FIRST IMPACT MEASUREMENT REPORT

A new view for sustainable development of the brazilian socio biodiversity

BERACA
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SUMMARY
The aim of this study performed by Beraca is to broaden the discussion regarding the social and environmental impacts caused by the use of natural resources from the Brazilian biodiversity. The results that foment the thesis are part of a project led by the company and by two major research and educational institutions: the University of São Paulo - USP, and Columbia University, based in New York, United States. The background of this systematization of data and information is the history of two successful decades of Beraca in the building of a business model that aggregates economic, social and environmental values for the company and the communities of different regions of the country, especially those located in the North and Northeast.

This report is the result of efforts performed by a multidisciplinary team that met for two years, political scientists, economists, engineers and administrators. The group performed field visits, literature, systematization of primary data, writing and presentation of scientific papers in Brazil and abroad, and besides much discussion about management models.

The work “A new view for the sustainable development of Brazilian socio biodiversity” seeks to contribute to a pluralistic and holistic approach to issues involving the design of sustainable chains, responsibility for the use of natural resources of the rich Brazilian biodiversity, the promotion of social inclusion and income generation from the communities in underserved areas of opportunity.
The starting point:
Environmental Responsibility, Development and Sustainability

Before going into the results of the work, it is essential to present concepts for its composition and understanding. The scope that defines Corporate Social Responsibility comes in the mid-1950s and refers to the relationship of conflict and dependence between business activities and society. Over time, the evolution of the understanding of the subject converged to the definition of a continuous corporate commitment, focused on the alignment between business activities, goals and values of the society in which the companies are inserted. In this way, we seek economic development, providing improvements to the quality of life of workers and their families, as well as the development of the local community and society in general.

In the middle of this trajectory, another concept occupies the center of attention and part of speech of different business and political organizations: “sustainable development”. In this case, there is an accumulation of nearly three decades of history, having the term ‘sustainability’ first used in 1987 in Our Common Future report1, published by the United Nations - UN, in order to generate reflections on negative impacts of strong global industrialization process. In the years to come, sustainable development has to be understood as “the ability to meet the needs and aspirations of the present without compromising the ability of future generations to meet their own needs”.

The effervescent discussion related to the ecological imbalances and its consequences - such as global warming and loss of biodiversity, which emerged as subject of an international agenda even in the 1970s – did that 178 countries came together to give life to the United Nations Conference on Environment and Development, based in Rio de Janeiro and consecrated under the name of ECO 92, the largest meeting of gender until this moment.

In the business segment, the 1990 marks the convergence of these two major schools of thought (social and environmental) and its operation along the value chain. The chain of sustainable value, in fact, is built on two complementary purposes: to creation of economic, social and environmental values along the different steps that enable the realization of a good or service; and ensuring stability, i.e. maintaining conditions of economic growth, social welfare and environmental conservation in order to “meet the present and future generations.”

In this context, the value chain governance can be understood as a process of articulation between different actors (companies, communities, cooperatives, government, NGOs, research institutions etc.) aimed to cooperation and coordination with common objectives related to sustainable development to throughout the chain.

Aligned with the same discussion, the socio biodiversity chain starts to be understood as an integrated system, consisting of interdependent actors and a series of training processes, research, management, production, beneficiaries, distribution, marketing and consumption of products and services of socio biodiversity. It is necessary to point out that this scenario contemplates the cultural identity and the incorporation of values and local knowledge, reason that it should ensure a fair and equitable distribution of benefits2.

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Beraca is a Brazilian company that started its activities even in the 1950s, in the chemical sector, becoming a main player in the water treatment segment in mid-1960. Only in 1988, with Marco Antonio Sabará and Ulisses Sabará ahead the company, Beraca starts to act on the ingredients for the cosmetics industry market, betting on a big difference: the prospecting of natural ingredients originated of Brazilian species. In 1994, the company entered in ingredients markets for food and animal nutrition industries.

In the same period, aware of discussions involving sustainable development and environmental preservation, which took place worldwide, and touched by the conditions of life and work found among the rural communities of the Brazilian Amazon, the entrepreneur Ulisses Sabará envisioned the possibility of making processes traditionally rudimentary in profitable activities, creating value for the communities and competitive advantages for the company. Then, the proposal to create sustainable chains from socio-biodiversity was created.

The operationalization of this idea occurred over the last 20 years and resulted in the consolidation of Beraca as reference in sustainable management of chains of Brazilian socio biodiversity. Along the way, there were many challenges.

With suppliers, many negative factors of reality were found by Ulysses at that time: large actuation of middlemen who, in addition to economically explore the communities through excessively low prices, failed to honor payments; inadequate forest management practices, especially the constant fires; exploitation of child labor; and low education verified in the communities were some of the problems that drew the attention of Beraca. It was necessary to develop corporate governance mechanisms, capacitate and organize the production of ingredient in a participatory form, improve the relationship with the cooperatives and associations of producers, ensure the flow of products and information and at the same time, preserving the cultural identity of communities.

At the other end of the chain, Beraca would deal with large established companies in the global market for cosmetics, food and animal nutrition, characterized and recognized by the operational excellence, high economic performance, permanent innovation capacity and environmental engagement. In this sense, the suitability to technical standards of quality and implementation of programs and actions of environmental responsibility would become critical factors to the organization of supply chains of biodiversity ingredients.

This present document seeks to reflect how Beraca has developed a sustainable business model, constituting partnerships and creating economic, social and environmental values along the supply chain.

Since the beginning of its journey, Beraca has integrated networks for sustainability in Brazil and worldwide. It is one of the signatory of Global Compact, initiative of the United Nations to mobilize the business community to adopt, in its business practices, fundamental values and internationally accepted in the areas of human rights, labor relations, the environment and combat to corruption in search of a more sustainable and inclusive global economy.

Beraca is also member of the Union for Ethical BioTrade (UEBT), a non-profit association that promotes the sourcing with respect of natural ingredients of native biodiversity; and supports the Caring for Climate - UN initiative to increase the engagement of businesses in the fight against climate change.
The business model of Beraca

Attentive to international trends, the company turned to the creation of a highly innovative business model, based on three pillars: Human Development in a Balanced Manner, Preservation of Water and Biodiversity and Appropriate Profitability.

Human Development in a Balanced Manner

The business activities should contribute to human development in a sustainable way, giving priority to the sectors of health, nutrition and beauty. Thus, the company seeks through its actions contribute to that people can develop in a sustainable way. The most important is that the business exists only because it is made of individuals and the company believes that investing in people also means investing in the business.

Preservation of Water and Biodiversity

Beraca’s business must preserve its sources of raw materials and use them sustainably. Thus, the company takes tangible commitments to the environment and other stakeholders. By the character of the business, it is essential that the issues of water and biodiversity are prioritized, without prejudice to other topics related to the environment.

Appropriate Profitability

Beraca’s business cannot be profitable only in the present, but should remain so in the future, which means profitable throughout the value chain while respecting the values and company policies. Beraca should generate income and add value to the entire chain, pay appropriate prices to suppliers, remunerate employees at market value and deliver additional benefits to customers.

The progress of the projects made by Beraca created in 2000 the Socio-biodiversity Enhancement Program®, a platform that includes all processes related to the manufacture of its products, from the selection criteria of the species to be explored, through the complex chemical formulations to reach the clusters of communities that carry out the management of green areas.

The results have appeared over the years and currently more than 2,500 families, of 105 community centers around twelve Brazilian states are benefited. The generation of employment and income is the result of encouragement and constant monitoring of Beraca, promoting the sustainable management and offering growth opportunities of extractive production, stimulated financially by adding a premium price to the certified ingredients, as in the case of organic production.
Besides ensuring that biodiversity will be conserved - avoiding contamination of ground and water resources by the use of pesticides or the indiscriminate practice of burning - the community that receives the ECOCERT certification can sell their production for a value up to 30% higher. One and a half million hectares are already tracked and maintained, the equivalent to half of the state of Alagoas area.

A large amount of financial resources was transformed into environmental investments through capacity and training on issues related to work safety and sustainable management of native species.

Due to the efforts and investments of more than 20 years, Beraca has developed a strong know-how in the formation of sustainable chains. The company knows to identify with clarity and agility which are the objectives of each of the involved parties around a kind of specie and balance them consistently, according to the premises of the tripod that characterize its business model, always based on the legal reference in force in Brazil and other countries buyers of ingredients - with emphasis on the United States and nations that form the European Union.

In other words, if the beginning of its activities, Beraca was concerned in bringing the product to the industry field, its performance made the view to become more extensive. There are already ongoing customized projects to serve customers who want to work with unexploited species, performed by the following dynamics:

More than a simple geographical mapping of the occurrence of a determined species, the company identifies issues such as: preparation of communities, from an organizational point of view, to maintain business relationships; information available in the scientific literature and the one that need to be obtained from primary studies; what the law requires that the species can be explored economically; bio correlation between the amount of product that is desired to manufacture and the required quantity of vegetable mass. The deep and careful study of all these factors is essential to form a really sustainable chain.

Beraca seeks to establish a direct relationship with communities and biomes through cooperatives and associations of local producers. In this sense, over time, the company specialized in measuring the results of their initiatives. In order to have an accurate idea, there are transactions that could not be implemented until the company gives support to communities and that their representatives could obtain documents regarded as trivial, such as the CPF (Brazilian Individual Taxpayer Registration), and also to open the first Bank account.

In the relations with the government and compliance with Brazilian laws and international protocols, Beraca strictly follows the old (MP 2186-16) and the new Law on Biodiversity (Law 13,123) that establishes procedures for research, development, traditional knowledge associated to economic exploitation of resources of Brazilian biodiversity, under the authority of the regulatory agency in the country, CGEN (Council of Genetic Heritage Management). Similarly, in line with the UN Convention on Biological Diversity, and the rules for the allocation of benefits provided by the Nagoya Protocol, Beraca has invested an average of 3% of its net sales in sustainability, including several allocations of benefits through accesses agreed by CGEN and mostly in the actions recommended by its Socio-biodiversity Enhancement Program®.

**Drawing a sustainable chain: How Beraca creates Value**

- **Training, fair income and benefit sharing, transfer of technology and knowledge**
- **Demands for technical adequacy, regularity and adequacy to standards of responsibility**
- **Organized Producers (cooperative)**
- **Costumers**
- **Diagnosis and monitoring**
- **Technical development and dissemination of information**
- **SUPPORTING INSTITUTIONS**
  - Universities and Research Centers, Certifiers, and Regulators
The partnership with the Academy: the importance of scientific view

The construction of governance architecture capable of creating sustainable value in socio biodiversity chains involves the articulation of strategic partnerships with different actors at the local, national and international levels. One of these partnerships is the constant and long-term dialogue maintained with academia (universities and research centers).

More than technical development and production of scientific knowledge, the relationship with the Academy has established itself as a strategic practice for evaluation and careful measurement of immediate results and of the socioeconomic and environmental impacts of long-term, with the business activities in socio biodiversity chain.

The reflex of this interaction company-university, the results presented in this document are part of a research project developed at the University of São Paulo (USP) in partnership with Columbia University, located in New York, in order to achieve a broad socioeconomic, environmental and political diagnosis of the impacts of the collection of oil seeds in the North and Northeast of Brazil.

In all, about 14 researchers - including doctors, masters and students of graduation and under graduation - were directly involved in the study that allowed to create a picture of the current local conditions through analysis of data collected from more than 400 hours of interviews with producers and information contained in databases such as the United Nations Development Program (UNDP) and the Brazilian Institute of Geography and Statistics (IBGE).

For the communities: opportunities of jobs and income, improving the welfare

Incentives and monitoring more efficient in terms of generation of results and long-term impacts

For companies: more efficient allocation of resources, transparency in negotiations and creation of value in ingredients

For universities: creation of scientific knowledge on sustainable use of biodiversity and sustainable development

Data collection through interviews and observation

Community

University

BERACA

Diagnosis and monitoring metrics
Evaluation of results and impacts

The continuing advance of globalization has moved the focus of worries with the local contexts, to give more prominence to the macro/international realities. It is only necessary to open the newspaper or follow the television news that this fact becomes apparent – it is more common a report on the performance of exchanges on major economic powers, for example, than materials regarding collaborative saving projects in outlying areas.

Even though this information may seem trivial, it is already an innovation in the approach of Beraca in relation to collecting families. This is due to the fact that in Brazil, studies performed by USP researchers point out that, in some cities, the rural household income is of 20 to 30% lower than the income of families living in urban areas. This mismatch goes often unnoticed when taking into account the data of the Municipal Human Development Index (HDI), which assemble these two groups in the same indicator.

When the income of families that live in rural areas is overestimated, it difficults the assertiveness of public policies and also projects performed by private enterprise. In the case of Beraca, the company part of the point of view that the families analyzed - and so many others whose profiles are similar - would opt not to perform economic activities that degrade the environment if there were alternative and sustainable employment opportunities.

In 1990, the economists Mahbubul Haq and Amartya Sen - Pakistani and Indian, respectively - gave life to the Human Development Index - HDI. At that time, it was the first successful effort to assess the progress of nations in terms that were not restricted only to the economy (income), such as Gross National Product (GNP) or Per Capita Income. In general, the indicator takes into account the following aspects: expectation of life, education and income.

A little more than two decades later, in 2012, the United Nations Development Program - UNDP of Brazil, with the IPEA (Institute of Applied Economic Research) and Fundação João Pinheiro, added a new page to the history of HDI bringing up the reality of the country’s cities. Therefore the HDI-M emerged, which placed more than 5,560 cities in the federation by the Global HDI tripod crossing with the information of the Demographic Census of 1991, 2000 and 2010.

The observed population is divided as follows:

- Breves, or Furo do Gil: 66 families
- Salvaterra: 84 families
- Bragança: 106 families
- Palmeira do Piauí: 78 families
- Uruçuí, both in Piauí: 86 families

Socioeconomic diagnosis and monitoring

Beraca has committed to promote and measure the socioeconomic and environmental progress at the local level, based on the communities with which it relates. This was one of the motivators for the research performed in partnership with USP and Columbia University, which among other objectives, sought to uncover the positive effects of sustainable activities around the collection of oil seeds over conventional practices - especially those related to the exploitation of timber forest products.

Initially, the studies focus on the reality of four cities: Salvaterra, Breves and Bragança, in Pará; Palmeira do Piauí and Uruçuí, both in Piauí. In total, 334 families were interviewed using open semi-structured questionnaires. On average, each interview took about 60 minutes, allowing identifying all sources of income; indicator used to reach the rural per capita income that differs from that found in urban areas.

In the evaluated sites three majoritarian sources for income were detected: subsistence agriculture, extractive activities and federal government income transfer programs (such as Bolsa Família, Bolsa Verde, Seguro Defeso, Pronaf and Aposentadoria Rural).
General aspects of the North and Northeast communities

The current data indicate that the cities of Salvaterra, Breves, Bragança and Palmeira do Piauí are part of the group with HDI-M considered low, as can be seen in the table below, based on the Atlas of Human Development in Brazil:

<table>
<thead>
<tr>
<th>City</th>
<th>Per capita Income (R$)</th>
<th>IDHM Income</th>
<th>IDHM Longevity (expectative of life)</th>
<th>IDHM Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belém-PA (capital)</td>
<td>853.82</td>
<td>0.751</td>
<td>0.822 (74.33)</td>
<td>0.673</td>
</tr>
<tr>
<td>Salvaterra-PA</td>
<td>296.28</td>
<td>0.580</td>
<td>0.793 (72.60)</td>
<td>0.488</td>
</tr>
<tr>
<td>Bragança-PA</td>
<td>311.97</td>
<td>0.589</td>
<td>0.795 (70.27)</td>
<td>0.489</td>
</tr>
<tr>
<td>Breves-PA</td>
<td>209.14</td>
<td>0.524</td>
<td>0.77 (71.65)</td>
<td>0.312</td>
</tr>
<tr>
<td>Teresina-PI (capital)</td>
<td>767.57</td>
<td>0.731</td>
<td>0.820 (74.22)</td>
<td>0.707</td>
</tr>
<tr>
<td>Palmeira do Piauí-PI</td>
<td>416.93</td>
<td>0.570</td>
<td>0.722 (67.26)</td>
<td>0.431</td>
</tr>
</tbody>
</table>

Source: PNUD; Atlas do Desenvolvimento Humano no Brasil (2010).

By observing the North and Northeast regions - where are the four cities visited by Beraca project with the universities – it can be said that there was a low expansion of income between 1991 and 2010, especially in remote areas compared to big urban areas. On the other hand, the education levels had significant growth, linked, among other factors, to the imposition of social programs destined to distribution of income, such as Bolsa Família.

Even in social terms, it is worth to analyze the ranking prepared by the United Nations Development Program (UNDP) to determine the Municipal Human Development Index (HDI-M). Of all the Brazilian cities listed in the aforementioned research, most part of people and their families who have established relationships with Beraca are in better living conditions compared to rankings of their locations, as in Igarapé Miri (PA) 5,244º; Moju (PA) 5,244º; Currais (PI) 5,293º; Augusto Correa (PA) 5,458º; Viseu (PA) 5,481º; and Afuá (PA) 5,543º, that are at the bottom of the ranking. This reveals the capillarity capacity of values and work of Beraca with the communities.
At first, the researchers were based on the following hypothesis: The encouraging to the collection of oleaginous tends to minimize the dependence of families of activities that exercise, apparently, greater environmental impact and of income transfer programs promoted by the government.

Between the months of January and March 2014, the research group visited the cities of Salvaterra and Bragança, in the state of Pará. Based on interviews performed with 190 families, being 84 of Salvaterra and 106 of Bragança, we looked to identify the positive impact of the company's practices on the incentive to collect seeds. For this purpose, the realities of three groups were analyzed:

- Collecting families associated to cooperatives;
- Collecting families not associated to cooperatives; and
- Not collecting families.

Two topics were the focus of research:

- The effects of seed collection activity in the composition of family income; and
- The impact of the organization of the workers in cooperatives in collecting families’ income.

At first, the researchers were based on the following hypothesis:

The encouraging to the collection of oleaginous tends to minimize the dependence of families of activities that exercise, apparently, greater environmental impact and of income transfer programs promoted by the government.

Two cooperatives were analyzed: the Cooperativa dos Produtores Extrativistas Marinhos e Florestais da Ilha do Marajó – COOPEMAFLIMA, located in Salvaterra - and Cooperativa Mista dos Caetés – COOMIC, of Bragança.

First stop:

Salvaterra and Bragança (PA)
The analysis of the evolution of HDI-M of these two cities allows us to understand the complexity that they face in comparison to the evolution of the state in which they are inserted:

<table>
<thead>
<tr>
<th>COOPERADED COLLECTOR</th>
<th>NON-COOPERATED COLLECTOR</th>
<th>NON-COLLECTOR NON-COOPERATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rs 1,070.46</td>
<td>Rs 920.11</td>
<td>Rs 829.61</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COOPERATED COLLECTOR</th>
<th>NON-COOPERATED COLLECTOR</th>
<th>NON-COLLECTOR NON-COOPERATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rs 1,968.80</td>
<td>Rs 2,017.00</td>
<td>Rs 2,016.66</td>
</tr>
</tbody>
</table>
Thus, these regions can be considered one of the poorest of Pará. In this case, the demand for oleaginous seeds signed in relation to Beraca offers an alternative source of employment and income to local populations. The company establishes supply contracts, trades and guarantees fair prices and mainly perpetuates the commitment to purchase seeds. Many of the interviewed workers reported that, in other times, seed buyers, known as “middlemen”, did not honor their commitments of purchasing and payment for the seeds, causing loss of production and/or debt. Ensure the maintenance in the income flow is a determining factor in encouraging the development of collection activities. After all, the producer does not want to have risk of compromising your income.

Not only the low local economic performance, it is necessary to pay attention to a reality of very low access rates to formal education, which creates a cycle of poverty that can only be broken by incentive of markets, since the public incentives are insufficient and bring results in long-term only. In this sense, the seed collection oriented by Beraca to meet quality standards, commitments and certifications, is an income opportunity that generates positive impacts, such as strengthening the fight against child labor.

The collection of oleaginous in Salvaterra and Bragança represents a fraction of the total family income obtained by the communities visited, hardly gets its income from a single activity. The agroextractivist or extractive production in the Amazon is characterized by diversification of activities. The producer develops activities thinking in maintaining the flow of income and especially on their livelihood and your family.

In all, about 60 different sources of income were listed, of extractive, through agriculture and livestock, to get to jobs outside the property in different segments. For the presented analysis, only the most important were considered (in terms of income and frequency generation). In the case of Salvaterra stand out among the fishing income sources (about 14%), the collection of oleaginous (8%) and the income transfer programs, Bolsa Família, Apontadoria Rural (Rural Retirement) and Seguro Defeso (which come to add 60 % of familiar income). In Bragança, the sources of income characteristics are: cassava flour production (38%), broiler breeding (10%), other Agriculture activities (about 5%) and collection of oleaginous (5%), besides the Bolsa Família and Apontadoria rural (total together 17%)3.

The results show that incentives to certain activities may modify the choice of the set of developed activities, decreasing the dependence, in terms of income generation, of a single activity. In theory, the incentive to collect oleaginous could reduce the pressure on natural resources involved in fishing activities and the production of flour, or even dependence on income transfer programs.

In all locations where it is present, Beraca seeks to sensitize and mobilize its local partners to combat slave labor and the exploitation of child labor. Also, search everyone to access and make use of Personal Protective Equipment (PPE).
The table below shows the average monthly income for the four groups investigated. As can be seen, the average monthly income of producers of Bragança is generally greater than that of Salvaterra. With exception of the group of non-collectors - not cooperative of Salvaterra – the average incomes between groups and localities do not differ statistically. This suggests that the collection of oleaginous, by itself, does not represent an alternative in getting an income to producers.

<table>
<thead>
<tr>
<th>Group</th>
<th>Salvaterra</th>
<th>Bragança</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperated Collector</td>
<td>R$ 1,070.46</td>
<td>R$ 1,968.80</td>
</tr>
<tr>
<td>Non-cooperated Collector</td>
<td>R$ 920.11</td>
<td>R$ 2,017.00</td>
</tr>
<tr>
<td>Non-collector Non-cooperated</td>
<td>R$ 829.61</td>
<td>R$ 2,016.65</td>
</tr>
</tbody>
</table>

Check out a brief description of the government’s income transfer programs with a strong impact in the cities studied:

**Bolsa Família** – Created in October 2003, the initiative was aimed at combating poverty and inequality through three fronts: the supplement of family income, access to rights, due to the fulfillment of commitments made by the beneficiaries, and coordination with other projects and social policies.

**Seguro Defeso** – Benefits paid to fishermen classified as craft to replace the income from the marketing of fish during the breeding season of the species, known as closed season.

**Programa Nacional de Fortalecimento da Agricultura Familiar** – Also known as Pronaf - is an initiative that supports projects that can generate income to farmers and also to the agrarian reform settlers.

**Bolsa Verde** – Awarded every three months for one year period of time, renewable for another year. The program is monitored by a representative of the Ministry of Environment in loco.
Therefore, what is the effect of the collection of oleaginous in the income of communities?

To answer this question it is necessary to look to the income in disaggregated way, understanding how different activities help in the composition of familiar income.
### Average Marginal Fractions of annual income

#### SALVATERRA- PA

<table>
<thead>
<tr>
<th>Source of Income</th>
<th>Cooperated Collector</th>
<th>Non-cooperated Collector</th>
<th>Non-collector Non-cooperated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment outside the community</td>
<td>R$ 2,126.30</td>
<td>R$ 1,452.24</td>
<td>R$ 65.72</td>
</tr>
<tr>
<td>Oleaginous collection</td>
<td>R$ 1,653.79</td>
<td>R$ 1,210.20</td>
<td>R$ 1,693.99</td>
</tr>
<tr>
<td>Fishing</td>
<td>R$ 1,548.69</td>
<td>R$ 2,272.43</td>
<td>R$ 2,126.10</td>
</tr>
<tr>
<td>Bolsa Familia</td>
<td>R$ 1,241.45</td>
<td>R$ 2,563.46</td>
<td>R$ 4,488.08</td>
</tr>
<tr>
<td>Retirement and pension (INSS)</td>
<td>R$ 3,642.25</td>
<td>R$ 2,563.46</td>
<td>R$ 4,488.08</td>
</tr>
<tr>
<td>Aux. Defeso</td>
<td>R$ 1,610.26</td>
<td>R$ 1,758.14</td>
<td>R$ 1,726.82</td>
</tr>
<tr>
<td>Other income sources</td>
<td>R$ 267.53</td>
<td>R$ 762.25</td>
<td>R$ 1,186.18</td>
</tr>
</tbody>
</table>

#### BRAGANÇA - PA

<table>
<thead>
<tr>
<th>Source of Income</th>
<th>Cooperated Collector</th>
<th>Non-cooperated Collector</th>
<th>Non-collector Non-cooperated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cassava flour</td>
<td>R$ 9,439.97</td>
<td>R$ 7,323.93</td>
<td>R$ 1,725.82</td>
</tr>
<tr>
<td>Other products of agriculture</td>
<td>R$ 1,417.54</td>
<td>R$ 1,694.28</td>
<td>R$ 2,835.07</td>
</tr>
<tr>
<td>Aviculture (chicken)</td>
<td>R$ 968.36</td>
<td>R$ 242.00</td>
<td>R$ 2,488.82</td>
</tr>
<tr>
<td>Employment outside the community</td>
<td>R$ 2,020.67</td>
<td>R$ 2,419.98</td>
<td>R$ 2,126.10</td>
</tr>
<tr>
<td>Oleaginous</td>
<td>R$ 66.72</td>
<td>R$ 363.61</td>
<td>R$ 4,488.08</td>
</tr>
<tr>
<td>Other activities</td>
<td>R$ 1,663.79</td>
<td>R$ 1,210.20</td>
<td>R$ 2,988.67</td>
</tr>
<tr>
<td>Bolsa Familia</td>
<td>R$ 1,564.00</td>
<td>R$ 1,209.99</td>
<td>R$ 4,668.10</td>
</tr>
<tr>
<td>Retirement and pension (INSS)</td>
<td>R$ 273.00</td>
<td>R$ 5,323.96</td>
<td>R$ 6,323.96</td>
</tr>
</tbody>
</table>
When speaking on interdependence of income sources, the research found that in Salvaterra the extraction of oleaginous seeds competes with the practice of fishing and two government programs: Bolsa Família and Seguro Defeso (Insurance closed season). However, in Bragança, the competition is with family farming, the production of flour, chicken production - stimulated by PRONAF (Programa Nacional de Fortalecimento da Agricultura Familiar) - and the Bolsa Família program.

However, the higher level of competition between sources of income in Bragança within the cooperative makes that the extraction is the least attractive option for the cooperative, thus presenting lower marginal income fractions for this specific activity. In Salvaterra, however, the income from extractive activities, although complementary, is the third largest source related to income-generating activities and presents itself as an attractive option for the cooperative and not cooperative families.

Regarding the resources of Bolsa Família, the communities of Salvaterra are comparatively more dependent than Bragança. The diversification of activities performed by families in this city has a positive effect on the dependency of government programs, even if there is a direct relationship in productive activities, such as the case of Pronaf for chicken production and for family farming in Bragança.

Regarding the profile of the interviewed families that are not part of the cooperatives that supply to Beraca, it may be noted that there is a significant reduction of the played role by extractive activities when a comparison is made with the cooperative families.

In the case of Salvaterra, the incomes of fishing, Seguro Defeso and Bolsa Família increase in relation to the cooperative members, that is, there is greater reliance on government income transfer programs. This comparison is possible because of the equal condition for cooperated and non-cooperated with regard to the price paid for the two groups, in the two cooperatives, by kilogram of collected oleaginous.

In the case of Bragança, the families non-cooperated get larger fraction of income through the production of flour, but the income fractions of activities related to the production of chicken and other Agriculture activities are lower when compared to the reality of families cooperated. This can be explained by the fact that the cooperative has a greater diversity of activities and focuses the members who benefit from the PRONAF program, responsible for stimulating the last two activities.

The third cut brings the overview of families who do not perform collection activities and are not part of cooperatives. The picture of these two groups, of non-collectors and non-cooperated, helps to understand how the dependence on fishing in Salvaterra, and flour in Bragança, increases when the oleaginous collection activity is not exercised by the families.
In Salvaterra, the Bolsa Família has the lowest average for non-collectors and non-operated when compared with the other two groups. However in Bragança, the dependence of the Bolsa Família is extremely low when compared to the other two income sources. In the case of the last group, the concentration of efforts on one main activity (flour) becomes the insertion costs of new activities higher, since the governance structure is much more related to the flour production than with extraction.

In general, it can be said that inserting new activities into communities that have greater historical activity diversification is less costly than in communities whose governance structure is directed to a smaller number of practice, since the capabilities developed in more diverse community make it easier to introduce other options, that is, transfer capacities for other governance structures.

The other variable that explains the success or not, of local governance, to collect seeds and oleaginous fruits is related to the structure of the cooperative. When the cooperative is directed only to the extractive activity, as in the case of Salvaterra, the entity can generate incentives for both the attraction and for the maintenance of cooperative members. Interestingly, the diversity of activities for the cooperative has a negative effect, because the dissolution of efforts and greater heterogeneity of the cooperative members make the extractive be not as attractive in relation to other activities.

The compiled data make clear the potential of extractive activities to supplement the family income, as well as the importance of cooperatives, because they allow arrangements able to leverage the gains of its participants and increase the welfare of the families involved in seed collection.

These two inferences reinforce the assertiveness of the business model adopted by Beraca for over 20 years, based on a multistakeholder platform.

While giving more sustainability and transparency (due to issues such as traceability) the chain of natural ingredients for the cosmetics and pharmaceuticals industries, it can be inferred that the company incentives allow greater local development to communities who choose the responsible extractivism.

Six other factors directly linked to environmental impacts in the areas studied deserve to be point out:

- The collection of seeds decreases the extraction levels of other natural resources.
- In case of Salvaterra, the collecting families reduce the fish extraction level compared to not collecting families, associated or not to cooperative.
- Still in Salvaterra, there are several reports that indicate an increase in adherence to the requirements of the closed season, which allows for better fish reproduction conditions between November and February. It can be inferred that the income from the sale of oleaginous assists in this behavior change.

In Bragança, the collection of seeds contributes to the reduction of areas intended for planting cassava, since the income of the flour is lower for collecting families compared to income of not collecting families.

It is remarkable the amount of interviewed families who stopped to cut trees for charcoal production compared to not collecting families.

As the income from oleaginous is not characterized as the main source of family income, at first there is no over-exploitation of non-timber resources, and thus this activity contributes to the maintenance (or natural balance) of ecosystems.
The city Breves, in Pará, has about 50% of its population living in rural areas, according to the 2010 Census, the equivalent of 43,000 inhabitants. Breves has more than 9,500 square kilometers and the called Furo do Gil is located in the northern part of the city in a relatively isolated area of the administrative city center. The investigated region is closer to the Amapá capital than the municipal urban area, for this reason it will be treated just like Furo do Gil from now on.

Second step: City of Breves, or “Furo do Gil”

Two groups of families were targeted of this step of the research, performed in July 2014: collectors of oleaginous seeds and non-collectors. This is because the creation of the Cooperative of Producers and Extractives of Curumum District - COPEDIC – occurred during the period of the visit with the help of the company.

Differently from what we have seen so far, the non-collectors of seeds are those with higher income in Furo do Gil. Among the reasons for this, is the logging, an activity linked to clandestine sawmills operation in the region. Each year, about 1/3 of the income earned by this group comes from the wood. In the opposite case, the collectors practically are not connected to sawmills, a clear demonstration that the açai, the fishing and collection of seeds compose an important alternative to replace the predatory exploitation of timber.

Average monthly income
Furo do Gil/PA

<table>
<thead>
<tr>
<th></th>
<th>Collectors</th>
<th>Non-collectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>R$ 1,146.77</td>
<td>R$ 1,345.33</td>
</tr>
</tbody>
</table>

Furo is a typical name of Amazonian vocabulary for natural communication (channel) between two rivers or between a river and a pond.
It should be noted that the seed collection activity in Furo do Gil was still incipient in the period when the research was performed. The fraction of income generated by this activity was relatively insignificant close to other activities such as logging, collection of açaí and income transfer programs promoted by the government.

In percentage terms, as shown in the following figure, the government programs represent 45% of the income source of not collecting families and about 50% of family income of collectors. However, it is verified that the collection of seeds, in addition to income transfer programs, offer an alternative to logging, even when it is considered that many of the jobs also occur in this sector.

Unlike Salvaterra and Bragança, as there is interdependence between the felling of trees and the clandestine sawmills activities, the non-collectors can get more than one hundred thousand reais a year with the extraction and logging in the region. The income of the wood is almost 1/3 of the total income earned by non-collectors at the end of a year. Moreover, they are families more linked to services activities such as transportation, cleaning, fuel sales etc. In the case of unregistered collectors, logging greatly reduced, as well as the activities of sawmills. In the case of registered collectors, practically none of the family is involved in the activity of sawmills, a clear indicator that the açaí, fishing and collection of seeds promote a major substitution effect, despite the aggregate income be lower.
In income volume, the extractivism is the most important governance structure for collectors and collectors not registered, losing only to the income transfer programs. The extractivism is the set of activities that demand lower transaction costs because families are used to develop them concurrently. Taking acai, fishing shrimp, collect seeds, kill small animals - like paca, armadillo, sloth, monkey and Guandu -; and pick fruits are ordinary activities, made with nimbleness to each entry in the forest or the rivers. The problem is that the removal of the wood is also part of the skills developed by the ribeirinhos. How, then, encourage some activities and not others if the transaction costs between them are so low?

As noted, the income of the non-collector is more concentrated in certain non-extractive activities and thus the wood and its processing are the most important, losing to the benefits of income transfer programs. In the following table, the function of the collector is not yet clear.

Half of this public extracts wood from the forest and comes to cut up to 317 trees/year. Adding to the total number of trees removed in the year, we arrive at 2,667 cubic meters, something between 533 (minimum) and 667 (maximum) of logs/year. The number is underestimated because they were not considered logs benefit from the sawmill, where many families get significant income, that is, this number should be much higher. Moreover, only 66 families are observed, with another 43 thousand people living in rural areas of Breves and assuming that a part of them, at least, should make use of logging to measure income.

<table>
<thead>
<tr>
<th>INCOME - GOVERNANCE STRUCTURES</th>
<th>Extrativism*</th>
<th>Services Market Agriculture</th>
<th>Income Transference Programs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperated Collector</td>
<td>111,703.20</td>
<td>- 43,405.00 (acai)</td>
<td>142,907.20</td>
<td>268,190.4</td>
</tr>
<tr>
<td></td>
<td>- 36,400.00 (wood)</td>
<td>- 16,762.00 (seeds)</td>
<td>13,580.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 7,796.00 (shrimp)</td>
<td>- 600.00 (wood)</td>
<td>142,907.20</td>
<td></td>
</tr>
<tr>
<td>Non-cooperated collector</td>
<td>109,903.20</td>
<td>- 41,610.00 (acai)</td>
<td>188,036.00</td>
<td>350,027.2</td>
</tr>
<tr>
<td></td>
<td>- 26,600.00 (wood)</td>
<td>- 25,200.00 (shrimp)</td>
<td>52,088.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 13,054.20 (seeds)</td>
<td>- 25,200.00 (sawmill)</td>
<td>188,036.00</td>
<td></td>
</tr>
<tr>
<td>Non-collector</td>
<td>87,591.00</td>
<td>- 57,017.00 (wood)</td>
<td>172,528.00</td>
<td>360,179</td>
</tr>
<tr>
<td></td>
<td>- 45,760.00 (sawmill)</td>
<td>- 45,760.00 (sawmill)</td>
<td>172,528.00</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WOOD NATURAL RESOURCE USE - LOCAL IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperated collector</td>
</tr>
<tr>
<td>% of wood extraction without total income</td>
</tr>
<tr>
<td>% of wood extraction and of sawmill without total income</td>
</tr>
<tr>
<td>Families that take wood</td>
</tr>
<tr>
<td>In m³</td>
</tr>
<tr>
<td>In number of trees/year *</td>
</tr>
</tbody>
</table>

*Considered only wood extracted from the forest (without sum to the wood beneficiates by sawmills)
In 1898, the land where Palmeira do Piauí is began to be exploited in the form of condominum. Three years later, the appreciation of maniçoba rubber attracted to the region a large number of people from the states of Ceará and Pernambuco. In the year 1921, in a donated land area, a chapel was built in honor of Our Lady of Mercy. In 1932, with the arrival of migrants from the Paraíba and the North of Piauí, the town witnessed a new surge of progress, culminating with its elevation to village, with the name of Palmeira. The creation of the city happened only in 1962. In the face of successive mistakes with Palmeiras City, the place name was changed to Palmeira do Piauí in 1973. The city has 4,993 inhabitants, of which 3,229 (64.68%) live in the rural area, while 1,764 (35.32%) live in urban areas (census, 2010). The Gross Domestic Product (GDP) per capita is R$ 5,815.61 (IBGE, 2012).

From 1991 to 2010, the city’s HDI-M passed from 0.279 in 1991; to 0.557 in 2010, while the HDI of Piauí passed from 0.493 to 0.727. This implies a growth rate of 99.64% for the city and 53.85% for the state. The city is in the Low Human Development range, between 0.500 and 0.599. The dimension that contributes the most to the city’s HDI is the longevity, with index of 0.704; followed by income, with index of 0.570, and of Education, with index of 0.431 – data of 2010. In the city, the size whose index grew the most, in absolute terms, was education, with an increase of 0.329; followed by income and longevity. In the state of Piauí, in turn, the dimension whose index grew the most, in absolute terms, was Education (0.358), followed by longevity and income (Atlas Human Development, 2013).

The research was also performed in the city of Uruçuí. In the case, the two cities are outside the region known as legal Amazonia, more specifically in the Cerrado biome. The families were visited and divided into two groups: seeds collectors and non-collectors. In the first, once again we opted for the cut associated or not with the existence of links with cooperatives. In this last case, we are talking of Cooperativa dos Produtores de Óleo e Derivados do Buriti de Palmeira do Piauí (BURITICOOP), founded in 2012.

<table>
<thead>
<tr>
<th>Palmeira do Piauí and Uruçuí/PI</th>
<th>Averge monthly income</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-collectors</strong></td>
<td>R$ 925.76</td>
</tr>
<tr>
<td><strong>Non-cooperated Collectors</strong></td>
<td>R$ 1,386.64</td>
</tr>
<tr>
<td><strong>Cooperated Collectors</strong></td>
<td>R$ 2,010.25</td>
</tr>
</tbody>
</table>
The group of collectors in Piauí follows the trend observed in Salvaterra and Bragança, as collectors of oleaginous seeds have higher yields compared to non-collectors. In income volume, the extractivism is the third most important activity for the cooperated collectors and the sustainable extraction of buriti corresponds to 21.17% of the total income earned annually. First, is the amount distributed by the government income transfer programs, among which may be mentioned the Bolsa Família, the Seguro Defeso and Bolsa Verde.
The Governance Structures and Income

There are, as can be seen in the following table, three governance structures that families are dedicated. The income transfer programs linking the family to benefits that make up much of the total income of the groups considered in the field of research. The Bolsa Família depends on the number of children and school performance achieved by individuals in training stage - it must ensure the minimum school attendance. In the sample, there is not significant number of beneficiaries of the Bolsa Verde and Seguro Defeso, as was observed in Salvaterra, Bragança and Breves (Furo do Gil) in Pará. A relatively significant portion of the sample receives the Aposentadoria Rural and Seguro Safra (the second in a smaller scale). The governance of these programs is made directly by the public authority. Families do not have the influence on the programs; need only adhere to rules that ensure their compliance.

In communities in Palmeira do Piauí, collectors of oleaginous seeds, such as Buriti - registered and non-registered - have the highest income (R$ 28,598.36 and R$ 16,622.93, respectively) when compared to the group of non-collectors (R$ 10,956.56). The data corroborate the observational scale field research, which indicates the existence of profound differences in relation to collecting and not collecting families, and the second group has worse living conditions in relation to collectors.

The production of cachaça is a constant in the visited places, especially in the group of collectors, since the productive structure of Buriti is intertwined with the productive structure of sugarcane in relation to the local cultures. In other words, buritizais are pervaded, in most cases, by the planting of sugarcane that is used to produce cachaça, traditional practice in the region of Palmeira do Piauí.

In income volume, the extractivism of oleaginous is the third most important productive activity for registered collectors. The extraction of buriti corresponds to 21.17% of total income. Second, it is with the income generated by commercial activities (grocery, craft sale and clothing etc.) and provision of services in general (locally identified as "daily"), which correspond to 25.28% of total income and the sale of cachaça, with 19.20%. The first is due to the income transfer programs, which correspond to 33% of the total income of registered collectors.

For non-registered collectors, the relationship between the productive activities with the generation of income follows the same trend. The income was measured by extraction of buriti, which corresponds to 8.29% of total income, followed by the sale of cachaça, with 16.19%, and income from commercial activities and services, accounting for 33.30%. The income transfer programs, considered as a whole, corresponding to 38.15% of total income.

In the group of non-collectors, the income transfer programs make up 51.72% of total income, while commercial activities and services represent 39.52% of the amount. The income of cachaça loses much representation in the total income, amounting to only 2.07%. It is noteworthy that the extraction of buriti is a relatively recent activity, which was intensified with the founding of BURITICOOP in 2012. There is great potential to expand the representativeness of income measured by extraction at low costs through the optimization of production structures existing in both in oil extraction, as in the production of buriti mass or pulp (“rapa”).

| TABELA 1 – AVERAGE INCOME - GOVERNANCE STRUCTURES |
|----------------------------------|----------------------------------|------------------|------------------|------------------|
|                                  | Extrativism                      | Services          | Income Transference | Total            |
|                                  |                                  | Market            | Programs           |                  |
| Registered collector             | R$ 6,056.07 (Buriti)             | R$ 5,492.86 (Cachaça) | R$ 200.00 (Animais) | R$ 392.86 (Seguro Safra) |
|                                  |                                  | R$ 1,072.29 (Bolsa Família) | R$ 7,974.00 (Aposentadoria Rural) | R$ 9,439.15 |
|                                  |                                  | R$ 7,231.71 (Services) | Total: R$ 28,598.36 |
| Non-cooperated collector        | R$ 1,378.69 (Buriti)             | R$ 2,692.86 (Cachaça) | R$ 292.09 (Agriculture) | R$ 1,467.37 (Bolsa Família) |
|                                  |                                  | R$ 380.00 (Animais) | R$ 5,536.94 (Services) | R$ 4,462.63 (Aposentadoria Rural) |
|                                  |                                  | R$ 5,536.94 (Services) | Total: R$ 16,622.93 |
| Non-collector                   |                                  | R$ 227.37 (Cachaça) | R$ 343.87 (Agriculture) | R$ 1,467.98 (Bolsa Família) |
|                                  |                                  | R$ 387.53 (Animais) | R$ 4,330.60 (Services) | R$ 4,022.95 (Aposentadoria Rural) |
|                                  |                                  |                   | Total: R$ 10,956.56 |


Despite being complementary to the main sources of income in the group of collectors - considering the existence of income transfer programs and market, services and sales of cachaça - the extractivism of buriti offers suitable conditions for raising income of the families with a positive environmental impact. The cooperative also has a small number of members. The market incentives shape the collective action of non-cooperative families who come to see the cooperative as an opportunity to increase income, which suggests the possibility of increasing the number of cooperative members in short time.

The practice of not burned in buritizais (as happens with the culture of sugarcane) is a requirement for the collection to be considered organic; i.e. there is a direct positive environmental impact. Moreover, the logic of use non-timber forest resource already is a strategy of sustainable use of natural Buriti resource, which is not encouraging either burned as possible felling of trees. This impact is important because there are reports that link the overthrow of buritizal trees in the past.

The very maintenance of ecological balance in so-called “wetlands”, i.e. semi-flooded areas, where buritis are collected, already represents an extremely positive environmental impact.
Conclusion

With the results presented in the study, we understand that Beraca is committed to ensuring and promoting sustainable value chain for the use of natural resources of Brazilian biodiversity. For this, we developed an innovative business model based on integrated management of extractive rural communities in different regions of Brazil. The company provides opportunities for sustainable management of extractive production in remote rural areas with low job opportunities. Through a differential price paid by natural inputs, the company promotes an income increase that helps reduce poverty and also produces positive environmental impacts.

Universities of São Paulo and Columbia, represented by their professors and researchers were able to observe in loco the results and the positive impacts of business activities. These results, moreover, are present in numerous scholarly articles and publications about sustainable development and its various dimensions. We believe that the management of Brazilian biodiversity value chain promoted by Beraca is in a model that ensures the stability and improvement of the three dimensions of sustainability: the value of the business itself, the improvement of welfare of remote rural populations and environmental preservation. Thus, we understand that we are giving life to the words of Go Brundtland and thus ensuring the enjoyment of the natural resources of Brazilian biodiversity for present generations and for the future of the entire planet.

A simple fruit like buriti, can become a source of social development when integrated into a production chain really sustainable. In Brazil there are numerous opportunities to harmonize the care of the environment and prosperity.
AJUDE O PLANETA!
Team of researchers

**USP**
- Danilo Trevisani
- Fausto Makishi
- João Paulo Cândia Veiga
- Mariana Caixeta de Abreu
- Maurício Pacheco
- Murilo Alves Zacareli
- Pedro Maia Veiga
- Sabrina Lissa Leme

**COLUMBIA UNIVERSITY**
- Andrea Kramar
- Heriselda Begaj
- Luis Figueroa
- Sara Lisa Orstavik
- William Miller

Contacts

www.beraca.com
www.facebook.com/beracaoficial
www.linkedin.com/company/beraca-ingredientes-naturais

For matters relating to the document, contact:
Thiago Terada
Corporate Responsibility and Sustainability
sustentabilidade@beraca.com

Beraca
Department of Sustainability
Avenida das Nações Unidas, 18001 - 6° andar
04795-900 | São Paulo SP – Brazil