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Brazil's Bem Querer dam: An impending Amazon disaster (commentary)

Commentary by **Philip M. Fearnside** on 16 November 2020



- *Brazil's President Jair Bolsonaro has announced his administration's priorities for Amazon dams, including the planned Bem Querer dam on the Rio Branco in the far-northern state of Roraima.*
- *Bem Querer is primarily intended to increase the energy supply to industries in locations outside of Amazonia, rather than for residents of Roraima.*
- *Probable environmental impacts include blocking fish migrations and flooding a riparian forest that possesses extraordinary bird diversity. Downstream flow alteration would impact protected areas, including two Ramsar wetland biodiversity sites. Riverside dwellers would also be impacted.*
- *Sediment flow blockage would impact fisheries and the unique Anavilhanas Archipelago, a spectacular Brazilian national park. These adverse impacts need to be fully evaluated before a decision to build is made. This post is a commentary. The views expressed are those of the author, not necessarily Mongabay.*

The text of this commentary is updated from an earlier Portuguese-language version of the author's column at [Amazônia Real](#).

Brazilian Amazonia already has more than a [dozen large hydroelectric dams](#), and their development history is not good: severe human and environmental impacts, and [benefits far below those envisaged](#) by the proponents at the time decisions were made to build the dams. The lessons of this history have not been learned, and today the government is moving fast in its preparations for yet another dam facing serious questions — the Bem Querer Dam, proposed to block the Rio Branco in Roraima state, to become operational in 2028 with 650 MW installed capacity ([EPE, 2020](#), p. 71) (Figure 1).



Figure 1. Map of the Rio Branco Basin (left) and the planned Bem Querer dam and reservoir (right), also showing three smaller planned dams on the Mucajaí River, a tributary to the Rio Branco. Source: EPE.

President Jair Bolsonaro has [announced his priorities](#) for building more Amazon dams, including Bem Querer (Figure 2). Bem Querer is one of three large dams to be built under Brazil's current 2020-2029 ten-year energy expansion plan, although [more dams could be added](#) to the list if the Bolsonaro administration succeeds in its declared objective of removing restrictions on building dams in Indigenous areas.



Figure 2. President Bolsonaro in August 2019 announcing his priority for building large dams, including Bem Querer. Photo: Adriano Machado/Reuters. Source: O Estado de São Paulo.

The Bem Querer dam's socio-environmental impacts would be large indeed. It would flood a 130-kilometer stretch of the Rio Branco, eliminating the aquatic ecosystems in this high-biodiversity river (Figure 3). The flooding would also eliminate riparian forests upstream of the dam. Downstream of the dam, flow alterations and other effects would directly impact three conservation units ([Vuruá National Park](#) and the [Niquiá](#) and [Caracarái](#) Ecological Stations); Vuruá is a [Ramsar wetland biodiversity site](#). Blockage of fish migration and other impacts would indirectly affect almost all conservation units (protected areas for biodiversity) in Roraima ([ICMBio](#), 2013, p. 64).

The dam would impact an especially great [diversity of birds](#) in the areas sacrificed to flooding. It would emit [greenhouse gases](#), especially [methane](#). It would alter the hydrological regime downstream, an effect that has killed [large areas of flooded forest](#) downstream of the [Balbina Dam](#) in the neighboring state of Amazonas.

The human population along the river below the Bem Querer dam will suffer from the change in the hydrological regime, as well as from the decrease in fishing caused by the blockage of fish migration and the decreases of both oxygen and nutrients in the water.



Figure 3. The Bem Querer rapids, where the planned dam is to be built. Source: G1.

The decrease in nutrients will occur due to sediment retention in the reservoir because the nutrients are associated with the sediment particles. The Rio Branco has a lot of sediments, which is why it got the name “Rio Branco” (meaning “white river”). The decrease in sediments downstream of dams causes erosion of the stream bottom and of the river banks, as is [now occurring in the Madeira River](#), where sediments [decreased by 30%](#) after the [Santo Antônio](#) and [Jirau](#) Dams were built. The decrease in nutrients caused by sediment retention [undermines the entire food chain](#) that supports fish populations (Figure 4).



Figure 4. Fish from the Rio Branco. The loss of fisheries when Amazon rivers are dammed represents a substantial social cost that is paid by local fishers and traditional riverside dwellers (ribeirinhos). Source: EPE.

The Rio Branco's sediments are also [essential for maintaining the ecosystems of the Anavilhanas Archipelago](#) (Figure 5) that was formed from these sediments in the Rio Negro, just downstream of its confluence with the Rio Branco. In fact, the Bem Querer dam threatens several jewels of the Brazilian national park system. The [Anavilhanas](#) and [Jaú](#) National Parks, as well as the [Rio Negro State Park](#), are all in the impacted stretch of the Rio Negro and are part of both the [Rio Negro Ramsar wetland biodiversity site](#) and UNESCO's [Central Amazon Biosphere Reserve](#). Anavilhanas and Jaú are also part of the [Central Amazon Conservation Complex](#), recognized since 2003 on UNESCO's [World Heritage list](#).



Figure 5. Some of the more than 400 islands in the Anavilhanas Archipelago. Source: A Crítica.

Almost the entire length of the Rio Branco between the proposed dam and the river's confluence with the Rio Negro is composed of conservation units, including "sustainable use" conservation units. This is also the case for the Rio Negro between the Rio Branco confluence and the outskirts of Manaus (Figure 6). All would be impacted.

Roraima does not need the Bem Querer dam. The state's population is small and it has the [best potential for solar energy](#) among the nine states in Brazil's Legal Amazon Region. The dam does not eliminate the planned transmission line to Manaus, which requires consultation with the Waimiri-Atroari Indigenous people whose territory it would traverse. That line is officially justified as a means of transmitting electricity from Manaus to Roraima. Manaus is already electrically connected to the [Tucuruí Dam](#) in the state of Pará, from which this city of 2.2 million currently receives power via a transmission line completed in 2013.

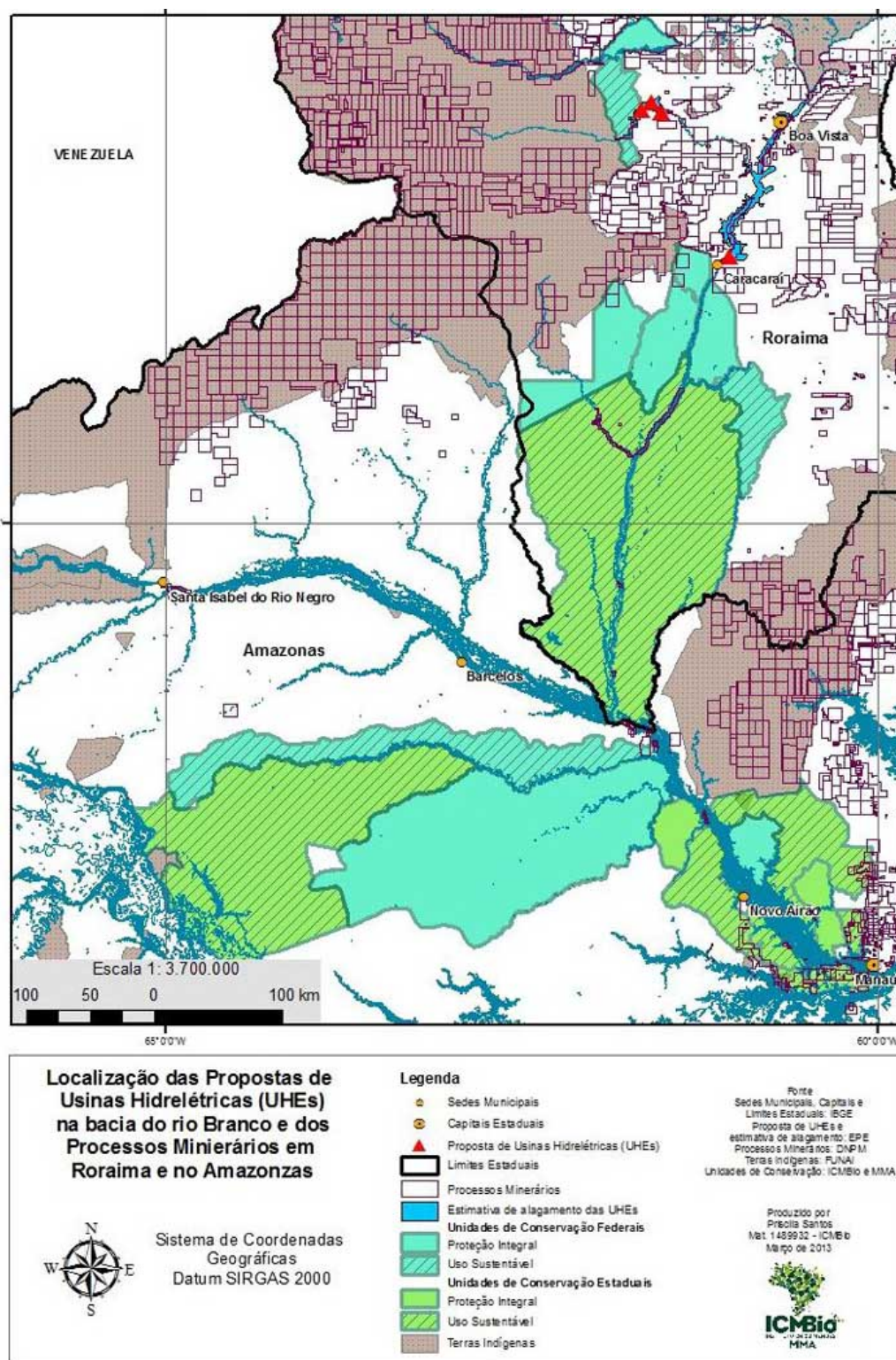


Figure 6. Protected areas line almost the entire course of the Rio Branco and the Rio Negro between the Bem Querer Dam and the city of Manaus in Amazonas state. All would be impacted. Source: ICMBio (2013), p. 58.

Most of the energy that would be generated by Bem Querer is not intended for the people of Roraima, but rather for other parts of Brazil. The electricity would be transmitted to Manaus to allow more of Tucuruí's power to be transmitted to

Brazil's industrial southeast region, or if joined by other planned dams, to transmit power from Bem Querer via Manaus to the rest of Brazil.

A representative of Brazil's Energy Research Company (*Empresa de Pesquisa Energética*, or EPE), which is a part of the Ministry of Mines and Energy (Figure 7), [explained this](#) energy transmission scheme at a public event in Boa Vista in July 2018. Since Roraima is in the northern hemisphere, the seasons are reversed in relation to the rest of Brazil. Therefore, the energy generated in Roraima — when there is a lot of rain there — can be transmitted to the south of the equator when water is lacking to use all of the hydroelectric capacity there. This logic is explained in detail on the [EPE website](#).



Figure 7. It's all smiles for Bem Querer in a leaflet prepared by EPE for distribution at the public hearings that are part of the licensing process. Source: EPE.

The EPE representative at the Boa Vista event concluded that Roraima had received a lot of support from the federal government over the years, and so “[Now is the time for Roraima to make \[a sacrifice\] for Brazil](#).” This viewpoint represents yet another example of the impact of Amazonian dams in terms of [environmental justice](#).

To reach sensible conclusions about major infrastructure projects like the Bem Querer dam, the impacts, benefits and alternatives need to be surveyed and considered before the initial decisions are made. This information needs to be collected and presented without bias and should be disseminated and debated democratically as part of decision making.

Such critically important decisions cannot be made — as it is done today in the licensing process — as a [mere formality to legalize a decision already taken](#).

Amazonian dams have [much greater impacts](#) than other energy alternatives such as wind and solar power. Brazil has an extraordinary potential for both of these alternative sources, as confirmed by the country's recently released [2050 National Energy Plan](#), but the priority continues to be for building more dams.