Belo Monte Dam: A spearhead for Brazil's dam-building attack on Amazonia?

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This article looks at the controversial proposals to build a dam on the Xingu river in Brazil. As well as looking at the potential impacts of the Belo Monte dam on the surrounding area, this article also looks at the wider potential impacts of the dam and the influence it may have on future dam building projects in the region.

Keywords: Belo Monte dam; Brazil; Xingu river, indigenous people; environmental flows.

Brazil's Belo Monte Dam on the Xingu River is now under construction despite its many controversies. The Brazilian government has launched an unprecedented drive to dam the Amazon's tributaries, and Belo Monte is the spearhead for its efforts. Brazil's 2011-2020 energy-expansion plan calls for building 48 additional large dams, of which 30 would be in the country's Legal Amazon region[1]. Building 30 dams in 10 years means an average rate of one dam every four months in Brazilian Amazonia through 2020. Of course, the clock doesn't stop in 2020, and the total number of planned dams in Brazilian Amazonia exceeds 60[2,3].

The Belo Monte Dam itself has substantial impacts. It is unusual in not having its main powerhouse located at the foot of the dam, where it would allow the water emerging from the turbines to continue flowing in the river below the dam. Instead, most of the river's flow will be detoured from the main reservoir through a series of canals interlinking five dammed tributary streams, leaving the "Big

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Bend" of the Xingu River below the dam with only a tiny fraction of its normal annual flow.

What is known as the "dry stretch" of 100 km between the dam and the main powerhouse includes two indigenous reserves, plus a population of traditional Amazonian riverside dwellers. Since the impact on these people is not the normal one of being flooded by a reservoir, they were not classified as "directly impacted" in the environmental study and have not had the consultations and compensations to which directly impacted people are entitled. The human rights commission of the Organization of American States (OAS) considered the lack of consultation with the indigenous people a violation of the international accords to which Brazil is a signatory, and Brazil retaliated by cutting off its dues payments to the OAS. The dam will also have more familiar impacts by flooding about one fourth of the city of Altamira, as well as the populated rural areas that will be flooded by the reservoir.

What is most extraordinary is the project's potential impact on vast areas of indigenous land and tropical rainforest upstream of the reservoir, but the environmental impact studies and licensing have been conducted in such a way as to avoid any consideration of these impacts. The original plan for the Xingu River called for five additional dams upstream of Belo Monte[4,5,6]. These dams, especially the 6,140 km2 Babaquara Dam (now renamed the "Altamira" Dam), would store water that could be released during the Xingu River's low-flow period to keep the turbines at Belo Monte running.

The Xingu has a large annual oscillation in water flow, with as much as 60 times more water in the high-flow as compared to the low-flow period. During the low-flow period the unregulated flow of the river is insufficient to turn even one of the turbines in Belo Monte's 11,000 MW main powerhouse[7]. Since the Belo Monte Dam itself will be essentially 'run-of-the-river', without storing water in its relatively small reservoir, economic analysis suggests that the dam by itself won't be economically viable[8,9].

The official scenario for the Xingu River changed in July 2008 when Brazil's National Council for Energy Policy (CNPE) declared that Belo Monte would be the only dam on the Xingu River. However, the council is free to reverse this decision at any time. Top electrical officials considered the CNPE decision a political move that is technically irrational[10]. Brazil's current president blocked creation of an extractive reserve upstream of Belo Monte on the grounds that it would hamper building "dams in addition to Belo Monte"[11]. The fact that the Brazilian

government and various companies are willing to invest large sums in Belo Monte may be an indication that they do not expect history to follow the official scenario of only one dam[12].

In addition to their impacts on tropical forests and indigenous peoples, these dams would make the Xingu a source of greenhouse-gas emissions, especially methane (CH4) which forms when dead plants decay on the bottom of a reservoir where the water contains no oxygen[13,14]. The Babaquara Dam's 23m vertical variation in water level, annually exposing and flooding a 3,580 km2 drawdown zone would make the complex a virtual 'methane factory'. The reservoir's flooding of soft vegetation growing in the drawdown zone converts carbon from CO2 removed from the atmosphere by photosynthesis into CH4, with a much higher impact on global warming[15,16,17].

It is Belo Monte's role in the decision-making and licensing process that has the farthest-reaching consequences for Amazonia. Brazil's 1988 constitution, enacted when plans for Belo Monte and the other Xingu dams were in full swing, increased the protection for indigenous peoples by requiring approval by the national congress for dams affecting indigenous land. This led to redesign of Belo Monte itself to avoid directly flooding indigenous land, and to a de facto policy of not mentioning the upstream dams. Then, in 2005, Belo Monte was suddenly approved by the senate in 48 hours under a 'urgent, super-urgent' regime with no debate and without the constitutionally required consultations with the tribes. This opened the way for consideration of multiple dams affecting indigenous peoples, including the upstream dams on the Xingu.

In February 2010, Belo Monte was granted a 'partial' license to allow installation of the construction site without completing the environmental approval of the project as a whole. Partial licenses do not exist in Brazil's legislation, and this device represents a step in allowing dam projects to make themselves into faits accomplis irrespective of their impacts. In January 2011 a preliminary license was granted, with 40 'conditionalities' that would have to be met before an installation license would be granted to build the dam.

Very little was done in the succeeding months to meet the requirements, and only five of the 40 had been met in June 2011 when an installation license was suddenly granted. The approval came after the head of the environmental agency had been forced to resign: he had supported his technical staff, who were opposed to approving the license without meeting the requirements. A new head of the agency was appointed who

approved the license without fulfilling the conditionalities, opening the way for approving projects for dams, highways and other infrastructure that await fulfillment of similar requirements. The approval by replacement of the key official also opens a precedent that can allow projects to move forward no matter what their impacts (see the new agency head's very revealing interview on Australian television here).

At the time Belo Monte's installation license was approved 12 court cases were pending decisions regarding irregularities in the licensing process. What will happen if any of these cases is decided against Belo Monte after vast sums have been spent in building the dam? Would the government simply back down and walk away? The stage appears set for breaking down Brazil's environmental licensing system even further, opening the way for the many other controversial dams planned in the Amazon.

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