

The Madeira River Complex: Socio-Environmental Impact in Bolivian Amazonia and Social Resistance

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Introduction

On July 9, 2007, the Brazilian government announced its initial authorization for the construction of two hydroelectric power stations at Santo Antonio and Jirau, in Rondonia, near the Bolivian frontier. Both are part of what is known as the “Madeira River Complex,” an infrastructure construction project with three components: the construction of a 4,200-kilometer waterway which will enable large cargo ships to navigate along the Madeira, Madre de Dios and Beni rivers; the construction of four hydroelectric dams, two of which are in Brazilian territory (those mentioned above in Santo Antonio and Jirau), a third in bi-national waters in the Abuná-Guayaramerín section of the river, and one in Bolivian territory, on the Beni River; and, finally, a high-voltage electricity transmission line.¹

The Madeira is the main tributary of the Amazoni, and at the point where the two rivers converge, it is among the five highest volume rivers in the world. The Madeira is the backbone of almost the entire Bolivian Amazonian basin, which accounts for 69 percent of the country’s area, and 95 percent of the total water volume of rivers in Bolivia flows through it. It is the only tributary on **the right bank of the Amazon which appears in the Andes mountains, at the confluence of the Beni and Mamoré rivers. It is also the main source of suspended sediments and dissolved solids in the Amazonian basin.**²

¹ Patricia Molina, “El Complejo del río Madera en el marco de las políticas energéticas de Bolivia,” in *El Norte Amazónico de Bolivia y el Complejo del Río Madera* (La Paz: FOBOMADE, 2007), pp. 101-110. Also see <http://internationalrivers.org/en/latin-america/iirsa>.

² Jorge Molina, “El megaproyecto hidroeléctrico y de navegación del Río Madera,” online at: <http://www.fobomade.bohttp://www.fobomade.org.bo/index1.php, 2007>.

The size and importance of the project have led to strong reactions in the regions affected by the construction of the dams, particularly in Bolivian Amazonia. The project has also created tension between the Brazilian and Bolivian governments.

Objectives and Strategic Framework of the Madeira River Complex Project

The Madeira River Complex is intended to generate energy to supply Brazilian urban areas (such as São Paulo) and to make the Madeira navigable to provide an incentive to increase production—mainly soybeans and other grains, timber, and minerals—for export to North America, Europe and other regions in South America. The two power stations planned for Jirau and Santo Antonio will produce around 3,300 and 3,100 megawatts of electricity, respectively, **[[[Correct?]]]** for Brazilian urban areas once they come into operation, which is currently anticipated between 2012 and 2015.

The project is part of the Initiative for the Integration of Regional Infrastructure of South America (IIRSA), which was established in 2000 at the behest of the Brazilian government. IIRSA is a package of infrastructure investments conceived to manage South American territory for major exporting multinationals and the economic sectors involved in international trade. As Zibechi points out, the strategic objective of IIRSA is to connect the continent's main natural resource producing areas to its large cities, which would then channel Latin American natural resources to international markets, particularly in Europe and North America.³ As Zibechi makes clear, the type of integration arising from this model is “exogenous” integration that goes “outwards” from the continent—i.e. the aim is not to integrate the continent itself internally, but rather to integrate it into international markets. In this process, Brazil plays the role of a regional sub-imperialist power and is the main beneficiary of the project. Thus IIRSA's integration model is a “doubly subordinate integration: to Brazil, by the South American countries, and by the region as a whole to... international market[s] and business.”⁴

IIRSA envisions a far-reaching plan to construct land, river and air transport routes and infrastructures for raw materials, such as oil and gas pipelines, waterways, ports, and more. In total, 335 projects are planned, 31 of which are priorities. The Madeira River Complex is one of the priority projects. The total cost of IIRSA projects is estimated at

³ Raúl Zibechi, “IIRSA: la integración a la medida de los mercados,” *Ecología Política*, Vol. 31, 2006.

US\$37 billion, [US dollars?] which will be financed by various international institutions including the Inter-American Development Bank (IDB), the Corporación Andina de Fomento (CAF), and the Financial Fund for the Development of the Plate Basin (FONPLATA), as well as Brazil's National Economic and Social Development Bank (BNDES). This plan is divided into nine interconnected areas of integration and development which cover most of the major investments and involve several countries. When implemented, it will penetrate or remove what the institutions promoting IIRSA characterize as currently existing natural, legal or social "barriers." These natural barriers include the Amazon jungle, the Orinoco basin and the Andes mountains. The legal barriers refer to the range of national laws that will need to be modified, reconciled, and deregulated. Popular resistance by those affected by the construction of these mega-infrastructure projects—primarily the peasant and/or indigenous populations—are the social barriers.

The Madeira River Complex is the central project in the Peru-Bolivia-Brazil Axis, one of the corridors across the continent. It includes southern Peru, the Amazonian region of Bolivia, and northwestern Brazil. The Peru-Bolivia-Brazil Axis is intended to link northwestern Brazil with the ports of the Pacific and the urban areas of the three countries, with roads that cross the Andes and navigable riverways that are connected to other integration axes, such the Inter-Ocean and Andean Axes.⁵ Rapids and small waterfalls currently make navigation on the Madeira difficult, though when the work is completed, large ships will be able to traverse its 4,200-kilometer length. The completion of transportation infrastructures in the Peru-Bolivia-Brazil Axis will make it possible to greatly increase exports of Brazilian agricultural products and, to a lesser extent, Bolivian agriculture, mainly through ports on the Pacific Ocean.

Impact on Bolivia

Bolivia, the region's poorest country, plays a vital, though unenviable, role in this scenario due to its key geographic position and the fact that five Axes of integration pass through its territory. Bolivia has been designated as one of the transit countries in this grand scheme for the sub-continent and a distribution center for gas and other energy

⁴ *Ibid.*, p. 24.

⁵ Gabriel Herbas and Patricia Molina, "Integración e IIRSA," in *El Norte Amazónico de Bolivia y el Complejo del Río Madeira*. (La Paz: FOBOMADE, 2007), pp. 13-29.

sources.⁶ In preparation for its new role under IIRSA, **all the infrastructure and transport policies implemented in Bolivia since the mid-1990s** [[[Josep, is this also true under the leadership of Evo Morales? If not, this statement needs to be qualified to say something like “up until the election of Evo Morales in 2006...”]]] have been geared towards transforming it into a transit country in an enclave economy based on raw material exports—mainly hydrocarbons (gas and petrol) and minerals [[[what about the soybeans and other products of industrial agriculture?]]] for use by foreign multinationals. According to Spronk and Webber, the application of neoliberalism in the country since the mid-1990s, based on privatizing key sectors of the economy and opening the exploitation of natural resources to foreign investment is a good example of the processes Harvey calls “accumulation by dispossession,” which define the operating logic of neoliberal globalization.⁷

With the development of the Madeira River Complex, Bolivia will become an energy exporter, since the energy produced by the two dams planned for Bolivian territory, one inside the country and the other located on a border between Bolivia and [[[what other country?]]], is destined for the Brazilian market. Despite the fact that the Bolivian energy system is highly deficient in terms of its coverage and quality of supply—especially in rural areas of the country—these dams will not provide any benefit to the local population of the Bolivian Amazonian region. Indeed, the privatization in the energy sector that took place between 1993 and 1997 has already deepened both regional and urban/rural inequalities.⁸ In response, the Declaration of the IV Meeting of social organizations opposed to the Complex states:

The energy model to which mega-projects like the Madeira River Complex are a response has nothing to do with local needs. They have not been planned to provide a solution to them, have no transmission lines or transformers for local distribution planned, the cost of the energy that they generate will be as unaffordable or more so than that currently produced in region, but it will have environmental costs which must be met by the villages of the Madeira.⁹

⁶ *Ibid.*

⁷ Susan Spronk and Jeffrey Webber “Struggles against Accumulation by Dispossession in Bolivia,” *Latin American Perspectives*, Vol. 34, No. 2, 2007. See also David Harvey, *The New Imperialism* (Oxford: Oxford University Press, 2003).

⁸ Patricia Molina, *op. cit.*, pp. 105-107.

The earliest origins of the Madeira River Complex project date back as far as 1971 when Brazil's Ministry of Mines and Energy earmarked the small waterfalls of Jirau, Santo Antonio and Teotônio as potential sites for the construction of hydroelectric power stations. However, Brazil's increasing energy needs provide the more recent impetus for the project¹⁰ and the strategic outlook for integration outlined in IIRSA. The construction of the Madeira River Complex is part of the Brazilian government's Accelerated Growth Program (PAC), a package of public macro-investments in infrastructure which aims to increase the growth in Brazilian Gross Domestic Product (GDP) by 5 percent a year. The main promoters of the Complex in Brazil are the large companies in the agribusiness sector, particularly soy exporters. The project is expected to increase the amount of soy that can be transported by 500 percent from the current amount of 7 million metric tons a year to 35 million.¹¹ The project also serves Brazil's geopolitical ambitions to expand towards the Pacific, reinforcing its hegemonic role on the continent.

Socio-Environmental Impact In The Amazonian Region

The Madeira River Complex will have a significant environmental, social and economic impact. The project will have numerous negative environmental impacts: a rise in river levels and flooding; blockage of the tributaries and rivers in the basin (including the Abuná, Madre de Dios, Beni, Mamoré and Guaporé), which will turn the region into a marshland; displacement and disappearance of a wide variety of fish species (the Madeira is the world's second most important river in terms of its wealth of ichthyofauna). Perhaps unsurprisingly, the Environmental Impact Study carried out by the Brazilian companies responsible for the project, neglected most of the ecological impacts and has been condemned by various authors including Molina¹² and numerous environmental organizations as highly unsatisfactory and insufficient. For example, in January 2007, Friends of the Earth-Brazil published a report highlighting 30 major errors in the Environmental Impact Study.¹³ According to the report, the Environmental Impact Study (EIS) only analyzed the direct impact of the flooding caused by the dams. The EIS failed

⁹ **[[[Josep, we need a complete citation for this, including the date of the statement, where it was made, etc.]]]**

¹⁰ *Ibid.*

¹¹ Zachary Hurwitz, "The Madeira Complex: International Banks to Fund Deforestation and Displacement," *Americas Program Report*, May 2007.

¹² Jorge Molina, *op. cit.*

¹³ Friends of the Earth, "30 Errors in the Environmental Impact Assessment for the Madeira River Hydroelectric Complex," Amigos da Terra-International Rivers Network, 2007.

to account for the project's impact on both the basin and tributaries, including changes to the natural sedimentation process, which... **[[[Josep, a statement here on the ecological importance of the natural sedimentation process would be nice.]]]**. Nor did the EIS consider the effect of the proposed 14,000 square kilometer transmission line, a corridor 10 kilometers wide and 1,400 kilometers long, that will carry 600-765 kilowatts of electricity. Furthermore, other dams in Brazilian Amazonia top the rankings of the world's most environmentally destructive projects. The Balbina dam near Manaus is particularly notorious for its high environmental cost compared to the amount of power it produces and for that reason is considered one of the world's five worst hydroelectric projects.¹⁴

The Madeira River Complex is another step forward in the now decades-long process of ecological destruction of Amazonia. Aside from the construction of huge dams, vast areas of forest have already been cleared to make way for transport infrastructures and agricultural and livestock farming by major agribusiness companies. According to Machado, 130,000 square kilometers of Amazonian forests in Brazil disappeared between 2000 and 2005.¹⁵ Under current plans, further deforestation will result as much larger areas of forests are cleared for planting soybeans.

In terms of production, the Madeira River Complex will destroy and alter local economies and the means of subsistence of the indigenous population. The flooding of pasture lands will make it difficult, if not impossible, for the indigenous population to carry on their animal husbandry. Planned changes to the forest will also likely decimate chestnut harvesting, since chestnut forests require certain conditions of humidity. Chestnut exports to Europe are a very important to the economy in Bolivian Amazonia; in fact, Bolivia is the number one exporter of this product in the world.¹⁶

Finally, the project will have significant social impacts, particularly increased risk of diseases and epidemics such as malaria and the heightened effects of mercury pollution of the water from a change in the speed of the water's circulation. The region's weak and precarious health system is ill-prepared to cope with an increase in diseases like malaria and illness from higher exposures of mercury and other toxins that the project will bring. This

¹⁴ Jorge Molina, *op. cit.*

¹⁵ Joao Machado "Los movimientos populares y la izquierda ante el segundo movimiento Lula," *Viento Sur*, Vol. 91, 2007.

¹⁶ Ivan Castellón, "Acerca de las represas en la cuenca del río Madera," in *El Norte Amazónico de Bolivia y el Complejo del Río Madera* (La Paz: FOBOMADE, 2007), pp. 117-127.

situation is even more acute in the rural areas of Bolivian Amazonia, where the few existing medical services are concentrated in the larger towns like Riberalta, Guayaramerín, and Cobija.¹⁷

Resistance to the Madeira River Complex: A Specific Case of a Broad-Based Movement

The Brazilian government's announcement authorizing the construction of the Santo Antonio and Jirau dams is strongly opposed **by the majority of** the rural and indigenous people in Brazil and Bolivia. In both countries, the regions affected have begun to mobilize to stop the project. Opposition to the Madeira River Complex has been stronger in Bolivia, and the government of Evo Morales has declared its opposition to Brazil's position. In November 2006, the Bolivian government requested that a bi-national commission be set up to study the impact of the project. Despite the fact that Brazil agreed, the commission has not begun its work. However, even if the commission was studying the impact of the project, **since it doesn't have any authority to stop the project to prevent any negative impacts that it would find,** representatives of environmental organizations such as the Bolivian Forum on the Environment and Development (FOBOMADE) have deemed it "insufficient."

Various peasant, indigenous and environmental organizations in Bolivian and Brazilian Amazonia have held several meetings to articulate their opposition to the project. These meetings have given birth to the "Social Movement in Defense of the Madeira River Basin and the Amazonian Region." In December 2007, peasant and indigenous organizations from Bolivia's affected communities denounced the Brazilian government to the Inter-American Commission on Human Rights (IACHR).

However, the analysis of resistance to the Madeira River Complex should not see it merely as a local issue. As noted above, the Complex is part of a regional strategy to integrate infrastructures for an economic development model that supports the interests of multinational exporters and the sectors of the Latin American economy that are linked into the international market. Opposition to the Madeira River Complex and the dams at Santo

¹⁷ Jaime Cabezas and Freddy Flores, "El problema de la salud en el norte amazónico y su relación con las represas del río Madera," in *El Norte Amazónico de Bolivia y el Complejo del Río Madera* (La Paz: FOBOMADE, 2007), pp. 85-95.

Antonio and Jirau is part of a wider context of popular movements against neoliberal policies and transport mega-infrastructures, of which opposition to the construction of large dams plays an important role.

Various related subjects are interwoven in the movement against large dams, such as the right to land, water, defense of the environment, and the historic rights of indigenous peoples. Resistance to the construction of large dams has gradually increased since the late seventies and early eighties to the present day. Not only have specific struggles against the construction of new dams increased, but so has the coordination between several of these movements. The rhetoric of the opposition movements has also become stronger. Besides rejecting the construction of large dams, the opposition movements also articulate a positive vision that calls for another model for economic and social development.

The greatest increase in the construction of large dams internationally took place in the 1970s, which saw an annual average figure of 540 new dam constructions.¹⁸ The growing social opposition to dams led to a sharp decline from the 1990s onwards, down to 200 dam constructions a year. Over time, World Bank financing for dam construction also dropped. In the 50 years between 1944 and 1994, the World Bank financed the construction, repair or expansion of more than 600 dams in 93 countries, many of which were highly controversial projects.¹⁹ Between 1975 and 1985, the World Bank financed an average of 26 dams per year, and today funds **[[[Josep, it would be good to add this figure if you have it, because 600 dams over 50 years is an average of 12 a year, which is less than the 26 a year you cite as a reduction.]]]**.²⁰ Among the local struggles against the construction of large dams, the most well-known internationally is undoubtedly the movement of the inhabitants of the Narmada River Valley in India, who as the Narmada Bachan Andolan (or NBA, the Save the Narmada Movement), succeeded in at least temporarily halting the construction of a series of large dams on their river in the mid-1990s.²¹

¹⁸ Patrick McCully "A Stream of Consciousness," *World Rivers Review*, Vol. 15, No. 1, 2000.

¹⁹ Elba Stancich, *Cuando los ríos se modifican, pierden los pueblos y la biodiversidad* (Rosario: TallerEcologista y Programa Energía Coalición Ríos Vivos, 2003).

²⁰ Lori Pottinger, "International Rivers Network: Working to Protect Rivers From Large Dams," *International Journal of Water* 1, 1, 2000, pp. 1-5.

²¹ Chittaroopa Palit, "Monsoon Risings," *New Left Review*, No. 21, May-June 2003.

In Latin America, these popular resistance movements have traditionally been strongest in Brazil, which has the largest number of big dams—60 percent of the 979 large dams in Latin America, according to the World Commission on Dams (WCD).²² Resistance began in Brazil in 1979 after Electrosul announced its intention to build 22 dams on the Uruguay River and its tributaries. Thus began a long series of grass-roots struggles against dams, which would culminate with the creation of the Movement of Dams Victims (MAB in Portuguese) in 1991. The opposition in Brazil initially framed its demands as an issue of land rights for poor peasants, but it gradually incorporated a political ecology point of view into its conceptual framework.²³ **[[[Josep, can you give a specific example of this?]]]**

Many of the local struggles against large dams have linked into continental and international struggles. This process began in 1997 with the first international meeting in Curitiba, Brazil under the auspices of the MAB and included environmental organizations like the U.S.-headquartered International Rivers Network and important national movements including the NBA of India and the Grupo de Accion por el Biobio (GABB), which was founded in 1991 to save the Biobio River in southern Chile. Meeting participants agreed to establish an annual international day “against large dams, for rivers, water and life” on March 14. A second meeting was held in Rasi Salai, Thailand in 2003, which attracted 300 people from 61 countries. Along with the activities for international coordination, a process of regional coordination of Latin American resistance developed. In 1999, during the Regional Survey convened by the World Commission on Dams in São Paulo, the Latin American Network against Dams and for Rivers, their Communities and Water was established in São Paulo. Their second, third, and fourth meetings were held in 2002 in Argentina, in 2005 in Guatemala, and in 2008 in Colombia, respectively.²⁴

The international and continental coordination of the movement against large dams reflects the organizational and strategic consolidation of the movement since the mid-1990s. Apart from its specific agenda, the movement has also been linked to the full spectrum of social and environmental struggles related to water that have arisen all over the world in recent years. The common link in all of these varied struggles is opposition to the

²² *Ibid.* The figures cited come from the World Commission on Dams. **[[[Josep, do you have the specific citation?]]]**

²³ Franklin Rothman and Pamela Oliver, “From Local to Global: The Anti-Dam Movement in Southern Brazil (1979-1992),” in J. Smith and H. Johnston (eds.), *Globalization and Resistance* (Oxford: Rowman & Littlefield, 2003), pp. 115-132.

²⁴ Gustavo Castro, “América Latina niega ser presa de represas,” *Serie Acción ciudadana en las Américas*, February 19, 2006.

privatization and commercialization of water and the defense of water as a right²⁵ and common asset.²⁶ Barlow and Clarke point out that these struggles include movements against the privatization of public water services; the exportation of water to foreign countries; the pollution of water resources as a consequence of the activities of multinational companies, often in the mining sector; improvement of the access to the supply by poor people; and opposition to the construction of large dams.²⁷

As part of the wider struggle over water issues, the movement against large dams has carried its advocacy of the defense of the right to water to numerous international fora. These include meetings of the People's World Water Forum in Delhi in 2004 and the parallel mobilizations during the meetings of the industry-dominated International Water Forum, which took place in Marrakech in 1997, The Hague in 2000, Kyoto in 2003, Mexico City in 2006, and Istanbul in 2009.

In more general terms, the movement against large dams has also been structured around the anti-globalization movement which burst into the public arena during the protests against the Third Ministerial Meeting of the World Trade Organization in Seattle in November 1999. As a result, various organizations opposing large dams have attended meetings of the World Social Forum, which was established as the most important meeting point for organizations critical of the neoliberal globalization model on an international scale. It has also participated in various activities that have taken place to coincide with the counter-summits during meetings of the WTO and the annual assemblies of the World Bank and the International Monetary Fund. In short, the movement against large dams has acted as a specific single-issue movement, but one which seeks to place its struggle in the context of criticism of the current neoliberal globalization development model and to create alliances with other social movements that are also opposed to it.

Conclusion: An Uncertain Future For The Region

²⁵ Patrick Bond, "Water Commodification and Decommodification Narratives: Pricing and Policy Debates from Johannesburg to Kyoto to Cancun and Back," *Capitalism Nature Socialism*, Vol. 15, No. 1, March 2004.

²⁶ Daniel Bensaid, *Un monde à changer* (Paris: Textuel, 2003).

²⁷ Maude Barlow and Tony Clarke, *Blue Gold: The Fight to Stop the Corporate Theft of the World's Water* (Delhi: Left Word, 2002).

The Madeira River Complex is a transport infrastructure and energy project that is part of the neoliberal development and regional integration model embedded in the “Washington Consensus.” At the urging of Brazil, IIRSA, an initiative sanctioned by the governments of South America with support from Europe and various international funding, trade, and development agencies, seeks to commercially integrate Latin America into the international market. The Madeira River Complex, one of IIRSA’s top priority projects, will provide energy to Brazilian urban areas and enable massive quantities of goods, particularly soy from the Brazilian, and to a lesser extent, Bolivian agribusiness sector to be transported along the river.

The Madeira River Complex will have dire environmental, social, and economic consequences for the local population in the Amazon region in Bolivia and western Brazil. The massive, terrain-altering work required to build the large hydroelectric dams, widen and tame the river to make it navigable for large ships, and run the high-voltage electricity transmission lines will significantly alter local people’s way of life: land will be flooded, fish stocks will decrease, and the ecological balance that currently sustains the culturally, environmentally, and economically important chestnut forests will be destroyed.

Faced with this situation, the affected populations on the Bolivian and Brazilian side have started to organize their opposition to the project. Far from being an isolated case, opposition to the Madeira River dams is part of a wider and growing social resistance to the construction of mega-infrastructure, particularly large dams. Increasing opposition internationally and on individual continents since the late 1970s and early 1980s has succeeded in significantly reducing both the number of new large dams planned since the early 1990s and the financing for them from international institutions. However, as the Madeira River Complex illustrates, the construction of large dams continues. It is still too soon to ascertain the outcome of the Madeira River issue, a result that will determine the fate and future of the Amazon region in Bolivia and western Brazil.