

SOCIAL AND ENVIRONMENTAL PROCESSES THAT ACCOMPANY THE CONSTRUCTION OF THE BELO MONTE HYDROELECTRIC DAM, ALTAMIRA, PARA

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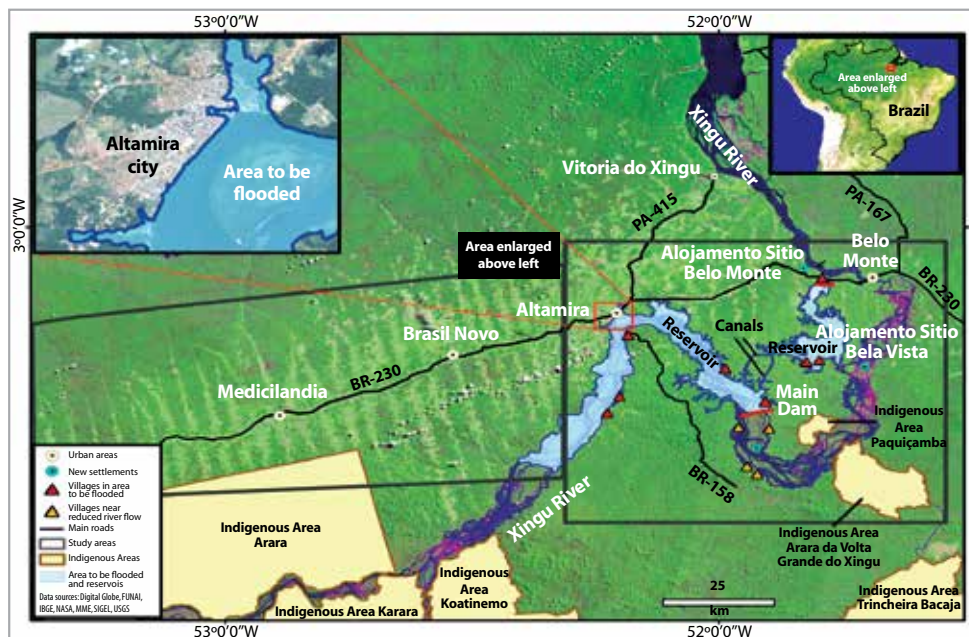


Figure 1. Map of the Belo Monte region, pre- and post-dam construction expected impacts (e.g. flooding of parts of urban Altamira in top left box), location of indigenous areas, and urban and rural areas likely to be affected by flooding (RIMA 2009). Villages to be relocated (red triangles), and those likely impacted by lower levels of river flow (yellow triangles) are indicated. Phase I of the study will examine the boxed area on the right, while phase II will examine the agropastoral area on the left box to understand the impacts of the agropastoral sector

The broad objective of this project is to examine the social and environmental consequences of the construction of the Belo Monte Hydroelectric Dam. This study will not be the study of an isolated case, since there are many dams being built in Brazil and elsewhere by countries seeking energy independence. 147 dams are planned in Amazonia, 69 of them in Brazil. The themes to be investigated represent important scientific and policy challenges:

- how to respond to the rapid increase in infectious water- and vector-borne diseases, to the rapid but temporary increase in the human population and the resulting difficulties in health, food, and residential provisioning;
- how to respond adequately to the changing labor market, changes in land use, and the flow of investments; and last but not least, how to ensure lasting regional economic development.

The project will make use of innovative methods such as annual cellphone re-interviews, after initial

face to face interviews with over 2,000 households selected by stratified random sampling procedures; the use of satellite data to assess land use and land cover and environmental changes; and examination of processes rarely studied before, such as how temporary migrants invest in the agricultural sector or in urban-industrial firms. The results will have immediate value to the agencies responsible for providing social and health services in the region. The objectives are:

- 1) What are the social and economic consequences of this doubling of population over the next three to five years that the construction is expected to last?;
- 2) What are the urban economic impacts of the capital flows, expected to exceed 10 billion dollars over five years, on the local economy? Are there lasting effects on urban infrastructure and employment?;
- 3) What is the impact of Belo Monte on the agricultural and pastoral economy?;
- 4) Determine the effects on the risk of transmission of malaria, dengue, and other infectious water- and vector-borne diseases.

SUMMARY OF RESULTS TO DATE AND PERSPECTIVES

The Project began with preliminary field research in January 2014, with a survey of old Altamira household residents in May 2014, and with ethnographic research among riverine people undergoing resettlement during both of these field campaigns. While it is too early to have published results from the data collection, it would be illustrative to show the study area (see map), which include not only Altamira the city, but also other urban area such as Vitoria do Xingu, Medicilandia, and Brasil Novo, numerous riverine settlements, such as Ilha da Fazenda and the farms along the Transamazon Highway.

It was already found that the people of Altamira think that the hydroelectric will benefit Brazil, but that, besides current employment opportunities, the benefits to the people in the community have been few, with declining health, sanitation, public order, and growing violence. There was a complete lack of preparation for the doubling of population that has taken place in the two years since construction began, and thus the public health sector has been unable to meet the needs of the old and new populations. There has not been a proportional increase in police and urban services to meet the increased demand. In other words, while the engineering at the dam has proceeded on schedule (despite numerous efforts to stop it by a variety of groups), the counties have been unable to meet the new demands from rapid population growth. The social situation can only be described as chaotic. Even more surprising has been the lack of response from the agropastoral sector to the growing demand for food. Ninety percent of the land cleared of forest is in pasture, and none of this land use has been reallocated to the production of staple crops to meet the food demand of a doubling of population, despite the area having some of the best soils in the Amazon region. Instead, the food is imported from far away. The research is trying to understand this lack of response to the demand for food in the area. The next stage of research will involve a study of producers along the Transamazon Highway to try to understand this counterintuitive and non-economic response by area farmers.

MAIN PUBLICATIONS

Brondizio E, Moran E. 2008. Human dimensions of climate change: the vulnerability of small farmers in the Amazon. Theme issue on climate change and the fate of the Amazon. *Philosophical Transactions of the Royal Society B*. **363(1498)**:1803-1809.

Brondizio E, Moran E, Batistella M. 2008. Trajetórias de desmatamento e uso da terra na Amazonia brasileira: uma análise multiescalar. In *Amazonia: Natureza e Sociedade em Transformação*. M. Batistella, E. F. Moran and D. Alves, eds. São Paulo: EDUSP

Lu D, Batistella M, Moran EF. 2007. Land cover classification in the Brazilian Amazon with the Integration of Landsat ETM+ and RADARSAT Data. *International Journal of Remote Sensing* 28(24): 5447-5459.

Moran E.F. 2010. *Environmental Social Science: Human-Environment Interactions and Sustainability*. Oxford, UK: Wiley-Blackwell Publishers. 2011 Portuguese edition: *Meio Ambiente e Ciencias Sociais*. Sao Paulo: SENAC and EDUSP.

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