

# RESPONSE TO THE REQUEST FOR REVIEW



**From:** Bureau Veritas Holding SAS

**To:** CDM Team

**Attention:** Daniele Violetti, Officer-in-Charge CDM and Secretary to the CDM Executive Board

**Reference:** Request for review for Monjolinho Energética S.A.'s CDM Project (2362), sent by e-mail in 09/04/2009 13:32

Dear CDM Team,

Regarding the above mentioned reference, Bureau Veritas Certification, BVC Holding SAS, had performed the Validation of the CDM Project 2362: Monjolinho Energética S.A.'s. Subsequently, have been issued 3 requests for review, where all of them have the same description.

It is a pleasure to inform Bureau Veritas Certification's response for this issue as defined below, where we describe all actions taken to properly handle the analysis of the situation and give the right answer for that.

**Question 1 – “The DOE is requested to explain how it has validated the investment analysis and input values as appropriate, in particular (a) as the investment was based on only 67 MW installed capacity and net energy supply of 43.1 MW; and (b) the sensitivity analysis, varying the tariff for only the first 3 years and why the variations in electricity output or plant load factor were not considered.”**

According to item 6 of Annex 45 of EB 41 - Guidance on the Investment Analysis, which is a complement to the “Tool for the demonstration and assessment of additionally:

“Input values used in the investment analysis should be valid and applicable at the time of the investment decision taken by the project participant. The DOE is therefore expected to validate the timing of the investment decision and the consistency and appropriateness of the input values with this timing (...)”

As described in the PDD, the Basic Project of HPP Monjolinho was approved in 22<sup>nd</sup> May 2007. This Basic Project shows that the installed capacity of HPP Monjolinho was 67 MW. The investment decision was taken by project participants with this information and in 16/07/2007, MONEL (Monjolinho Energética S.A.) started the project activity which was proved through the issue date of the Construction Service Order (from the Portuguese: Ordem de Serviço de Construção) to COMAX Terraplenagem Ltda. to the service of common excavation of left and right margins and ground work for construction site of HPP Monjolinho.

After MONEL started the construction, some studies pointed the possibility of an increase in the installed capacity of the HPP Monjolinho. In June 2008, ANEEL

(National Agency of Electric Energy) approved the change of the installed capacity. However, when project participants decided to develop the project, they didn't know that the installed capacity would be 74 MW. All official studies that supported the investment decision considered an installed capacity of 67 MW and an assured energy of 43.1 MW.

It is important to make some comments about the definition of the Assured Energy and about Electricity Market in Brazil. According ANEEL<sup>1</sup>, the determination of the Assured Energy is associated to the conditions in the long term that each plant can supply to the system assuming specific criteria of risk of non-attendance to the market (risk of deficit), considering mainly the hydrologic variability which the plant is exposed.

The values of Assured Energy are the maximum quantity of electricity that can be sold under long term contracts (Power Purchase Agreements - PPAs). If a company generates more or less electricity than the assured energy that was contracted in the PPAs, this energy will be accounted in the "Mechanism of Electricity Relocation" which is a Financial Mechanism which has the objective of sharing the hydrologic risks that affect the generators agents to assure the optimization of the hydro resources of the interconnected system. The intention is to assure that all Generators Agents that participate in this Mechanism market their assured energy independently of their real electricity production since all plants of the "Mechanism of Electricity Relocation", as a whole, generate enough electricity to attend the system demand.

Therefore, it is important to make clear that in Brazil the Generators Agents can only market in the Power Purchase Agreements their assured energy and if they produce more or less energy than the assured energy this amount will be accounted in the "Mechanism of Electricity Relocation".

The official assured energy of HPP Monjolinho is 43.1 MW and it was this value when the decision to proceed with the project activity was made. As it was said in the PDD, MONEL also required to ANEEL a review in the assured energy of 43.1 MW. However, up to now, MONEL has not received yet any answer. The assured energy can be changed or not. Therefore, the official assured energy is 43.1 MW and that's why this value was used in the investment analysis and also in the emission reduction calculation.

It is important to highlight that the change of the installed capacity occurred after the beginning of the Validation Process, which started on 11 April 2008. Therefore, as recommended by item 6 of Annex 45 of EB 41 - Guidance on the Investment Analysis, which is a complement to the "Tool for the demonstration and assessment of additionally", all the investment analysis was based in the input values at the time of the investment decision.

As described at PDD pg. 20, the sensitivity analysis varies the tariff just for only the first three years because, only for this period, the company did not have the Contracts of

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<sup>1</sup> Page 9-11 of the Thematic Book – Assured Energy, December 2005.

Power Purchase Agreement (called PPA) already signed. For the remainder concession period, Monjolinho Energética S.A. has PPAs already signed, where the electricity price was negotiated with a value of R\$ 124.52/MWh. The Power Purchase Agreements that proves that Monjolinho Energética S.A. sold the electricity in a fixed price of R\$ 124.52/MWh were presented to the DOE during the validation process. With that, it makes no sense to vary the price for the period where the electricity is sold based on a fixed price.

Variations in electricity outputs and in the plant load factor were not considered in the sensitivity analysis because as it was said before all inputs used in the investment analysis were inputs at the time of the investment decision. As it was said before, in Brazil, Power Purchase Agreements are signed considering the assured energy of the plant, because the assured energy is the limit of electricity that can be sold by the Hydro Generators Agents in the Power Purchase Agreements. Therefore, for the first three years, MONEL will be able to sell the same 43.1 MW.

However, the main point is that all inputs taken in the investment analysis were valid and applicable at the time of the investment decision as recommended by the item 6 of Annex 45 of EB 41 - Guidance on the Investment Analysis, which is a complement to the “Tool for the demonstration and assessment of additionally “

**Question 2 – “The DOE is requested to confirm (a) the number of similar hydropower plants above 30 MW that are not built by state-owned entities and (b) the essential distinction between them and the project activity”**

According to the Atlas of Electric Energy in Brazil<sup>2</sup>, the hydroelectric energy generation in Brazil is constituted essentially by major entrepreneurships. According to this study, the 23 hydroelectric power centrals of the country with a generation capacity of over 1,000 MW correspond to 71.4% of its installed capacity. Entrepreneurships of this magnitude present, for their generation capacity and consequent capacity of revenues, a great economic viability.

Still according to ANEEL, in the study mentioned above<sup>3</sup>, the use of hydraulic potentials in Brazil to the generation of electric energy has historically demanded the formation of great reservoirs and inundation of big flooded areas. These constructions have used, in the majority of the cases, water accumulation reservoirs and regulations of water flow that provoked alterations in the regimen of water and the formation of microclimates, favoring, damaging or even extinguishing certain species.

Other fact that must be highlighted is that, analyzing the history of Brazilian electrical sector, it is verified that in the past the country’s legislation did not incorporate the environmental variable in national electric sector planning. However, facing the undesirable social-environmental impacts resulting from the implantation of hydroelectric entrepreneurships, a series of legal demands that aim at avoiding and

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<sup>2</sup> Atlas of Electric Energy in Brazil / National Agency of Electric Energy, page 32. (*Atlas de Energia Elétrica do Brasil / Agência Nacional de Energia Elétrica, Página 32. – Brasília: ANEEL, 2002.*)

<sup>3</sup> Atlas of Electric Energy in Brazil / National Agency of Electric Energy, pages 45-46. (*Atlas de Energia Elétrica do Brasil / Agência Nacional de Energia Elétrica, Páginas 45-46. – Brasília: ANEEL, 2002.*)

mitigating the environmental effects of this kind of project have become demands of the conceding power and of the legislative organs. With this, for the implementation of new hydro projects in Brazil there is a tremendous increase on investments regarding environmental and social issues, where in some cases become so higher that the financial attractiveness of the new entrepreneurship can be seriously affected, also become not viable the implementation.

HPP Monjolinho (Alzir dos Santos Antunes) is an entrepreneurship that has 74 MW of installed capacity and 43.1 MW of assured energy, being different, therefore, of the great national hydro electrical sites and not having the enormous potential of revenues of this kind of entrepreneurship. Moreover, HPP Monjolinho (Alzir dos Santos Antunes) is a run-of-the-river power plant that has a power density of 13.55 MW/km<sup>2</sup>, with a flooded area of 5.46 km<sup>2</sup>, presenting low environmental impacts and that considers in its planning a series of investments in programs and environmental actions that did not exist when there was the implantation of the greatest part of hydroelectric power plants in the Southern Region. The implantation of this project does not count on large revenues from the great Brazilian hydroelectric entrepreneurships and although has minimal environmental impacts, it demands big investment in environmental and social issues, where its cash flow presents return rates below the markets references and as consequence the revenue from selling certified emission reduction becomes important to make the project possible.

It is necessary to clarify that Desenvix S.A. is a subsidiary of Engevix Engenharia S.A., created in 1995 to develop new businesses, especially in the area of electric energy generation in three states of Brazil - Rio Grande do Sul, Santa Catarina and Rio de Janeiro through its controlled companies. Desenvix S.A. is controlled by Engevix Engenharia S.A, which holds 100% of the social capital and its directors are the same shareholders of the controller company. A great part of the company's growth history is related to its performance in the energy sector and, this way, Desenvix S.A was created to make the participation of Engevix in energetic generation projects possible. Acting as a holding, the company develops its activities through its controlled companies that exercise the function of independent producers of energy in the national electrical sector. One of these controlled companies is Monjolinho Energética S.A. – MONEL, created specifically to implement and to operate Monjolinho Energética S.A.'s CDM Project

Furthermore, it is important to highlight that the great majority of Hydro Projects that were not developed by state-owned companies were developed by consortium with several companies that shared the project risks. HPP Monjolinho is being developed by just one company (MONEL) that assumes all the projects risks and investments.

In the South Region of Brazil, region where HPP Monjolinho is located, there are 12<sup>4</sup> (twelve) hydropower plants above 30 MW that were not built by state-owned entities. It is important to say that in Rio Grande do Sul state, where Monjolinho Project is located, there are only 5 hydropower plants above 30 MW that were not built by state-owned

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<sup>4</sup> It was used the profile of the Brazilian Electrical Sector of the "Atlas of Electric Energy of Brazil, 3<sup>rd</sup> edition", year 2008 (ISBN: 978-85-87491-10-7) elaborated by National Agency of Electric Energy in November 2008 – pages 159 to 233.

entities, proving that this kind of project activity is not a common practice in this state as will be proven below .

As recommended by the sub-step 4a of the “Tool for the demonstration and assessment of additionality”, “Other CDM Activities (registered project activities and project activities which have been published on the UNFCCC website for global stakeholders consultation as part of the validation process) are not to be included in this analysis.

Therefore, the following HPPs above 30 MW must be excluded from the analysis, because they are CDM Project Activities (or they are registered or they were submitted for global stakeholders consultation):

- Hydropower Plants Fundão and Santa Clara (2 Power Plants in the same project): <http://cdm.unfccc.int/Projects/DB/BVQI1186161655.85/view>
- Hydropower Plant Monte Claro: <http://cdm.unfccc.int/Projects/DB/DNV-CUK1163591697.79/view>
- Hydropower Plant 14 de Julho: <http://cdm.unfccc.int/Projects/DB/SGS-UKL1209121131.35/view>
- Hydropower Plant Campos Novos: <http://cdm.unfccc.int/Projects/Validation/DB/QJV07OUUF95DPM8EES0YT0G4KEW2DV/view.html>

Therefore, there are only 7 (seven) other Hydropower Plants located in the South Region that were neither built from state-owned entities nor CDM project activities. The essential distinction between them and HPP Monjolinho are described below:

- Hydro Power Plant Machadinho<sup>5</sup>: This entrepreneurship started to be built in 1998. It has an installed capacity of 1,140 MW which means that has an enormous potential of revenues that makes it more profitable and more financial attractive. It also presents more environmental impacts. Furthermore, to construct this entrepreneurship, it was created a consortium with 11 (eleven) companies associated (7 private companies and 4 state-owned companies). This type of configuration attenuates risks. Due to the size of this Hydropower Plant, it cannot be compared with HPP Monjolinho, because the revenues and the environment impacts are in another level.
- Hydro Power Plant Itá: This plant has 1,450 MW which also means more capacity of revenues what makes the project more financial attractive. One consortium formed by three companies shares the risks and the profits of this project. This plant was built in 1996. Also, due to the size of this Hydropower Plant, it cannot be compared with HPP Monjolinho. The main shareholder was a state-owned company (Gerasul/Eletrosul) that was bought by a private company.

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<sup>5</sup> (<http://www.machadinho.com.br/historico.html>):

- Hydro Power Plant Barra Grande: This project is under validation in the UNFCCC (<http://cdm.unfccc.int/Projects/Validation/DB/SONAXN2JJ91TO2UMXXJRRC4U6UKECB/view.html>) but project proponents have requested the withdrawn from the CDM, therefore we included in this analysis. HPP Barra Grande has 708 MW of installed capacity and 380.6 MW of assured energy which means that has more revenues that makes it more profitable. Besides that, one consortium of 6 big Brazilian companies was formed to construct and operate this Plant.
- Hydropower Plant Castro Alves: This plant was withdrawn form the CDM (<http://cdm.unfccc.int/Projects/Validation/DB/CJJACA7U4ILONCA4SXLQVQORWJMKCC/view.html>) and it was also analyzed in common practice analysis. This plant is one enterprise of the CERAN Complex<sup>6</sup> that has three plants. (two of them are CDM projects – HPP Monte Claro and HPP 14 de Julho) in the same river (Antas River). CERAN was also implemented by a consortium with three shareholders and one of them is a state-owned company (CEEE) which has 30% of the complex. The fact that the Complex has three plants dilutes risks mitigates risks of electricity generation and, therefore, risks of revenues generation. Furthermore the consortium formed by three companies also mitigates risks.
- Hydro Power Plant Dona Francisca: HPP Dona Francisca has an installed capacity of 125 MW and a flooded area of 19 km<sup>2</sup>. The power density of the plant is 6.57 MW/km<sup>2</sup>. HPP Monjolinho has smaller installed capacity and higher power density (13.55 MW/km<sup>2</sup>, PDD pg.11) compared with HPP Dona Francisca, providing less environmental impacts. Another great difference between these HPPs is that HPP Monjolinho is being constructed by one unique private shareholder that supports all risks present in this kind of entrepreneurship. HPP Dona Francisca was constructed by a consortium composed by 2 major companies: CEEE, state electrical company of the state of Rio Grande do Sul and Dona Francisca Energética S.A, which has two state-owned companies as shareholders (CELESC and COPEL) and two private companies. Therefore, the major differences between these two HPPs is that and (1) MONEL has higher power density and less environmental impacts; (2) HPP Monjolinho does not have public companies as shareholders; (3) MONEL is the unique private investor of the project and due that (4) MONEL has to support all risks which is not common practice.
- Hydro Power Plant Quebra-Queixo<sup>7</sup>: The installed capacity is 121,5 MW and its assured energy is 59.7 MW what bring more revenues for the project and it makes it more financially attractive than HPP Monjolinho. It is also important to say that HPP Monjolinho is more efficient than HPP Quebra-Queixo because the load factor of HPP Monjolinho is 58.2% and the load factor of HPP Quebra-Queixo is 49.7%. HPP Quebra-Queixo started to be constructed in 2001 before the Kyoto Protocol entered into force. HPP Quebra-Queixo has two

<sup>6</sup> <http://www.ceran.com.br/>

<sup>7</sup> <http://www.uhequebraqueixo.com.br/dados.htm>

shareholders: Construtora Queiroz Galvão and Construtora Barbosa Mello S.A. They shared risks, profits and they can also have an easier access to the capital markets. This Hydropower plant is located in Santa Catarina state.

- Hydro Power Plant Ourinhos: This HPP is located between the states of Paraná and São Paulo. The construction had to be interrupted in 2003<sup>8</sup> due to technical and financial problems. Due to these financial problems, one of the biggest industrial group in Brazil, called CBA – Companhia Brasileira de Alumínio – bought the concession from another company (that had achieved the public concession before) and restarted the construction. This HPP has an installed capacity of 44 MW and a flooded area of 5.095<sup>9</sup> km<sup>2</sup>, therefore its power density is 8.63 MW/ km<sup>2</sup>, less than HPP Monjolinho power density, which means that to provide less energy, HPP Ourinhos needs to flood more area and impact more the environment. As it was said before, HPP Ourinhos started its construction before 2005, year when Kyoto Protocol got into force and due that the former investors face some financial barriers. The CDM will provide MONEL revenues to develop the project by itself and do not face the financial barriers that the former investors of HPP Ourinhos met. The construction of Hydro Power Plants by CBA has the objective of supplying electricity for its activities, where today 60% of its necessity of electricity is supplied by own hydro plants, and specifically for Ourinhos, 100 % of its production is for internal consume, which is an essential distinction compared with Monjoliho ..

It can be clearly seen that in Rio Grande do Sul, state where Monjolinho Project is located, hydro power plants like HPP Monjolinho are not the common practice in the state because there are few HPPs above 30 MW that are neither built by state-owned companies nor CDM Project Activities and which have different characteristics from HPP Monjolinho that were described above. If the analysis is wider considering all the South Region, it can be obtained the same conclusion where in the three states of this region, there are only 7 HPPs (including the two located in Rio Grande do Sul) with also different characteristics of HPP Monjolinho. If the analysis is still wider considering the other state where Desenvix S.A acts, Rio de Janeiro State, the same conclusion is also obtained, once just state-owned companies built hydro power plants there.

It can be also clearly noted that the Hydro Power Plants that were built by private companies are usually implemented by consortium where several companies share the risks. In some of them, there are also state-owned companies in the consortium. HPP Monjolinho is being implemented by one unique investor that supports all risks.

Taken in considerations the above information, provided by National Agency of Energy Electric-ANEEL, we can conclude that common practice was not been characterized. All sources of data were checked in the validation process.

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<sup>8</sup> <http://www2.uol.com.br/debate/1292/regiao/regiao04.htm>

<sup>9</sup> [http://www.aneel.gov.br/cedoc/areh2006296\\_1.pdf](http://www.aneel.gov.br/cedoc/areh2006296_1.pdf)

**Question 3 – “The DOE is requested to confirm that the grid emission factor was based on data available at the time of validation; otherwise, the emission factor and emission reductions must be recalculated accordingly.”**

It is important to explain that The ONS - National Electric System Operator (website: <http://www.ons.org.br>), is a private entity, nonprofit, created on 26 August 1998, responsible for coordinating and controlling the operation of generation facilities and transmission of electricity in the National Interconnected System (SIN) under the supervision and regulation of the National Electric Energy Agency (Aneel), being officially responsible for the accuracy and deliverable of the electric data generation, where the grid emission factor was calculated according to data made available by ONS for the years 2005 to 2007 at the time of the validation.

Monjolinho Energética S.A.’s CDM Project used the emission factor of the subsystem South-Southeast-Midwest. As it was said before, the validation process began in 11<sup>th</sup> April 2008. In 26<sup>th</sup> May 2008, Brazilian Designated National Authority published its Resolution number 8 that established that all CDM Project Activities which generates electricity to the Brazilian Interconnected System must consider the Brazilian Interconnected System as unique. However, according the page 8 of the “Handbook for Submission of CDM Project Activities” elaborated by Brazilian DNA, norms contained in all Brazilian DNA Resolutions are applicable without retroactive effect, being just valid for project activities that begin its validation process after the approval date of the respective Resolution. Brazilian DNA clarifies in the same page that must be considered as the beginning date of the validation process the date when the project activity was published in the website of UNFCCC by the DOE.

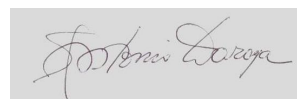
Monjolinho Energética S.A.’s CDM Project was published in 11<sup>th</sup> April 2008 in the UNFCCC website. Therefore, the Monjolinho Energética S.A.’s CDM Project used the applicable emission factor and it was based on data available at the time of the validation which were validated by the DOE.

Confident that the above comments will support you to adequately address the raised issues, the DOE remains available at any time for additional clarification.

Yours faithfully  
For Bureau Veritas Certification, BVC Holding SAS.

  
RFS

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