

SOCIAL CARBON APPLICABILITY – UHE MASCARENHAS POWER UPGRADING PROJECT

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The *UHE Mascarenhas Power Upgrading Project* consists of a GHG emissions reduction project, carried out by Energest S/A, which improves efficiency of current hydro power plant, through the installation of a new generating unit with capacity of 49,5 MW. The Hydro Power Plant (UHE) of Mascarenhas is located in the north of the Espírito Santo State, on the Doce River. It was constructed between 1968 and 1972 by *Centrais Elétricas Espírito Santo S/A – Escelsa*, now, after the segregation of the Brazilian electric sector², Energest S/A, which is responsible for electricity generation activities. Mascarenhas hydro power plant is the oldest one of the State.

The Project Activity will result in carbon dioxide emissions reduction through the increase of clean and renewable energy supply for the Brazilian system. The Project will generate emission reductions of around 353.262 tones of carbon credits in a period of seven years. To allow a representative diagnosis to take place, the Social Carbon applicability was divided into two components: the first one focuses on the actual state of the *UHE Mascarenhas Power Upgrading Project*, and the second deals with communities around.

The diagnosis represented an evaluation of **project's sustainability** conditions. Some indicators analyze the company's conditions as well, in this case the Energest S/A – Espírito Santo. This means that evaluation considers not only project activities but also other aspects developed by the company, for example, human resources management, including corporate actions or actions related to others companies from the ENBR³ group, when considered relevant to the subject of appraisal.

¹ First published at: <http://www.climate-l.org/>

² Established by the Law number 10.848/2004, which determines that the electric sector companies should be segregated in four main activities (generation, transmission, distribution and commercialization).

³ Energias do Brasil – Holding company of Energest S/A.

The UHE Mascarenhas Social Carbon was applied in August 2007 to establish the Zero Mark of the social-environmental reality of the project. To prepare the diagnosis, interviews with representatives of Energest's environmental, human resources and financial areas were carried out; technical visits to UHE Mascarenhas took place, as well as meetings with civil society representative. Also, documents that confirmed the authenticity of the information gathered during participative meetings and interviews were evaluated.

The diagnosis was based in Social Carbon Methodology Indicators for sustainability in the Hydroelectric Sector, which evaluates 48 main aspects of the project taking in to consideration the Resources previously defined. The indicators were analyzed individually; the actual situation of the project was evaluated by the respective value (considering the possible six scenarios of the methodology); and, when applicable, suggestions were given of what can be done to improve project's and communities' sustainability.

Four local communities were selected to the diagnosis considering the dialogue established with the entrepreneur, the Municipal Secretary of Agriculture, the Capixaba Research Institute, the Technical Assistance and Rural Extension and the Rio Guandu Basin Intermunicipal Consortium for Environmental Recuperation and other stakeholders. They are:

- **Community 1:** Women of Mascarenhas Village – Mascarenhas Village is now district of Baixo Guandu municipal district, being the nearest urban community to UHE.
- **Community 2:** Queixada Smallholders Association – Queixada is a local place distant 5 km approximately from UHE. The smallholders are the nearest association from the UHE and are well organized.
- **Community 3:** Ibituba Smallholders Association – Ibituba is 28 km distant from UHE and the association exists for more than 20 years. Despite well organized have little influence on the region.

- **Community 4:** Baixo Guandu Fishermen Association – Fishermen group that suffer the most important UHE impacts. They are organized as a formal association that has great influence on the region.

The meetings with those communities were realized individually so as to identify groups' particularities. They are the more impacted people during the development of the project, but, on the other hand they will be the beneficiaries of development projects suggested by Social Carbon.



Community 1

Community 2



Results of Social Carbon Applicability – UHE Mascarenhas Power Upgrading Project⁴

Company Profile

As showed on the following graphic (Figure 1), in a general way, the enterprise possesses a sustainability index that is considered good. Most resources reached indexes close to 3, except Human Resources, that exceed averages, scoring 4,6 and Biodiversity Resource that scored lower than 3. Aspects that showed excellent results are related to Human Resource Management, compliancy with environmental regulation, project's low environmental impact, environmental education and conservation /sustainable use of Ichthyofauna.

On the other hand, main critical factors that could affect the sustainability of project were those related to social communication (of the Power Plant in general, and of the emission reduction project in particular), and the conditions of preservation areas around the reservoir.

⁴ The results presented here are a summary of a greater research work that was done to make possible Social Carbon Applicability. There are much more information/graphics on the final report.

Schematic representation of the Project's sustainability using the Social Carbon Methodology

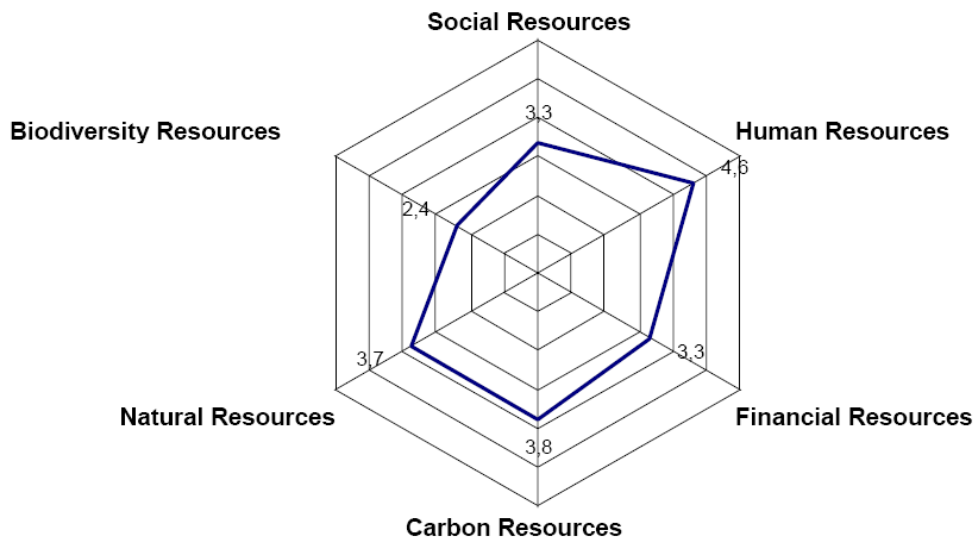


Figure 1: Company Hexagon

Communities Profile

Community 1: Women of Mascarenhas Village	Community 2: Queixada Smallholders Association
<ul style="list-style-type: none"> • Do not have a formal association; • Strong will among women to unit; • Absence of regular income; • Human potential for activities of sewing, crochet, needlework and artifacts; • Interested in setting up a new sewing cooperative; • Urban community without direct relation with natural ecosystems. 	<ul style="list-style-type: none"> • Have a formal association that is well structured; • Leaders have know-how; • Agriculture of subsistence; • Main financial difficulties: commercialization of products (e.g. Flour and Cheese) and the discharge of products; • Inadequate use of agro-toxic, irregular utilization of Permanent Preservation Areas and Legal Reserves; • Remaining native woods are scarce. Some are willing to restore and conserve spring areas.

<p>Community 3: Ibituba Smallholders Association</p> <ul style="list-style-type: none"> • Have a structured association, but it's not very active; • Individualism present, as well as political interferences; • Agriculture of subsistence; • Difficulties in the commercialization of products and lack of water during drought periods; • Inadequate use of agro-toxic, irregular utilization of Permanent Preservation Areas and Legal Reserves; • Remaining native woods are scarce and have lost their natural characteristics. 	<p>Community 4: Baixo Guandu Fishermen Association</p> <ul style="list-style-type: none"> • Urban community; • Have an formal association; • Low fish stocks and territorial conflicts have created the movement that seeks the construction of a fish ladder; • Non-fishing period is not respected by fishermen.
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In communities' profile, as showed on the graphic above (Figure 2), the Social Resources had the highest average index, considering that with the exception of Mascarenhas group of women, all selected communities have organized non-profit associations that have as objective the facilitation and success of collective objectives and ideas. There are, however, no co-operative spirit, as production activities and profit generation is done individually. Habitation conditions were considered reasonable, satisfying minimal standards that are necessary to be a descent habitat, giving Human Resources a good average.

Carbon Resource, on the other hand, received the lowest evaluation index. The realization of diagnosis and meetings was the first incentive to involve local communities that are located around the project's area. Related to Natural Resource, the environmental impacts caused by communities are concentrated at small producers that use agro-toxic in an incorrect way, degrade Legal Reserves and/or spring areas within their property. Financial Resources are considered to be a critical feature, especially for the Mascarenhas Women and the fishermen of Baixo Gandu River.

At least, Biodiversity Resource is considered critical for the sustainability of the region as there is much lost of native characteristics of the region's natural ecosystems. The situation is the same as identified during the diagnosis that was prepared for the project itself.

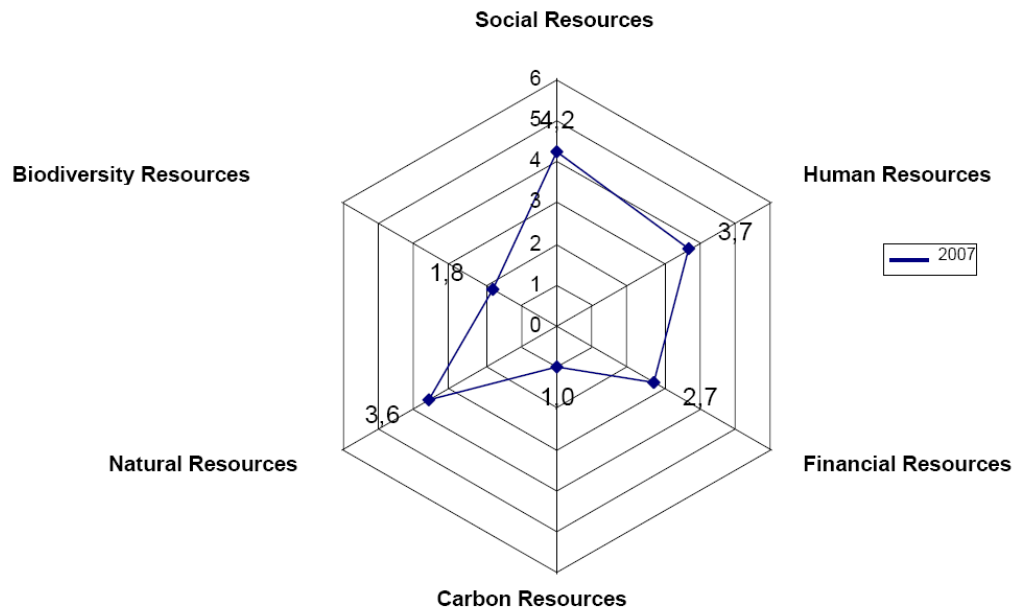


Figure 2: Communities Profile – General Performance