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COMMENTARY

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The discourse, what's between the lines, the ghosts

By **Valor International**

On June 5th, world environment day, President Dilma Rousseff made a ten-page speech during the meeting of the Brazilian Forum on Climate Change, in Brasília, trying to show how Brazil is advancing towards the low-carbon economy. But eight lines in her speech were that gained the spotlight on the following day.

"We have to face the fact that, if we continue to build low-head hydroelectric plants ... there will be an inexorable trend to increase thermal plants in our power system," it was the core of the speech. The president didn't say, but the alternative to hydropower plants that use less amount of water are hydro projects with reservoirs, probably big, certainly in the Amazon. In this unspoken speech there is room for much controversy.

The three big plants that Brazil is building at this moment, and where it is investing billions, are low head. There the turbines will generate power from the natural river current, without big falls. The water that comes in the reservoir will exit quickly to become megawatts. The dams of Santo Antônio and Jirau, on Madeira River, in Rondônia, and Belo Monte, in Pará, are like this.

New projects, such as São Luiz do Tapajós, follow the same concept – designed for 6,133MW and flooding 1,630km² of Amazon. An old project, such as the giant Itaipu, on the Paraná River, is also low head. It has a giant lake, of 1,350km², installed power of 14,000MW and supplies 18% of the electricity consumed in Brazil. In other words, being low head is no guarantee of small flooding.

What is between the lines in the president's speech is that the next power plants in Brazil will have reservoirs that can accumulate water for years, to ensure that the power-generation capacity will not be so dependent on the rains. They work as a backup to times of drought and prevent what happens today: Without rains and with low reservoirs, thermal plants need to be turned on, which means higher costs and greenhouse-gas emissions. Even worse, energy security at risk means new auctions for coal-fueled thermal plants, something that didn't happen since 2009.

The president's speech follows the power industry's logic: reservoirs are crucial. And since the country only uses 7% of the hydroelectric potential in the North region, it's just a matter of connecting the dots to understand that the target is the Amazon.

But there are other logics aside from that one. Some suspect converting the Brazilian rivers in megawatts may not work in many cases. "Unfortunately the government is thinking that it can fight with geography," says Celio Bermann, a professor at the Institute of Electrotechnics and Energy of the University of São Paulo. There are big plains in the Amazon, so big reservoirs are only possible if huge areas are flooded, with all the social and environmental problems



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that this brings. "I am not again dams in the Amazon, but it's necessary that they are conceived taking into consideration the biome, the geographical characteristics, the social and environmental aspects."

Mr. Bermann, who helped in the development of studies of hydrological use of the Xingu River in the 1980s, is a big critic of Belo Monte. He recalls that R\$32 billion are being invested in a dam with installed capacity to generate 11,000MW, but that during several months, because of the low current of the Xingu, will not produce more than 1,100MW.

"They will necessarily build a dam up river," he suspects. "The discussion of resuming the old model of big reservoirs is reopening field for the old Xingu projects to be remade," he argues. "See the danger there," agrees Philip Fearnside, senior researcher at the National Institute of Amazon Research, who has been studying the region for over 30 years.

The government says there's no such risk. In 2008, the National Energy Policy Council set a resolution ensuring that no other dams would be built on the Xingu River besides Belo Monte. One of the plants designed in the past, Babaquara, would flood 6,140km² and directly affect the Caiapó Indians, always fighting against the project. "You can't condemn all hydroelectric plants. But what needs to happen, and is not happening, is a public and democratic discussion of how the energy will be used," Mr. Fearnside says.

The crop of big dams of the past produced a series of big errors. The ghost of the Balbina plant is the most haunting one. Projected to end with the lack of power in Manaus, it's one of the biggest ecological, financial, energetic and social disasters of the country's history. Built on the Uatumã River, in the state of Amazonas, it flooded 2,360km² of forest for a pitiful generation capacity, of 250MW. In 1983, Uatumã's level fell so much that the river turned into a small brook and the Eletronorte engineers in charge of works crossed it in passenger cars, Mr. Fearnside says. "Each nominal megawatt of Balbina sacrificed 31 times more forest than Tucuruí," he says, referring to a big power plant in the Amazon.

The cost of the plant doubled, fishes died, wood was wasted, water quality deteriorated. Vegetation grew in shallow waters, producing methane, a greenhouse gas 25 times more harmful than CO₂. Balbina dramatically affected the fate of the Waimiris-atroaris that lived in the region. It's the worst dam in the country. "The biggest benefit of Balbina is the lesson on how not to plan development of Amazon," Mr. Fearnside says.

It's true that today much more is known about the Amazon, and the power industry is better equipped to avoid the mistakes of the past. In the government's speech, though, you don't hear anything about optimizing usage, reducing it, having more efficiency. Mr. Fearnside recalls that 5% of all the electricity in Brazil is used to heat water in electric showers, when solar energy could be used. Electric showers are cheap and few cities in Brazil have structure for piped gas, but here there is consensus: the hour of the simultaneous bath in the country has always been a nightmare for the electric system.

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