(From request for review 1)*"The project cannot convincingly prove the existence of an investment barrier. Its IRR of over 20% is clearly higher than the one-day floating bond rate prior to project (see figure 8 of PDD); that the bond rate rose above 20% for a short period in late 2005 is no proof that all long-term investments with IRRs below that rate were suddenly stopped. It is not appropriate to apply a one-day bond rate to an investment with a time horizon of several decades (and a crediting period of 21 years).Moreover, the developers managed to get a bank loan at 12% (9% + 3% risk premium) which shows that long-term financing is not determined by the one-day floating bond rate. This is confirmed by the validator (p. 10 of the validation report: "It was verified that the investment barrier is not the most important barrier, once the project received subsidised funds from BDNES (with interest rate lower than the rate of the market"). CDM project activity registration review form (F-CDM-RR) (By submitting this form, a Party involved (through the designated national authority) or an Executive Board member may request that a review is undertaken)"*

PP initial comments

Interest Rate Environment in Brazil

Reliable financial markets have been recognized as essential to promote economic development. A strong and reliable financial market is the one where savings are efficiently used to fund productive sector.

According to a study published by the National Development Bank - BNDES[1], "the high costs and risks keep the interest rates too high, limiting the group of viable projects and increasing the rates of unsuccessful projects". In the same paper, it concludes that "lack of infrastructure, high cost of capital, heavy taxation, high macro and jurisdictional risk avoid the credit flow to private sector".

As described in the PDD, in order to analyze accurately the investment environment in Brazil, one has to consider the Brazilian Prime Rate, known as SELIC rate, as well as the CDI – Interbank Deposit Certificate, which is the measure of value in the short-term credit market. Real interest rates have been extraordinarily high since the *Real Plan* stabilized inflation in 1994.

As a consequence of the long period of inflation, the Brazilian currency experienced a strong devaluation, precluding commercial banks from providing any long-term debt financing. The lack of a long-term debt market has caused a severe negative impact on the financing of energy projects in Brazil.

Interest rates for local currency financing are significantly higher than for US Dollar financing. The BNDES is the only supplier of long-term loans. Debt financing from BNDES are made primarily through commercial banks. The credit market is dominated by short term credit lines (90-days to 1-year). Long-term financings are available only to the strongest corporate borrowers and for special government initiatives. Credit is restricted to the short-term in Brazil or the long-term in dollars offshore.

[1] BNDES: MERCADO DE CRÉDITO NO BRASIL: O PAPEL DO JUDICIÁRIO E DE OUTRAS INSTITUIÇÕES. (Armando Castelar Pinheiro e Célia Cabral, 1999)

The above exposed strongly indicates that 100 or 200 basis points in the project IRR over the benchmark in a relatively risky and complex country like Brazil is too weak to convince the investor to proceed with his project.

Despite of the fact that the project IRR of 20,13% was higher than the benchmark (SELIC rate) during the project analysis (July 2005), the volatility of the interest rates (Figure 1) in Brazil still is strong enough to avoid many private infrastructure investments. As can be seen on the figure below, the Brazilian financial market is not stable enough to create a fully satisfactory environment for investments in infrastructure projects.

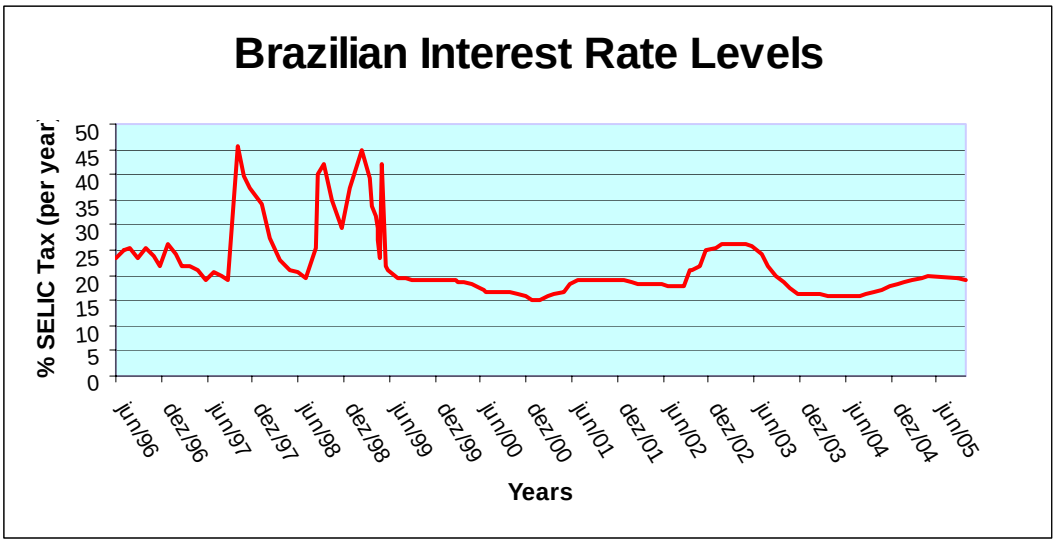

Figure 1- SELIC rate (Source: Banco Central do Brasil)

Financial and fiscal risks

It is ungrounded to state that a project activity is economically feasible without a detailed analysis of the existing economic scenario at the time the project was set up. According to Irma Adelman[2], "the only constant in development is systematic dynamic changes". In Brazil there's a considerable lack of funding to productive investment. The domestic credit is scarce, expensive and concentrated on short term maturities. As described in the Investment Barrier of the PDD, the majority of the private resources are not reverted to the productive sector. The pension funds, insurance companies and mutual funds invest mostly in public bonds and most firms and companies finance themselves out of retained surpluses.

The lack of a local long-term market results not from a disinterest of financial investment opportunities, but from the reluctance of creditors and savers to lengthen the term of their placements. It has made savers opt for the most liquid investments and to place their money in short-term government bonds instead of investing in long-term opportunities that could finance infrastructure projects.

[2] Irma Adelman, Fifty years of economic development: What have we learned?, ABCDE Conference, World Bank, 2000

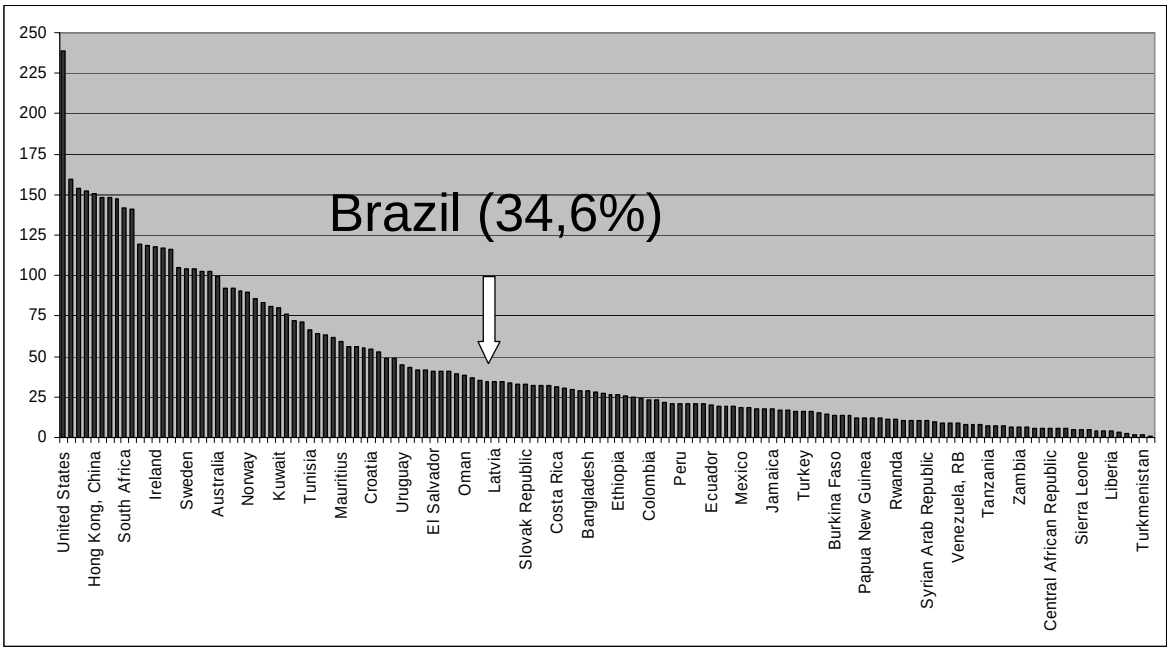

Figure 2 - Domestic credit to private sector (2003, % of GDP) Source: World Bank, 2005

The Figure 2 shows the low level of the domestic credit reverted to private sector. There are several reasons for Brazil being not on a better position compared to other countries. The high level of the interest rates in Brazil avoids the savings to be invested in private and productive sector.

Beyond the high interest rates in Brazil, there are other issues in the financial market that contributes to make local interest rate spreads one of the highest in the world. Market volatility (described above), jurisdictional uncertainty, insufficient competition among the financial institutions and high taxes are some of the issues that prevent the allocation of savings in the productive sector and rise the interest rate spreads in Brazil (Figure 3).

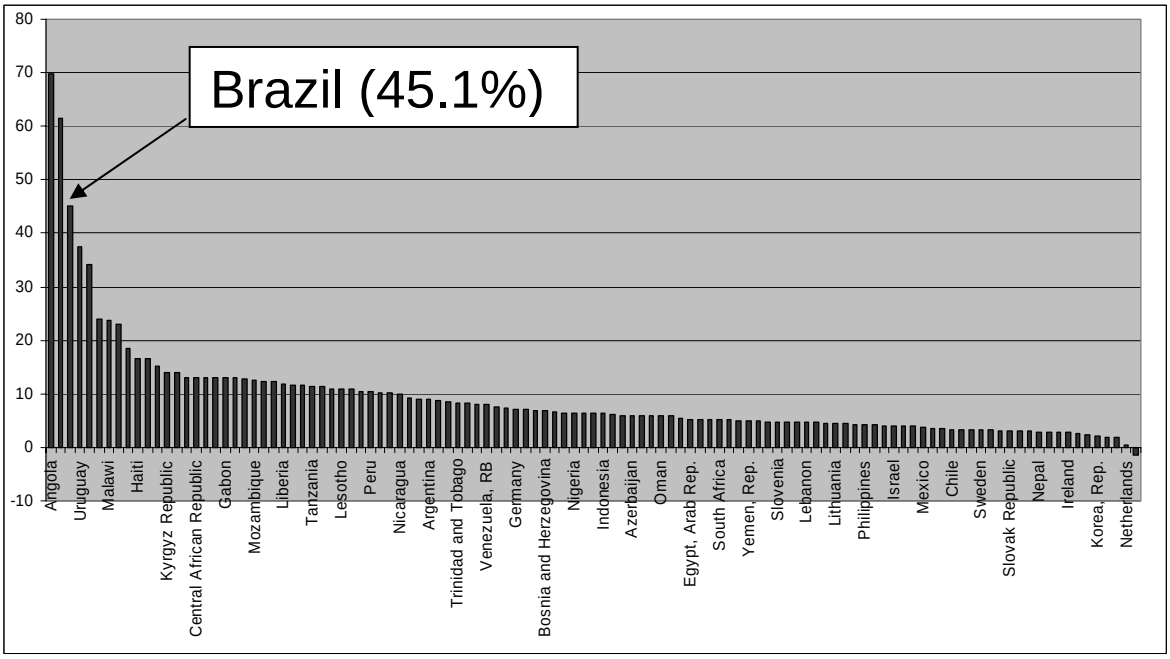

Figure 3 - Interest rate spreads (percentage points, 2003) Source: World Bank, 2005

Figure 4 describes other investment barrier in Brazil justifying the additionality of the project activity. It also demonstrates that 200 basis points over the benchmark or even an IRR over 20% are not strong enough to make the project sufficiently attractive to private sector in Brazil.

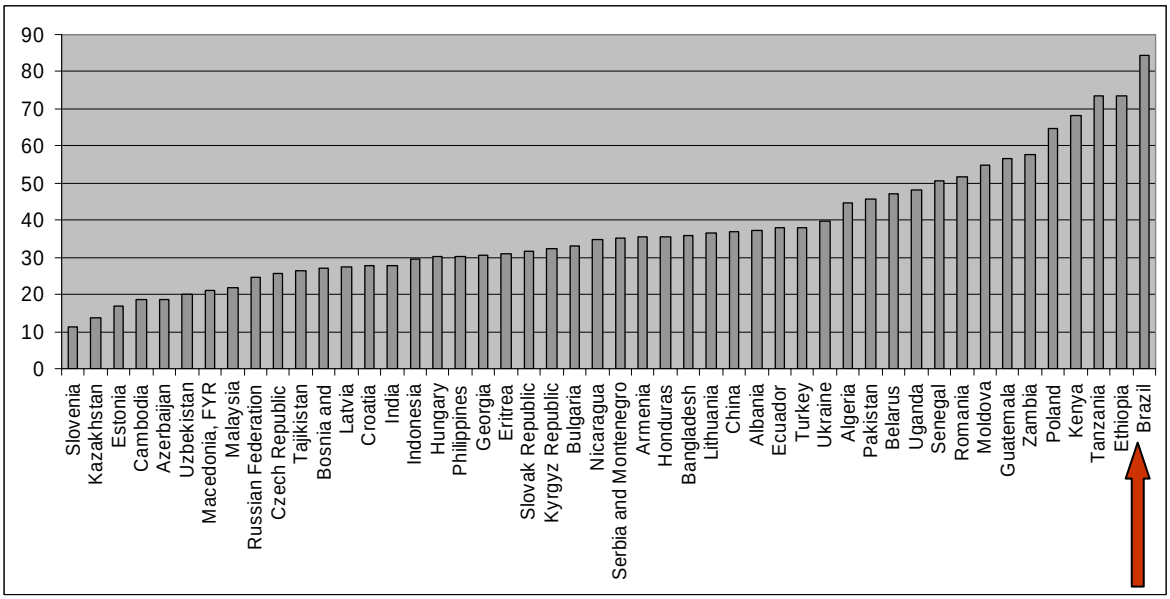

Figure 4 - Tax rates as a major investment constraint Source: World Bank, 2005

In the World Bank's Developing Country Report, the tax rates are analyzed under the perspective of one of the major investment constraint. Figure 4 shows how complex and difficult is to run a private investment in Brazil. The Word Bank estimates that 147.9% of

gross profit is used in Taxes payment by any medium size company in her second year of operation (except for labor taxes).

BNDES Loan

The fact that short term interest rates trade at a premium over long term ones does not mean that BNDES loans are subsidized. The country's inverted term structure for interest rate, also known as backwardation, occurs in others emerging economies and developing countries and is no sign of undisputed subsidy. Rather, an inverted yield curve might pose yet another barrier to investment in projects with long term maturities. Investors wary of a potential increase in interest rates will have an incentive to keep their money in short term paper instead.

Completion and Credit Risk

Financing from BNDES is only available to companies able to offer real guarantees totaling an amount higher than the amount borrowed. In other words, the project participants (PP) had to use its own balance sheet and capital to raise funds from BNDES. In the event of the project underperforms or become unfeasible, BNDES will call PP's guarantees and real assets up to their initial credit exposure. In addition to leveraging their balance sheet with sizeable borrowings, investors, through their holding companies, faces completion risk of the projects and credit risk of the utility. Completion risk is mitigated by guarantees pledged by the construction company; which are however of limited recourse. The credit risk of the utility though is difficult to hedge. Once the Power Purchase Agreements are signed, the project activity is immediately exposed to the utility's long term credit risk. At the time of project commissioning and completion, none of the local utilities of Brazil were rated above the sovereign ceiling of BB (double B) and thus, at least, two notches below the BBB+ (triple B plus) investment grade rating.

Conclusion

The financial indicators used are important to establish a comparison between the project activity and other alternative investments. The financial indicators alone are not the prohibitive barrier for the project activity. This information needs to be analyzed with other several barriers that together would prevent the development of the project.

CDM offered Garganta da Jararaca project an additional source of revenue that could mitigate the projects' exposure to currency devaluation, interest rate increases and credit risk. The pro-forma income statement analysis of the projects shows that investor's return on equity could increase by as much as 200 basis points when revenues from CERs are considered, making the project much more attractive when compared to risk free bond rates. In sum, in the absence of CDM, Garganta da Jararaca would be a riskier, less attractive and ultimately unfeasible project.

(From request for review 1) *"The IRR calculation uses a load factor of 75% while the PDD lists 82%, making the IRR calculation very conservative. Using a load factor of 82%, project IRR rises by 3.3% and reaches 23.4%, making the project a clearly attractive investment. Equity IRR is even higher, at 45% resp. 60%."*

PP initial comments

Long-term historical data of the river flow shows indicated a load factor of 75% as a feasible one. This figure was used to estimate the project IRR, design and plan the power plant. Notwithstanding, during the last 5 years, the average rainfall was significantly higher than the historical figures and the load factor of 82%, achieved in the test phase (i.e., long after the investment analysis phase), was used to estimate the electricity generation.

Although the project IRR could rise using the load factor of 82%, at project analysis the load factor used was the indicated by the long-term trend, namely 75%.

It is not clear to the PPs how the reviewer(s) arrived to the 45% resp. 60% equity IRR and, therefore, cannot comment it.

(From request for review 1) *"The validator argues that lack of infrastructure in the region of the project activity, such as roads, reliable electricity supply, communication and transports, was a "significant" barrier. Significant does not mean "prohibitive" (which should have been checked). Moreover, in the PDD it is mentioned that another small hydro plant is operational 10 km from the project site, so the infrastructure barrier is certainly not prohibitive."*

PP initial comments

The additionality tool does not necessarily demand a single prohibitive evidence on the Barrier Analysis. The step is used to "determine whether the proposed project activity faces barriers that: a) Prevent the implementation of this type of proposed project activity; and b) Do not prevent the implementation of at least one of the alternatives."

As described in the PDD, the lack of infrastructure is a significant barrier and not a prohibitive barrier. The lack of infrastructure made the project activity more expensive and its construction time longer than a similar project developed in a different region with better infrastructure.

Due to the lack of welll developed infrastructure, the project participants had to promote several improvements on the region in order to create a better environment to receive the project investment.

To evidence how complex are the problems in the area where the project is located, there is another small hydro plant 10 km away from Garganta da Jararaca, the Baruito Project. Even the small distance between those projects, both power plants have developed their own infrastructure and there's no connection between them. Just as an indication of infrastructure differences it shall be noted that the two projects, although only 10 km one

from another, the different projects have different dispatch conditions. The Baruito Project dispatches fully into the interconnected grid and the Graganta do Jararaca Project would initially dispatch to isolated systems and new infrastructure had to be built to integrate the project to the interconnected grid.

As explained in the PDD, the project will deliver electricity to two different systems. Garganta da Jararaca is not fully connected to the national interconnected system, as Baruíto. It is too difficult for developing projects on that region and the lack of infrastructure is one of the barriers to this project.

(From request for review 1)*"The validator argues "that the project would not be the most attractive scenario. …. As an alternative for the group company is the investment in other opportunities, like the financial market or in other traditional industrial areas of the group" (p. 10 validation report). This is not a proof that there were prohibitive barriers to the project. The validator's statement would only have been appropriate if the project developer had done an investment test for these alternatives and shown that investment in the financial market or other traditional industries would have yielded a higher IRR than the project. I think it is extremely unlikely to find alternatives with IRRs above 45%/60%"*

In order to respond this point, two things must be clarified:

- The project IRR is around 20% and not 45% or 60% as described in Reasons for Request.

- As described above, the Investment Barrier analysis alone does not necessarily result in a single prohibitive barrier.

As already explained above the environment for developing new projects in Brazil oft is not as attractive as to invest in the financial market. The high interest rate in Brazil along with all regulatory and fiscal issues make most of the private projects investments less attractive.

The use of financial indicators, as SELIC, is for establishing a comparison between a private project investment and the most liquidity and attractive alternative, the public bonds, and not a definitive barrier.

(From request for review 2, 3 and 4)*"The PDD contains abundant on information on the barrier analysis, finally resulting in a confusing and inconsistent claim for an investment barrier. It is not clear why an IRR (not including CER revenues) of 20,13% would consist an investment barrier while the IRR including CER revenues of 21,89% would not consist such barrier"*

PP initial comments

Two hundred basis points do not completely address the risks of long term investments in Brazil. As described in the PDD, there are other aspects on the CER revenues that have

motivated the project participants to move forward with the project. Besides the increase in project IRR, CER revenues would bring the project additional benefits due to the fact that these revenues are generated in hard currencies such as the US Dollar or the Euro. The potential revenues from CDM allow project participants to hedge their debt cash flow against currency devaluation and can be eventually discounted at an applicable interest rate, increasing the project leverage.

(From request for review 2, 3 and 4) *"It is not clear how the financial barrier related to the PPA would be specific for a small hydro plant only"*

PP initial comments

It is not specific to the small hydro power plant. As the project activity is a small project, compared with other Brazilian hydro plants, those issues related to the PPA and other bureaucratic process assume larger proportions.

Once the Power Purchase Agreements is signed, the project activity is immediately exposed to the utility's long term credit risk. At the time of project commissioning and completion, none of the local utilities of Brazil were rated above the sovereign ceiling of BB (double B) and thus, at least, two notches below the BBB+ (triple B plus) investment grade rating.

Beside this, utility companies prefer to buy electricity from large power plants than small hydro projects like Garganta da Jararaca.

(From request for review 2, 3 and 4) *"It is not clear how the institutional barrier of changing government electricity market policies would be specific for a small hydro plant only"*

PP initial comments

The institutional barrier is not specific for small hydro projects. As analyzed above and described in the PDD, it affects all infrastructure projects. Markedly smaller projects. It's important to stress that the small hydro plants in Brazil are taking advantage of the CDM to overcome the institutional barrier. Actually the PPs are not aware of a single new small power plants developed in the last years in the country without taking into account the CDM incentive.

(From request for review 2, 3 and 4) *"In sub-step 3b the wrong comparison is made. The PP is supposed to compare the project activity to similar alternatives, i.c. other types of power plants which could also yield approximately 30 MW power; investments in other markets are no comparable alternative"*

PP initial comments

The PPs intended to start calling the attention to the fact that financial investments are very oft a preferred alternative, better developed ahead in the text. The PPs acknowledge that the comparison and reasoning was wrongly initiated in sub-step 3b.