



<http://www.internationalrivers.org/campaigns/xingu-river>



<http://www1.american.edu/ted/ICE/belomonte.html>



<http://peakwater.org/tag/belo-monte-dam/>

BELO MONTE DAM COMPLEX

Juruna tribal member states that they are opposed to the dam because

“The river is our home and the basis for our survival.”

<http://www.internationalrivers.org/resources/sigourney-weaver-narrates-google-earth-tour-of-belo-monte-dam-3444>



<http://amazonwatch.org/>

Belo Monte Dam

- Located in state of Para, Brazil. In the Amazon basin, on the Xingu river
- Third largest dam in the world
- A run-of-the-river dam
- Over \$16 billion US dollars
- Generating capacity of 11,233 MW but would only generate an average of 4,500 MW. Energy generation will be highly variable due to seasonal fluctuations which will be exacerbated by climate change. Necessitates additional dams to equalize variability which were in original plan.

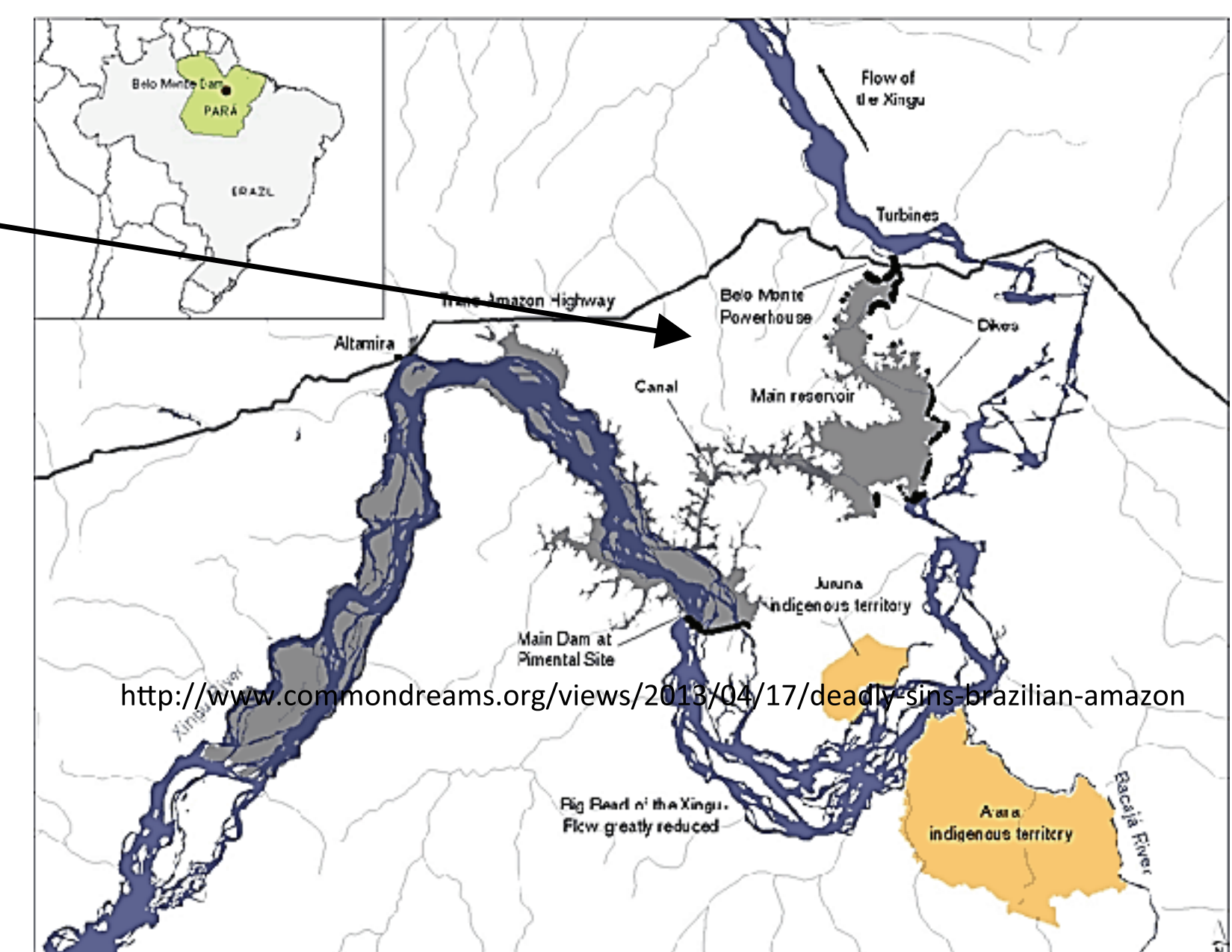
<http://www.internationalrivers.org/resources/belo-monte-fact-sheet-2637>



Figure 2: Hydro- Dam Projects in the Amazon



<http://www.renewable-technology.com/projects/belo-monte-hydroelectric-power-brazil/belo-monte-hydroelectric-power-brazil1.html>



<http://www.commondreams.org/views/2013/04/17/deadly-sins-brazilian-amazon>

Research question:

How will the Belo Monte dam complex in the Brazilian Amazon forest impact the local Indigenous people both short and long term?

How will the dam contribute to climate change?

Findings:

- The Juruna and Arara tribes will experience the largest immediate impact due to the dam.
 - Loss of transportation, loss of fishing (some endemic fish species may go extinct), decline in quality water for drinking, cooking, and bathing
 - Flooded land will impact their homes, culturally significant areas, food sources, and traditions.
 - Displacement of roughly 20 to 40 thousands indigenous people and Altamira residents.
 - Social, psychological and cultural duress.
 - Decline in water table will negatively effect both indigenous and non-indigenous famers.
- Approximately 1,500 km² of Amazon rainforest will be flooded.
 - Effecting the tribes, terrestrial and aquatic flora and fauna, biodiversity, habitat, and riparian zones.
- Hydrologic, geomorphological and ecosystem systems will be altered.
- Carbon dioxide (CO²) and Methane (CH₄) will be released into the atmosphere accelerating climate change through 4 main factors
 - First- Flooding the 1,500 km² of forest will result in the trees and vegetation being inundated and die, to be decomposed by microorganisms which will release CO² and CH₄.
 - Second- The loss of this land is the loss of a carbon sink for current and future CO² emissions
 - Third- Dams block sediment and organic behind them, as the organic matter decomposes it releases CO² and CH₄.
 - Fourth- As the river flows through the dam turbines the rapid depressurization of the water creates CO² that's released.

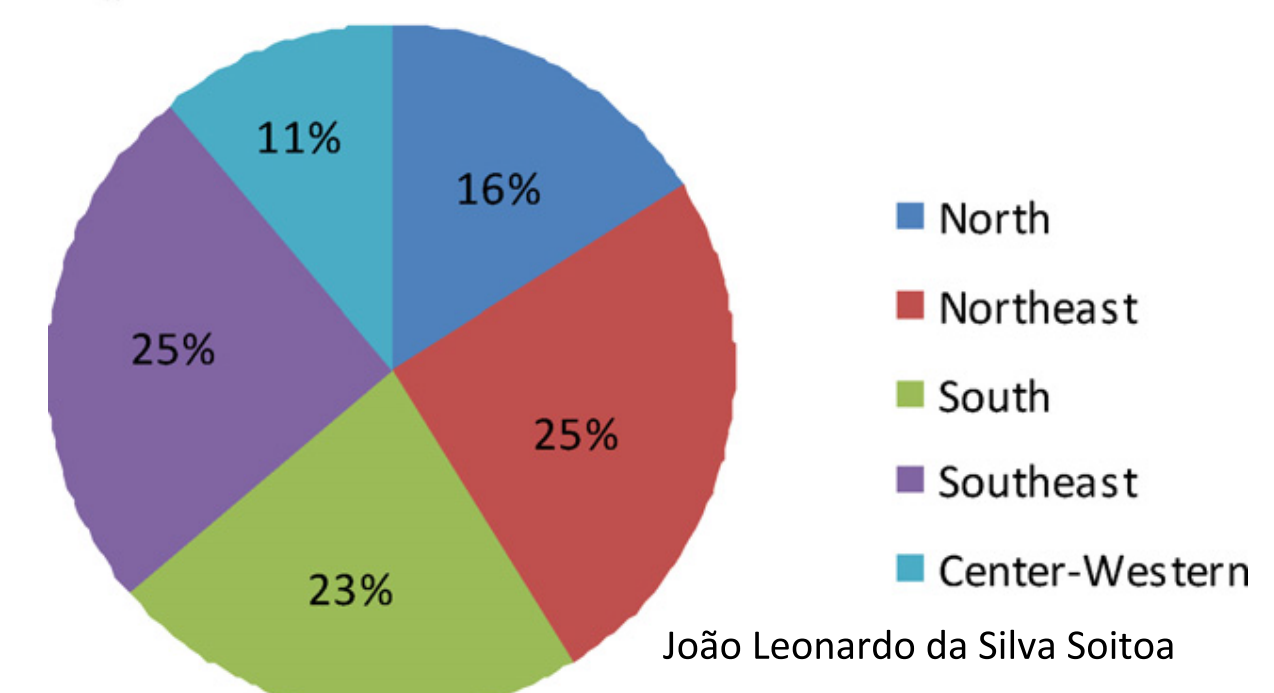
Recommendations:

- Immediately stop construction of Belo Monte dam and began the dismantling process to prevent further deleterious effects on the indigenous people, residents of Altamira, the flora and fauna, the Amazon which is a biodiversity hotspot and prevent exacerbating climate change.
- Encourage local and foreign governments to consider removing dams that no longer provide tremendous benefits to society and consider putting future energy investments into sustainable energy sources such as solar and wind.

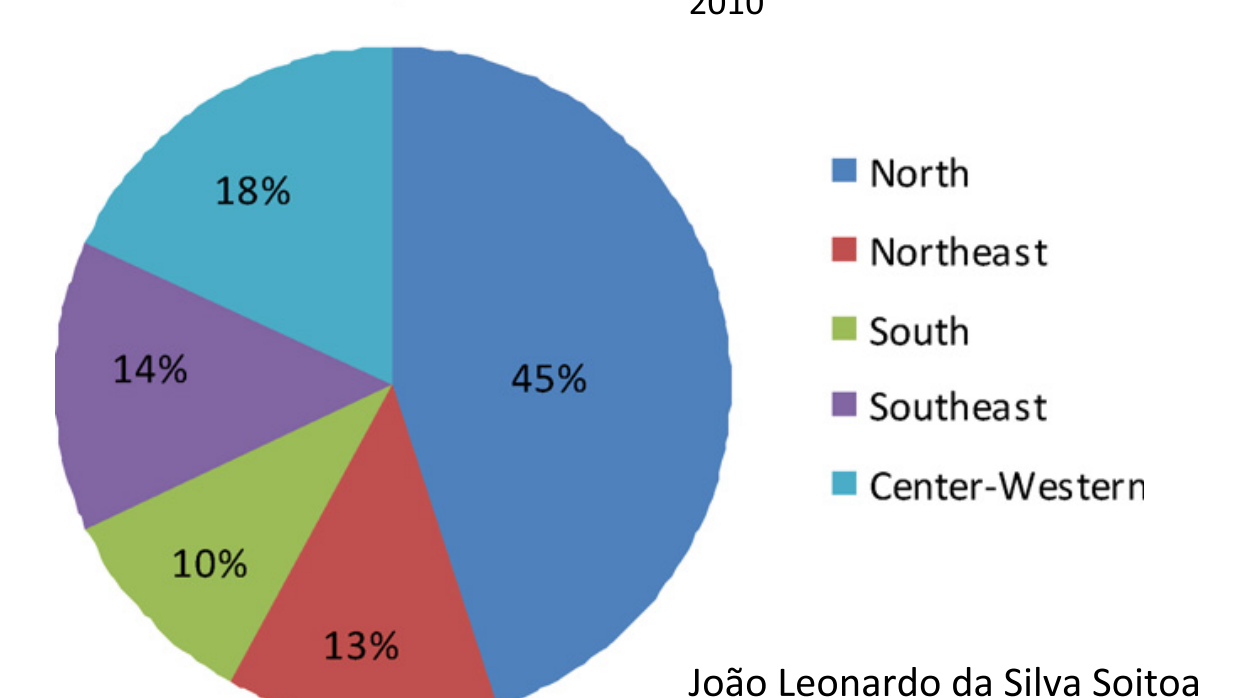
Sources:

Soitao, João Leonardo Da Silva, and Marcos Aurélio Vasconcelos Freitas. "Amazon and the Expansion of Hydropower in Brazil: Vulnerability, Impacts and Possibilities for Adaptation to Global Climate Change." *Renewable and Sustainable Energy Reviews* 15.6 (2011): 3165-177. Web.
 Kahn, James, Carlos Freitas, and Miguel Petrer. "False Shades of Green: The Case of Brazilian Amazonian Hydropower." *Energies* 7.9 (2014): 6063-082. Web.

Brazilian Hydroelectric Potential Operation /Construction 2010



Brazilian Hydroelectric Potential In Study/Estimated 2010



Energy exchange between regions.

SE/CO—Southeast/Midwest;
 S—South;
 NE—Northeast;
 N—North;
 MAN/AP—Manaus/Amapá;
 IV—Ivaiporã;
 IT—Binational Itaipu Hydroelectric Plant;
 AC/RO—Acre/Rondônia;
 BM—Belo Monte;
 TP—Teles Pires/Tapajós;
 IMP—Imperatriz.

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