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TÜV®

CDM Executive Board

Our / Your Reference

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Date
29.10.2009

Request for Review

"Santana I SHP CDM Project (JUN 1118)" (2793)

Dear Sir/Madam,

Please find below the response of TÜV NORD JI/CDM Certification Program to the requests for review for the above mentioned project no. 2793.

If you have any questions do not hesitate to contact us.

Yours sincerely,

TÜV NORD JI/CDM Certification Program



Rainer Winter

Request for Review 1-3	
Issue raised by EB Members / DNA	<i>The DOE is requested to explain further how it has validated the accuracy of the financial calculations, including the suitability of the input values to the investment analysis and the sensitivity analysis, in line with the VVM paragraph 109.</i>
Response of project participant	<p>It is first of all important to point that the development of the PDD and submission to the DOE was prior to the implementation of the project.</p> <p>Furthermore, the fact that we were waiting for the positive validation opinion by the DOE before committing to major investment expenses, demonstrates that carbon credits are crucial for the implementation of the project activity (the starting date in the validated PDD was 2009/03/01 and the Final Validation Report was submitted to the Brazilian DNA in order to obtain the LoA.</p> <p>In order to respond to the request for review raised by the members of the Board, a sensitivity analysis was prepared by making a deviation in the key parameters of the in the financial calculations. The spreadsheet containing the sensitivity analysis in addition to the IRR (Internal Rate of Return) previously submitted is attached to this document (reference: "Sensitivity analysis at validated IRR spreadsheet"). Explanation of the results of the sensitivity analysis is given in the attached document reference: "Response to the Request for Review".</p> <p>We sincerely hope the further explanations given is sufficient to provide the further clarification sought by the Board members.</p>
Response of DOE	<p>The sensibility analysis provided by the PP clearly shows that the financial barrier is very robust, as in no case a variation of +-10% put the IRR of the project even close to the average SELIC rate (the source is the Central Bank of Brazil), which can be considered a conservative rate, once it is only an indicative rate and not a specific sectorial benchmark applicable to the risk profile of the project, once it refers to government bonds and it is expected that an investor would not likely decide to take risks in a private enterprise such as a small hydro project and receive a lower return than the much safer government bonds.</p> <p>Furthermore, the breakeven point analysis shows that variations ranging from 23% (Investment) to 147% (Maintenance costs) are required to meet the indicated SELIC rate, which likelihood is deemed low, as it is quite well explained in the attached document provided by the PP and explained in our assessment below:</p> <p>Likelihood of scenarios occurrence</p> <p><u>Investment (R\$)</u></p> <p>The value applied by the PP was considered adequate considering the technical characteristics of the SHP, and it was cross checked with the <i>Eletrobras Standard Budget</i>, which is part of the executive project of the SHP assessed and approved by the National Electric Agency (ANEEL), which is the regulatory agency of electrical energy in the host country</p>

	<p>and also from the point of view of cost index of investment - R\$ per installed capacity in MW.</p> <p>The cost index of investment (R\$/MW installed) of this project is R\$ 2,825.37 per installed MW, using the validated costs presented in the Table 5 of the validation report (R\$41,696,900.00).</p> <p>Comparing the Santana I cost index of investment to registered CDM projects, we can observe that the project activity has comparative and conservative values for this index. For example, TUV has made a random research of registered projects in order to compare with the present project activity. As a result “Rialma Companhia Energética I S/A. – Santa Edwiges I Small Hydro Power Plant – Small Scale CDM Project” Ref. no. 0830¹, has presented a cost index of investment of 4,289.09 (R\$/MW installed); the project “Saldanha Small Hydroelectric Project” Ref. no. 1526², has presented 5,668.04 (R\$/MW installed); “Rialma Companhia Energética III S/A. – Santa Edwiges III Small Hydro Power Plant – Small Scale CDM Project” Ref. no. 2165³, has presented 4,989.94 (R\$/MWh installed). Those projects were developed using the same methodology as Santana I SHP.</p> <p>Considering the data above presented, it can be considered that the input value for investment costs used in the financial analysis is adequate/suitable as well as conservative.</p> <p><u>Energy Price (R\$/MWh)</u></p> <p>The signature of a PPA prior to project implementation is common practice in Brazil.</p> <p>The PPA was signed for 20 months, and committed most energy to be produced by the SHP (8.2MW). As correctly indicated by the PP in its response, the contracted price is higher than the prices in the energy auctions and thus it is considered unlikely that this price could be further increased. In addition, TUV considered that the longer the time, the lower the price that can be negotiated in a PPA and therefore it is conservative to consider that if the length of time contracted were higher, the price fetched would likely be lower than the considered one.</p> <p>It is possible that a small quantity of exceeding energy can be sold in the spot market. However, the prices in the spot market are significantly lower than those in energy auctions and the price in the signed PPA. The current prices practiced in the spot market of energy have ranged from R\$74.28/MWh (data from October 2008⁴, date when the project was</p>
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¹ <http://cdm.unfccc.int/Projects/DB/BVQI1167161981.54/view>

² <http://cdm.unfccc.int/Projects/DB/DNV-CUK1200486228.81/view>

³ <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1218634643.54/view>

⁴ Document reference: http://www.ccee.org.br/cceeinterdsm_CCEE_template_print_October_2008

made publicly available in the UNFCCC website) to R\$16.31/MWh (current prices – September 2009⁵), released by CCEE (Electric Power Commercialization Chamber).

Considering the above said, the audit team considers that it is highly unlikely that the energy price can be higher than the price validated by TUV.

Plant Load Factor (MW)

The data applied comes from the dispatch of ANEEL and the document was reviewed by the validation team.

ANEEL has a body of technical project reviewers who properly analyses generation projects in different sectors in Brazil. The main technical issues that influence the value of Plant Load Factor are the series of hydrological data and flow that historic occurred, climate conditions, topography, regular flow of the river, among others, that the ANEEL's technical body is capable of analyzing these conditions and provide data for firm generation or assured generation of SHP projects.

As ANEEL is an independent third party, and the country's agency responsible for the regulation of the electrical energy market, with the necessary experience and competence to evaluate

technical data of hydro projects, the value presented was accepted by the audit team as reliable and accurate.

O&M costs

The values were provided by the financial/accountant consultant Correcto, which is a specialized company in this sector as it could be verified also by visiting its website, which presents in its first page the "Administrative and Operational Management of Small Hydro Plants" as one of its core services. The company has been providing consulting services for other SHP projects such as Cristalino SHP (CDM project registered at UNFCCC ref # 1800) and Rio Tigre SHP (under validation - bundled project Electra Power CDM project). As discussed during the interview with this third party, the costs are considered suitable, because they take into account the specific conditions of the project. Several factors influence the data provided and validated, as explained in the PP's response attached to this document.

Furthermore, the breakeven point analysis shows that a variation of 56% of the total costs is required to pass the indicative comparison rate (average SELIC). Accordingly a much higher variation in each individual parameter would be required to meet the comparison rate.

For example, for the parameter Maintenance alone, which is the component of O&M costs with the highest weight, if the value applied was zero (which is of course not feasible), the IRR would go to 15.4%, which is still 1.5% below the average SELIC).

⁵ Document reference: http://www.ccee.org.br_cceerinterdsm_CCEE_template_print_September_2009

Likewise, if the value applied in the excel sheet for Administration costs was zero, the IRR would be 13.8% and if the value for insurance was zero, the resulting IRR would not pass 14.6%. Of course zero values for such parameters are just hypothetical and far from feasible

Period of Assessment & Residual value

Furthermore, the cash flow calculation considers 28 years of operation which is considered extremely conservative. In line with that reasoning, the residual value of 40% considered by the PP is also assessed by TUV as very conservative, as according to accounting regulations in Brazil, the book value for the asset will be zero at the end of the assessment period.

Taxes and Depreciation

All taxes applied were correctly applied according to the relevant laws (Federal Law 10.637 and Federal Law 9.718) and also depreciation was not considered in the cash flow, as Brazilian legislation allows the modality of vain profit (lucro presumido), according to which the income taxes are calculated over a given percentage of the revenues instead of the profit, and thus it is not necessary to include the depreciation in the cash flow.

Exactness of calculations

Moreover, the financial spreadsheet presented was thoroughly checked so that each formula, reference and input value was reviewed to ensure that the calculations were correctly presented.

Conclusions

Finally, considering the provided documents, interviews with the financial consultant, the result of the financial calculation and TUV's local expertise, the validator considers the financial barrier robust and therefore CDM income decisive for project implementation.

If this information is not sufficient to close the request for review, we appoint Ms. Inga Nagel as our contact person.

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