

Comments on the Jirau Hydropower Project
Submitted to Lloyd's Register Quality Assurance Ltd.

May 23, 2012

We are writing to express our concerns over the application for validation of the Jirau Hydropower Project in Brazil. The Project Design Document (PDD) for this project is flawed and inaccurate. In addition, CDM validation of this project would reward not only a clearly non-additional project, but also one of the most socially and environmentally destructive dams in the Amazon Basin.

Summary of Key Concerns

- *The project does not comply with the EU-ETS and EC regulation on the 3rd trading phase.* GDF-Suez is a 50.1% holder of the Enersus project consortium, and therefore the Project Proponents must provide evidence of compliance with the policies of the EU Emissions Trading System, which requires large hydropower projects above 20MW to comply with the recommendations of the World Commission on Dams (WCD). In addition, an approval letter from an Annex 1 country is necessary for GDF-Suez to generate CERs using its own project development, as there is currently a default prohibition on using new-project CERs beyond 2013 unless they are generated by least-developed countries (LDCs).
- *The project clearly does not meet criteria for additionality.* The Brazilian National Development Bank (BNDES), acting as the financing facility for this proposed CDM project activity, provided preferential credit lines for the proposed project activity (see PDD at e.g. page 18, 46 following). Despite the Project Proponents' comments on the treatment of E- policies based on the EB 22 meeting, we believe that it is wrong to conduct an equity IRR analysis excluding BNDES' fiscal benefits. CDM revenues are clearly not additional due to both current and future public finance committed to the project. In addition, the PDD's IRR calculation methods and benchmark are obscure.
- *The project has devastating and irreversible environmental and social impacts.* Technical studies conclude that the Jirau hydropower project will cause transboundary impacts in Bolivia and Peru. The project EIA avoided an analysis of transboundary impacts and creation of relevant mitigation plan. By only referring to the EIA, the PDD violates Decision 4/CMP.1, which foresees the inclusion of transboundary issues in its discussion of environmental and social impacts.¹
- *There are serious examples of inconsistencies with applicable laws.* The planning, licensing and construction of the Jirau HPP has been marred by repeated violations of Brazilian legislation and international agreements regarding human rights and environmental protection.

¹ ["Modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol," UNFCCC](#)

(1) Non-compliance with European Regulations

EU-ETS regulations

The Project Proponents should add a chapter in the PDD on how they have respected the relevant international criteria and guidelines including those contained in the World Commission on Dams – A New Framework for Decision-Making (2000) during the development of the project activity. This is important as the buyer of the CERs will be GDF Suez, a French company included in the European Emissions Trading System with a compliance gap (see footnote 69 at page 21 of the PDD). It is illustrative of the inviability of this PDD that GDF Suez proposes to purchase CERs from its own investments while simultaneously omitting this information from section A.4 on page 12.

EC regulation on 3rd Trading Phase

If it is the intention by GDF Suez to generate CERs through its own project developments, the DOE should first request the approval letter of an Annex 1 country before finalizing the Validation. As there had been no international agreement at the end of 2010, nor had there been any EU agreements with third countries, article 11a(4-5) (Directive 2009/29/EC) provides a default situation of prohibition on using new-project CERs unless they are from LDCs registered after 2012. Taking this into consideration the PP is asked to justify their expectation that they will indeed receive registration this year, and to explain the likelihood of CERs really materializing for this project and serving as an income stream to project financing.

(2) Lack of Additionality

Preferential credit lines

As described in the PDD, the Brazilian National Development Bank (BNDES) is the financing facility, and provided preferential credit lines for this proposed CDM project activity (see PDD at e.g. page 18, 46 following). BNDES operates as a national bank, not private, and offers preferential credit lines for renewable energy projects, which should be considered as governmental subsidies when compared with lending for conventional energy projects. BNDES has to date disbursed a total of 10 billion *reais* to Enersus for the Jirau HPP. BNDES' initial line of credit was 7.2 billion *reais* in 2009.² The Project Proponent then requested an additional 2.2 billion *reais* of credit from BNDES in February 2012.³ GDF-Suez now currently seeks an additional 1 billion *reais* of credit from the BNDES to pay for project expansion, including the addition of six turbines, as of April 2012.⁴

Despite the Project Proponents' comments on the treatment of E- policies based on EB 22 meeting, we believe that it is wrong to conduct an equity IRR analysis excluding this record of fiscal benefits. In addition, EB 53, Annex 32 provides an 'Information note on the implementation of E+/E- in the context of projects on the agenda of the fifty-third meeting of the CDM Executive Board'. As per §3 of the document the "... DOE should assess whether the tariff has been affected by any national and/or sectoral policy and if so whether this policy/policies are E+ policies or E-policies." Such detailed analysis is expected to be provided in the Validation Report.

Equity IRR calculation for Optimized Case

The Project Proponents provides an equity IRR calculation for the Base Case considering E-policies plus the inclusion of CERs (see PDD at page 53). However, such comparison is not made for the Optimized Case, which will be the ultimate project design and should be the reference. The DOE is

2 "[Brazil bank signs its largest loan, for 3,300-MW Jirau.](#)" July 8, 2009.

3 "[Jirau quer ampliar financiamento de R\\$ 7,3 bi para R\\$ 10 bilhões .](#)" February 18, 2012.

4 [Fox Business Report](#), April 12, 2012, and "[Suez negocia mais R\\$ 1 bi para Jirau.](#)" April 12, 2012.

asked to review the actual financing model agreed between the Project Proponents and BNDES and make publicly available the equity IRR worked out (with and without CERs). Page 53 says that “If all benefits of the E-regulation are taken into account, the Equity IRR for the base case reaches 9.7%.” Without access to a detailed IRR calculation sheet the public cannot assess the validity of the 9.7% figure (e.g. expected CER value not available). Comparable equity IRRs should also be provided for the Optimized Case in the PDD.

Appropriateness of the benchmark

The PP's use of a CAPM model for calculating the project's equity IRR is obscure. In general, the CAPM model does not accurately represent the actual hurdle rate of investors. The dates and indexes used to calculate risk premium and the parameters used to calculate the beta can substantially alter the outcome of the model and are an arbitrary choice.⁵ The CAPM model's result of 15.7% does not represent a benchmark derived from any analysis of equity IRR for the hydropower sector in general in Brazil. Indeed, both the Santo Antônio and Teles Pires dams, two projects similar to the Jirau HPP that have recently submitted PDDs to the CDM, use a benchmark equity IRR of 10.35%, lower than the cited 15.67%.

In fact, construction of the Jirau HPP began in 2009 based on an equity IRR estimate of 12%, promoted to Enersus shareholders in 2008.⁶ This differs substantially from the Project Proponent's assertion that the original IRR was 6.8%, and subsequently 7.5% for the optimized project. Indeed, Enersus decided to optimize the project design after the IRR of 12% had already been promoted publicly. One would assume that the decision to optimize the project was based on an expectation that the Jirau HPP's equity IRR could be even higher. In hindsight, the publicized 12% IRR is closer to the Project Proponent's calculation of IRR with E-policy and BNDES support at 9.7% in the PDD. Clearly, the Project Proponent's decision to utilize a 15.7% benchmark has no clear precedent in comparison with the earlier estimate of 12% that actually served as the basis for construction. We would prefer that the financial benchmark that has been used by BNDES to assess the investment be made publicly available.

Treatment of E-policies in this project context

By invoking the E+/E- rule from EB 22 to justify not including these preferential lines of credit in the investment analysis the project proponent is going against CDM convention. In July 2010 the EB “agreed not to continue the consideration of the treatment of national and sectoral policies in the demonstration and assessment of additionality.” The Board also agreed that “the possible impact of national and sectoral policies in the demonstration and assessment of additionality shall be assessed on a case by case basis.” (EB 55, paragraph 27). Convention has been that the investment analyses should use subsidies, tax benefits and preferential tariffs at the time of the development and investment decision. This is entirely appropriate since governments commonly subsidize renewable energy and large hydropower and those supports change over time as conditions change.

The treatment of E-policy as defined per EB22 contradicts with § 6 of the “Guidelines on the assessment of investment analysis,” which says that “Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant”. Investment decision (in the PDD referred to as project start date) was 22/07/2008. At that time BNDES already had announced the indicative financing conditions to support the implementation of the Jirau

⁵ Haya, B. 2010. *Carbon Offsetting: An Efficient Way to Reduce Emissions or to Avoid Reducing Emissions? An Investigation and Analysis of Offsetting Design and Practice in India and China*. PhD Dissertation, Energy and Resources Group, University of California, Berkeley. (See chapter 3)

⁶ ["Tractebel Energia S.A. Conference Call to Discuss the Jirau Hydro Power Plant Auction Result – Final"](#) May 30, 2008, and ["Jirau consortium sees 12% return."](#) May 21, 2008.

HPP (11/02/2008); see also PDD at page 33. By considering the E-policy rule, the equity IRR calculation was prepared with input values that were not valid at the time of investment decision. Taking into account the real input values of the credit line provided by BNDES, the equity IRR without the CERs is much higher, and can be expected to be even higher for the Optimized Case. The validator should be aware that the E-policy treatment in this case can lead to unrealistic and financial parameters. Allowing a treatment of E-policies as presented in this project would set a precedent that supports large infrastructure projects that are already promoted by the national government, and for which it is doubtful that the government will drop just because it may not obtain CERs. We believe that the credit line as offered by BNDES to the project with all its input values contained therein give a more realistic insight into the equity IRR and the additionality assessment.

Common Practice analysis

Brazil is clearly one of the world's leading dam-building nations and is already highly dependent on hydropower for its electricity, with about 80% of its electrical energy coming from hydroelectric dams. It has at least 63 dams either under construction or planned, and the government regularly sets both credit and electricity prices. This means that hydropower cannot be considered an uncommon technology in the country. In general, the common practice analysis should be strengthened because the ability to argue that a project is "essentially distinct" from other similar projects can easily be abused. Projects under construction and in the CDM pipeline should be included in the common practice assessment.

Alternatives

A recent study by Greenpeace on alternative energy scenarios in Brazil concluded that: (1) energy losses in the country's transmission system are an estimated 20%, a phenomenon largely related to a heavy dependence on extremely long-distance transmission lines, such as those planned for the Santo Antônio and Jirau dams; (2) Brazil's potential for wind power generation is at least 143,000 MW and may easily surpass 300,000 MW; and (3) considering an average annual level of solar radiation of 1.742 -2.300 KWh/m², tapping only 5% of the Brazil's solar potential would produce of the equivalent of the energy demands of the entire country.⁷

Considering the increasing economic attractiveness of investments in energy efficiency and alternative renewables such as wind power (with much lower social and environmental footprints, including GHG emissions), the CDM should require evidence of a serious assessment of investment options.

(3) Environmental Impacts

The PDD ignores serious environmental impacts because it is based on an incomplete EIA. The Jirau HPP will cause transboundary impacts in upstream areas of neighboring Bolivia and Peru. Technical studies have illustrated that the Jirau reservoir will increase water levels in areas of confluence between the Madeira River and the Abuná River, Beni River, and Mamoré River located on binational territory between Bolivia and Brazil. The increasing water levels would extend beyond the Area of Influence considered by the project EIA, which terminates exactly before the Brazil-Bolivia border. The resulting increase in water level increases the risk of flooding, sedimentation, and impacts on fish species reproduction within Bolivian territory. IBAMA technical report 014/2007 stated that the resulting impacts on fishing activities and viability of migratory fish reproduction further upstream in Bolivia as well as in Peru warrant the creation of a new EIA that considers transboundary impacts, as well as new public consultations.

By considering only the environmental impacts discussed in the project EIA, the PDD violates

⁷ ["\[r\]evolução energética."](#) Greenpeace, 2007.

Decision 4/CMP.1, which foresees the inclusion of transboundary issues in its discussion of environmental and social impacts.⁸

Deforestation and reduction of conservation areas

The PDD ignores official data on the increased incidence of deforestation associated with the Jirau HPP. The Brazilian Instituto Nacional de Pesquisa Espacial (INPE) attributed a doubling in the rate of deforestation in the state of Rondônia during 2010-2011 to the construction and implementation of the Jirau HPP and Santo Antônio HPP further downstream. The deforestation is explained both by direct intervention in forested areas by the project proponent as well as by an increase in forest asset extraction as a result of labor market migration induced by the HPP.

In addition, in 2009, 140,000 hectares of the “Reserva Estadual do Rio Vermelho” protected area were reduced in order to accommodate the Jirau HPP. To offset the reduction, 140,000 hectares were added to the existing “Reserva Federal do Rio Pardo.” Yet only 70,000 hectares of the offset area consisted of forested land, while the remaining 70,000 hectares consisted of land for agricultural production occupied by 5,000 families.⁹ The resulting effect was a net loss of 70,000 hectares of forested areas attributable to the Jirau HPP.

(4) Social Impacts

Stakeholder comments

Chapter E.2. Summary of comments received states that “No comments have been received during the local stakeholder consultation process, as implemented according to the requirements of the Brazilian DNA.” However, chapter E.1 describes additional public consultations that were held during the process of obtaining the various licenses (Preliminary License, Installation License). For completeness and transparency reasons, the public comments made during these consultations should be made publicly available in the PDD. It is difficult to believe that no public comments or objections were made for a project of this size, where enormous environmental and social impacts can be expected. The PP should prepare a detailed summary of statements made during the pre CDM public hearings under E.2. in the PDD.

Labor issues

The PDD ignores serious social impacts that have occurred throughout the implementation phase of the Jirau HPP. Violations of workers' rights to fair wages and living conditions led to labor unrest beginning in 2011, when 35 sites that serve as living quarters and 45 buses were set on fire. Further incidents have occurred in 2012, including when 30 dam structures were set on fire in protest over poor wages and conditions.¹⁰

Impacts on indigenous people

Construction of the Jirau HPP has caused social and environmental impacts on federally-protected indigenous territories as well as on nearby tribes living in voluntary isolation. The Federal Public Prosecutor of the state of Rondônia is currently investigating these impacts in order to measure how Enersus has complied with the indigenous peoples' mitigation plan developed as a condition of the

⁸ "Modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol," [UNFCCC](#)

⁹ "Cassol fecha acordo para Reserva do Bom Futuro e compensação da Usina de Jirau," [Government of the State of Rondônia, Brazil](#)

¹⁰ [New York Times, May 6, 2012.](#)

project license.¹¹

(5) Violations of legislation

As demonstrated by numerous lawsuits filed by the Federal Public Prosecutor's office and reports published by civil society organizations, the planning, licensing and construction of the Jirau project have been marred by repeated violations of Brazilian legislation and international agreements. Mandatory analysis and dialogue with neighboring countries regarding transboundary impacts on Bolivia and Peru have been systematically denied by the Brazilian government. In Brazil, a host of lawsuits have been filed on this general issue and specific violations of legislation regarding impacts on migratory fish and implications for the livelihoods of local populations, reservoir sedimentation and flooding in Bolivia. Lawsuits have also been filed regarding isolated indigenous peoples and violations of workers' rights.

The Brazilian DHESC filed a report detailing violations of human rights protected by national and international law during the planning and implementation of the Jirau HPP, including the following violations:¹²

- Exclusion of transboundary impacts in the upstream Madeira basin from the EIA;
- Violation of the principle of self-determination of populations in neighboring countries, which caused a diplomatic row between the governments of Brazil and Bolivia, leading the government of Bolivia to reject the Jirau HPP in 2007 based on the risk of transboundary impacts;
- Unsatisfactory evidence of undertaking needs and options assessments;
- Violation of democratic principles including the right to information and participation;
- Violation of indigenous peoples' rights, the right to a healthy environment, and the commitment to biodiversity protection;
- Violation of the right to access to water and sanitation, including increased malaria risk and lack of water quality studies;
- Violation of the right to safe working conditions, access to property, and adequate housing; and
- Violation of the right to cultural property, especially historical architectural patrimony.

The report's allegations have been substantiated by a number of lawsuits awaiting trial in Brazilian courts. A 2008 lawsuit filed by Amigos da Terra Amazônia-Brasileira and Kanindé argued that the Jirau HPP would cause impacts on indigenous peoples in voluntary isolation found northwest of the projected reservoir, in Amazonas state. Subsequent lawsuits were filed in 2009 by the same plaintiffs against ANEEL, IBAMA, and the federal government alleging the illegality of the project licenses of the Jirau HPP due to severe errors and gaps in the project EIA. Further, a lawsuit has been filed by the Public Prosecutor of the state of Rondônia over the federal government's violation of CONAMA resolution 01/76, which mandates the inclusion of transboundary basin-level impacts in project EIAs.

Conclusion

In conclusion, the PDD for the Jirau HPP is clearly flawed, violates existing regulations and national legislation, and manipulates the CDM rules in an attempt to obtain CERs. The project is non-additional, has provoked high social and environmental impacts, and would continue to be built anyway regardless of approval of CERs. We request that validation for this project be rejected. The approval of this project would set an extremely dangerous precedent for the CDM as it prepares to enter the third trading period.

11 "MPF/RO quer saber os impactos de hidrelétricas e ferrovia em terras indígenas," [Rondônia Vivo](#), February 1, 2012.

12 Plataforma brasileira de direitos humanos econômicos, sociais, culturais, e ambientais (dhesc), "[violações de direitos humanos ambientais no complexo madeira](#)," April, 2011.

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Amigos da Terra Brasil – Brazil

Associação de Preservação do Meio Ambiente e da Vida - APREMAVI – Brazil

CDM Watch – Belgium

Conselho Indigenista Missionário – CIMI, Brazil

Fórum Carajás – Pará, Brazil

Fórum da Amazônia Oriental – FAOR, Brazil

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Instituto Amazônia Solidária e Sustentável - IAMAS, Brazil

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