretch of Highway 101 duplication project began its work in May 2011. It is accountable for conducting 21 environmental programs in its stretch (649 km); one of these programs is related to the relocation of families living along the highway. Qualitative and quantitative primary data collection occurred in the period from August to September 2012. It was conducted by a multidisciplinary team, aiming to realize a socioeconomic diagnosis and identify vulnerability of 117 families (117 properties) that should be relocated to vacate the public right of way in order to allow highway construction. This article will discuss the measures taken in the Relocation Program of Indigenous Communities, developed by the Consortium responsible for the environmental management of highway 101 duplication in the State of Alagoas - Brazil, aiming to mitigate the negative environmental impacts and ensure that relocation process was carried in a fair and sustainable way.

Keywords: Relocation; Indigenous Communities; Mitigation; Highway.

Abbreviations:

DNIT	:	National Department of Infrastructure and Transportation
BR-101	:	Brazilian Highway 101
FUNAI	:	National Indian Foundation

1. Introduction

Under Brazilian law, environmental licensing should be undertaken prior to the installation of an enterprise or potentially harmful activity to the environment, such as the construction or duplication of a highway. In Brazil, the concept of environmental management in highway projects was adopted in 2005 with the duplication of the southern section of Highway 101 (BR-101) [1]. It is the longest highway in the country with nearly 4,800 km and it crosses 12 Brazilian States following virtually the entire east coast of Brazil. It has social and economic importance to the country, once it drains much of the country's production and connects northeastern and southern Brazil. Due to the success of this concept, the Brazilian Federal Government, through the Ministry of Transport and the National Department of Infrastructure and Transport (DNIT), began to consider it as a model for all its projects of transport infrastructure. Currently, there are twelve Consortia that by bidding processes were contracted by DNIT in order to carry out Environmental Management Programs on federal highways [2].

The Consortium responsible for conducting environmental management projects in the Northeast stretch of BR-101 duplication project began its work in May 2011. The Consortium is accountable for conducting 21 environmental programs, as determinants of the Environmental Construction License of BR- 101 No 690/2010 replaced by No 872/2012. The Northeast stretch is located between the municipalities of Palmares in Pernambuco State and Feira de Santana located in the State of Bahia, totaling 649 km. Among these programs, one of the most sensitive is the Relocation Program of families living in the right-of-way (a strip of land along the highway which belongs to the Government). In Brazil, right-of-way comprises 35 m measured from the center of the highway [3]. It is a fact that roads construction often functions as vector of occupation for housing and development of commercial activities.

In Alagoas State, the BR-101 started to be built around the 40's. During that time, there were groups of Indigenous communities living next to the municipality of Joaquim Gomes, whose were attracted by the duplication project. Over the years, 19 indigenous communities settled along the highway (Figure 1). In 1986, Decree No. 93,331 created the Indigenous Territory Wassu-Cocal, which included these communities. However, its 2º clause kept right-of-way under Government possession [3].

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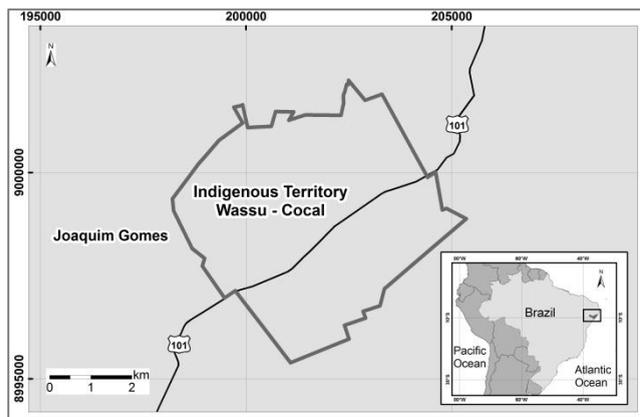


Figure 1 Indigenous territory along BR-101 in Alagoas State.

Due to the proximity to the highway, residents install their homes along the strip domain (public right of way) and establish small businesses of local produce such as fruit and sweets, which serve as supply of the highway users. The public right of way is defined as the area of 15 meters to both sides, starting from the center of the highway [3]. Such area is not part of its territory; it belongs to the Federal Government.

Under these circumstances, houses of indigenous families which would be directly affected by the highway duplication plan should be properly relocated to other areas in the Territory, aiming to preserve local people's quality of life. If not well planned, the involuntary displacement of these families could generate the disarticulation of community structures, social networks, production systems and livelihoods. Consequences could result in long-term hardship and impoverishment of the affected populations. On the other hand, an effective relocation program would pay fair compensation in correlation to socioeconomic values and would be agile from the beginning of negotiation until its completion.

This article will discuss the measures taken in the Relocation Program of Indigenous Communities, developed by the Consortium responsible for conducting environmental programs over BR-101 duplication project in the State of Alagoas - Brazil, aiming to mitigate the negative environmental impacts and ensure that relocation process was carried in a fair and sustainable way.

2. Methodology

The main references used for planning the Relocation Program of Indigenous Communities were: Operating Procedures OP 4.12 [4] and BP 4.12 [5] adopted by the World Bank as International Standards for Involuntary Resettlement and the Guidelines and Procedures for Resettlement of Affected Populations in Highway Construction adopted as Resolution No. 33/98 by DNIT [3]. One important element cited in national and international guidelines is the participation of communities during decision making procedures. Furthermore, DNIT indicates the need for a characterization of family vulnerability.

For program implementation, DNIT received the collaboration from the Department of Engineering and Construction of Brazilian Army. Soldiers walked along the planned lineation for the new road, recording every house that should be demolished in order to free public right of way. It was founded that 117 properties should be relocated. While recording the number of houses, soldiers were also quantifying the amenities in the property, aiming to calculate a suitable value for indemnification that would be paid by DNIT. During community meetings, families decided to receive compensation in cash, refusing the initial offer from the National Indian Foundation (FUNAI), which raised the possibility of compensating families through the construction of new houses. Damages calculation did not include land's value, once it already belonged to the Government. On another hand, fruit trees were included in the price and residences' values were calculated disregarding depreciation over time.

Once the amount that each family should receive was defined the Consortium roles' was to manage and supervise the Relocation Program of Indigenous Communities, running socioeconomic diagnosis studies and conducting vulnerability analysis of affected families and most important, Consortium proposed mitigation actions and provided social assistance, following up relocation plan in order to ensure that people would receive the exactly amount they were promised, that families would not built new houses in the public right of way, and other measurements to ensure process smoothness.

2.1 Data Collection

In Wassu-Cocal community live 1,915 distributed in 11,842 hectare [6]. However, the area of public right of way is not part of its territory; it belongs to the Federal Government. Therefore, 100% of the properties installed in such area should be demolished in order to allow highway expansion and families living in those houses should be carefully relocated to other areas in the community.

The team identified 100% of the properties located in the public right of way ($n=117$), nevertheless, one family could have more than one property, therefore, it was founded that those 117 properties belonged to a total of 111 families.

In this context, qualitative and quantitative primary data collection occurred in the period between 20 August 2012 and 5 September 2012 and it was conducted by a multidisciplinary team consisting of a social worker, a lawyer, an engineer and a research assistant, all specially trained to develop this particular program.

The leader of each family (mother, father or elderly) was chosen to answer the questionnaires prepared by the multidisciplinary team, totaling 111 respondents ($n=111$). For the survey, the leader was defined as the person who best knew about family health, education and financial situation.

The major role during the survey was played by the social worker who was responsible for mediating the information about the process of receiving money and

explaining to families where they should not construct their new houses and the technical and legal reasons for that. Communication and community consultation often occurred through meetings. Consortium' team through the voice of social worker informed communities about how relocation process would occur.

The next step consisted of the socioeconomic diagnosis. The social worker with the help of a research assistant prepared a questionnaire to apply in each family, in order to identify the most vulnerable ones, so they could receive the money first. During data collection, social worker explained in details the process of payment and relocation in order to avoid emergence of anxiety and expectations. Information about each family profile (number of children, monthly income, education, sanitation, e.g.), as well as their perceptions about future changes was collected and possible social impacts were identified for each family with the objective of proposing fair compensation of damages.

Respondents consisted of the main person in the house, the ones responsible for sustaining the house, and it could be male or female, elder and in all cases, respondents were over 18 years old.

Data obtained through socioeconomic diagnosis were also considered in vulnerability analysis. The index of social households' vulnerability in Wassu-Cocal featured six dimensions: family structure, access to knowledge, children and youth development, access to work, family income and housing conditions. The index was adapted from [7].

Variables were processed and analyzed by specialized software for qualitative research interpretation called SPHINX. Based on this relationship, the index ranged from "o" (most vulnerable households) to "1" (less vulnerable). Affirmative responses have value = "1" and negative responses have value = "o". The categorization of social vulnerability was presented as "high vulnerability" (< 0.33), "intermediate vulnerability" (between ≥ 0.33 and ≤ 0.67) and "low vulnerability" (> 0.67). The analysis also considered groups already identified to [8], [9] and [10] whose the most vulnerable groups are households which have women as family head and have the presence of children and elderly.

The purpose for studying family vulnerability was to identify priority groups for relocation, contribute to a fair calculation of damages, and support decision about location of new housing in order to maintain existing relationships among neighbors, friends and relatives.

3. Results and discussion

3.1 Socioeconomic Diagnosis

The population of Wassu - Cocal was classified as rural and sparsely populated, with an average 4.04 persons/household. Almost 55 % were male and the most representative age groups were from 25 to 49 years (29 %) and children under 9 years old (25 %). There was no type of traditional hollow in the entire territory; architecture was

similar to houses outside the territory. The oldest and most recent families moved to the territory 54 and 15.5 years ago, respectively. In the educational area, 58 % of population was literate and only 1 % of people living in territory knows the indigenous language Tupi-Guarani. 15.93 % of houses have access to water supply system while 84.07% make usage of wells. On the issue of sanitation, 94 % use rudimentary septic system (pit hole) and 97% have electricity. Almost 77% burn or bury their garbage, once there was no continuous waste collection system offered from the government. Human Development Index average was considered as medium with the average score of 0.54. Indicators showed precarious quality of life both in water supply and waste disposal.

The sectors with greater participation in economic activities were agriculture and manual labor for harvesting sugar cane planted by farmers in the region. Regarding the use of labor force by the sugar industry and in particular the usage of indigenous labor, [11] says: "the sugar cane expands even more, with its entire economic and cultural complex [...] Wassu-Cocal will become employed of sugar plantations, which will generate a new dynamic between the indigenous populations".

3.2 Vulnerability Analysis

After analyzing 39 indicators grouped into six dimensions (family structure, access to knowledge, children and youth development, access to work, family income and housing conditions), the average indices were calculated for each dimension. The mean values calculated for the six dimensions originated Figure 2, which display the overall vulnerability of households to be relocated.

Results showed that the majority of households (68.47 %) were categorized in the Intermediary Vulnerability group, followed by the low vulnerability group (30.63 %). Only 1 household was included in the group of high vulnerability presenting overall vulnerability index of 0.32. This residence received special attention in the process of relocation, being prioritized in the process of compensation. The main reasons which led this household to be classified in the group of high vulnerability was caused by the dimension of remuneration (index "o"), justified by the fact that the head of the family did not have any monthly income and the dimension of resource availability (index "o") because its household income was under the poverty line (34Us/person/month) [12].

Among dimensions, access to knowledge had the lowest rate (0.37) overall households. There are four schools in the territory and none has the option of high school, forcing students to leave the territory. Furthermore, the 2010 School Census [12] pointed to the lack of library, computer lab, internet access, electricity, water and sewage of all schools. The dimensions of compensation (0.52), housing conditions (0.52) and family structure (0.63) reached intermediate vulnerability index.

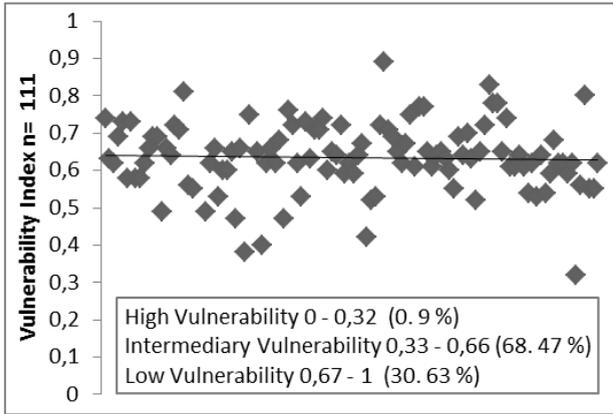


Figure 2 Vulnerability analysis of households.

As communities produce much of their food and have access to natural resources the dimension of children and youth development (0.78) and resource availability (0.95) were classified as low vulnerability.

3.3 Change in Communities Perception

A major focus of socioeconomic diagnosis was to identify the knowledge level of families about the BR-101 duplication project. Results showed that 73.45 % of interviewee answered to know about the project, while, 19.47 % claimed to have no knowledge and 7.08 % declined to answer. These results were used to develop strategies to include communities in the Social Communication and Environmental Education Program also conducted by the Consortium.

During diagnostic phase families were quite skeptical about the Consortium activities. They were afraid of losing their homes without any compensation. Nevertheless, once payments for damages started to be paid by DNIT, and households started building new and better houses (Figure 3 and Figure 4), the receptivity to Consortium activities increased markedly.

Families had the option to choose their compensation type. As a result, 92.92 % opted for payment in cash, 4.2 % chose not to respond and 2.65 %, opted for the purchase of a new house, while, the option for relocating all families to housing complex received no votes.

Payments stage initiated in October 2012 and ended in February 2013. From 111 respondents, 5 mentioned to have no intention to invest in Wassu - Cocal territory, while, 5 families are waiting to the start of highway duplication within the territory, in order to rebuild their businesses near the highway. The other 101 families have their nearly finished houses (Figure 4) which were relocated in the territory. When families were asked about the satisfaction of total amount received for their properties, 7% of respondents thought the amount was great, 82% found it a good amount, 7% said to be bad and 4% reported to be extremely bad. It is worth mentioning that the financial evaluation of each property did not take into account the

depreciation index, therefore, all amounts received were set above the market average. In fact, 67% respondents reported that the amount received was the best incentive for relocation, once they could build better houses like the situation showed by Figure 3 and Figure 4.

Currently, DNIT is waiting the approval of FUNAI in order to initiate highway duplication in the indigenous area.



Figure 3 Household established along Highway. Date: 22/01/2013.



Figure 4 Relocated household. Date: 22/01/2013.

4. Final Considerations

The involuntary relocation is undoubtedly one of the most sensitive issues related to a highway construction. Special care is necessary to relocate indigenous communities due to their particular cultural background and law protection. Moreover, project fluidity depends directly on the success of the mentioned program. In that sense, the Consortium continues to communicate and assist relocated families through the care of a social worker whose report DNIT

monthly, about the Consortium activities related to the program.

The Relocation Program designed specifically to families from the Indigenous Communities of Wassu - Cocal established useful criteria and procedures which were used to calculate damages and evaluate vulnerability of families. The mentioned program assisted in securing compensation for loss of property, focusing on particularly low-income families, allowing the continuity of economic and social activities from livelihood, and therefore, mitigating possible socioeconomic impacts derived from the duplication of BR-101 over indigenous communities located in the Indigenous Territory of Wassu Cocal, Alagoas State- Brazil.

Household vulnerability analysis proved to be an important tool for promoting the success of the relocation project. The monitoring carried out by the multidisciplinary team was essential to the success of the relocation process. Thus, one important conclusion is that the process of environmental licensing of federal highways that have a full team to follow up on actions to be taken by the entrepreneur, in this case DNIT, contributes to the sustainability of communities to be relocated.

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