



Organização do trabalho garimpeiro na mina do Boi Morto

Bruno Milanez (2007)

Opals from Pedro II (PI) are revitalized to meet environmental and labor standards

DATE

06/10/2011

DISTRICT

PI - Buriti dos Montes
PI - Pedro II

LATITUDE

-

LONGITUDE

-

SUMMARY

The Local Production Arrangement (LPA) for the extraction of opals in Pedro II, Piauí, was officially established in 2005 with the aim to revitalize and energize the productive chain of opal in the region for it had a low level of technological and economic efficiency and caused social and environmental impacts, as degradation of vegetated areas and damage to agricultural and livestock activities.

actions towards the product appreciation in Brazil (COSTA, 2005).



Rua típica no centro de Pedro II

Bruno Milanez (2007)

CASE DESCRIPTION

The main Brazilian opal deposits are located in Pedro II and Buriti dos Montes, located in the semiarid region in the northwest of Piauí state, 200 km from Teresina (MILANEZ; PUPPIM, 2009). With dry weather and mild temperatures due to the altitude, the municipality had, in 2000, 36,200 inhabitants, of whom more than 42% lived in rural areas. Three quarters of the population lived on half a minimum wage. The economy is traditionally linked to agriculture and livestock which, unfortunately, are vulnerable activities because of the semiarid climate. Groundwater resources are limited and the rains are fickle (OLIVEIRA; CARDOSO, 1979 apud MILANEZ; PUPPIM, 2009). The region's main rivers (Matos, Correntes, Parafuso and Capivara) are intermittent and are part of the Poti and the Longa River Basins (MILANEZ; PUPPIM, 2009).

Opals are composed of minerals (mainly silica, and impurities - such as aluminum and iron oxides, calcium and magnesium) and have a characteristic set of colors. For decades, they were exploited only in localized mines in Australia, but nowadays Brazil is the world's leading producer. Many of these Brazilian stones were taken to Australia and there marketed as Australian. This occurred due to the lack of

The first stone was found in Pedro II between late 1930s and early 1940s (OLIVEIRA, 1998; SOUZA, 1985 apud MILANEZ; PUPPIM, 2009). The most significant deposits are in an area of 200 km², around the headquarters of the municipality (FUNDAÇÃO CEPRO, 2005; OLIVEIRA; CARDOSO, 1979 apud MILANEZ; PUPPIM, 2009).

There are about 30 - active and inactive - mines, like the one at Boi Morto farm, the largest and most important mine, and also the Tatu Mine (Armadillo Mine), which, according to locals, was so named because a hunter was once passing through the vicinity when he saw two opal stones coming out of an armadillo hole. A few days later, a great search for the precious stone began, giving rise to a new mining site. Other important mines are: Pajeú, Limão, Roça dos Pereira (COSTA, 2005), Roça Velha, Bom Lugar and Mamoeiro (GOVERNMENT OF PIAUÍ, 2008). During the 1950s, mining was done in small galleries, under precarious conditions, and landslides and death of miners were frequent (OLIVEIRA; CARDOSO, 1979 apud MILANEZ; PUPPIM, 2009).

Most of the production was extracted by foreign companies that exported the stones in their raw state, while local prospectors mined in a rudimentary and informal way, selling opals at prices below market value. Thus, the extraction of noble opals in the region did not contribute to the generation of wealth in the city (MILANEZ; PUPPIM, 2009).

Maximum production occurred when company Empresa de Minérios Brasil Norte-Nordeste (Emibra) operated the Boi Morto mine and employed, between 1960 and 1976, more than 80 workers (MILANEZ; PUPPIM, 2009). During this period, there were about 30 deposits occupied at different times. While companies were interested in larger deposits – i.e. the primary - the secondary deposits were exploited by miners. These deposits were formed especially in the riverbeds and miners were often forced to change the course of the river in order to reach the deposits, causing significant environmental impacts to the region (OLIVEIRA; CARDOSO, 1979 apud MILANEZ; PUPPIM, 2009).

From the mid-1980s on, companies began to leave Pedro II. At the time, a number of 22 abandoned mines, three paralyzed and only three active was recorded. There were about 200 miners in the region, but only about 30 had mining as their sole activity (SOUZA, 1985). The closing of Emibra in 1988 was an important factor for the reduction of the mining activity. The Boi Morto Mine was then occupied by informal miners who sometimes worked the tailings of the company and other times tried their luck in a few galleries. However, activities were carried out without supervision, and landslides often happened, like the one in which three miners got killed in 1989 (MILANEZ; PUPPIM, 2009).



Until the late 1980s, most rough stones were illegally marketed (GOVERNO DO PIAUÍ, 2008). In the following decade, some public and private institutions initiated movements in an attempt to strengthen the chain of opal in Pedro II. The main strategy at that time was to train and educate goldsmiths and jewelers to add value and increase the city's share of income (OLIVEIRA, 1998 apud MILANEZ; PUPPIM, 2009).

Nevertheless, it was from the early 2000s that there was a

resumption of the mining activities in Pedro II. At first, there was dispute between a company that had a legal right to property and the miners who worked in the mine area for subsistence. In 2003, this conflict drew the attention of government agencies, which banned not only the Boi Morto Mine but also other mining sites, since all were in an irregular situation (MILANEZ; PUPPIM, 2009).

As time passed by, the situation became more and more unbearable because miners could not work formally, and the environmental licensing of the company bumped into the liability created by the waste left by Emibra (CETEM, 2005). This deadlock led to a negotiation between the parties, in which Emibra donated to the miners the tailings pile it had left. The solution was interesting for the company as it ceased to be an environmental liability to become a miners' responsibility. This alternative, however, was only possible after negotiation and mediation from technicians of state and federal agencies (MILANEZ; PUPPIM, 2009).

This mobilization resulted in the creation of the Local Production Arrangement (LPA) for an Opal Extraction project, in 2005, implemented through a partnership involving the Center for Mineral Technology (CETEM), the State Department of Economic and Technological Development (SEDET), the Brazilian Support Service to Micro and Small Businesses (SEBRAE) in Piauí; the Study and Project Funding Agency (FINEP), among other institutions (PESSOA, 2009; REDE APL MINERAL, 2010).

To make the project feasible, a baseline study was carried out, in which it was identified that the productive chain of opal in the region had, at all stages, a low level of technological and economic efficiency. From the technological point of view, this situation generated poor working conditions, environmental problems and products with low added value. From an economic perspective, there was tax evasion and improper business practices. The causes for this inefficiency were: the sector's traditional informality, insufficient qualification of the persons involved in the various activities of opal exploitation and beneficiation (HENRIQUES; SOARES, 2005 apud MILANEZ; PUPPIM, 2009), and the economic seasonality in the municipalities where mining acts as an alternative or complementary income to agricultural and livestock activities. (GOVERNO DO PIAUÍ, 2008).

Therefore, it was proposed: the formalization of the activities related to opal extraction; improvement of working conditions and reduction of environmental impacts by mining; added value to opal beneficiation; and strengthening of the managerial and commercial opal chain, which included support to the creation of associations and cooperatives, business management training, branding, negotiation of specific credit lines, and project design for mineral tourism (FINEP, 2005).

Today, more than two thousand people are involved in the opal production chain in Pedro II, taking into account direct and indirect jobs. All work is done jointly with around 150

cooperative miners in that region (PESSOA, 2009). These miners take turns between working in the mine, in the rainy season, and in the agriculture, in the dry season (MILANEZ; PUPPIM, 2011).

CETEM's role was to deploy techniques that would allow the miners authorized to work at the Boi Morto mine to safely extract opal (PEITER et al., 2007). To strengthen the LPA, the Association of Jewelers and Cutters of Pedro II and the Cooperative Miners of Pedro II were created, giving a new dimension to the sectors' activities in the region (GOVERNO DO PIAUÍ, 2008).



Although not all actions contemplated by the LPA project were implemented (or showed the expected results), they had positive effects on the economic dynamics of Pedro II. From the miners' perspective, the main advantages of the LPA were the changes related to the working conditions and routines, which became safer. From the institutional point of view, these workers began to act in accordance with environmental regulations, which became an indirect benefit for themselves and the local population. Mines also began to be contemplated by the mining law, meaning the end of risk of expulsion from the mining areas. Nevertheless, workers are still under precarious working conditions: constant exposure to sun and heat, lack of drinking water, dust (with inhalation of silica and risk of developing silicosis) and physical exertion. Another negative aspect not yet addressed by the LPA is the low pay received by the miners (MILANEZ; PUPPIM, 2011).

Environmentally speaking, although the cooperative mines and some autonomous mines have obtained environmental permits, practices that are not in accordance with the regulations still occur. Two aspects seem to be more relevant: the impact on water resources and the restoration of degraded areas (MILANEZ; PUPPIM, 2011).

GEOGRAPHIC LOCATION

BIBLIOGRAPHIC REFERENCES

CETEM, Centro de Tecnologia Mineral. Extração racional vai garantir ciclo da opala. Cetem na mídia, 24 jul. 2005.

Disponível em:

http://www.cetem.gov.br/noticias/cetem%20midia/not_site_governo_piaui_24_07_05.html. Acesso em: 03 ago. 2010.

COSTA, A. M. Piauí desperta para a valorização da opala. Governo do estado do Piauí. Criado em: MAI 2005.

Disponível em:

http://www.piaui.pi.gov.br/atuam/materia_especial.php?id=13152. Acesso em: set. 2010.

FINEP. Convênio ref. 3686/04. Rio de Janeiro, 2005.

FUNDAÇÃO CEPRO. Diagnóstico e diretrizes para o setor mineral do estado do Piauí. Teresina: Fundação Centro de Pesquisas Econômicas e Sociais. 2005.

GOVERNO DO ESTADO DO PIAUÍ. Grupo Gestor Estadual De Arranjos Produtivos Locais. Plano de desenvolvimento do arranjo produtivo da opala na região de Pedro II – Piauí, 2008.

Disponível em:

http://www.mdic.gov.br/arquivos/dwnl_1247146958.pdf. Acesso em: 06 ago. 2010.

HENRIQUES, H. S.; SOARES, M. M. (Coord.). Políticas e ações para a cadeia produtiva de gemas e jóias. Brasília, DF: IBGM. 2005.

Disponível em:

<http://www.ibgm.com.br/UserFiles/File/ibgmMDIC2005all.pdf>. Acesso em: set. 2010.

MILANEZ, Bruno; PUPPIM, José Antonio. Opalas de Pedro II: o APL como remediação da grande mina. In: FERNANDES, Francisco Rego Chaves; ENRIQUEZ, Maria Amélia; ALAMINO, Renata de Carvalho Jimenez Alamino (Eds.). Recursos Minerais e Sustentabilidade Territorial v.2, p. 69-88. Rio de Janeiro: CETEM/MCTI, 2011.

Disponível em:

http://www.cetem.gov.br/publicacao/livros/Vol_2_APL_TOTAL.pdf. Acesso em: 05 dez. 2011.

_____. Ambiente, pessoas e labor: APLs além do desenvolvimento econômico na mineração de opalas em Pedro II, no Piauí. Cadernos EBAPE. BR, vol.7 no.4, Rio de Janeiro, dez. 2009.

Disponível em:

http://www.scielo.br/scielo.php?pid=S1679-39512009000400001&script=sci_arttext&lng=pt. Acesso em: 03 ago. 2010.

OLIVEIRA, J. C. Recursos gemológicos dos estados do Piauí e Maranhão. Teresina: CPRM, 1998.

OLIVEIRA, J. C.; CARDOSO, C. E. T. Projeto opala em Pedro II: relatório final. Recife: CPRM, 1979. v.1.

PEITER, Carlos César; VIDAL, Hollanda Francisco Wilson; OLIVEIRA, Sirlei Aparecida de. Transferência de Tecnologia nos Arranjos Produtivos de Base Mineral. XXII Encontro Nacional de Tratamento de Minérios e Metalurgia Extrativa, Ouro Preto, MG, 20 a 24 nov. 2007, volume II, páginas 854-859.

Disponível em:

<http://www.cetem.gov.br/publicacao/CTs/CT2007-105-00.pdf>. Acesso em: 03 ago. 2010.

PESSOA, Antônia. Instituições fazem trabalho de melhoria do processo produtivo da opala em Pedro II, Agência Sebrae de Notícias, PI, 18 nov. 2009.

Disponível em:

<http://www.agenciasebrae.com.br/noticia.kmf?canal=200&cod=9180333&indice=20>. Acesso em: 06 ago. 2010.

REDE APL MINERAL. Base de APLs.

Disponível em:

http://www.redeaplmineral.org.br/apl/banco_apls/apls. Acesso em: set. 2010.

SOUZA, V. C. de. Perfil analítico da opala. Brasília: DNPM, 1985. 49 pp. (Boletim, 58).